



Volume 3 | INNOVATIONS IN
HIGHER EDUCATION
TEACHING
AND LEARNING

Inquiry-Based Learning for Multidisciplinary Programs

A Conceptual and Practical
Resource for Educators

EDITED BY **Patrick Blessinger** *and* **John M Carfora**

**INQUIRY-BASED LEARNING FOR
MULTIDISCIPLINARY PROGRAMS:
A CONCEPTUAL AND PRACTICAL
RESOURCE FOR EDUCATORS**

INNOVATIONS IN HIGHER EDUCATION TEACHING AND LEARNING

Series Editor: Patrick Blessinger

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LEARNING VOLUME 3

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FOR MULTIDISCIPLINARY
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AND PRACTICAL RESOURCE
FOR EDUCATORS**

EDITED BY

PATRICK BLESSINGER

International HETL Association, New York, NY, USA

JOHN M. CARFORA

Loyola Marymount University, Los Angeles, CA, USA

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LIST OF CONTRIBUTORS

<i>Anders Siig Andersen</i>	Roskilde University, Roskilde, Denmark
<i>Neil Anderson</i>	James Cook University, Cairns, Australia
<i>Tom Barrett</i>	NoTosh, Melbourne, Australia
<i>Michelle Bata</i>	Clark University, Worcester, MA, USA
<i>Patrick Blessinger</i>	International HETL Association, New York, NY, USA
<i>Becky Boesch</i>	Portland State University, Portland, OR, USA
<i>Vic Boyd</i>	The Glasgow School of Art, Glasgow, Scotland, UK
<i>Tina Calandrino</i>	University of Central Florida, Orlando, FL, USA
<i>John M. Carfora</i>	Loyola Marymount University, Los Angeles, CA, USA
<i>Barbara Cozza</i>	St. John's University, New York, NY, USA
<i>April D. Cunningham</i>	Palomar College, San Marcos, CA, USA
<i>Kathy-ann Daniel-Gittens</i>	University of Central Florida, Orlando, FL, USA
<i>David Dickinson</i>	University of Roehampton, London, UK
<i>Mary Dickinson</i>	University of Surrey, Guildford, UK
<i>Kathleen B. Duncan</i>	University of La Verne, La Verne, CA, USA
<i>Debra L. Gilchrist</i>	Pierce College, Lakewood, WA, USA

<i>Mercedes González-Sanmamed</i>	University of A Coruña (UDC), A Coruña, Spain
<i>Montse Guitert</i>	Universitat Oberta de Catalunya (UOC), Barcelona, Spain
<i>Simon B. Heilesen</i>	Roskilde University, Roskilde, Denmark
<i>William E. Herman</i>	State University of New York College at Potsdam, Potsdam, NY
<i>Charles W. Jarrett</i>	Ohio University Southern, Ironton, OH, USA
<i>Darryl E. Jones</i>	The College of New Rochelle, New Rochelle, NY, USA
<i>Greg Latemore</i>	The University of Queensland and Latemore Consulting, Brisbane, Australia
<i>David M. Lucas</i>	Ohio University Southern, Ironton, OH, USA
<i>Beth Marquis</i>	McMaster University, Hamilton, ON, Canada
<i>Teresa Martinelli-Lee</i>	University of La Verne, La Verne, CA, USA
<i>Gavin Melles</i>	Swinburne University of Technology, Melbourne, Australia
<i>Michele R. Pinard</i>	State University of New York College at Potsdam, Potsdam, NY
<i>Christine E. Poteau</i>	Alvernia University, Reading, PA, USA
<i>Nicholas Rademacher</i>	Cabrini College, Radnor, PA, USA
<i>Albert Sangrà</i>	Universitat Oberta de Catalunya (UOC), Barcelona, Spain
<i>Alia Sheety</i>	Cabrini College, Radnor, PA, USA
<i>Nicholas J. Shudak</i>	University of South Dakota, Vermillion, SD, USA

<i>Vivian Tam</i>	McMaster University, Hamilton, ON, Canada
<i>Scott Thompson- Whiteside</i>	Swinburne University of Technology, Melbourne, Australia
<i>Tanya D. Whitehead</i>	University of Missouri-Kansas City, MO, USA
<i>Amy Whitney</i>	Clark University, Worcester, MA, USA

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SERIES EDITOR'S INTRODUCTION

The purpose of this series is to publish current research and scholarship on innovative teaching and learning practices in higher education. The series is developed around the premise that teaching and learning is more effective when instructors and students are actively and meaningfully engaged in the teaching-learning process.

The main objectives of this series are to:

- (1) present how innovative teaching and learning practices are being used in higher education institutions around the world across a wide variety of disciplines and countries,
- (2) present the latest models, theories, concepts, paradigms, and frameworks that educators should consider when adopting, implementing, assessing, and evaluating innovative teaching and learning practices, and
- (3) consider the implications of theory and practice on policy, strategy, and leadership.

This series will appeal to anyone in higher education who is involved in the teaching and learning process from any discipline, institutional type, or nationality. The volumes in this series will focus on a variety of authentic case studies and other empirical research that illustrates how educators from around the world are using innovative approaches to create more effective and meaningful learning environments.

Innovation teaching and learning is any approach, strategy, method, practice, or means that has been shown to improve, enhance, or transform the teaching-learning environment. Innovation involves doing things differently or in a novel way in order to improve outcomes. In short, Innovation is positive change. With respect to teaching and learning, innovation is the implementation of new or improved educational practices that result in improved educational and learning outcomes. This innovation can be any positive change related to teaching, curriculum, assessment, technology, or other tools, programs, policies, or processes that leads to improved educational and learning outcomes. Innovation can occur in institutional

development, program development, professional development, or learning development.

The volumes in this series will not only highlight the benefits and theoretical frameworks of such innovations through authentic case studies and other empirical research but also look at the challenges and contexts associated with implementing and assessing innovative teaching and learning practices. The volumes represent all disciplines from a wide range of national, cultural, and organizational contexts. The volumes in this series will explore a wide variety of teaching and learning topics such as active learning, integrative learning, transformative learning, inquiry-based learning, problem-based learning, meaningful learning, blended learning, creative learning, experiential learning, lifelong and lifewide learning, global learning, learning assessment and analytics, student research, faculty and student learning communities, as well as other topics.

This series brings together distinguished scholars and educational practitioners from around the world to disseminate the latest knowledge on innovative teaching and learning scholarship and practices. The authors offer a range of disciplinary perspectives from different cultural contexts. This series provides a unique and valuable resource for instructors, administrators, and anyone interested in improving and transforming teaching and learning.

Patrick Blessinger
*Founder and Executive Director,
International HETL Association*

FOREWORD

It gives me great pleasure to write the Foreword for the third volume of *Inquiry-Based Learning*. As an educator, this topic has always been dear to my heart. It is a topic that is meaningful because this process of learning encourages higher level thinking processes for all learners at any level of study – thinking skills that are needed by all, for the 21st century. Inquiry is not a “method” of doing mathematics, science, literacy, or other subjects. Inquiry-based learning is an approach to tentatively explore, investigate, and discover answers to formulated questions. As Wells (1999) stated, equally important in an inquiry approach is that answers to questions are taken seriously and are investigated rigorously, as the circumstances permit.

In this volume, you will read about successful implementation of elements of inquiry that may be integrated in a variety of learning settings. I would suggest that as you read this volume you consider what inquiry should look like when the approach is used in your own educational setting.

As an educator, professor, teacher, and consultant, I continue to provide professional development for teachers and administrators that integrate the following inquiry components: (1) tap into the learners’ prior knowledge, (2) integrate collaborative work and hands-on experiences using materials, (3) follow the problem-solving process and strategies, (4) accept multiple solutions to problems, (5) encourage high-level thinking through open-ended situations, (6) create conversations around solving problems, and (7) reflect on ideas both in discussion and in writing (Cozza & Bonekemper, 2007). Unfortunately, I have found that an inquiry lesson is often falsely represented with teachers only focusing on asking students to perform hands-on tasks. I have also witnessed that inquiry is not usually an agenda to be integrated into an administrator’s vision action plan. What the reader should realize is that inquiry is not an all or nothing process. Like most instructional practices, it manifests itself along a continuum that shifts according to time, place, and circumstance (Audet, 2005) based on the influence of lesson topic and task, learning environment, and a student’s experiences.

Some factors to consider in an inquiry model are the following: the level of inquiry is based on the relative amounts of student versus teacher control

over an activity, and that the inquiry process skills are developmental in nature. Based on my experiences, choosing the inquiry model in a lesson should be influenced by the topic of study, age level of the learner, amount of experience of the learner, and the nature of the task. It is important to note that merging inquiry into programs should be a gradual process over-time. Teachers and students need to gain an understanding of just what inquiry looks like during a slow release of control over classroom events.

An important framework to consider for a continuum of inquiry learning from grades pk-16 includes the following elements: students at all levels should progress through a cycle from questioning and hypothesizing to data collection, analysis, application, synthesis, and evaluation. How do teachers sequence instruction when using the framework? Although teachers' approaches vary, a three series sequence of student performance occurs: messing around with materials, guided inquiry (Ritchart, Stone Wiske, Buchovecky, & Hetland, 1998), problem solving, and metacognitive applications (Cozza & Oreshkina, 2013). Teachers build on students' prior experiences with initial explorations of central questions, materials, and issues about a topic. For example, in a science electricity class, third graders brainstorm and hypothesize just how lights turn on and off considering materials such as a light bulb, electrical wire, and a battery. During guided inquiry, small collaborative groups solve problem and use the materials to test how a bulb lights. Students record through drawings which diagram lights a bulb and which does not. The students explore, investigate, question, synthesize ideas and draw conclusions. As a culminating task, students become metacognitive and reflect on the investigation to understand just how they met the lesson goals. The inquiry process moves the learners' performances from simple to complex thinking tasks, from structured to more open-ended activities, and from collaborative to more independent evaluations. This is the inquiry process that should be included in school vision plans, integrated into professional development programs for educators, and connected to all pk-16 classrooms.

Inquiry is the practice of extracting meaning from experience (Audet, 2005) and it is a habit that integrates naturally in the teaching and learning processes. High-level thinking skills (skills required for the 21st century) are interwoven through all inquiry endeavors. What I suggest is that readers of this volume consider the concepts presented and reflect on how such factors might influence and become meaningful for your own performance as a professional.

Barbara Cozza

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PART I
CONCEPTS AND PRINCIPLES

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INNOVATIVE APPROACHES IN TEACHING AND LEARNING: AN INTRODUCTION TO INQUIRY-BASED LEARNING FOR MULTIDISCIPLINARY PROGRAMS

Patrick Blessinger and John M. Carfora

ABSTRACT

This chapter provides an introduction to how the inquiry-based learning (IBL) approach is being used by colleges and universities around the world to strengthen the interconnections between teaching, learning, and research within the multidisciplinary programs. This chapter provides a synthesis and analysis of all the chapters in the volume, which present a range of perspectives, case studies, and empirical research on how IBL is being used across a range of courses across a range of institutions within multidisciplinary programs. The chapter argues that the IBL approach has great potential to enhance and transform teaching and learning. Given the growing demands placed on education to meet a diverse range of complex political, economic, and social problems and personal needs, this chapter argues that education should be a place where students learn

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“how-to-learn” – where increasingly higher levels of self-directed learning is fostered – and where students grow in the three key areas of learning: cognitively, emotionally, and socially. To that end, this chapter argues that IBL, if designed and implemented properly, can be an important approach to enhancing and transforming teaching and learning.

INTRODUCTION

The chapters in this book focus on how the inquiry-based learning (IBL) approach is being used in a variety of educational settings to enhance teaching and learning within multidisciplinary programs as a means to enhance and transform student experiences. Using case studies and other empirical research, this volume presents a broad and in-depth overview on a variety of IBL applications to help educators implement IBL in a variety of ways in their own courses. The chapters in this volume cover the main theories, models, and principles of IBL, as well as successful strategies and practices of real IBL implementations in multidisciplinary settings. Since the main purpose of human activity is to organize information from their experiences and then to make meaning from that information. Questions then naturally arise from this meaning-making process leading the person to investigate and inquire in order to try to answer those questions (Doherty, Riordan, & Roth, 2002). IBL, with its focus on the inquiry process is naturally suited to the human learning process. Therefore, the IBL has great potential to increase academic engagement, intrinsic motivation, and self-regulated learning (Blessinger & Carfora, 2014; Carfora, 2011; Lee, 2013).

The chapters in this volume provide a wide-ranging overview of recent developments in IBL theories and pedagogical practices, including new and established literature on IBL (Barrow, 2006; Bell, Urhahne, Schanze, & Ploetzner, 2010; Blessinger & Carfora, 2014; Bruner, 1961; Dewey, 1997; Eslinger, White, & Frederiksen, 2008; Garrison, Anderson, & Archer, 2000; Kovbasyuk & Blessinger, 2013; Lee, Greene, Odom, Schechter, & Slatta, 2004; Levy, Thomas, Dargo, & Rex, 2013; Spronken-Smith, 2012; Vygotsky, 1962).

An increasing number of interdisciplinary and multidisciplinary programs (to include professional programs like law, medicine, and business which tend to be interdisciplinary and multidisciplinary by their nature) have been developed in higher education in recent times. This trend toward

interdisciplinary and multidisciplinary programs (and even transdisciplinary programs) appears to be growing as educators seek new knowledge that lies at the intersections of traditional disciplinary boundaries. The IBL theories, models, and concepts covered in this volume, coupled concrete examples via case studies of authentic learning exemplars, can help educators interested in adopting the IBL approach in a wide variety of contexts.

In the twenty-first century, characterized by increasing globalization, internationalization of education, educational mobility, and increasing diversity of learning opportunities for students, educators are challenged to work within with the new realities of modern life and within the multi-purpose role of the education (i.e., political, economic, social, and personal). Thus, educators today must serve multiple constituencies and purposes and learn how to adapt to the contemporary educational environment. The case studies and exemplars presented in this volume illustrate how IBL is being used in a variety of ways and they demonstrate innovative approaches for constructing more engaging, and authentic means to engage students in more effective learning.

In response to Kirschner, Sweller, and Clark (2006), Hmelo-Silver, Duncan, and Chinn (2007) offer considerable evidence and convincing logic to demonstrate that IBL can be an effective approach to teaching and learning if it is designed appropriately relative to the teaching and learning context in which it is used. The authors conclude that "... there is growing evidence from large-scale experimental and quasi-experimental studies demonstrating that inquiry-based instruction results in significant learning gains in comparison to traditional instruction and that disadvantaged students benefit most from inquiry-based instructional approaches" (p. 104). The IBL approach emphasizes that learning should be both about the epistemic knowledge and the epistemic practices of the domain(s) being studied in order to better prepare students in more authentic, meaningful, and self-directed ways (Bereiter & Scardamalia, 2006; Bransford, Brown, & Cocking, 2000; Kovbasyuk & Blessinger, 2013; Sandoval & Reiser, 2004).

IBL, as an approach instead of a specific method, is a cluster of teaching and learning strategies where students inquire into the nature of a problem(s) or question(s). The problem or question scenario thus serves as a mechanism and catalyst to engage actively and deeply in the learning process. This approach is constructivist in nature because it allows the student to take greater ownership of her/his learning by allowing them a means by which to construct their own knowledge rather than just having that knowledge merely spoon-fed to them by others. Thus, a chief aim of IBL is to

empower both teachers and students. Students are empowered by requiring them to take increasing of their own learning through purposeful engagement with specific questions, problems, and related learning activities. Instructors are empowered because they learn to progress from isolated subject matter experts to learning architects and instructional leaders. A key responsible of instructors therefore, in this active learning environment, is to design a learning environment that is challenging, supportive, and emphasizes both epistemic knowledge and skills as well as social and emotional development. **In IBL, one goal is to move the learner from a passive state to become a more active participant in the learning process.**

In IBL teaching and learning, both roles are more effectively expanded and defined, and more focused on achieving higher-order learning outcomes. Also important is the quality of the ongoing interaction and relationship between instructors and students, and between learners themselves. **The flexibility of IBL allows it to be applied to any discipline at any level within any institutional type.** How it is implemented is a function of several variables (e.g., institutional mission/type/level, discipline, grade level, learning outcomes). Teaching and learning strategies vary depending on the context of the teaching and learning environment. It is the instructor, as the learning architect and instructional leader, to decide how to design the course to best meet the needs of the students and the learning outcomes sought. So, for instance, the instructor may use a variety of learning tasks and activities to achieve the desired learning outcomes (Blessinger & Carfora, 2014).

Moving from traditional teaching and learning roles (e.g., the instructor and textbook as the sole or even primary repositories of knowledge, the lecture as the sole or primary instructional method, and the student as passive receptacle of information) to inquiry-based teaching and learning roles can be a huge transition, because along with taking on new roles comes development of a new mindset about the purpose and nature of teaching and learning. This implies that adopting **an IBL approach is not simply redesigning the structure of the course, but it is also about adopting a different mindset and attitude about the roles of the instructor and learner.** The IBL approach is supported by a large body of research evidence and established learning theories, which informs (without being prescriptive) faculty and administrators about what factors are most appropriate in creating more effective learning environments (Blessinger & Carfora, 2014; Gredler, 2009; Kovbasyuk & Blessinger, 2013).

As the case studies in this volume illustrate, courses and programs must be designed purposely and rooted in relevant learning theories and in

evidence-based practices and properly aligned with appropriate learning outcomes. Some of the more common IBL learning activities include case analysis or case creation, research projects, field work investigations, laboratory experiments, and role-play scenarios. The commonality of these activities is that they are active, authentic, experiential, meaningful, and they are focused on higher-order thinking. The level of structure required (e.g., on the continuum of unstructured to highly structured) will influence how much instructor guidance and direct instruction is required. In addition, learning projects may be small or large, or may cover whole projects or just particular components of a large project. IBL activities usually involve collaboration (directly or indirectly) with others such as fellow students, librarians, and/or researchers or others who have specialized knowledge or skills that the student needs in order to address the problem(s) or question(s) under investigation. Thus, the degree of guidance needed depends on the nature of the course and the needs of the students. In IBL, there is no “one size fits all” solution and no one prescriptive recipe for academic success.

Another key aspect of IBL is its ongoing self-assessment and peer-assessment, which serves two basic purposes: (1) critical self-reflection is important for fostering a deeper understanding of themselves as learners and a deeper understanding of the learning process — learning how to learn, (2) competence evaluation is important to assess the quality and level of knowledge and skills acquired and produced. Thus, IBL supports the integration of instructional practices and learning activities, resources, and assessments used in the teaching and learning process. Thus, for the instructor, in her/his roles as learning architect and instructional leader, one of the main challenges is to create the right conditions that are necessary to cultivate an IBL environment. This implies that the instructor (and students) must adopt values and attitudes and a mindset that helps foster such an environment, such as belief in diversity, inclusivity, student empowerment, self-regulated learning, meaning-centered learning, and an ethic of care for students. Thus, the instructor must believe that IBL can be an effective approach and trust that students have the ability become more self-directed and self-regulated learners. This implies that students (and instructors) should have a significant degree of control over what they do, how they behave, and how much they learn (i.e., educational and personal agency) (Kovbasyuk & Blessinger, 2013).

Key to adopting an IBL learning environment is creating a learning environment where students are encouraged to develop meaningful questions and authentic empirical investigations, which requires them to

determine the resources and activities needed to help address those questions and problems. In this learning process, students are better able to learn how to take increasing levels of responsibility for their knowledge and skill development. In this learning process, they are better able to work at higher-order thinking levels as identified in *Bloom's Taxonomy of Learning Objectives*, and in working on these levels, they are better able to use logic, reasoning, and argumentation as well as creativity and judgment.

Creating a learning environment where all these elements come together in just the right way is no small matter. IBL holds great promise in cultivating more effective teaching and learning environments, but IBL also presents new challenges for both instructors and learners, especially if they are entrenched in more traditional passive forms of learning. Challenges are to be expected when moving from one paradigm to another (e.g., from traditional teaching-learning where the instructor spoon feeds information to students via a steady diet of lectures, to IBL where students gradually become more self-regulated learners by learning to feed themselves by learning “how to learn” and by learning how to build their own knowledge and skill base). In the process of learning to take more responsibility for their own learning by engaging in a process of inquiry, creative learning (the essence of higher order thinking) is more likely to be cultivated because students are provided with the opportunity (and responsibility) to answer questions and solve problems themselves or in collaboration with their fellow learners. The editors contend that the process of inquiry is a natural learning process that aligns well with human cognitive development.

The IBL classroom (whether the delivery mode is face-to-face, online, or hybrid) tends to be more complex than a traditional lecture-based classroom because of the additional roles the instructor plays and because students take increasing and more direct responsibility for constructing their own knowledge and skill base. IBL can be adapted to any course at any level because it is a general strategic approach to learning and it is not prescriptive. IBL operates along a continuum and thus provides a great deal of flexibility. As discussed earlier, **IBL requires adopting new roles and new beliefs and attitudes about the nature of teaching and learning.** This, in turn, requires purposeful course design and planning and a lot of commitment to move past the growing pains of implementing a new approach and to get past the organizational cultural inertia that often resists change. However, as the chapters in this volume indicate, over the long-term, the benefits of IBL should prove worth the effort.

ADOPTION PRINCIPLES

Two key principles emerge from the findings of the chapters in this volume that help frame how IBL is being used within multidisciplinary programs:

1. IBL enhances student learning by creating more engaging and meaningful educational environments through a variety of learning activities (e.g., fieldwork, research projects, case studies, laboratory experiments, essays). IBL is better aligned with a learner's natural inclination for investigation, creativity, and experiential learning by allowing students the opportunity (and responsibility) to address problems and questions, investigate the answer(s) to those questions through their own research investigation and collaboration with others, connecting and integrating their findings with their accumulated knowledge base, and sharing and explaining their findings by presenting it to their peers.
2. IBL enhances instructor teaching by expanding their role from isolated subject matter specialists to collaborative instructional leaders who are not just responsible for disseminating information, but also responsible for designing effective learning environments and cultivating the development of the whole student (e.g., cognitively, psychologically, socially). The instructor is crucial to the effectiveness of IBL settings because she/he serves as the chief learning architect for the course and the chief instructional leader who guides and mentors students through the complex learning process. The interpersonal relationship between instructor and students is very important since learning is not just a cognitive activity but also a psychological and social one.

These principles are reflective of a growing recognition that education should not be solely focused on cognitive learning (i.e., developing a knowledge and skill base), however important that may be, but also about psychological and social development. Part of the latter developmental areas include values clarification, attitudes and beliefs, and a mindset that is most conducive to learning and functioning effectively in the many roles that people must assume throughout their lives (e.g., citizen, worker, family member, community member). These principles also reflect the notion that learning should not be an onerous process (for either learners or instructors), but rather it should be done in an environment that is humane, and one that allows for meaningful participation through authentic teaching and learning activities that engage with one's interests and values. These IBL principles are consistent with modern learning theories about how

humans learn in a meaningful way and how people make sense of their environment (Kovbasyuk & Blessinger, 2013).

IBL is flexible and adaptable to a wide variety of educational settings because the instructor can design different types of IBL environments (e.g., confirmation, structured, guided, open; Banchi & Bell, 2008) along an IBL continuum that best fits the learning context and situation (e.g., grade level, course topic, needs of students). Contextualized learning occurs through making meaningful connections and through situated interactions. Situated learning occurs within a specific social and personal context. Authentic learning involves aligning learning objectives with learning activities that are personally meaningful to the student. Each instructor must determine how best to implement IBL in her/his classroom, and the examples in this volume provide great insight in how the instructor can do that. Thus, the flexibility of IBL allows it to be contextualized to a variety of learning situations and modes of inquiry and allows it to be applied to any course in any discipline at any level (Blessinger & Carfora, 2014).

IMPLEMENTATION BENEFITS

The current body of research strongly suggests that IBL can be an effective teaching and learning strategy and can produce positive learning effects if designed and implemented properly with regard to context and creating the proper linkages between teaching, content, learning, and assessment (Cuneo et al., 2001; Cuneo, Harnish, Roy, & Vajoczki, 2012; Hickey, Wolfe, & Kindfield, 2000; Justice et al., 2007; Lynch, Kuipers, Pyke, & Szesze, 2005; Vajoczki, Watt, Vine, & Xueqing, 2011). Since IBL is centered on authentic and meaningful problem scenarios and question-based investigations, it more naturally aligns with a student's own value system (axiological dimension), one's own life and career aspirations (ontological dimension), learning/knowledge needs (epistemological dimension). IBL helps to expand the boundaries of teaching and learning by allowing students greater active participation in their own learning process by requiring students to take increasing ownership of their own learning. Thus, IBL is inherently more active, participatory, and authentic than traditional modes of teaching and learning and thus better suited to engaging and retaining students.

IBL is oriented around inquiry and higher-order thinking and it therefore naturally starts with the creation of relevant questions or problem

scenarios (relative to the scope and nature of the course and the learning objectives and outcomes sought). This type of learning stands in sharp contrast to simply learning established facts by having that information fed to students through more passive, indirect means (e.g., lecture or textbooks) of learning. Although lectures and textbooks can be very useful ways to transmit information, learning should not be confined simply to those two means. Furthermore, building a broad and in-depth knowledge base is critically important (as illustrated in Bloom's Taxonomy), but this base is just the first step or level in the learning process. **Learning should be designed in such a way that students do not get stuck at level one (i.e., learning established knowledge) of Bloom's Taxonomy. Courses must be designed in such a way that students are focused on higher-order learning.** These higher-order levels of learning cannot be acquired solely by passive, indirect means of learning. **Developing higher-order thinking skills requires more active, direct means of learning, such as research projects, peer collaboration, and role-play.** Thus, in addition to the cognitive benefits, IBL is a more holistic learning strategy for developing important psychological, social, and behavioral qualities and skills necessary for higher-order thinking and lifelong and life-wide learning.

As the chapters in this volume illustrate, IBL is a strategic approach for improving teaching and learning and providing educators with more opportunities to transform how students interact with the instructor, how they interact with other students, and how they interact with the course content. IBL helps expand our notions about what it means to teach and learn in contemporary society. IBL promotes interdisciplinary learning and it fosters learning from multiple perspectives. IBL promotes the development of transferable learning skills because it focuses on authentic and meaningful and experiential learning activities.

Authentic and experiential learning is also important for the development of practical life skills, emotional and social development, personal and group value clarification, as well as developing more complex meaning-making capabilities. Mezirow (1991) states that, "Making meaning is central to what learning is all about" (p. 11). Kovbasyuk and Blessinger (2013) note that meaning-making is central to all learning. They note that open meaning-making educational processes and practices are best suited to develop more self-regulated learners and where learning continues long after they graduate. **Therefore, education (i.e., formal learning) is not just about the acquisition of knowledge but also about enabling students to engage in lifelong learning.** In doing this, educators can help foster learning environments where questioning and problem investigations become a

natural part of one's learning process and where meaning making is at the core of the learning process.

THEORETICAL FRAMING

IBL, regardless of the setting, is centered on a problem (or set of problems) or question (or set of questions) that needs to be addressed. The Galileo Educational Network (2013) defines IBL as the “study into a worthy question, issue, problem or idea. It is the authentic, real work that that someone in the community might tackle. It is the type of work that those working in the disciplines actually undertake to create or build knowledge” (n.p.). Contemporary IBL approaches understand the need to explicitly link inquiry-based teaching practices and content with IBL activities and course learning outcomes with inquiry-based assessment.

The inquiry approach to learning can be traced back to Socrates, though modern theoretical foundations have their roots in the works of Piaget, Dewey, Vygotsky, and others. The theoretical foundations, in turn, also have roots in an educational philosophy known as constructivism. Although there are several branches of constructivism, the essential components that they share is that learning is and should be active, situated, and social. In this view, learning (and the knowledge constructed from the learning process) is most effective when it is based on meaningful learning activities. This implies that learning activities should be authentic and experiential (Biggs, 1996; Dewey, 1997; Levy, Lamer, McKinney, & Ford, 2011). Kovbasyuk and Blessinger (2013) provide an overview of the main learning theories and educational philosophies such as constructivism.

Lave and Wenger (1991) expand on the concept of knowledge construction with their theory on situated cognition and learning as participation in a community of practice. Kovbasyuk and Blessinger (2013) extended these ideas further with their theory on meaning-centered education and meaning-centered learning, which focuses on learning as self-motivating and self-regulating personality and cognitive development through open meaning-making processes. Both theories place emphasis on the inter-subjective, experiential, and dialogical nature of meaning-making in knowledge construction. Thus, in the broadest sense of the concept, IBL can be viewed as a set of learning and assessment strategies and standards where learning is grounded in the inquiry process. Thus, higher-order learning is

fostered through meaningful active engagement with relevant and authentic questions and problems (Levy et al., 2011; Shuell, 1996).

Appropriate instructional leadership is very important as it allows the instructor to not only serve as a subject matter expert, but also a mentor and guide who provides a socially and emotionally supportive learning environment. Thus, an important ingredient in IBL is the caring support from instructors and the development of appropriate values, attitudes, and habits that encourage learner empowerment, self-initiative, and higher-order thinking. In this type of environment, the instructor serves as the chief learning architect for her/his course to help ensure teaching and learning is done purposefully and meaningfully (Kovbasyuk & Blessinger, 2013).

IBL is applicable and relevant across all disciplines and levels within education and in both formal and informal learning situations. IBL provides a common theoretical framework upon which to design more effective and meaningful learning environments without the need to create a rigid system of standardization and conformity across educational disciplines and levels. The key to effective design is in the contextualization of IBL to the specific level, discipline, course, learning objectives, etc. At the heart of IBL is an inquiry learning process where all learning activities and assessments are purposefully designed to cultivate higher-order thinking through scaffolding of knowledge creation and exploration of authentic and meaningful questions and problems.

For instance, depending upon the context, learning activities may include answering a research question(s) or solving a problem (e.g., structured or unstructured) via fieldwork or analyzing real-world case scenarios. Learning activities may be in the form of a project which may be short cycle or long cycle or somewhere in between. Depending upon the complexity and level of the course, students may require significant guidance and explicit instruction. Nonetheless, with the IBL approach, all students are expected to take increasing degrees of ownership of their own learning as they progress through the grade levels and as they build their knowledge base and as they continually work toward higher levels of higher-order learning. They are also expected to work collaboratively with their instructors and peers, as needed, as well as others (e.g., librarians, specialists). As part of their interaction and collaboration with others, students are more naturally inclined to engage in critical self-reflection and are more inclined to share the results of their learning with those audiences.

With these IBL concepts in mind and based upon the case studies and exemplars presented in this volume, IBL can be considered a

learner-centered and active learning environment where deep, sustainable learning is cultivated by a process of inquiry owned by the learner. Thus, **IBL can be said to be oriented around at least three main components:**

- (1) exploration and investigation** (e.g., problem-based learning (PBL), collaborative learning, self-directed learning, meaningful learning),
- (2) authentic inquiries using contextualized and situated learning** (e.g., field learning, service learning, case-based learning), and
- (3) research-based approach** (e.g., research-based learning, project-based learning, scaffolded learning).

As such, IBL naturally supports different modes of inquiry where the questions to be answered or the problems to be solved are grounded in the relevant epistemological basis (i.e., the type and level of course and discipline and mode of inquiry) since each discipline has evolved within its own particular epistemological framework. In this view, IBL typically begins with an authentic and contextualized problem scenario where learners (with guidance from instructors and peers) identify their own issues and questions (i.e., that are meaningful to them) and where the instructor serves as guide and facilitator in the learning process. **IBL encourages more self-regulated learners because the primary responsibility is on the learners to determine the issues and research questions and the resources they need to address the questions.** In this way, learning occurs more naturally across all learning domains (affective, cognitive, and social) because different types of knowledge are acquired through a diversity of learning activities and by active participation and experience with complex, real-life problems. In other words, formal learning is not disconnected from informal learning or separated from one's larger lifeworld.

CHAPTER OVERVIEWS

In "The Problem-oriented Project Work (PPL) Alternative in Self-directed Higher Education" by Anders Siig Andersen and Simon B. Heilesen, the authors investigate how Roskilde University in Denmark has adopted an educational approach known as the Roskilde Model, an approach characterized by (1) a special type of self-directed learning, named "problem-oriented project learning" (PPL); (2) a way of organizing undergraduate education into broad interdisciplinary programs; and (3) an interdisciplinary profile where double-major graduate programs allow students to design

their own academic and professional profiles. The chapter outlines the challenges that current educational policy poses to practicing an educational alternative.

In “Critically Examining Inquiry-Based Learning: John Dewey in Theory, History, and Practice” by William E. Herman and Michele R. Pinard, the authors discuss the history and development of IBL and describes how teaching and learning strategies over several decades in P-12 and higher education have built upon the ideas of John Dewey. Though personal reflection, uncertain learning paths and outcomes, and mindful inquiry have been central foundations undergirding IBL, the approach now stands upon the shoulders of theoretical and research giants such as Piaget, Vygotsky, and Bruner.

In “Folkography: Inquiry-based Learning and Qualitative Research” by David M. Lucas and Charles W. Jarrett, the authors introduce an innovative and practical approach for conducting, directing, and teaching qualitative research through IBL at the undergraduate level. Folkography is a qualitative research methodology that allows the undergraduate to successfully learn the academic concepts and guidelines required for participating in field investigations. This methodology relies heavily on the investigative techniques associated with ethnography, phenomenology, and sociology. Folkography is presented in this chapter as parallel actions; first, as a method of teaching undergraduates research; and, second as a system of data collection specific to qualitative investigations.

In “Resonance-based Inquiry: An Epistemological Approach to Indian Studies” by Nicholas J. Shudak, the author describes the conceptual underpinnings and practices of an interdisciplinary “Indian Studies” course taught through a unique inquiry-based epistemological approach referred to as resonances. In providing a resource and model for others who teach sensitive and even controversial topics that include the study of other groups of people, this chapter progresses in four stages discussed by the author.

In “Developing an Interdisciplinary Inquiry Course on Global Justice: An Inquiry-Informed, Cross-Campus, Collaborative Approach” by Beth Marquis and Vivian Tam, the authors discuss why higher-education institutions have an increasing responsibility to foster “global citizenship,” enabling students to recognize injustice and pursue equity. As a first step to creating a larger “hub” for global justice, McMaster University set out to develop an interdisciplinary course on the topic. This course was intended to bring together students and faculty from across campus, as well as alumni and community partners, in order to develop students’ abilities to recognize,

question, and contribute to addressing inequities and injustices on a global scale. This chapter describes the process used to develop this new course.

In “Inquiry-Based Learning as Foundational Pedagogical Tool for Critical Examination of Social Justice in Theory and Action” by Alia Sheety and Nicholas Rademacher, the authors describe two faculty members’ and six undergraduate students’ unique journey in implementing IBL through the field of social justice theory and practice. The two faculty members, from different departments, Education and Religion Studies, collaborated to structure and co-teach a social justice course using IBL pedagogical strategies. The chapter shares the IBL implementation and discusses advantages, such as, students’ engagement and the development of critical thinking and limitations, such as, time constraints and students with different background knowledge.

In “Inquiry-Based Learning as a Gateway for Exploration into Human Environmental Conflicts” by Becky Boesch, the author discusses how integrated learning is helping students develop the ability to make connections and see relationships between subjects, themselves, and the world around them. The author designed a term-long project for university freshman at the end of a year-long (3 terms) Freshman Inquiry class. This project which is largely student driven allows students to explore areas of interdisciplinary interest in a variety of ways. Such variety allows for learning to occur both affectively, cognitively, and socially. This multifaceted project challenges students to make connections between themselves and the seemingly disparate fields of science and social science on a local, national, and international level and ultimately allows them “ownership” of their learning.

In “Developing Digital Student Selves: Using an Inquiry-Based Approach to Explore Digital Confidence in Creative Learning” by Vic Boyd, the author reflects on the outcomes of the Digital Student Selves project at a small, specialist arts institution in the UK. The project aimed to promote increased student understanding of the research process as well as increased reflexivity by engaging students in an inquiry-based approach to unpacking experiences and perspectives of the role of technology in learning. Discussion within this chapter outlines strategies that students employed in adopting blended approaches to learning and also presents key aspects of students’ negotiation of digital selfhood.

In “A Master’s Level Research Methods Class: A Practice Example of Inquiry-Based Learning” by Kathleen B. Duncan and Teresa Martinelli-Lee, the authors examine a graduate-level research methods course that was designed to be student-centered and inquiry-based utilizing scaffolding assignments, small group discussions, peer feedback, and collaborative

interactive exercises. Having students ask the questions in which they are interested, find the resources to answer those questions, which then leads to new questions, eventually culminates in the creation of a literature review and research proposal. Many of the specific in-class practices that support this inquiry-based approach are presented.

In “Design Thinking: A Problem Solving Technique for Education” by Gavin Melles, Neil Anderson, Tom Barrett, and Scott Thompson-Whiteside, the authors compare design thinking to PBL and enquiry-based learning (EBL) approaches to problem solving in education before focusing on the approach itself and current debates about its meaning and significance. This chapter focuses particular attention on the problem finding aspect of design thinking and its integration of creative methods for solving a range of tame to wicked problems (Rittel & Weber, 1973) in a variety of spaces.

In “Connecting Inquiry-Based Learning with Collaborative Work in Online Education” by Albert Sangrà, Mercedes González-Sanmamed, and Montse Guitert, the authors aim to show how the IBL approach can be successfully used in online education. The authors present the experience of the Digital Competence Program at the Universitat Oberta de Catalunya, which is designed considering the principles of collaborative work, implemented with a wide range of educational resources taking advantage of ICT benefits, is delivered online, and is finally evaluated from opinions voiced by students. Assessment is based on continuous evaluation activities, designed as authentic experiences to ease the building of mental structures.

In “Using Inquiry-Based Learning Outside of The Classroom: How Opportunities For Effective Practice Can Animate Course-Based Learning” by Michelle Bata and Amy Whitney, the authors explore how Clark University’s recent educational innovations in liberal education and effective practice (LEEP) have led to a cultural shift in how “real-world,” “off-campus,” and “hands-on” experiences are viewed on campus. Instead of supplementing academic coursework, IBL opportunities that take place outside the classroom are being embraced as a fundamental mode of learning that animates what goes on inside the classroom. The goal is to engage students throughout their academic career by challenging them to take responsibility for connecting their learning through exploration, inquiry, and by defining solutions to real-world issues.

In “Chaos and Order: Scaffolding Students’ Exploration during Inquiry-Based Learning” by Debra L. Gilchrist and April D. Cunningham, the authors describe the benefits for learners when librarians collaborate with discipline faculty to design IBL experiences. The authors purport that the research strategies and information literacy that form the basis of student

inquiry are as critical to student learning and success as discipline-specific course outcomes. Practical examples illustrate how faculty might embed information literacy into inquiry-based courses to scaffold, challenge, and support inquiry.

In “The Life Arts Project: Application of an Inquiry Based Learning Model for Adult Learners” by Darryl E. Jones, the author describes the adult-centered program delivered by The College of New Rochelle, School of New Resources; a northeastern, liberal arts institution that is a pioneer in educating adult learners. A model program for educating today’s adult learner is introduced with particular emphasis on faculty implementation of IBL in the classroom and student’s responses to the Life Arts Project (LAP) which is incorporated in each six credit course seminar. Through the LAP, adult learners investigate course content through exploration and discovery, participate in critical inquiry, investigate various research methodologies, and experience project-based learning.

In “Reconfiguring Affective, Conative and Cognitive Outcomes in IBL: A Multi-Disciplinary Case Study” by Mary Dickinson and David Dickinson, the author discuss an IBL case study that was designed in 2012/2013 for the highest achieving undergraduate students at our research-intensive UK University. The University has ~15,000 students and advertises an average UCAS entry tariff of over 320 (US equivalent: minimum of 3 AP’s at 4 or above, SAT 2030+). In 2005 the University received National funding from the UK Higher-Education Academy (HEA) to develop an innovative model of IBL to be used in a multidisciplinary context. Historically, IBL practice at our university had catered well for cognitive and affective learning, but had not been focused to develop conation. The authors therefore purposefully designed a conative-heavy element into our IBL intervention.

In “Enhancing Inquiry-Based Online Teaching and Learning: Integrating Interactive Technology Tools to Scaffold Inquiry-Based Learning” by Kathy-ann Daniel-Gittens and Tina Calandrino, the authors provide practical guidelines to higher-education faculty and faculty developers for implementing inquiry-based teaching models online. Although this chapter identifies three types of inquiry-based instructional models, it focuses on open inquiry and more specifically guided inquiry models. The chapter examines why IBL is particularly relevant to higher-education learning, how these models are implemented in higher-education settings and the constraints they face. The chapter will also explore how IBL can be authentically replicated in online learning environments.

In “Multidisciplinary Online Inquiry-based Coursework: A Practical ‘first steps’ Guide” by Tanya D. Whitehead, the author discusses how

students learn not only to produce an independent project with personal meaning, but also to think critically, to first identify and then engage with a topic in a way that brings lasting skill in personal inquiry to their lives. The inquiry-based method of leading students through several group projects conducted in synch with the thematic seminar and their independent reading, demonstrates that students enjoy the process of growing intellectually through stimulating discussions with peers, and then are well able to generalize the process and produce independent papers. The chapter discusses how students advance from a structured learning environment into field study on a topic of personal meaning.

In “Inquiry in the Coaching Experience: Reflective Strategies for Transformative Change” by Greg Latemore, the author describes the coaching relationship as a vehicle for personal learning. The chapter focuses on workplace coaching, one of the deepest forms of communication where true understanding is formed between two people in rich dialog.

The author distinguishes mentoring, coaching, counseling, and sponsoring, and then highlights two domains of personal learning: the “inner theater,” which includes multi-source feedback, and the “outer theater,” which includes action-learning projects. The author concludes the chapter by providing some cautions for the professional coach and insisting that coaching needs to be deeply respectful.

In “Classroom Without Walls: Inquiry-based Pedagogies and Intercultural Competence Development Via Service-learning” by Christine E. Poteau, the author explores how the expanding global economy necessitates innovative curricula that incorporate development of intercultural competence via language and cultural awareness. No matter the discipline, learners must be equipped with the necessary language and cultural knowledge to adapt to changing social conditions within communities and professional contexts. This chapter provides an overview of higher-education classrooms that include various forms of IBL, such as cooperative learning strategies that allow students to support one another and build new knowledge as a team.

CONCLUSION

In this volume, we have presented a range of perspectives, case studies, and empirical research on how IBL is being used across a range of course within the multidisciplinary programs. These findings, together with current research on IBL reviewed in the chapters, suggest that the IBL approach

has great potential to enhance and transform teaching and learning. However, the chapter also discussed the challenges that may arise when implementing IBL. In spite of these challenges, the promise and soundness of IBL is rooted in established learning theories and a growing body of research evidence. Compared to passive and indirect means to facilitate learning, IBL has the potential to cultivate, over the long-term, a more engaging, meaningful, and effective learning environment.

If designed and implemented properly and within the appropriate epistemic context (i.e., course and discipline-specific), IBL has the potential to address a wide range of learning objectives across all disciplines and across a range of educational purposes. In this sense, IBL can be applied to different modes of inquiry (e.g., artistic, philosophic, scientific) where the nature and types of questions and problems can vary greatly (e.g., well defined vs. ill-defined questions, structured vs. unstructured problems, closed-ended vs. open-ended questions and problems). Thus, IBL is oriented around both process and content and outcomes and is considered a way of learning by focusing on investigating authentic (real-world) questions and problems that are meaningful to learners (Drayton & Falk, 2001).

Within the context of the growing demands placed on education to meet a growing range of complex political, economic, and social problems, education should be a place where lifelong and life-wide learning is cultivated and where self-regulated and self-directed learning is nurtured. Education should be a space where multiple forms of learning are fostered, such as informal learning and collateral learning (e.g., attitudes, values, habits) and multiple forms of knowledge are mastered such as procedural, factual, conceptual, and meta-cognitive. Education, in its broadest sense, is not just about learning facts or preparing for a job but also about serving as an incubator where students are part of a learning community and it is about learning to grow cognitively, emotionally, and socially by taking on increasing responsibility for their own learning.

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THE PROBLEM-ORIENTED PROJECT WORK (PPL) ALTERNATIVE IN SELF-DIRECTED HIGHER EDUCATION

Anders Siig Andersen and Simon B. Heilesen

ABSTRACT

This chapter introduces an approach to higher education developed and practiced over four decades at Roskilde University in Denmark. Known as the Roskilde Model, the approach is characterized by (1) a special type of self-directed learning (SDL), named “problem-oriented project learning” (PPL); (2) a way of organizing undergraduate education into broad interdisciplinary programs; and (3) an interdisciplinary profile where double-major graduate programs allow students to design their own academic and professional profiles. The chapter first explains similarities and differences between PPL and some related concepts of SDL: problem-based learning (PBL), inquiry-based learning, and project learning. Secondly, it outlines the origins and development of Roskilde University and of PPL. Thirdly, it introduces and discusses the building blocks and workings of PPL: problem-orientation, interdisciplinarity, the exemplary principle, participant direction, and group-based project

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work. Fourthly, it describes how studies are organized so as to realize PPL in practice. And finally, it outlines the challenges that current educational policy poses to practicing an educational alternative.

INTRODUCTION

The “Roskilde Model” is an approach to education developed and practiced at Roskilde University in Denmark. The university was founded in 1972 as a “reform university” and originally was designed as an educational answer to the crisis of the traditional universities. It offered an alternative to students wishing to base their studies on the new ideas originating in the 1960s youth rebellion and alternative cultures. For four decades it has served successfully as an educational alternative to the more conventional Danish universities. Briefly stated, the Roskilde Model can be characterized by (1) a special kind of self-directed learning (SDL), named “problem-oriented project learning” (PPL); (2) a way of organizing undergraduate education into broad interdisciplinary programs; and (3) an interdisciplinary profile where double-major graduate programs allow students to design their own academic and professional profiles. PPL has been the subject of various studies, for example, Olesen and Jensen (1999), Mallow (2001), Olsen and Pedersen (2008), Blomhøj and Kjeldsen (2009). More recently a monograph has been published, discussing various aspects of the Roskilde Model from different points of view (Andersen & Heilesen, 2015).

In this chapter, first, we explain the similarities and differences between PPL and some related concepts of SDL. Next, we outline the origins and development of Roskilde University and PPL, followed by a discussion of the building blocks and workings of PPL. Then we describe how studies are organized so as to realize PPL in practice. We conclude by discussing the challenges that current educational policy poses to practicing the Roskilde Model.

PPL AND RELATED CONCEPTS OF SELF-DIRECTED LEARNING

A number of learning theories advocate SDL, notably “problem-based learning,” “inquiry-based learning,” “project learning,” and “problem-oriented

project learning.” In addition to constructivist theories (e.g., [Gijsselaers, 1996](#)) and social learning theories ([Wenger, 1998](#)), this is also true of theories that apply psychoanalytical, critical cultural, and enactivist perspectives to the phenomenon of learning ([Fenwick, 2000](#)).

Problem-based learning (PBL) is a method by which students learn through facilitated problem solving. In PBL, student learning centers on real-world problems that do not have any single correct solution, but are typically complex, open-ended, and ill-structured. Students are expected to decide what they need to learn about and what skills they have to acquire in order to manage the situation effectively (see [Savin-Baden, 2000](#), p. 3). They engage in “self-directed” (SDL) and “self-regulated learning” (SRL) ([English & Kitsantas, 2013](#)), and they reflect on what they have learned and on the effectiveness of the learning strategies employed. [Healey \(2005, p. 7 f.\)](#) traces the origin of “*inquiry-based learning*” both to late 19th Century Peter Kropotkin, who wanted to replace the rote learning method with independent inquiry-based problem solving, and to contemporary experiential learning theory. According to Savery: “Inquiry-based learning activities begin with a question followed by investigating solutions, creating new knowledge as information is gathered and understood, discussing discoveries and experiences, and reflecting on new-found knowledge” ([Savery, 2006](#), p. 16). PBL and IBL have different origins. The former originated in medical education and is based on research on medical expertise. IBL is rooted in the practices of scientific inquiry and places heavy emphasis on posing questions, gathering and analyzing data, and constructing evidence-based arguments (see [Savery, 2006](#), p. 16). However, [Hmelo-Silver, Duncan, and Chinn \(2007\)](#) think that “there are no clear-cut distinguishing features” (see also [Savery, 2006](#)).

When it comes to “*project-based learning*” (PL) versus “*problem-based learning*” (PBL), [Hanney and Savin-Baden \(2013, p. 7\)](#) point out a sharp distinction in the United Kingdom. While the former adopts a chiefly technical rationalist perspective, the latter adopts a more Socratic and dialogical approach. However, project work has a long tradition within different parts of the educational system, ranging from (1) an early period, where it was used in technical and design-oriented education in order to increase the potential for transferring students’ learning to their professional practice, to (2) reformulation of the concept in the early 20th century within the tradition of reform pedagogy and the extension of project pedagogy to include elementary school, and to (3) development of the concept within a critical pedagogical tradition as it was introduced at the reform universities in the 1970s. Today, all three varieties of project work are still in use, exerting

varying influence in different parts of the educational system (see [Apel & Knoll, 2001](#)).

When focusing on the concepts of “problem-based learning” (PBL) and “*problem-oriented project learning*” (PPL, see below: “The Main Features of Problem-oriented Project Learning”) it is evident that they share basic pedagogical ideas. Boud’s characterization of the central features of PBL applies to both concepts:

1. An acknowledgment of the base of experience of learners,
2. An emphasis on students taking responsibility for their own learning,
3. A crossing of boundaries between disciplines,
4. An intertwining of theory and practice,
5. A focus on the processes of knowledge acquisition rather than the products of such processes,
6. A change in staff role from that of instructor to that of facilitator,
7. A change in focus from staff assessment of outcomes of learning to student self- and peer assessment, and
8. A focus on communication and interpersonal skills (quoted in [Savin-Baden, 2000](#), p. 17 f.).

The two concepts, however, have developed from different social and political contexts and have a completely different history. The crucial differences between them concern (1) who formulates the problem for the participants to work with, and (2) how study work progresses. In PBL, the teachers formulate the problem or the problem scenario, and draw up a list of references. In PPL, it is considered crucial that the students formulate the problems of their project work, and that they themselves find literature of precise relevance to the study. Academic requirements and quality standards derived from research projects have a high priority in PPL project work, and are also present in the PBL tradition. However, in subjects such as medicine, economics, and engineering, emphasis within PBL has been placed on establishing teaching methods that support the motivation of the students and facilitate a possible transfer from the study context to the professional work context.

A NEW UNIVERSITY

Roskilde University came into existence at a time when the influx of students was transforming universities from elite institutions into institutions

of mass education. In late 1960s Denmark, a political alliance emerged, criticizing the universities for upholding rigid disciplinary boundaries rather than adjusting to a labor market dominated by both increasing specialization and a need for an interdisciplinary approach to the challenges of modernization and of developing the welfare state. The wish for reform resulted in the founding of two new universities (at Roskilde in 1972 and Aalborg in 1974) with broad basic study programs and a focus on interdisciplinary studies. However, the actual design of Roskilde University education drew less on government intentions than on the positions of the post-1968 student movement that advocated pedagogical reforms based on student-centered and collective work formats, interdisciplinary studies combined with practical social, and political engagement, and participatory institutional democracy with equal participation of students, professors, and administrative staff.

Curricula involved PPL, and the original structure consisted of two-year “basic study programs” (humanities, social sciences, and natural sciences), followed by three years of single- or double-major “superstructure programs” where students from different subjects completed interdisciplinary projects within a common thematic framework. Several educational reforms later, although a rather more conventional organization has been imposed, elements of the original design continue to matter significantly in the university’s pedagogical approach, as described later.

THE MAIN FEATURES OF PROBLEM-ORIENTED PROJECT LEARNING

Fundamental to the Roskilde Model is that problem-oriented project work provides the pedagogical context for the program curricula. Furthermore, the approach encourages team work and self-management within a frame of “house organization,” and it defines an unconventional role for the teachers. Combined, these features provide repeated and long operating cycles, facilitating student learning processes based on research-like inquiries. Below, we expound the pedagogical concept of PPL by discussing its constituent concepts: problem-orientation, interdisciplinarity, the exemplary principle, participant direction, and group-based project work. First, however, we will provide a setting by outlining how PPL is organized in practice.

The Practice of PPL

At Roskilde University, in the course of their bachelor and master studies, students complete a total of eight one-semester projects (each 15 ECTS, European Credit Transfer System) and a thesis (30 ECTS, equaling a full semester). Thus, half the student workload consists of project work while courses account for the rest. The formation of project groups at the beginning of term usually requires a complex process involving from 30 to 120 students. It is organized by the students themselves with the assistance of a faculty “house coordinator” (or subject coordinator at the master level; for “houses” see below: “Program Structures and Interdisciplinarity”). In the course of several days of discussion, the participants evaluate numerous project ideas and negotiate with fellow students so as to end up with a subject they wish to explore together with peers that they want to team up with. Once group formation has been completed, a supervisor is allocated to each group. The group identifies a theme of study within a broader field of interest, and singles out a problem that relates to the theme. The theme selected constitutes the context for the problem picked. It is the framework for arguing the personal, social, and academic relevance of the problem. The supervisor supports the students in exploring the theme and in tightening up and clarifying the research question.

Project work must meet academic criteria. Thus the students have to complete systematic literature searches, produce an overview of relevant research, decide on what scientific theories will serve as a framework for the project work, and identify appropriate analytical methods. The student group reflects on criteria for selection and rejection of theories and methods. The supervisor may help with suggestions, but his/her main task is to support the students’ own activities and their SDL. All phases of project work involve iterative processes where the students reflect critically on their choice of empirical field, theoretical framework and methodology as they produce and analyze empirical data. The supervisor engages in a dialog with the students on these matters, and contributes to the project work by involving his or her own professional research experience.

Finally, the students draw conclusions based on their findings. They critically reflect on various aspects of their project work, and they put the project into perspective in relation to broader social and academic issues. At this point, the supervisor acts as a discussion partner, helping not only to conclude the project, but also to bring out connections to more general theoretical or practical matters (see the section “The Exemplary Principle”).

To help students focus on their project work in the second half of the semester, most courses are placed early in the semester, running parallel to and supplementing the early stages of project work. At the bachelor-level, courses either provide general academic knowledge or support project work directly (e.g., project planning and project methodology). At the master level, course offerings depend on subject area.

Project work is evaluated continuously and mutually by the project group members and their supervisor, and also at seminars where pairs of project groups and their supervisors engage in critical and constructive dialog. Student project work is assessed at oral group exams. This type of assessment where all group members participate in a discussion of the project is a continuation of the project work and allows the group members to present and discuss their work together with the examiners more intensely and with more time available than would be the case at individual exams. Grades are given individually for performance at the oral exam, and the time allotted for examination is proportional to the number of group members, providing time for in-depth questions and answers.

Problem-Oriented and Interdisciplinary Studies

Project work at Roskilde University is characterized by being problem-oriented and exploring real-world problems. The fundamental pedagogical idea is to link problem-orientation to interdisciplinarity, that is, to allow the problem of a project, rather than a traditional discipline, to determine the choice of theories and methods.

The criteria for defining a problem for project work were first elaborated by Illeris (1974, p. 187) as a trinity of personal, social, and study-related relevance. Thus, issues should: (1) be perceived as immediately relevant for the individual participants in a group of learners and of common interest to all learners in the group (ensuring motivation and commitment); (2) be of such a nature that they can elicit broader social structures and the basis for these structures (ensuring orientation toward actual social problems); and (3) comply with the curriculum of the study program (ensuring compliance with academic standards).

In dealing with problems, interdisciplinary contributions from different relevant theories and methods are needed. The concept of interdisciplinarity is still evolving, and today various types of interdisciplinarity can be distinguished, importantly:

- *Multi-disciplinarity* involves an additive approach (Holley, 2009, p. 333). In multi-disciplinary research, the collaborators draw on knowledge, theories, and methods from different disciplines, but without deviating from the approach of their individual disciplines.
- *Cross-disciplinarity* develops research on particular issues in collaboration and mutual influence across the disciplines (Enevoldsen, 2012, p. 32). To create holistic knowledge, issues and problems are addressed from several disciplinary perspectives, as theories developed within one discipline affect theories in other disciplines, or as methods developed within one discipline affect the methods of other disciplines.
- *Transdisciplinarity* means that the disciplines required for exploring a problem work together, subordinating their scientific axioms, theories, and methods to the common research enterprise (Enevoldsen, 2012, p. 41 ff.; Jensen, 2012, p. 61). Transdisciplinarity includes various types of interdisciplinary research such as Mode 2 and action research.

In a given context, the specific research tradition and academic culture determine what kind of interdisciplinarity will come into play. The co-existence of a plurality of cultures entails that there are academically legitimate distinctions as to how interdisciplinarity is practiced. At Roskilde University at least five academic cultures are in evidence (Jensen, 2012, p. 66 f.):

- Mathematical modeling (primarily in Mathematics and Physics). Interdisciplinarity depends on the researchers having comprehensive knowledge and skills in their discipline. Each discipline has a knowledge base that must be mastered, also when just used to support other disciplines. The various disciplines may enter into either multi- or cross-disciplinary collaboration, or in transdisciplinary collaboration fashioning new subjects by adding specialized disciplines.
- Empirical experimental (primarily in Biology and Chemistry). The culture has a theoretical basis, prescribing specific criteria for advancing and testing hypotheses and carrying out experiments. Various disciplines may engage in multi- or cross-disciplinary collaboration. The culture has contributed to action research, notably projects where experimental scientific knowledge has been pivotal to understanding of environmental, and health and safety issues.
- Analytical and reflective (primarily in the humanities). The culture has its analytical focus on historical or contemporary cultural products (signs and texts). The study of them aims at increasing academic understanding by providing cultural, historical, and philosophical information and

developing theories and methods. Disciplines may engage in multi- and cross-disciplinary collaboration, and may also help establish new, trans-disciplinary subjects. Furthermore, various disciplines may contribute actively to develop culture (e.g., Mode 2 or action research). This implies, however, a departure from the original analytical and reflective academic culture.

- Analytical academic (prevalent within social science and subjects located in the intersection between social science and the humanities). Research within this culture particularly focuses on social issues. It figures prominently at Roskilde University whose *raison d'être* is societal engagement and the production of socially relevant research. Disciplines engaging in this culture tend to have an interdisciplinary approach, often involving direct collaboration with external partners. The collaboration may be multi-, cross- or transdisciplinary. Creative constructive (primarily in communication-, construction-, intervention-, and planning-oriented studies). The culture is prominent in disciplines where special importance is accorded to construction and design, based on high academic standards. When engaging in various types of interdisciplinary collaboration, disciplines focus on upholding their innovative and creative character.

Academic disciplines and traditions play an increasingly important role at Roskilde University. Still, different notions of interdisciplinarity figure prominently in the academic discourse (Enevoldsen, 2012, p. 33 f.), and the composition of the educational profile illustrates that interdisciplinary studies are still highly valued. New interdisciplinary programs have been established, based on collaboration among researchers from different disciplines, who have come in contact because of the interdisciplinary organization of studies. Thus, interdisciplinary collaboration within and across academic areas has acted as a major incentive for continued educational innovation.

The Exemplary Principle

It is the particular strength of PPL that participants study specific problems in depth, identifying and analyzing them by drawing on theories and methods. However, the quite narrow focus on exploring a specific problem may also be interpreted as a weakness, and it raises the question of how to gain

broad insight into a discipline or subject. In terms of project work, the answer has been the exemplary principle.

At Roskilde University, the German social scientist Negt (1971) has inspired the concept of exemplarity. According to Negt, the educational content has an exemplary value if it both includes and transgresses the immediate interests of the learners. Negt was inspired by Wagenschein (1956), who saw the “exemplary principle” as a method for reducing curricula without omitting important learning outcomes, and who stressed how the principle would support learners’ comprehension of broader scientific contexts. Furthermore, Negt’s theoretical didactical considerations have been inspired by Wright Mills’ concept of “sociological imagination.” For Mills (1959) the role of social science is to clarify the public dialog and to support the spread of democracy, understood as the strengthening of peoples’ influence on decisions that affect them in their everyday life. According to him, this means that social sciences should be characterized by illustrating the interplay between social conditions, the everyday environments of peoples’ lives, and the circumstances of their lives as perceived from their life story perspectives.

The exemplary principle may be implemented by different pedagogical strategies, for example, by requiring project reports to reflect on social, theoretical, or methodological issues, by requiring group members to discuss the projects among themselves taking into consideration a broader scientific and social framework, or by committing the students to reflect on the relation between course content and their own project work. Exemplary learning is not always achieved if the responsibility is left solely to the students. Indeed, some projects do not go beyond exploring relatively narrow issues. Possible explanations are that the principle of exemplary learning is not clearly stated as a formal requirement for project work, or that the students do not reach beyond the point of completing the targeted study of narrowly delimited problems (Ulriksen, 1997, p. 82 ff.).

Participant-Directed Learning

Participant-directed learning, being a mode of “self-directed learning,” is a key constituent of Roskilde University’s educational philosophy. It entails facilitating more democratic forms of studying. The reasons for referring to participant-directed rather than student-directed learning are (1) that teachers are allocated to supervise the students; and (2) that participant-directed activities always unfold within a formal curriculum, a framework

that cannot but affect the substance of the students' work. Although still an ideal for problem-oriented project work, participant-directed learning is the cause of some clashes of interest. Firstly, there is a potential conflict between the function and obligations of the supervisor. In the project work process, the supervisor should act jointly with the students' project work, supporting the learning process without actually directing it. But when assessing the project report and the performance of the individual student, the supervisor is obligated by the prescribed learning outcomes of the academic program. Thus, the supervisor must weigh focus on learning processes against satisfactory outcomes. In the project work process the students may become uncertain whether the supervisor unreservedly is supporting the students' project goals or is acting with a view to meeting certain learning outcomes. Secondly, the students' needs and interests may clash with curriculum requirements, the provisions for learning outcomes being experienced as a constraint on the individual study interests of the students.

Recently, Cath Lambert has tried to revitalize the arguments for participatory pedagogy, based on a critique of the neo-liberal discourse of education. Participatory pedagogies may challenge the "logic of education as a commodity of service" (Lambert, 2009, p. 303). Her idea is to "reinvigorate the idea of participation in such a way that it makes sense of the everyday, embodied activities of student researchers, and captures the social and political importance of both intellectual and participatory practice" (*ibid.*, p. 296). Lambert mentions different approaches to participatory pedagogies that are applied in higher education: "research-," "enquiry-," and "problem-based" learning, and argues that these approaches all accentuate an explicit commitment to the idea that students should be producers of knowledge and not only consumers. Somehow, Lambert's deliberations revive Wilhelm von Humboldt's (1767–1835) ideas of what a university should be, but against a modern background and with a pointed critique of the kind of consumerism that is supported by neo-liberalism.

Group-Based Project Work

Project work figures prominently in the Roskilde University educational structure. Over the years, different types of projects have developed to meet the requirements of different academic cultures. Most projects are modeled on the format of the academic dissertation, while some focus on the dissemination, planning, and design of products. In design- and

product-oriented programs it is sometimes necessary to downplay project work in favor of pedagogical models with course work, and workshops that include relatively long and intensive periods of designing and producing. In the course of the project, participants draw on various disciplines and methods in order to achieve their goals. Over time, student activity revolves around a complex series of interactions among the team members, just as it draws on a range of transferable skills such as communication and planning. By engaging in the projects, students work with theory and scientific methods. This means that theory and method are employed as means of working toward an objective. At the same time, theory and method are placed in a context where they have a purpose beyond mechanical acquisition (Simonsen & Ulriksen, 1998, p. 137; see also Hanney & Savin-Baden, 2013, p. 8).

Group work is meant to support collaborative learning processes that are likely to generate more advanced knowledge than most individuals are able to develop by themselves. Furthermore, participants in group processes also learn how to work in teams. It is a requirement at Roskilde University that project work must include at least two participants, the argument being that the learning outcome of the educational programs can be realized only on the basis of extensive experience with group project work.

Labor market demands for project skills are important for justifying the use of project work at the university. Research indicates that employers are looking for work-related project competencies involving knowledge about:

- How projects are dependent on internal and external contexts, rationales, resources, structures, systems, and cultures of companies and organizations.
- Various forms of project management used within companies and organizations, and the ability to critically reflect on strengths and weaknesses of different forms of project management.
- Various tools for optimizing project work as part of professional working practices; tools that are integrated in the common language of business and organizational contexts and in the expectations for project skills.
- Expectations in companies and organizations regarding personal skills of communication, collaboration, conflict resolution, creativity and innovation, balancing the relation between context and self, and management of the self (Andersen, 2013; see also Kapsali, 2011; Saynisch, 2010).

When bringing the experiences from academic project work to the labor market, it may be useful for university graduates to be aware of such requirements and to be able to convert the explicit and tacit knowledge derived from university project work into project work in other settings. Conversely, some tools developed in a professional context to optimize different aspects of project work may help enhance the quality of project work at the university. However, there is reason for cautioning against uncritically importing business perceptions of project management into university studies, as they tend to foster an ideology of control to the detriment of unfolding creativity (Hanney & Savin-Baden, 2013, p. 9).

PROGRAM STRUCTURES AND INTERDISCIPLINARITY

In accordance with the Bologna Model, studies at Roskilde University are organized into three levels. The entry level consists of three-year bachelor programs in the humanities, humanistic-technological sciences, natural sciences, and the social sciences. Most bachelor students continue their studies in double- or single-major two-year master programs. Finally, graduates with a master's degree may apply for admission into a three-year PhD program at one of the university's doctoral schools. Below, we will focus on the current design of the undergraduate and graduate levels so as to explain the organizational and interdisciplinary characteristics of the Roskilde Model.

Bachelor Programs

The bachelor programs have retained an initial broad, interdisciplinary part (65 ECTS) which serves as the foundation for subsequently choosing two specialized subject modules (35 ECTS each). The subject modules include one project (15 ECTS) and four subject courses (each 5 ECTS). In addition, all bachelor programs include two 5 ECTS optional courses, that may help make the choice of subject modules more flexible. Thus, if a student changes his or her choice of subject module after having taken one or two subject courses in, say, the third semester, the optional courses can be used as subject courses in the new subject module, thus preventing a prolongation of the bachelor studies for the student. The bachelor programs are concluded by a bachelor thesis (15 ECTS).

Each of the six semesters is composed of three courses (5 ECTS-points each) and project work that is documented in a written report (15 ECTS). While one specialization subject must be within the main academic area of the bachelor program in question, the other one is likely to be chosen across the boundaries of the main areas. Course assessment usually is based on a written assignment, whereas project work is assessed at an end-of-term oral group exam using the project report as the point of departure (see the section “The Practice of PPL”). Courses and project work complement one another, the former systematically introducing students to theories, methods, and concepts of various academic fields, and the latter letting the students apply their newly acquired insights to actual real-world problems.

In the first three semesters, the projects are interdisciplinary so as to require an approach combining various disciplinary dimensions. In the humanities, for instance, the interdisciplinary dimensions are: “Culture and History,” “Subjectivity and Learning,” “Text and Sign,” and “Science and Philosophy.” In the fourth and fifth semester projects are carried out within two academic specializations, and in the bachelor thesis the students either pursue one of the specializations or work to combine the two of them in their thesis.

The curricula have been designed in such a way that the students are trained both in recognizing the potentials of an interdisciplinary approach to problem solving, and at the same time are introduced to disciplinary perspectives, from which they will eventually choose their academic specializations.

The physical and social frameworks play a pivotal role in the bachelor programs. Each of the four programs is organized in one or more “houses” accommodating 120 students, four to eight supervisors allocated from various departments, and some administrative staff. The houses – containing classrooms, offices, space for group work, a kitchen, and a recreational area – constitute an academic as well as a social unit, fostering a sense of identity and cohesiveness that is important to the successful acculturation of new students to group project work. It also offers a very literal reification of interdisciplinarity in that the supervisors represent not only different departments and subjects, but also a variety of theoretical and methodological approaches. Thus, throughout the semester, the students are exposed to a multi-faceted understanding of academia. Early on, it takes place in the process of group formation (see the section “The Practice of PPL”). Later, when groups have been formed, each with an assigned supervisor, there will be seminars for discussing problem-formulation, a mid-term evaluation, and an end-of-term evaluation.

Master Programs

The specific feature of Roskilde University master's programs is that students may design their own study program by combining the two fields or subjects that best support their academic interests and career plans, continuing their studies at one or two of the university's six departments. The first two semesters combine equal shares of courses and project work, the third semester features a range of courses, seminars, and workshops, while the final semester is reserved for writing the master thesis. As students are required to work in groups on projects, and as group members often have backgrounds in different bachelor programs (e.g., humanities and social sciences), the significance of an interdisciplinary approach to research is further accentuated.

There is a choice of following a double-degree program or a single-degree program. The former is by far the most common. It combines two subjects, and students may continue at the master level within the subjects chosen at the bachelor-level, specializing in each of them while at the same time developing an interdisciplinary understanding of them. One subject must be chosen as "primary" (meaning that it frames the thesis), and it can be combined with one of eight "secondary" subjects approved by the study board as relevant and interesting from an interdisciplinary point of view. Limiting the number of options helps departments organize combination programs as continuous cycles with a clear delegation of responsibility for research support. It is quite common for students to replace one of the bachelor-level subjects with one from a different branch of science, for example, combining a subject from the humanities with one from the social sciences (e.g., subjects Psychology and Business Studies), or combining natural science and social science subjects (e.g., Math and Social Science). Eleven subjects are offered as single-degree programs, and they are characterized by being interdisciplinary by design, examples being Global Studies, Social Entrepreneurship and Management, Spatial Designs and Society, and Environmental Risk.

INTERNAL AND EXTERNAL CHALLENGES

Once considered radical, today elements of the Roskilde Model have been accepted at many other institutions, ranging from high school to colleges and universities. But the Roskilde approach to education has never become

habit. Challenges come both from faculty and students, and from society. Faculty members tend to challenge the conceptual understanding and practice of PPL, alleging that single-academic subjects should define their teaching and research. This apparent conservatism suggests a reaction to current trends of politically defined strategic research and the adaptation of academic programs to specialized labor market demands; and it is also a strategy for self-preservation in an academic world increasingly dominated by formal publishing requirements. Students have different needs and requirements. Some students easily embrace PPL. Others, after enrolling at Roskilde University, discover that they prefer teacher-directed single-subject programs. As is the case in many countries, Danish university education has become subject to a number of external pressures. Public finances are strained because of the current economic crisis, and the government demands rationalization and budget cuts in all sectors. Politicians define society as a threatened community that can survive in the global competition only if organizations, companies, and individuals increase their productivity. They argue that university education is too expensive, and that too many students graduate from the Danish universities. They also argue that university education is often irrelevant to business needs. Politicians conclude that students should be guided more quickly through their studies, that dropout rates should be reduced, and there should be more focus on employment opportunities in the existing labor market. Until now, the political levers have been: (1) to close down or reduce university programs with low employment rates, (2) to punish students and universities economically for not reducing study completion time, and (3) to curb enrollment in programs with actual or potential overproduction of graduates.

Although comprehensible in times of recession, these political measures represent specific threats to the university and hence to its pedagogical approach:

- Having a profile with many programs within the humanities and social science and none within engineering and medical science, Roskilde University is particularly exposed to the negative employment patterns caused by the recession.
- While the postponed choice of subjects helps optimize matches between educational motivation and choices of professional careers and actually means that students complete their bachelor degree more quickly than students at other Danish universities, completion rates are slower than average at the master level.

In addition to these largely economic challenges, recognition of the importance of interdisciplinarity is being challenged by national accreditation of interdisciplinary programs being carried out by representatives from conventional single-academic subjects; sorely tempting program planners to stick to uncontroversial, standardized designs.

More fundamentally, regarding the structure of the Danish higher education area, the government recently has aired ideas for a new model of university education. Thus, publicly funded university education, typically leading to a master degree, may be replaced by one leading to a bachelor degree, studies beyond which will be divided into professional master degrees for the many (possibly part-time and fee-based), and research-oriented graduate and post-graduate studies for an elite. The economic rationale behind the model will be that society is willing to pay for basic academic and professionally oriented education and elite training, while continuous education might perhaps be financed by private funding. A reform along these lines would run counter to the basic educational philosophy of Roskilde University of offering broad bachelor programs, a gradual choice of specializations, and targeted job specialization at the master level.

The educational strategy of Roskilde University has always been to develop types of academic knowledge that respond to the challenges from broader society and labor market requirements. In this perspective, the problem is not that politicians require occupational relevance. Rather, the problem is that political statements – in response to the perceived mismatch between universities and societal needs – suggest a unilateral prioritization of very narrow business relevance at the expense of social relevance and academic standards. Thus in many ways, Roskilde University has become subject to pressures that make it harder to insist on being an educational alternative in terms of program structure, academic and professional orientation, and pedagogy.

There may be a need to formulate a more balanced understanding of the university's relevance to society. In terms of societal needs that universities should meet, we will suggest four types of relevance:

- **Scientific relevance:** Universities must be based on society's highest level of knowledge as well as knowledge about how such knowledge is produced.
- **Social relevance:** Universities must relate critically and reflectively to the social significance of science and seek to provide answers to important societal challenges.

- Employment relevance: Universities must strive to plan to meet current and future labor market needs for knowledge, skills, and competencies.
- Personal relevance: Universities must consider the students' backgrounds, professional interests, and their conceptions of a meaningful worklife.

The four types of relevance are closely linked and need not conflict, even if they may do so. We wish to emphasize that it is imperative to avoid one-sidedness when deciding what types of relevance to attach importance to when organizing programs at the universities. At the same time, the university should be well aware of the fact that academic studies require distinctive time rhythms and modes of production that would be undermined if they were exclusively to be defined by instrumental and short-term interests.

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CRITICALLY EXAMINING INQUIRY-BASED LEARNING: JOHN DEWEY IN THEORY, HISTORY, AND PRACTICE

William E. Herman and Michele R. Pinard

ABSTRACT

This chapter introduces the history and development of inquiry-based learning (IBL) and describes how teaching and learning strategies over several decades in P-12 and higher education have built upon the ideas of John Dewey. Though personal reflection, uncertain learning paths and outcomes, and mindful inquiry have been central foundations undergirding IBL, the approach now stands upon the shoulders of theoretical and research giants such as Piaget, Vygotsky, and Bruner. Over 100 years, modern IBL proponents like Gruenewald, have implemented and experimented, contributing to cognitive and social science pedagogy, for instance, by attempting to make contemporary teaching and learning relevant, thoughtful, and action-oriented.

Dewey's work continues to dominate educational landscapes and inquiry-based approaches to teaching and learning have, in contemporary forms,

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withstood the test of time. Two case studies in this chapter illustrate how IBL has materialized as problem-based and place-based methodology, reflecting influences of social and cognitive constructivism, humanistic psychology, and eco-feminism. Those who embrace IBL continue to improve teaching and learning strategies in order to find more effective methods of immersing themselves and their students in globally critical conversations about essential life issues – inside and outside of classrooms – a central and enduring tenet of Dewey’s experiential learning.

John Dewey, in *How We Think (1910/1991)*, discussed how inspirational teachers guide students’ thought processes and personal reflection to affect positive learning outcomes; these have become foundational elements of inquiry-based learning (IBL). Were Dewey to visit contemporary P-12 and higher education settings today, he would find himself awash in “inquiry-based” jargon: learning communities; content-driven teaching; critical pedagogy; and active, discovery, self-regulated, authentic, student-centered, collaborative, problem and place-based learning.

Here authors apply IBL to problem and place-based learning. Dewey life snippets thread among three notable educators’ contributions: Lev Vygotsky, Jean Piaget, and Jerome Bruner. Two case studies show pragmatic challenges and opportunities practitioners face implementing IBL. Core groundwork Dewey and others laid are exposed to show what remains relevant for those interested in international problem and place-based IBL today.

JOHN DEWEY (1859–1952)

In native Vermont, young John Dewey witnessed his father enlist in the American Civil War, moved to Virginia, and, was exposed (by age six) to war horrors. Such experiences impacted Dewey, his concern for individuals, and contributions to domestic and international society (Cochran, 2010). Influenced by Congregationalism, which emphasized moral behavior, social reform, and thoughtful actions, at 15, Dewey entered the University of

Vermont (UVM). He graduated second in his class (1879) and, with practical teaching experience, became intrigued with philosophy. Later, he enrolled and received a doctorate at Johns Hopkins University (1884). Academic appointments in Michigan, Minnesota, and Chicago (where he founded the Laboratory School), preceded Teachers College at Columbia University in New York City.

Charles Darwin published *Origin of the Species* in 1859, the year Dewey was born. Shifts influencing the acceptability (if not controversy) of human evolution study and its more scientific methods were resulting in a confluence of ideas that could not have been more timely for teachers. In Dewey's time, most students learned by rote. "Exceptional or problem learners" routinely sat in corners adorned with dunce caps! Dewey famously reformed American education practices by focusing upon what students were – or were not – doing; his Progressive notions drew from psychology, education, and philosophy.

Spouse Alice Chipman, a teacher, also fiercely promoted children's innate right to inquire (Walker, 1997) agreeing students should legitimately govern their own learning. Dewey's early outdoor work with youth in Vermont, as well as studying his own children carefully (Walker, 1997), underscored values he placed on learning in natural settings. Having watched the country rise from destruction to become industrialized, Dewey advocated for education systems that promoted democratic ideals, much like Thomas Jefferson did:

A democracy is more than a form of government; it is primarily a mode of associated living ... the great heroes who have advanced human destiny are not its politicians, generals, and diplomatists, but ... the artists and poets who have celebrated his struggles, triumphs, and defeats ... (Dewey, 1916, pp. 101, 253–254)

Dewey's ideals embodied reactions to inequities and educational circumstances inside classrooms and those emerging in late 19th century society. He lectured in Japan and China, consulted in Turkey, and visited former Soviet Union schools, criticizing industrialist divisions in America between wealthy citizens and struggling poor citizens. Political activism and friendship with Jane Addams led to becoming a trustee for Chicago's Hull House. He supported Teddy Roosevelt, the 1912 "Bull Moose" candidate; published civil rights essays in the *New Republic*; held charter membership in the first teacher's union in New York City; worked for women's suffrage; and, promoted the American Civil Liberties Union (Cochran, 2010; Dykhuizen, 1973).

MODERN PROPONENTS OF INQUIRY-BASED LEARNING

Dewey advocated for IBL. An anecdote relates Dewey searching a local school supply store for suitable desks and chairs to meet the:

... artistic, hygienic, and educational ... needs of children. We had a good deal of difficulty in finding what we needed, and finally one dealer, more intelligent than the rest, made this remark: "I am afraid we have not what you want. You want something at which the children may work; these are all for listening." That tells the story of the traditional education. (1899, pp. 47–48)

This interaction illustrates how Dewey intertwined cognition, social interaction, and classroom desks, reimagining teachers optimizing IBL environments. Along with Progressive educators, constructivist forerunners took foothold and IBL has flourished, having "been promoted by such notable scholars as John Dewey, Lev Vygotsky, Jean Piaget, and Jerome Bruner" (Snowman & Biehler, 2013, p. 302).

Lev Vygotsky (1896–1934) developed his views, ironically, while Marxist struggles occurred behind the Iron Curtain when Stalin and Cold War politics prevented free exchange of ideas (Sawyer, 2014). Like Dewey, Vygotsky agreed education should support social justice movements and improve society (see p. 97). Articulating the interplay between cognitive and social constructivism, he believed humans question to practically change physical environments and test individual thoughts against others', although collaborative efforts do not always support collective learning. Classism can and does profit one person over another. Teachers should purposefully scaffold students' IBL, provide prompts within proximal zones of development, and promote reflection upon actions. Vygotsky affirmed how "active, persistent, and careful consideration of any belief or supposed form of knowledge ..." leads to "generated confusion and suspended belief ..." (Dewey, 1910/1991, pp. 6–9) rather than a priori "proof."

Jean Piaget (1896–1980) also thought personal engagement was necessary for cognitive change, through schematic development. Piaget assumed learning tasks require inherent practical value to capture student interest. Manipulating objects or concepts to discover principles, students share "truths" and offer scientific evidence or proof, realizing constructivist IBL principles: "... education is a constant reorganizing or reconstructing of experience ... It is that reconstruction or reorganization of experience which adds to the meaning of experience, and which increases

ability to direct the course of subsequent experience” (Dewey, 1916, pp. 89–90).

Saunders (1992) confirmed: “... learners respond to their sensory experiences by building or constructing in their minds, schemas or cognitive structures which constitute the meaning and understanding of their world” (p. 136). IBL ideas emerge, are communicated, tested, and cared for in a social context, according to Piaget and others (DeVries, 1997; Watts, 1994).

Finally, Jerome Bruner (1915) advocated IBL by stressing personal meaning to activate participation and build cognitive structures. He is associated with discovery learning, inquiry methods, intuition, vicarious learning, and inductive and deductive reasoning. Bruner wrote:

“We teach a subject not to produce little living libraries on that subject, but rather to get a student to think ... Knowing is a process, not a product” (1966, p. 72). Consequently, teachers are not absolved of active roles in IBL and discovery learning. While Bruner and Vygotsky suggest learning involves students actively engaging with objects within structured circumstances (Bergstrom & O’Brien, 2001), teachers act as coaches, encouraging students to discover principles for themselves. Selected taxonomies and assessment strategies support deeper levels of synthesis, application, and knowledge construction. Question-types posed, as well as responses expected, encourage or allow minimally satisfactory and, preferably, exemplary engagement; these are critical for motivating and sustaining independent IBL.

To this point, Dewey might recognize the time he reputedly asked a class:

“What would you find if you dug a hole in the earth?” Getting no response, he repeated the question; again he obtained nothing but silence. The teacher chided Dr. Dewey, “You’re asking the wrong question.” Turning to the class, she asked, “What is the state of the center of the earth?” The class replied in unison, “Igneous fusion” (Bloom, Engelhart, Furst, Hill, & Krathwohl, 1956, p. 29).

Essentialist and rote learning methods ran counter to Dewey’s expectations about teaching and learning. Constructing environments for thoughtful questions and responses to occur are crucial in IBL. Emphasis is placed not on “right answers,” but on how knowledge is acquired. Significantly, Dewey stressed both deductive *and* inductive thinking, synthesis *and* analysis. Citing geography, for example, he explained:

The synthetic method is supposed to begin with the partial, limited portion of the earth’s surface already familiar to the pupil, and then gradually piece on adjacent regions ... till an idea of the entire globe is reached ... The analytic method is supposed

to begin with the physical whole ... and work down through its constituent portions till the immediate environment is reached ... Analysis leads to synthesis; while synthesis perfects analysis ... this process always consists in taking (events) out of their apparent brute isolation as events, and finding them to be parts of some larger whole ... (1910/1991, pp. 114–118).

Rather than contriving learning interactions, Dewey explored assumptions behind questions, expanded students' knowledge from immediate referential frames to broader contexts, and returned to immediate examples. Motivating students to pause, assess situations, question, apply critical lenses to base knowledge, and apply skills, students became better problem-solvers. Sustained interactions and problem-posing strategies were key Dewey methods. Teachers' identity metaphors shift from "sage on the stage" to "guide on the side" (King, 1993).

DEWEY ON PROBLEMS AND PLACE-BASED IBL

Problem and place-based IBL emphasizes authentic, ill-structured questions, as Dewey practices did, allowing for: free inquiry; interdisciplinary, collaborative curricula; self-directed learners that reanalyze "resolutions" in debriefing processes; and, interpersonal, intrapersonal and procedural assessments (Savery, 2006, pp. 13–14). Successful problem and place-based IBL curricula are theme-oriented, interdisciplinary, experiential, and assessed in meaningful ways (Bergstrom & O'Brien, 2001). Open-ended questions posed prior to and while conducting learning are critical for motivating students. Transforming learning spaces and transferring ownership of learning to students are germane. Communicating with stakeholders, sharing learning processes and results with authentic audiences, and evaluating program outcomes extends student application of knowledge and skills to form authentic bases for reflection in interdisciplinary IBL study (Gruenewald, 2003; Gruenewald & Smith, 2008; Sobel, 2008).

Dewey's existentialist leanings show how individual and group learning may be made explicit. In problem and place-based IBL, early imperatives are found: "The moment children act they individualize themselves; they cease to be a mass ..." (1899, p. 49). Rogers recalled in *Freedom to Learn* (1969), referencing Søren Kierkegaard, the Danish philosopher, how what students learn juxtaposes with teacher-centered learning: "I have come to feel that the only learning which significantly influences behavior is self-discovered, self-appropriated learning" (p. 153). Students' existential

realities may be impossible to directly communicate, but they correlate with “individuals on the firing line facing immediate problems – teachers, doctors, farmers, counselors – (and) are especially effective because the individuals are trying to cope with problems ...” (1969, p. 162).

IBL, like Dewey, sees individuals and communities as funds of knowledge rather than as deficits or problems (Gonzalez, Moll, & Amanti, 2005 in Buxton & Provenzo, 2012, p. 11). However, Dewey (1899) warned that inquiry was *not* at the heart of all formal educational institutions where children learned: “When the child gets into the schoolroom he has to put out of his mind a large part of the ideas, interests, and activities that predominate in his home and neighborhood” (p. 89). Fundamental theories in education that have positioned students as active learners include postmodernism, eco-feminism, and critical theory. Legitimately tying inquiry to “truth-seeking,” individuals holding these lenses encourage students to ask critical questions – about themselves and their communities. Reflecting on and teaching about deeper issues using place-based problems of socio-environmental and human concern, qualitative educators who draw from the post-modernist period (approximately 1990–1995) tap into one of seven “historical” moments in North America’s complex historical research field (Denzin & Lincoln, 2000).

Post-modernists eschew traditional teacher-centered methods in favor of student-centered inquiry; lectures and Socratic discussions fall out of favor. Personal storytelling nurtures students’ doubts about central “truths” and urges students to adopt responsibility for questioning assumptions, given methods or theories. Ethnographers use action research methods to examine and (re)position learners within their places, communities, and societies. Students leading seminars question the status quo to develop solutions to social or environmental problems; research and learning are seen as intertwined personal and public acts, but the intrapersonal is privileged more than the collective to challenge historically unbalanced authoritative representations of what it means to know, discover, and learn (Denzin & Lincoln, 2000).

Teachers use problem and place-based IBL methods to achieve outcomes by meshing individuals’ learning, classroom foundations, and real world connections. They prefer holistic, integrative, collaborative, and multi-disciplined decision-making processes. Unfortunately, misappropriated curricula, inadequate student preparation and commitment, insufficient resource investment, and underdeveloped or inappropriate assessment methods (Savery, 2006, pp. 10–11) can undermine IBL outcomes. Ideally, problem and place-based exercises foster students’ critical thinking and

solutions to contemporary problems in order to build a more just or sustainable world. These methodologists align IBL to operate from a Dewey premise: "... the educator cannot start with knowledge already organized and proceed to ladle it out in doses" (1938, p. 102).

Skeptics may resist, charging students lack maturity, sophisticated thought patterns or self-discipline to lead or take ownership of IBL. Advocates observe: "Learning in school has been so long associated with a docile or passive mind that because that useful organ does not squirm or talk in its operations, observers have come to think that none of the child should do so, or it will interfere with learning" (Dewey, 1915, p. 136). Although standardized exam pressures isolate teaching from students' lived experiences, programs (Buxton & Provenzo, 2012) have (re)established a "pedagogy of place," showing that communities have common problems. Current IBL stresses local community character with *unique* concerns and sources of indigenous knowledge. Differentiating goals of outdoor education, community-oriented schooling, ecological education, and bioregional education, problem and place-based IBL goals include cultivating ecoliteracy and ecological identity (see Orr, 1994; Thomashow, 1995; as cited in Woodhouse & Knapp, 2000, p. 1). Outcomes include cultivating civic values, community ties, and engagement with the natural world. In fact, teachers using problem and place-based IBL have been able to "close the achievement gap" in 40 schools in 12 states with more than 400 students, 250 teachers and administrators (Lieberman & Hoody, 1998). Comparing studies of standardized test scores, Grade Point Averages and attitudinal measures, outcomes challenged international data showing U.S. students lagging in science and social studies content and skill knowledge and application (Buxton & Provenzo, 2012, p. 3). Science, technology, engineering and mathematics (STEM) funded initiatives and curriculum initiatives in U.S. higher education and P-12 classrooms today may increasingly identify opportunities ripe for IBL curricular designs and assessments to successfully focus individuals' and communities' inquiry on pressing local *and* global issues. Concerns about water shortages or human trafficking issues are examples of IBL issues that could stimulate students and teachers to inquire about universal truths impacting people worldwide.

Alice Chipman Dewey promoted individual and social inquiry and influenced her husband's feminist stances; both encouraged children to actively investigate their environments. The Deweys were reputedly accused of unorthodox methods of parenting because they allowed their older children to observe younger siblings' natural childbirths (Walker, 1997, p. 17). While teachers particularize knowledge-seeking processes, build content

and skills, they assist students to generalize solutions for and with others who hold global perspectives. Teachers and students investigate and creatively attempt to solve community environmental and socio-economic challenges, seeking outcomes that inform citizens while creating learning in sustainable, ecologically friendly ways. Since Dewey cared about equitable resource acquisition, distribution, and conservation, as well as knowledge ownership, it is not surprising that IBL is supported by eco-feminists aligned with environmental social justice movements. They demand that gender issues, dominance and duality, and marginalization issues not be overlooked when using place-and problem-based IBL. International problem and place-based IBL advocates would challenge students to: explore and problematize gender issues across time in all places; critically examine patriarchal, political systems; expose economic exploitation patterns and human relationships; and, explore and address how natural events and humans in their surroundings, as Vygotsky also argued, have resulted in knowledge-creation, norm-making, and destructive consumptive patterns (Sawyer, 2014).

Today, communities interested in children's recreational rights, for example, could compare labor versus leisure patterns in different locales; IBL teachers might assist students to investigate the "nature-deficit disorder" (Louv, 2008) and examine contrasting places' positions. Teachers and students inquiring about U.S. versus Australian school recess schedules could focus on what is learned during or from outdoors play, for instance, as a central problem in place-based IBL. The curriculum content, affective understanding and skill development could concentrate on gathering and contrasting data on societal values about learning outdoors, medicinal, and food information gleaned from traditional plants, eco-feminist dialogs about women's contribution to knowledge – via literacy and domestic duties, for example (Harvester & Blenkinsop, 2010). Youth could investigate oral histories, spoken wisdom and what indigenous elders "teach" by investigating community-based and non-traditional or text-based literacy sources. Comparative IBL outcomes could include those in which Western youth view formal and informal educators in non-Western communities as authoritative, vital, contributing members of "truth" to society – or vice versa – because of extended investigation of place-based questions; Australian and U.S. educational community members (teachers and students) could gain mutual insights into how respective groups value time and leisure.

Combining Eastern and Western ontological perspectives using IBL instills value for multiple ways of living and learning. Teachers integrating

problem and place-based IBL contextualize knowledge by using primary sources and cross-cultural texts to develop eco-literacy, thus engaging and making learning personally relevant. IBL teachers connect learners to immediate and extended human communities, showing how local issues are globally interdependent.

Social justice icon Paulo Freire influenced teachers well beyond Brazil by using critical pedagogy. He encouraged teachers (1998) to interrogate assumptions about solutions to social problems. Consequently, he impacted global educational communities by actualizing participatory, communal IBL methods. Those impacted by problems in their places reprioritized how or whose knowledge is (or should be) viewed as more authoritative than others' – especially when viewed against institutional, historical, or collective measurements of what is authentic, valid, or good. Martin (2010) likewise showed how two science educators and students in Hawai'i needed to reflect on theories of decolonization and reinhabitation of shared places and spaces to deconstruct historical legacies or reconstruct more co-habitable places in harmony with the earth and one another in a culturally respectful manner (Gruenewald, 2003). In some traditional societies, subsuming one's rights for the "good of the order" may be seen as historically (or presently) relevant – even desirable – for individual, environmental, and societal sustainability. Problem and place-based IBL contrasted and highlighted this powerful key lesson.

For Western individualists, such IBL outcomes may cause discomfort. Exploring Eastern professional educators' "saving face" values may cause debate about whether individuals should use limited resources, especially if students' proposed solutions to problems in place-based IBL conflict with shared community resource patterns. Skillful IBL teachers welcome these dialogs – as places contextualize problems and help to critically inform or nuance student arguments; yet, pressure to quantify learning outcomes (especially if correct responses are privileged by standardized assessments) may conflict with tasks that require commitment to methods of teaching and assessing critical thinking. IBL processes may even discourage some teachers. Proponents will recall, ironically, the exchange Dewey purportedly had with children about the center of the earth (Bloom et al., 1956, p. 29).

While successful IBL processes and assessment strategies extend beyond the scope of this discussion, one method recommended for collaborative problem and place-based learning is participatory action research (Chevalier & Buckles, 2013). Traditional objective and subjective tools (see Buxton & Provenzo, 2012, pp. 14–19) can document IBL processes

and outcomes. Needs assessments, diagnostic activities, concept maps, content quizzes, journal entries, interviews, and focus group discussions are legitimate pre-evaluative, formative, and summative tools. Technology increasingly serves to link and record educational communities' IBL activities.

STRENGTHS AND WEAKNESSES OF IBL: TWO CASE STUDIES

Here, two case studies illustrate how teachers could more effectively implement core components of international problem and place-based IBL. Ideally, teachers would focus learners on critical questions that reflect individual *and* societal concern. International IBL would identify common problems in different places and contextualize learning to create transnational learning, collaboratively, with students and teachers from inside classrooms and populations outside in their home communities co-defining and reflecting upon learning processes, mutually considering and how language, literature, human and technology resources, service, and assessment will facilitate learning goals.

At two public higher education institutions in rural New York State, teachers experimented by implementing core IBL elements to varying degrees in an English as a Second Language (ESL) and South Africa (S.A.) Study Abroad program. The result was contrasting learner outcomes. What follows is a description of each program, followed by international IBL program components compared to the learner outcomes. Recommendations follow. By exposing the trajectory of teachers who did explore implementing IBL, it is hoped others may reflect on and assess the strengths and weaknesses of their own developmental, problem, and place-based inquiry processes.

Case 1: Russian ESL Program

Three cohorts of 10–15 Russian-speaking undergraduate and graduate Economics students were involved in intensive, summer ESL programs. They sought to improve literacy skills and U.S. cultural knowledge. An experienced educator had limited technology available to assess individual students prior to arrival to determine language needs or learning goals. A

curriculum designed with experiential classes utilized half-day campus instruction, followed by afternoon and evening field-based outings, based on administrative program goals. Upon arrival, students were queried about interests but most could not define IBL questions, due to lack of sufficient contextual information.

To contrast Russian and U.S. economic systems, prepare for thematic, place-based field experiences, and strengthen language acquisition, students read *The Giver* (Lowry, 1993). During the ESL class, they honed business, grammar, and composition skills. Printed, web-based, and oral information supplemented off-campus resources. Instruction highlighted small, local cottage industries such as soap factories, chocolate shops, and fishing businesses that strategically solved economic obstacles presented by the area's remoteness. These were chosen to reinforce students' academic foci; economic issues explored included North Country and Adirondack historic, cultural, social, and agricultural communities (logging, local artisans, Amish, and tourist). Visits to local businesses, government offices, and museums, along with excursions to New York City, Niagara Falls, and other urban areas extended traditional classroom content.

Students researched, wrote, and gave oral reports on assigned topics. The Russians' ability to build and sustain relationships with hosts or apply language skills using IBL was minimal. They arrived, read, toured, listened, talked, wrote, and left – largely as a cohort, isolated and, although formal interactions with community groups (e.g., with Rotary Club volunteers) did occur, they were mainly teacher-initiated or directed. Interactions with high school students studying on campus were strictly managed, due to age differences. A Russian economics professor reinforced seminar discussions; guest speakers (including by a local Russian volunteer) augmented background readings. Nevertheless, comprehension and skill gaps remained as some text vocabulary was too advanced. A number of factors impeded students' ability to raise pertinent questions, test observations, or convey conclusions about economic hypotheses they made. What students discovered about problems in the United States and transferred to their home context was difficult to garner. Subjective and objective assessments revealed language and content growth, but time and circumstances did not allow substantive demonstration of connections. Students completed assignments and projects, but no formal grades were recorded on transcripts. Instructor narratives and certificates of achievement were provided. Students did not self-reflect formally; they did complete instructor and program evaluations.

Case 2: South Africa Study Abroad Program

At another university, two U.S. and South African colleagues co-designed a Study Abroad program. Five students enrolled in a pre-departure course covering geography, history, policies, and problems that existed in both contexts. Comparative curricula focused on the question: How do formal and informal educators contribute to or obstruct social change? Instructors facilitated IBL about how race and gender, protest music, and sports were used to grant or block access in Civil Rights and Apartheid movements. Using *Knowledge in the Blood* (Jansen, 2009), students deliberated formal and informal education systems and reflected, individually and cooperatively, on learning using critical incident methodology (Angelides, 2001) in private and group journals.

Prior to departure, students developed personal learning goals (Montrose, 2002) setting the trajectory for individual and collective research. Faculty negotiated service-learning objectives with community providers (in a township teaching English to school children and in an adjacent garden). On-site, students immersed themselves at historical sites, visiting with community educators, and, in daily reflective debriefings, contrasted social change processes in the U.S. and S.A. At school, service swirled around interactions with stakeholders. Mentor teachers who spoke multiple languages (including English) translated Xhosa so U.S. participants' language limitations with children were ameliorated; collaborative endeavors built moderate interdependency, as U.S. participants relied on S.A. hosts to gain knowledge about insider perspectives.

Instructors used technology intensively – to prepare students (Moodle), minimally while abroad, and upon reentry. Ample access to print, web-based, and human resources (e.g., film, on-line, SKYPE and web pals) enabled students and the group to contextualize IBL. Fair trade providers arranged mini-lectures, visitations, and tours with non-governmental organizations, universities, commercial providers, and other experts at businesses, museums, government and policy-making, historic, and religious sites. Each perspective brought curriculum “to life.” Even when accompanying faculty lacked specific topical knowledge on-site, students' expanding experiential bases (i.e., connected to their U.S. educational frameworks) allowed the group deeper understanding. IBL was strengthened because hosts' knowledge was indispensable to iterative learning processes, fueling and molding synergetic conceptual development. Tourist events were minimal, interspersed throughout, and viewed as non-essential; this was made explicit to students, as it would not contribute significantly to IBL.

Formal assessment occurred throughout the program – individually, collectively, formally, and informally. Students’ initial intra-cultural self-assessments allowed instructors to assess, develop, and gauge group curricular baseline needs formative and summative affective growth. Learning contracts guided individuals’ research project. Common assignments included individual and group journal entries, seminar participation, research paper, and self- and faculty/program evaluations. Oral, mid-term and final group reflection sessions were held, as were individual debriefings. A university Registrar recorded formal grades (six credits) on transcripts. Faculty met regularly to collaboratively discuss individuals, procedures, and program outcomes.

IBL Outcomes

Dewey believed humans should apply IBL and resultant knowledge to scientific and social problems: “Publics are in effect both democratic communities and epistemic communities, producing knowledge that helps individuals adapt and make more meaningful worlds for themselves in accordance with share needs forged by shared circumstances” (Cochran, 2010, p. 326). Instructors in the preceding cases attempted to meet Dewey IBL ideals. The ESL instructor hoped Russian students could apply vocabulary and knowledge gained from U.S. experiences to an economics disciplinary context; likewise, U.S. instructors designing the South African comparative course advanced students’ reflections on both contexts to show educators’ contributions or obstructions to social change. College campuses were sites of inquiry, but what became critical to learner outcomes appears to have been also dependent on the degree of focus on problem and place-based IBL facilitated by pre-departure preparation, language functionality, type of literature used, assessments and student accountability, and community involvement in facilitating learning goals. As these elements materialized, IBL approaches lead to either enhanced or missed opportunities to maximize students’ content and skill development. Naturally, outcomes differed (see Table 1).

Based on these two international study abroad cases, it is recommended that those interested in maximizing educational outcomes by using problem and place-based IBL: involve students in defining learning goals; address language skill proficiency needs; select comparative literature centering on core problems under study; leverage human and technology resources to

Table 1. A Summary of Two International IBL Outcomes.

International Problem and Place-Based IBL Components	Case 1: Russian ESL Program Outcomes	Case 2: South Africa Study Abroad Program Outcomes
<p><i>Learning goals</i></p> <ul style="list-style-type: none"> • IBL curriculum goal definition process • Student versus instructor design/group ownership • Type of host community involvement • Degree of interdependence fostered 	<ul style="list-style-type: none"> • Economics focus • No defined IBL question(s) • Minimal student involvement identifying learning goal • Administrators and faculty designed curriculum • Minimal host community involvement • Little interdependence 	<ul style="list-style-type: none"> • Social change focus • IBL question(s) defined during pre-departure • Students identified independent learning goals; contributed to group learning goals • Faculty and community hosts co-defined and designed curriculum • Moderate level of interdependence nurtured
<p><i>Language skills</i></p> <ul style="list-style-type: none"> • Student proficiency in first (and second functional language, if required) • Type and time of assessment/instruction delivered • Faculty proficiency in second language • Contribution to curriculum/IBL goals 	<ul style="list-style-type: none"> • Students' first language Russian; minimal proficiency in English, required • Language skills not pre-assessed; assessed subjectively and objectively throughout; daily formal and informal language lessons received • Faculty proficiency in learner language none to low • Language skills became curriculum impediment 	<ul style="list-style-type: none"> • Students' first language English; no second functional language required • No assessment required; rudimentary Xhosa language lessons delivered • One faculty member bilingual; one faculty member not; hosts bilingual • Language not serious curriculum impediment; faculty and hosts' translation skills enhanced curriculum/IBL outcomes
<p><i>Literature</i></p> <ul style="list-style-type: none"> • Compares problems in places • Is appropriate reading level • Contributes to content and language skill acquisition 	<ul style="list-style-type: none"> • Used <i>The Giver</i> • Guided reading level materials too advanced • Moderate contribution to content and limited to language skill acquisition 	<ul style="list-style-type: none"> • Used <i>Knowledge in the Blood</i> • Guided reading level very appropriate • Significant contribution to content and limited to language skill acquisition
<p><i>Human/technology resources</i></p> <ul style="list-style-type: none"> • Availability/diversity of human/technology resources during pre-departure, on-site, and reentry phases 	<ul style="list-style-type: none"> • Limited availability of diverse resources in pre-arrival or on-site phases; no interactions in reentry phase 	<ul style="list-style-type: none"> • Extensive availability of diverse resources in pre-departure phase; extensive interactions in on-site phase;

Table 1. (Continued)

International Problem and Place-Based IBL Components	Case 1: Russian ESL Program Outcomes	Case 2: South Africa Study Abroad Program Outcomes
<ul style="list-style-type: none"> • Contribution to learning outcomes during learning phases 	<ul style="list-style-type: none"> • Null or adverse contributions to learning outcomes in first and last phases; limited contribution to IBL in on-site phase 	<ul style="list-style-type: none"> • supportive interactions in reentry phases • Positive contributions to learning outcomes throughout all phases
<i>Assessments</i>		
<ul style="list-style-type: none"> • Distribution during program (baseline, formative, summative) • Subjective and objective • Documented formally 	<ul style="list-style-type: none"> • No pre-assessments; informal formative and limited summative assessments • Subjective and objective • Undocumented on transcripts 	<ul style="list-style-type: none"> • Formal and informal assessments throughout all phases • Subjective and objective • Documented on transcripts
<i>Community interactions</i>		
<ul style="list-style-type: none"> • Type and extent • Contributions to learning goals • Sustainability 	<ul style="list-style-type: none"> • Host interactions limited by age and purpose • Group isolation contributed moderately to learning goals • Relatively unsustainable 	<ul style="list-style-type: none"> • Purposefully encouraged; unlimited by age • Community engagement on short-term service projects contributed significantly to learning goals • Moderately sustainable
<i>Service learning components</i>		
<ul style="list-style-type: none"> • Extent of community involvement to meet learning goals • Type • Contribution to IBL 	<ul style="list-style-type: none"> • No service interactions with host community • Tourist-based, except when directed by instructor • Limited contributions to IBL 	<ul style="list-style-type: none"> • Fair trade providers facilitated host community service project (garden) arrangements; engaged academicians and non-formal partners (elders, non-governmental organizers) • Intensive • Significant contribution to IBL

sustain student and program partnerships; administer subjective and objective assessments prior to, throughout and at the conclusion of the program; activate community interactions to enhance learning goals; and, include service elements to expand students' and faculty's depth and complexity of understanding about core IBL issues.

CONCLUSION

This chapter described how John Dewey, three Progressive educators and practitioners approach IBL: nurturing high student motivation; sustaining students' needs while engaging relationships; and, engendering excitement in discovery learning, in spite of unpredictable outcomes. Students who find responsibility and freedom to learn within open contexts acknowledge learning from others, test knowledge by practical means, and engender creative capacities. Meaningful personal, life-long IBL contributes positively to social change.

John Dewey reflected continuously on how life experiences shape the fundamental desire to learn. Noddings (2013), a century later, suggests that democracy “is perpetually a cooperative work under construction. So is education” (p. 157). Dewey described inquiry as the core process behind thinking:

To “learn from experience” is to make a backward and forward connection between what we do to things and what we enjoy or suffer from things in consequence. Under such conditions, doing becomes a trying; an experiment with the world to find out what it is like; the undergoing becomes instruction – discovery of the connection of things (1916, pp. 164–170)

While IBL encourages both objectivity and subjectivity, IBL nevertheless faces perpetual impediments and resistance. Some possess fear, defense, or mistrust of its processes; launch curricula where students may not engage in problems in places or contexts that are well-researched or designed; and, engage with limited prior knowledge, skills, or training. Others find students dependent on external learning structures, versus reliant upon internal loci of control; encounter inherent lack of strong support systems for IBL; or, face disengagement – which can be ultimately detrimental to all involved. Those interested in delivering or arguing against eliminating IBL from the core curriculum may want to familiarize themselves with discussions about how achievement gaps have been closed, student learning outcomes increased, and problem and place-based IBL sustained by reviewing case studies and successful curricular models (Edwardsdottir, 2013; Sobel, 2008).

IBL case studies illustrated here show teachers and learners entwined in practical, international problem and place-based IBL communities. Admittedly, teachers' skills, curricular designs, functionality, and challenges when adopting IBL potentially affect whether ideal democratic classrooms exist or not, as Dewey and Noddings envisioned. However, attempts

to reduce hierarchal differentials and shift traditional authority and power between those who know to those who discover lead to more questions that penetrate reflective practice – including students’ individual challenges, public taxpayer stakeholders’ concerns, and accrediting agencies’ guidelines. Appropriate assessment aligning with curriculum goals and instruction appears key; applying multiple objective and subjective measures, timing them before, during and after, and involving constituents in reflection on products and processes is critical in IBL.

Dewey acknowledged individuals as unique sites for inquiry, offering perspectives on world issues from their own “place.” While contesting and connecting educational communities, those who feel the need to know, control, or approve of exactly where, when, and how learning is going to occur or be accounted for may want to remind themselves that Dewey ascribed what is still a universal learning goal – ultimately, that it should be accessible to all.

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FOLKNOGRAPHY: INQUIRY-BASED LEARNING AND QUALITATIVE RESEARCH

David M. Lucas and Charles W. Jarrett

ABSTRACT

The authors introduce an innovative and practical approach for conducting, directing, and teaching qualitative research through inquiry-based learning at the undergraduate level. Folknography is a qualitative research methodology that allows the undergraduate to successfully learn the academic concepts and guidelines required for participating in field investigations. This methodology relies heavily on the investigative techniques associated with ethnography, phenomenology, and sociology. Data collection techniques are specifically designed to reveal thick descriptions that represent the subjective attitudes, perspectives, and interpretations of the folk selected for investigation. The main objective of study is to gather qualitative data that allows for the emergence of a collective voice assumed to be representative of the targeted population. This chapter identifies three separate research projects in which undergraduate students immersed themselves in a specific setting; and, from that perspective, made important discoveries that expanded their knowledge of socio-cultural phenomena. Folknography is presented in this

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chapter as parallel actions; first, as a method of teaching undergraduates research; and, second as a system of data collection specific to qualitative investigations.

INTRODUCTION

Inquiry-based learning has been a powerful educational tool for generations. As an academic process, inquiry-based learning has facilitated learning by forming and exploring carefully constructed investigative probes. The roots of inquiry-based learning appear within the pedagogical theories of academicians like John Dewey, Jean Piaget, and Jerome Bruner; and, inquiry-based learning extends to the ancient Greek philosophers Socrates, Plato, and Aristotle (Benson, 2000; Dariush, 2012). Aristotle's teaching style relied on intriguing questions and critiques that challenged the intellect of his students. Jenkins (2004, p. 29) detailed the benefits of inquiry-based learning stating, "there is clear evidence from a range of studies in different types of institutions of students valuing learning in a research-based environment." Collaborative and inquiry-based teaching styles accentuate learning by emphasizing "critical thinking" and "analytical skills." Students have the benefit of working in teams, resolving more complex problems, and applying knowledge from a particular situation to a multiplicity of related circumstances. However, inquiry-based learning does require modifications in curriculum, instruction, teaching philosophy, and assessment practices that require flexibility (Darling-Hammond et al., 2008).

The primary theme guiding the development of this chapter rests on the premise that the undergraduate gains noticeable, observable benefits from inquiry-based explorations; and, in terms of the quality of the learning experience, students express deeper understanding after participating in inquiry-based studies (Healey & Roberts, 2004). "Different scientific disciplines prefer method-specific guidelines of investigation and standards of evidence" (Edelson, Gordin, & Pea, 1999, pp. 393–394). Communication instructors choose research methodologies designed to allow the student to learn valuable skills in the discipline of communication, guidelines of research in the field, and the techniques of quantitative or qualitative investigation. "The term 'inquiry-based learning' generally refers to student-centered teaching and learning whereby students raise questions, explore social situations, and develop their own ideas about possible solutions" (Maaß & Artigue, 2013, p. 780). Healey (2005) and Griffiths (2004) suggest inquiry-based teaching and learning share certain qualifying characteristics.

- *Research-led*: Students focus on research findings; the curriculum content is guided by the research topic, and information transmission serves as the teaching technique.
- *Research-oriented*: Students experience the research process while the curriculum presents learning as knowledge and what is achieved. In this case, research presents the learning base.
- *Research-based*: Students learn as equal researchers in a fully designed research project; the curriculum is centered on inquiry-based activities, and the division of roles between teacher and learner is blurred. Students become colleagues and the teacher becomes facilitator.

Inquiry-based learning encourages students to actively construct their own knowledge base, bring their personal ideas into the discussion, identify concepts important to the learning experience, and make changes in their attitudes and behaviors (Kuhlthau, Maniotes, & Caspari, 2007). Central to the success of inquiry-based teaching and learning is the engagement of undergraduates, especially the collaboration of the student in formulating, designing, and preparing questions for investigation. Maaß and Artigue (2013) contend that, “Inquiry is a multifaceted activity that includes observations; questions and probes; an appropriate literature review; systematic investigation; experimental evidence; tools for gathering, analyzing, and interpreting data; and explanations, predictions, and the communication of study findings.” Inquiry-based learning allows students to choose their own heuristic devices, explore, and compare their own assumptions, use critical and logical thinking, and consider alternative explanations.

The National Research Council (2000, p. 27) suggests that the following features should be considered when conceptualizing inquiry-based learning projects: “students should create scientifically oriented questions; students should prioritize evidence when responding to questions; students should formulate explanations based on evidence; students should connect explanations to scientific knowledge; and students should justify explanations according to scientific guidelines.” Inquiry-based learning depends on communication skills and appropriate questions.

METHODOLOGICAL CONSIDERATIONS

Studies of human behavior have emerged from two intellectual traditions, each with a different perspective on the nature and style of social research.

Positivism, the first intellectual tradition, contends sense perceptions are the only admissible basis of human knowledge and precise thought (Benton, 1977; Giddens, 1974; Patton, 2002). Positivism assumes social phenomena exist not only in the minds of individuals, but also as an objective reality. The fact that a social phenomenon may be viewed differently by subjects does not negate its existence, nor the application of scientific principles as a valid means of investigation (Benton, 1977; Denzin & Lincoln, 2000; Giddens, 1974; Sullivan, 1992). Patton (2002) clarifies the *objective* nature of positivism saying, “A positivist seeks the facts or causes of social phenomena apart from the subjective states of individuals, using quantitative and measure-oriented methods to test deductive generalizations” (p. 69).

Phenomenology, a second intellectual tradition, questions the premise that social reality can be determined using empirical data alone. The phenomenological perspective views social phenomena as constituting not one, but a set of multiple realities requiring subjective methods of inquiry (Berger & Luckmann, 1966; Denzin & Lincoln, 2000; Patton, 2002; Schutz, 1962). The phenomenologist is committed to understanding social phenomena from the actor’s subjective perspective. Thomas and Swaine (1928) clarify the *subjective* nature of phenomenology with their classic statement, “It is not important whether an interpretation is correct – if men define situations as real, they are real in their consequences” (p. 572). Thomas and Swaine (1928) suggest social reality is a matter of human perspectives, that people construct reality from a subjective point of view.

Weber (1964) believed there was no absolutely objective scientific analysis of social phenomena. Weber notes, “We can only understand human action by using methods of investigation requiring ‘*verstehen*,’ or ‘*empathetic understanding*’” (p. 29). Weber’s definition of sociological inquiry aimed for “an interpretative understanding of social behavior by penetration into the subjective meanings that actors attach to their own behavior, as well as to the behavior of others” (Coser, 1977, p. 220).

Ethnographic research frequently utilizes phenomenological tools to uncover the actor’s orientations toward social reality (Costelloe, 1996; Fielding, 1988; Patton, 2002). Ethnography is defined as the work of describing cultures, with a particular goal of understanding another way of life from a “*native point of view*” (Berg, 1998; Patton, 2002). Ethnographers produce forms of cultural description by placing themselves in the midst of a specific population, and from this unique vantage point, interpreting social reality from an empathetic perspective (Berg, 1998; Fetterman, 1998; Goodall, 2000).

The authors present in this chapter a fresh perspective in qualitative research known as “Folknography,” a methodology that combines the principles of ethnographic, sociological, and phenomenological research. Folknography offers systematic guidelines for conducting qualitative research and a unique method of data collection by a researcher (or team of researchers) interested in revealing the collective *voice* of the *folk* targeted for investigation (Lucas, 2006a).

Folknography may be understood by carefully dissecting the word. The term *folk* comes from the German word *volk*. The meaning of *volk* can be stated as, “the great proportion of the members of a people that determines the group character and that tends to preserve its characteristic form of civilization and customs, arts and crafts, legends, traditions, and superstitions from generation to generation” (Merriam-Webster Online, n.d.). Accordingly, the syllable “no” derives from an abbreviated form of the Greek word “gnosis,” which means literally, knowledge (Merriam-Webster Online, n.d.). Finally, the word, “graphy” refers to “a way of writing or showing something” (Merriam-Webster Online, n.d.). Collectively, the actual word *Folknography* then translates to recording the knowledge of a particular “*folk*” who share common socio-cultural and historical traditions. *Folknographers* seek deeply layered inquiry into the perceptions, attitudes, and interpretations of social and cultural groups in order to learn the emerging collective *voice* of that particular population. *Folknographers* make certain assumptions about knowledge and the process of human communication:

- the folk of social and cultural groups have valuable knowledge to share,
- the collective *voice* of socio-cultural groups emerge through communication,
- empowered *folk* often have a platform for sharing knowledge,
- disenfranchised *folk* may not have a platform for sharing knowledge,
- *folknographers* typically seek the *voice* of disenfranchised and marginalized groups, and
- *folknographers* investigate the collective *voice* of selected *folk* for the purpose of resolving problems as well as for accumulating knowledge for the sake of knowledge.

Folknography offers a systematic methodology for collecting data efficiently, within relatively short periods of time, and at reasonable expense to the institution or funding source. The objective of Folknography is to investigate the perceptions, attitudes, and meaningful interpretations of the *folk* of a particular social or cultural group. The researcher (or research team) records data for the purpose of describing multiple layers of social

and cultural life. Folknographers produce forms of cultural description by placing themselves in the midst of specific *folk*, and from this vantage point, attempting to describe social reality from the subjective perspective of that population. A comprehensive description of the guidelines required for applying this unique and innovative research methodology is presented in this section:

Identify the Folk and the Grand Tour Question: Researchers should identify the “*folk*” selected for study and the “*grand tour question*,” a reference to the central question that contains the main theme of the field investigation. Typically, the grand tour question is generated as a result of some observation, notion, artifact, or phenomenon observed by the researcher that begs further investigation in the field. The researcher may begin alone, in partnership, or with an eclectic research team consisting of colleagues, professionals from the private sector, or a collection of undergraduates. Project directors begin by familiarizing their colleagues and participants during a series of pre-training sessions that concentrate on specific study objectives and the appropriate technologies that will be required for collecting qualitative data in a systematic manner. Project directors have the responsibility of establishing a research/writing lab in the field as a headquarters for participants.

Field Research Lab: Researchers prepare in advance for establishing a “field research lab,” a requirement for coordinating the activities of participants in the investigation. Participants will be trained, debriefed, and engaged in the standard and unique methods available for recording observations, interviews, narratives, artistic observations, focus group sessions, and plenary gatherings. Researchers must draft survey questions and develop probes and/or follow-up questions important effective data collection. Survey questions and probes become relevant for investigating thick descriptions and deeply layered inquiry into the perceptions, attitudes, and interpretations of the *folk* selected for study. Questions and probes are “field tested” for clarity, coherency, transition, functionality, brevity, and for applicability in revealing data about the central theme of study.

Feed Forward: Researchers create a design for the official web site and/or face-book page to accompany the investigation. This stage in the process allows for a fresh and innovative concept called “*feed forward*.” The advent of the Internet allows for the posting of information and observations daily. Researchers, team participants, and the subjects of study may comment, critique, or provide data that clarifies and enhances objectives. Technological innovations allow for a myriad of standard or new data collection techniques including interview information, focus group data, personal narratives, naturalistic observations, content analysis, digital photos, videos, sound recordings, astute and artistic observations, and data from plenary gatherings, any of which may be posted to the Internet.

Data Collection: Researchers may collect data through a multiplicity of subjective methods. Narrative theory suggests that people (*folk*) relate, frame, and understand their world through the act of recounting stories. Humans tend to relate life and their culture through the story (Herman, Phelan, Rabinowitz, Richardson, & Warhol, 2012). Researchers seek the story assumed to be inherent in the perceptions, attitudes, and

meaningful interpretations of the *folk* under investigation. The collective *voice* of a particular socio-cultural group emerges through the process of communication. Researchers may now collect data using innovative techniques including personal interviews, focus group sessions, personal narratives, naturalistic observations, content analysis, digital photos, videos, sound recordings, astute observations, artistic observations, data from plenary gatherings in the community like public rituals and ceremonies.

Interviews: Researchers enter the field with specific guidelines for exploring the perceptions, attitudes, and meaningful interpretations of the *folk* selected for study. Personal interviews play an important role the emergence of the data required for revealing the collective *voice* of the people selected for investigation. Personal interviews are an effective way to learn the attitudes, perceptions, and meaningful interpretations that eventually reveal the collective *voice* to the *folk* selected for investigation.

Focus Groups: Researchers understand that focus groups allow participants to discuss the ramifications of thematic questions pertaining to the objectives of investigation. Accounts from participants may stimulate responsive commentary in a synergistic manner, and this multi-layered method of investigation is a practical technique of gathering data. Focus groups usually consist of one or more of the researchers who facilitate discussions with group members about the grand tour question and central probes. Focus groups can produce deliberations, dialogues, synergistic interactions, perceptions, attitudes, and interpretations about the socio-cultural phenomena under investigation.

Narratives: Researchers understand that personal narratives provide a glimpse of the actual experience and interaction that takes place between the researcher and the respondent. Human beings define their existence through the life-long process of communicating stories. Narratives should be written in the present tense and with an active voice. Effective narratives should transcend time and transport readers to the actual moment that respondents recount their stories.

Naturalistic Observation: Researchers use naturalistic observation as a type of descriptive method for investigating behavior in its natural environment. Settings for naturalistic observation might include people gathered in plazas, court yards, centers of worship, parades, weddings, funerals, and various civic celebrations, rituals, and ceremonies.

Content Analysis: Researchers may seize opportunities to read, decipher, translate, and study documents, materials, images, recordings, cultural artifacts, and writings from the targeted population (the *folk* under study). Content analysis provides an inside perspective on statements offered by the *folk* selected for investigation, and this type of analysis offers a self-described view of the socio-cultural history of the *folk* under investigation.

Astute Observation: Researchers know observations of people, places, and things are essential for identifying the established trends, traditions, behaviors, communication practices, and socio-cultural patterns of behavior of the *folk* under investigation. Observations that are astute, intuitive, perceptive, and insightful are assumed to be potentially related to the grand tour question and relevant to the perceptions, attitudes, and meaningful interpretations of folk.

Artistic Observation: Researchers assume that an eclectic team of investigators in the field would normally gravitate toward observations that have some meaning to them as individuals. Cultural artifacts, folklore, music, cuisine, and architecture may stimulate different reactions from individual researchers. Folknographers assume that artistic expressions are the way the *folk* of a particular group reveals their “inner selves” to the external world.

Plenary Session: Researchers understand that large gatherings, such as town meetings, civic ceremonies, and community celebrations often provide a platform for recording public insights, perceptions, interpretations, and the stories emanating from such public venues. Investigators may observe certain *folk* speaking and “tagging off” from storylines that others recount. Respondents formulate consensus concerning topics that affect them most, producing dialogue that might not emerge from any other data collection technique. Plenary sessions often generate lively discussions that explore specific issues related to the grand tour question. Plenary sessions introduce opportunities for observing the interaction of couples, families, opinion leaders, and community members in public settings.

Triangulation of Data: Researchers expect findings to be reliable, credible, and valid, especially as this leads to an accurate description of the perceptions, attitudes, and interpretations of the folk under investigation. Triangulation of the data is a method of collecting information often used by qualitative researchers to check and establish validity in their study findings. By analyzing a research question from multiple data collection methods, the researcher gains confidence in the reliability and accuracy of study findings.

Folknographers engage respondents in the field and initially investigate the questions posed through interviews, focus groups, and other subjective methods used for data collection. Respondents recount their perceptions, attitudes, and interpretations as the researcher listens, makes notes, records responses (digitally or otherwise), and applies astute observations for reference with colleagues at the field research lab later that day. The field research lab offers researchers a change to engage in descriptive narratives, quotes, thoughts, and observations about the previously interviewed respondents. Folknographers craft the descriptive narrative assumed to be the emerging collective *voice* of the population. By delivering a myriad of qualitative data through carefully constructed sources, observations, short stories, poems, digital photos, videos, interviews, and written accounts that are cast in the present tense and with an active voice, the process of collaboration becomes focused on the concept of inquiry-based learning. “When narratives are collected in person, the researcher can attend to who is telling the story and take those characteristics and experiences into consideration during analysis” (Keyton, 2014, p. 323).

Folknographers gather in planned debriefing sessions on a daily basis to discuss the data collection process. The debriefing process allows

researchers to reflect on the investigative process which provides illumination, clarification, and identification of emergent research themes in a systematic fashion. The daily debriefings allow the project leader opportunities to identify problems in the procedure, process, and logistics of investigation. The debriefing process becomes vital to obtaining valuable insights on the study objectives, coordination of participant activities, and for identifying problems in procedure that might otherwise be undetected. The authors present three studies in the next section that will demonstrate the pedagogical and practical applications of adopting this uniquely innovative research methodology.

FOLKNOGRAPHY IN ACTION

Connecting with the Soul of a Community: An Interactive Study of Gullah Culture

The Gullahs are descendants of enslaved people living in the Sea Islands of South Carolina, Georgia, and northern Florida. As a result of their isolation on islands, the Gullahs have been able to maintain their culture as a distinctive African American heritage. However, this unique culture may be disappearing with the construction of bridges from mainland areas to the Sea Islands. The bridges have introduced land development increasingly directed toward Gullah owned properties. The Gullahs are a rural population with strong economic and emotional ties to their land, and the loss of land ownership threatens the very existence of Gullah language and culture.

Folknography was applied as a research methodology to learn the perspectives, attitudes, and interpretations of Gullah *folk* on the impact of economic development on their culture and language. Field research confirmed the fact that economic development in the Sea Islands has affected traditional Gullah lifestyles in meaningful ways. Gullah “spiritual life” operates as a central ethos of this indigenous population, but the introduction of bridges connecting the barrier islands to the mainland has brought increasing threats to this traditional population. Land development has combined with an ever-increasing scale of interaction, assimilation, and ecotourism to threaten traditional lifestyles, religious practices, and the preservation of their unique culture and language. Emory Campbell, former director of the internationally known educational

landmark Penn Center, contends the loss of land ownership places a burden on Gullah leaders to implement effective strategies for preserving their language and culture (Jarrett & Lucas, 2002).

The authors led a team of eight undergraduates from the University of South Carolina – Beaufort into the field to gather data on the attitudes, perceptions, and interpretations of Gullahs residing on St. Helena Island, Daufuskie Island, and Hilton Head Island, South Carolina. Students participated by reviewing content analysis, conducting interviews, observing focus group sessions, plenary gatherings, and naturalistic observations before writing essays, papers, and giving oral classroom reports. The research team concluded the indigenous population (Gullahs) faced significant changes brought on by the bridges that connected the islands to the mainland, changes that included the erosion of traditional values, social norms, and religious ceremonies once practiced by their ancestors. Students wrote passionately about the threats posed by economic development, some stating that the Gullah language was (in fact) an oral tradition that serves the purpose of passing along the history and ancient knowledge of their African ancestors. Students understood from being immersed in the culture the important role played by cuisine, folklore, and artistic expression as part of the Gullah heritage. Land development and the expanding tourist industry are rapidly eliminating the natural materials required for cooking, making indigenous musical instruments, and the thousand year-old tradition of weaving “sweetgrass baskets.” Students enthusiastically stated that the research experience enlightened them to an indigenous culture (Gullah) that had been to that point a mystery in their lives.

The Perceptions of Math Education in the Midwest

Folkography was applied as a methodology to investigate the perceptions of math and math education in a small rural Midwestern community. The target population consisted of people residing within the community and county given the pseudonym *Midville* for the purposes of investigation. Jamie Fugitt, a faculty member at the University of Tennessee, and the author accompanied 14 undergraduate students from Ohio University into a community in rural Illinois to gather data during May, 2006 (Lucas & Fugitt, 2009). The authors were interested in exploring the perceptions, attitudes, and meaningful interpretations of the community *folk* on three central questions:

1. What are the perceptions of the *folk* concerning math and math education?
2. What is the perceived quality of math and math education in the school districts under consideration?
3. What is the impact of math and math education on the future success of students upon graduation?

The residents of *Midville* believed that a foundation of math education prepares a young person for success in college. The *folk* believed that advanced education offers youth a better and successful future. Math was viewed by the respondents as the key for gaining logical skills, better job opportunities, and greater leverage in the world of academic competition. Respondents believed that math skills were important in developing powerful careers for students.

Study findings revealed that many adults view schools as failing to offer effective math education. Respondents believed that there was too much emphasis on technology and not enough on arithmetic. Respondents did not fear the introduction of technology (or technical tools) into the classroom, but rather perceived that the emphasis on technology superseded the emphasis upon mental and computational skills in the classroom. Respondents believed that instructors of math were ill-tempered and created fear and negative attitudes in many of the students. Pressures, criticism, and negative behavior apparently had been exhibited by the majority of the math instructors in this particular school system.

Students generated a multiplicity of narratives concerning math education in their community and posted this data to the project web site. Thus, the concept of *feed forward* became an important source of relevant information and an opportunity to dialogue with study participants. Digital cameras were used to record the comments of focus group members and participants in plenary sessions dealing with issues of math and math education (Fig. 1). The summation paper resulting from this study was presented by the author to the board of education. *Folknographic* research revealed math students in this study desired more positive, pleasant, considerate, and kind instruction in their classroom environments. The local school board reviewed their math curriculum and teacher classroom management procedures as a result of this folknographic investigation. Participating students learned the value of asking carefully crafted questions. Debriefing sessions played a significant role in re-designing questions that more powerfully prompted responses. Students admitted to maturing in the field through the peer-learning process.

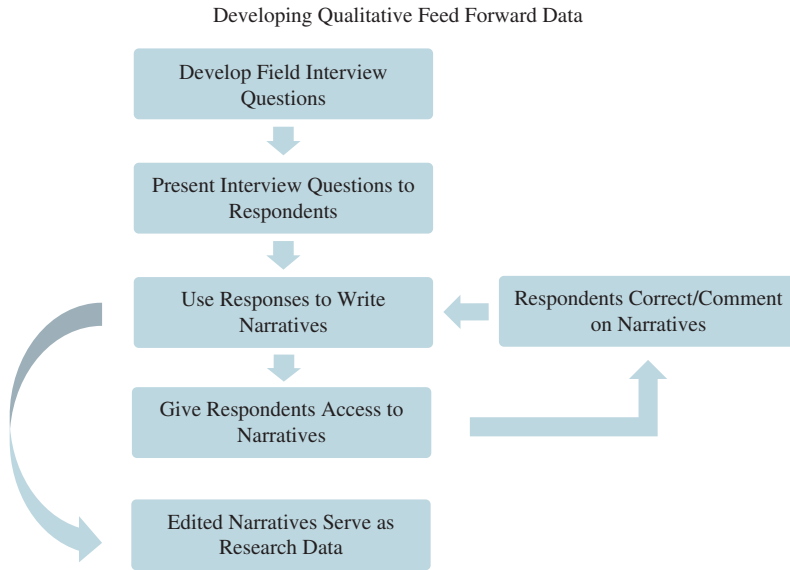


Fig. 1. Process for Engaging *Feed Forward* to Create Inquiry-Based Narratives as Qualitative Research Data.

Porter Gap Road: A Microcosm of Appalachia

Researchers had heard of a location in Southern Ohio where, according to folklore, African Americans, Native Americans, and Caucasians had lived together in the same community without the bitter prejudices and discriminations that were occurring in other parts of that region. Discussions among interested colleagues generated a Grand Tour Question, “What was life like here along Porter Gap Road in Lawrence County, Ohio?” The team engaged in numerous interviews, focus groups, and town meetings as data collection techniques. Observations and interviews led the “folkloric team” to another significant discovery; located in the deep forests of that region, refugees from the southern slavery industry had created a hide-away for enslaved Africans in the 1800. This place was known by the local population as a secure haven in the shadows of the deep valley, a stopover and resting place along the Underground Railroad. Leaders in the movement to free slaves had carved out a window in the massive stone face of a rock structure, so

that a watchful eye could be kept in case bounty hunters and their blood hounds were searching for run-a-way slaves. The local people had knowledge of this place, referring to the edifice as Window Rock. The author, a tenured professor in communication, led undergraduate students into the field to apply the qualitative research methodology known as *Folknography*. This study revealed historical notes of importance for the regional population as well as scholars interested in the Underground Railroad.

Folknographers worked in teams to interview (217) respondents, traced the sojourners' paths along the Underground Railroad, and recorded digital photos, hours of video tape, personal narratives, historical documents, property deeds, marriage and death certificates, geographical maps, and made astute and artistic observations within Blackfork, Polk Patch, and the wooded trails around Porter Gap that led directly to the massive rock formation Window Rock. *Folknography* provided a means whereby this sacred structure was revealed as authentic and as an integral part of the historical movement known as the Underground Railroad in Southeastern Ohio. In this project, the participants uncovered an historical monument significant to the history of the indigenous population in this region (Lucas, 2010).

Undergraduates learned about the possible existence of an African American cemetery near Porter Gap Road. The vague story intrigued the team of students who, after completing their research on Window Rock, decided to investigate the mystery of the long forgotten cemetery. In 1916, owners of the regional coal mines brought African American workers in from Cincinnati to break a strike in the local mines. The Spanish Flu epidemic of 1918 hit Lawrence County particularly hard, killing most of the black miners and their family members (Lavric, 2006). African Americans were buried without caskets or grave markers at a place called Sacred Hill Cemetery. The unmarked burials were soon forgotten and never officially recorded. Undergraduate teams used data collection techniques learned in their field research course to illustrate the importance of their local discovery. Afterwards, high on a ridge overlooking the beautiful mountains of southeastern Ohio, an Ohio University professor of communication and his students obtained a grant for an official historical marker with the name Sacred Hill Cemetery (Hendren, 2006; Lucas, 2006b). What began as a research project became an archeological dig of significant importance for a team of undergraduates applying Folknography (see Table 1).

Table 1. Level of Openness in Scientific Inquiry.

Level	Aim (Is the Aim of the Investigation Given to Students or Is It Open?)	Materials (Do Students Source their Own Materials or are the Materials Provided?)	Method (Is the Method Given or do Students Develop their Own Method?)	Answer (Is the Outcome Known by, or Given to, Students, or is the Outcome Open?)
0	Given	Given	Given	Given
1	Given	Given	Given	Open
2A	Given	Given whole or part	Open or part given	Open
2B	Given	Open	Open	Open
3	Open	Open	Open	Open

CONCLUSION

Folkography offers researchers a fresh methodology for deeply layered inquiry into the perceptions, attitudes, and interpretations of people sharing some common socio-cultural tradition or heritage. Folkography provides the researcher (or team of researchers) an investigative design for seeking the *voice* of the social group targeted for investigation. Folkographers assume that social and cultural groups have valuable knowledge to share, however certain populations may not possess a recognized platform for disseminating information. Folkographers investigate the collective *voice* of the *folk*, or segments of a “grassroots” population that tends to include marginalized and disenfranchised people, often indigenous populations that have not historically had a recognized platform for sharing their knowledge.

Folkography offers a systematic methodology for collecting data efficiently and in relatively short periods of time at reasonable expense to the participating researchers, agencies, or institutions. Folkography uses the notion of inquiry in every conceivable part of the investigative process. Researchers constantly use inquiry-based learning as part and parcel of the comprehensive research process. Folkographers question themselves about their own ethical stance, the judgments made or not made during a field experience, the possibility of research biases, and the motivations for choosing a particular research theme. There is a responsibility for researchers to ask themselves: What observations prompt study? Who does the researcher identify as a suitable subject? When does the researcher investigate? Why does the researcher decide the study is relevant? These are the conceptual questions that must be asked by the folkographer to frame

and develop “thick” description (Geertz, 1973) and through inquiry discover the collective voice of social and cultural groups selected for investigation. Interrogatives of this nature produce the answers that allow folknographers to “give voice” to populations often ignored by mainstream society.

The advent of the Internet has spawned innovative ways for collecting data in the field, particularly the myriad of hand-held devices capable of documenting respondent dialogue and producing action photos from the field. Folknography has been introduced in this chapter as parallel actions; first, as a method of teaching undergraduates research; and, second as a systematic method of gathering data specific to qualitative investigations. Folknography is linked philosophically to inquiry-based learning and ethnographic investigation. Research methodologies have been borrowed from phenomenological and sociological investigation, concepts that question the premise that social reality can be determined using empirical data alone. Phenomenologists argue social phenomena constitutes not one, but a set of multiple realities that require subjective methods of investigation. The authors present a step-by-step process with procedural guidelines for conducting a new and innovative form of qualitative research – *Folknography*.

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PART II
PRACTICES AND STRATEGIES

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RESONANCE-BASED INQUIRY: AN EPISTEMOLOGICAL APPROACH TO INDIAN STUDIES

Nicholas J. Shudak

ABSTRACT

Developed in this chapter are the conceptual underpinnings and practices of an interdisciplinary “Indian Studies” course taught through a unique inquiry-based epistemological approach referred to as resonances. In providing a resource and model for others who teach sensitive and even controversial topics that include the study of other groups of people, this chapter progresses in four stages. Firstly, necessary insight is provided about the course’s unique context within state teacher certification requirements and standards documents. Secondly, the nascent theory of resonances is developed from and then as an alternative to dissonance theory and cultural matching. Thirdly, and continuing the development, practical, and pedagogical applications of resonance-as-inquiry are shared with indebtedness to autoethnography. And lastly, the relative successes and limitations of this particular epistemological approach are discussed phenomenologically.

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INTRODUCTION

At the outset of her chapter introducing small- and large-scale models of inquiry-guided learning, Virginia Lee (Lee, 2012) makes a simple assertion. She states that in recent years around the world, and at the university level, “The power of inquiry as a way of learning has had widespread appeal” (p. 5). For many whose lives are enmeshed in academic domains, “inquiry is part of the distinctive ecology” of campus life (p. 5). At its most basic level, and as the result of following developmental steps, we can consider inquiry as a formalized investigation into a question or problem leading to an evidence-based conclusion.

When the inquiry is discursively rooted, as it is in many of the postpositive social sciences, and is course-based as opposed to lab-based, strict adherence to specific steps or stages of scientific inquiry becomes problematic. “Inquiry” in this regard is more like providing students with intellectual lenses or frameworks – heuristics – for looking at, criticizing, and making sense of the world around them. It is in this sense of the word, and through the heuristic of *resonance* developed in this chapter, that I teach an inquiry-based course.

This chapter develops the conceptual underpinnings and practices of an interdisciplinary “Indian Studies” course taught through a unique inquiry-based epistemological approach that I refer to as *resonances*. The overarching goal is to provide a practical resource and model for others who teach sensitive and even controversial topics that include the study of other groups of people.

The chapter is organized around four topics. The first topic pertains to the course’s overall context. Context in this sense includes a discussion of the historical, demographic, and geographical considerations, which in large part, play an important role in the course’s epistemological approach. Secondly, the course’s description and the conceptual backdrop to the particular inquiry-based approach through *resonances* is developed and elaborated upon. This backdrop, then, helps frame the pedagogical and organizational practices of the course, the third topic. Lastly, findings by way of commentary are offered regarding the relative success of the model put forth.

COURSE CONTEXT: HISTORY, STANDARDS, GEOGRAPHY, DEMOGRAPHY

For better or worse, and as articulated by anthropologist Guy Gibbon, when the world thinks of the Native people of North America, the visage

that comes to mind is that of the head-dressed, horse-backed, “bison-hunting Sioux” (Gibbon, 2003, p. 1) of the Dakotas. Some of the most famous Natives in North America are Sioux. Historically, Red Cloud, Crazy Horse, Sitting Bull, and Black Elk are members.

Moreover, Natives in South Dakota have caught the world’s attention for bringing Native rights, issues of land redress, and sovereignty to the forefront of political discussions. Famous examples of this are the 1973 “takeover” of Wounded Knee and the controversial yet principled stand to refuse money for land. In 1980 the Supreme Court argued in favor of the Sioux and against the US government regarding a nearly 100-year old treaty dispute (*United States v. Sioux Nation of Indians*, 1980). The ruling has resulted in approximately 1 billion dollars sitting in a trust (Young, 2010). The Sioux refuse to collect simply because they want the land, not the money.

There is a darker side. The Pine Ridge Reservation, site of the 1890 massacre at Wounded Knee and the 1973 takeover, was once known as having the highest murder rate per capita in the United States (Perry, 2002), and, is partially located in one of the poorest counties – Shannon – in the United States (Means, 1995). The murder of two FBI agents – Jack Coler and Ronald Williams – on Pine Ridge famously resulted in a trial which found William Kunstler as the defense lawyer and Marlon Brando as a Hollywood advocate. The unfortunate murders resulted in an acquittal of two suspects in one trial, a conviction in another and still no closure for the victims’ families (A&E, October 17, 2000). Hollywood has produced two films – *Incident at Oglala* (Apted, 1992a) and *Thunderheart* (Apted, 1992b) – partially based on the murders.

South Dakota’s geography, most notably the sacred *Paha Sapa*, or Black Hills, brings millions each year to the state. Though originally more than half the state, reservation land now only accounts for roughly 17 percent of the state’s total area. Even at 17 percent, which might seem minor, it is difficult to travel anywhere in the state without traveling through what is colloquially referred to as “Indian Country.” For the millions who travel on I-90 to the Black Hills, on vacation to see the Badlands, Wounded Knee, Mount Rushmore, Crazy Horse, Spearfish Canyon, or for Bike Week, they travel through reservation land. It is difficult to travel to Pierre, the capital, without traveling through reservation land. One cannot go through the state on I-29 without traveling through reservation land. Indian Country, still, is everywhere, but notably not in the *Paha Sapa*.

South Dakota and its Native populations are intimately bound, and because so, the state has concluded that it is imperative for teachers to know about its Native peoples and their history with Whites. The course

developed in this chapter is generally titled “South Dakota Indian Studies.” It is one of two courses required by the state of South Dakota in order to obtain teacher certification. However, those who want to teach in South Dakota must show transcribed proof of having taken an approved Indian Studies course. And though the various Institutions of Higher Education offer different instantiations of the course, every course, regardless of professor or institution, must incorporate four core strands: cultural dynamics; history; educational theory and background; and, pedagogical strategies for the classroom (South Dakota Department of Education, 2014a, 2014b). In conjunction with the core strands, this course also incorporates the state’s “Oceti Sakowin Essential Understandings and Standards.” There is much expected from these courses, and for good reason.

Some brief background. The reference to *Oceti Sakowin* is a conscious departure from the historically pejorative term *Sioux*, an English adaptation of a French corruption of an Ojibwa term (Gibbon, 2003), which essentially means little snakes, devils, or demons (Makes Good, 2009). According to the state’s standards document, “Oceti Sakowin is a cohesive tribal society consisting of seven tribes known as the Seven Council Fires” (Oceti Sakowin Essential Understandings and Standards Workgroup, 2012, p. 40). The purpose of the standards is clear. They are established “to give school districts in South Dakota some basic knowledge about the Oceti Sakowin” (p. 2). According to Dr. Craig Howe who is quoted by the workgroup, “The hope is that citizens who are well educated about the Oceti Sakowin history and culture will be more likely to make better decisions in the arena of Indian issues and to get along better with one another” (p. 2).

Regarding the Native populations about which teachers should be well educated, they amount to roughly 10 percent of South Dakota’s total population. And though 10 percent might seem minor, Native representation is found in nearly every school district. According to the South Dakota Department of Education’s Statistical Digest website, of the 9,168 certified instructional staff, 8,750 are White (South Dakota Department of Education, 2014a, 2014b). In other words, though close to 10 percent of the overall population in South Dakota is Native, and though 10 percent of students enrolled in South Dakota public schools are Native (U.S. Department of Education, 2011–2012), 95 percent of the teachers in the state of South Dakota are White, and have a distinctly different worldview that, arguably, mismatches with the Native worldview.

According to the Oceti Sakowin standards report, this cultural mismatch has dire consequences for Native students. As the report states, “When we approach teaching with one worldview [the dominant worldview], and

Native students have a different worldview, we create systems of failure in our schools” (Oceti Sakowin Essential Understandings and Standards Workgroup, 2012, p. 4). The report continues to argue that “by learning about the culture of Native students in our classrooms, we encourage these students to feel good about themselves and their heritage. In general, American Indians who are traditional and bicultural adhere to a relational worldview, while European American teachers adhere to a linear worldview. The relational worldview can be described as a holistic approach to life. In this view, all areas of people’s existence, the mental, spiritual, emotional, physical, social and psychological are considered to be interrelated.” Furthermore, when White teachers are able to open themselves to another worldview, this assists them “in understanding of what occurs both in and outside of Native communities” (p. 4). It is in trying to do something with this mismatch that the epistemological and inquiry-guided approach of *resonances* comes into relief.

CONCEPTUAL BACKDROP: A NASCENT THEORY OF RESONANCE

In an attempt to meet the objectives within the core strands, and to help students address the standards when they teach, the course developed herein has a unique description. It is designed as a study into the various socio-cultural and historical dynamics that in part account for the present day existential considerations faced by many Native people on and off reservations in South Dakota. These accounts are provided through scholarly materials, narrative, autobiography, biography, indigenous philosophy, and teaching resources. Through such sources, and in reflecting on the course’s various instantiations, students are accorded an opportunity to learn about and appreciate various cultural, religious, and historical practices that mark the various South Dakota “Sioux” Indians – Oceti Sakowin.

In accordance with Dr. Howe’s hope expressed earlier, the course is heavy on the socio-cultural, historical, and autobiographical more so than the pedagogical. The purpose for this is inspired from the notion of “thick description,” animating from Geertz’s (Geertz, 1977) work that has been appropriated by many in the social sciences. In brief, the course focuses on those socio-cultural and historical things – context – that in part animate behavior as a way of situating behavior for the sake of better understanding. This understanding, which comes from an ability to thickly

describe the animating culture of one's students and one's self through resonances, affords insight into how to shape pedagogy in culturally relevant ways.

In terms of the course's conceptual underpinnings, there are a few pieces that make up this whole. The remainder of this section is dedicated to weaving those pieces together for those interested in creating a course with a similar epistemological approach to inquiry: *resonances*.

At the end of the previous section, the dilemma of cultural mismatch was broached. According to the report cited earlier, mismatch in terms of the cultural frames through which the world is viewed leads to a system of failure for Native students. It is intimated that through the standards, mismatch can be mitigated. As has been argued elsewhere, there are many problems attached to the practice of cultural matching as a policy aimed toward mitigating academic underachievement of minority students (Shudak, 2013).

Matching is rooted in the premise that White teachers, because they come from a background culturally distinct from many minority students, in this case Native students, their cultural perceptions require alteration through experiences and coursework. To this end, Chance et al. comment that "It is necessary to alter the perceptions of all preservice teachers about working with children from culturally diverse backgrounds, children of color, and children in poverty" (Chance et al., 1996, p. 387). And though the authors are careful to state "all," it is evident from the piece that theirs is really a reference to White preservice teachers. As found through an analytic exploration of the concept of diversity as used in teacher education discourses, some scholars believe that "For White, middle-class, monolingual, female teachers, their perceptions are built within and 'patterned after the [frames of] mainstream culture, a culture steeped in the legacies of racism and colonialism'" (Shudak, 2013, p. 53). According to the discourse "such legacies impel White teachers to perceive their diverse students through a demeaning deficit lens, a lens that tends to reify White teachers' privilege much to the detriment of their diverse students' academic successes" (p. 53). In order to challenge and change these perceptions, then, certain courses within teacher education programs must act "as a vehicle through which to examine in depth personal bias and racism and to better understand the meaning of diversity" (Baldwin et al., 2007, p. 315). This is no easy task as "teacher education candidates often enter teacher preparation programs with beliefs and dispositions that mitigate against fostering the educational success of children from diverse backgrounds" (Major & Brock, 2003, p. 9).

The “Indian Studies” course for South Dakota certification is just such a course designed to alter White students’ cultural frames of reference, to alter toward matching. Such courses seemingly borrow from Leon Festinger’s “Theory of Dissonance.”

The premise behind Festinger’s study is quite simple. On Festinger’s terms, and generally, there is some “consistency between what a person knows or believes and what he does” (Festinger, 1957, p. 1), and when an inconsistency arises, psychological discomfort is experienced. This inconsistency is what Festinger calls *dissonance* – “the existence of non-fitting – [mismatching] – relations among cognitions” (p. 3) – and leads toward activity to reduce it, to find *consonance*. The impulse, then, is to engage in activity that leads away from mismatch and toward consistency, or matching. Dissonance, on Festinger’s terms, is a motivational factor.

In the teacher preparation classroom, this can play out by providing and/or creating situations in which dissonance is introduced. The hope is that dissonance leads to activity to reduce the discomfort between the frames. However, the dissonance reducing activity essentially is learning new culturally relevant frames. The hope is also that the activity will lead to an actual change in the cognitions – knowledge or thoughts or beliefs – and thus ultimately the behaviors of White teachers in classrooms comprised largely of minority – or in this case, Native – students.

Matching is the wrong place to begin. Even if this were desirable, it is seemingly unrealistic to think that one course, or even a series of courses, could alter perceptual frames that have developed over a lifetime (Lortie, 1975). Furthermore, there is next to no evidence in the literature to suggest that even if the perceptual frames of White teachers were altered, that minority student achievement increases due to this change (Shudak, 2013, p. 55). And though Festinger’s theory of cognitive dissonance is worthy of being part of an informed pedagogy, when it comes to courses in which people study other people, however, I have turned toward something called *resonance*.

Though there are no educational theories or theorists of resonance, it is a studied phenomenon in the mechanical, electrical, and optic fields. Resonance as it informs my course, however, is quite musical, not unlike Festinger’s appropriation of dissonance and consonance. Etymologically, resonance comes from *resonatus* or *resonare* and literally means to re-sound, or, to sound again. Simply put, resonance happens when the vibrational energy caused by, let’s say, an instrument in turn causes some other nearby object to similarly vibrate in a harmonizing way. However, two separate and distinct objects can harmonize while maintaining their

separateness, distinctness, and uniqueness. This is perfectly captured by English and Ethnic Studies scholar, Benjamin Carson, in a reflective essay parlaying his experience as a “*wasi’chu*” at a Sun Dance (Carson, 2008).

Carson acknowledges that “Historically, the Sun Dance was not open to the public, and the White man had no place under the arbor, let alone the sacred dancing ground. Given the vicissitudes of history, this is entirely understandable” (Carson, 2008, p. 48). And though there is still a place for the protection of tradition, and the right for a given culture to control the representation of its practices and values, there is a danger, however, when control and protection turns toward a “politics of exclusion,” as “exclusion is the constitutive element of a racist culture” (p. 51). When it comes to the White Christian culture of the upper plains and the Native populations indigenous to the land, Carson comments that “untangling indigenous practices from outside influences is as undesirable as it is impossible” (p. 51).

It is on this point that resonance comes into play. According to Carson, and “For many Indians in the United States, for example, Christianity is as fundamental to their way of life as traditional indigenous practices. (The pipe ceremony and the Eucharist, rather than being spiritually at odds, *resonate* with one another in profound ways [*italics added*].) Despite the horrendous abuse of Indians at the hands of Christians, Christianity, in all its varieties, has provided and continues to provide spiritual sustenance to indigenous peoples” (p. 51). Though not explicitly his intent, Carson’s piece is itself an example of the resonance that guides my course.

Carson starts his essay with a prayer: *mitakuye oyasin*. In quoting Chief Leonard Crow Dog, Carson informs that “If *mitakuye oyasin* (Amen to all of my relations) means anything, it means we must love our relations, even the ones we hate” (p. 47). To more fully understand the prayer, Carson juxtaposes it with the notion of *unconditional hospitality* coming from French postmodernist Jacques Derrida. As Carson quotes Derrida, unconditional hospitality goes beyond mere tolerance, “which remains a scrutinized hospitality, always under surveillance, parsimonious and protective of its sovereignty ...” Rather, unconditional hospitality “opens or is in advance open to someone who is neither expected nor invited ...” (p. 53). Unconditional hospitality places no burden on the visitor, but that the burden is on the one who is visited, to indeed ask nothing such that “All are welcome.”

The connection between the two is syllogistic: If all are welcome, then all are related like family, even the ones we hate; and, if all are like family, then all are welcome, even the ones we hate. The resonance between the

two is risk and openness. Mitakuye oyasin requires us to take risk, to open ourselves to each other as we are all family, regardless of our feelings toward each other. This openness is a risky proposition in that through the openness, we risk getting to know others as well as ourselves, for better or worse; we risk opening ourselves to the possibility of change. Arguably, the same can be said for the notion of unconditional hospitality.

Carson provides the reader with two seemingly distinct, separate, and unique culturally rooted concepts in mitakuye oyasin and unconditional hospitality. However, when juxtaposed, and when one is struck through processes of inquiry, it *resonates* with the other – vibrates in harmony with – though still distinct, separate, and unique. Through the development of this nascent theory of resonances, a process of inquiry is broached that allows two seemingly distinct, unique, and perhaps even separate cultures to learn about the other in deep and profound ways without giving up or over anything to do so. In a classroom setting, and through this type of inquiry, there is no obligatory compliance through the feigning of changed cultural or perceptual frames for the sake of passing a course or placating a professor. Inquiry conducted through resonances opens up the possibility that we might come to know ourselves and the other more fully. The following section discusses the pedagogical implications of resonances as a process of inquiry.

RESONANCE-BASED INQUIRY: PRACTICAL PEDAGOGICAL IMPLICATIONS

In his study titled *The Sioux*, archeologist Guy Gibbon (Gibbon, 2003) warns the reader that there are some ‘fundamental issues’ and ‘subtle problems’ involved when one group of people studies another. In part, those issues and problems stem from the assumption that those doing the studying do so from a position of a fixed and immutable identity, while those who are studied are also assumed to be of a fixed and immutable identity. For Gibbon, this is problematic. Identity, though at times stable, is something fluid and oftentimes negotiated. In order to help students inquire into the identity of the Oceti Sakowin while adhering to the core strands and essential understandings, and in a way that doesn’t assume deficiency in perceptual frames based on race, the resonance-based inquiry in my course is also a concomitant study into the self. To do this, to inquire into culture through resonances, students must also engage in autoethnographic study.

Succinctly stated, borrowing from Reed-Danahay (1997), “autoethnography is defined as a form of self-narrative that places the self within a social context” (p. 9). Glesne offers that it is “the kind of writing that inquires into the self” and begins with the self (Glesne, 1999, p. 181). Glesne also borrows Carolyn Whites’s term of *mystory*, as White uses the term to help her students think about and critique their constructions of ethnicity, and in particular Whiteness (p. 182). Autoethnography, then, is in part how – the method of inquiry – students find culturally rooted concepts within their culture in order to find resonances with culturally rooted concepts from the Oceti Sakowin. Through resonances, students come to understand the “other” and the “self” in deep, powerful, and profound ways, in ways that my traditionally based lecture style classrooms and even classrooms predicated on learning about the “other” through dialogical methods could not.

Though there are several assignments in my course, there are three autoethnographically rooted that assist students in developing the ability to find resonances: *Re-presentation of the Self*; *Re-presentation of the Other*; and, *5 Things*.

Re-Presentation of the Self

This first assignment is titled “Re-presentation of the Self.” This assignment is designed to help students think of themselves as researchers of oneself while concomitantly researching the “other.” This assignment gives students an opportunity to re-present the self to oneself; to start thinking of the self as a subject similarly to how the Oceti Sakowin are the subject of inquiry throughout the semester. This particular assignment is sent directly to me and is then opened for discussion during class after I’ve had a chance to read and process the responses.

The most difficult part of this assignment, and of the overall inquiry, is getting students used to thinking about themselves as beings who exist within a cultural context, as culturally dependent beings. According to Tatum, when students come from “areas where a person is a member of the dominant or advantaged social group ... identity is so taken for granted by them that it goes without comment” (Tatum, 1997, p. 21). Classroom discussion is what generally opens the students’ eyes to the possibility of how many different ways we exist as cultural beings. As will be discussed in the next section, this is an uncomfortable assignment for many, simply because of its newness and novelty.

As it is inspired by autoethnography, and after reading a couple of selections and examples of autoethnography, this assignment asks the students to start thinking of themselves as an autoethnographer. To that extent, this assignment challenges students to put “self” into the foreground, to make self and the encapsulating social life more conscious, holding out for the possibility that one’s self is really something multiple and shifting. This assignment really marks the beginning of the course’s resonance-based inquiry and occurs somewhere after the first week of class. The assignment’s open-ended prompts are as follows. Again, this assignment is designed to get students thinking about themselves as an object of cultural inquiry and can occur more than once throughout the semester.

Prompt 1: An understanding of autoethnography is that it is a type of study and writing that inquires into the self as the self is part of a larger context. In a few sentences, begin to re-present to yourself what you think is the larger context that encapsulates the individual self. What is in this context? What does it look/feel like? Who’s there? What’s there? Of course you can’t add everything. I’d like you to limit yourself to about 150 words. Please be more matter of fact and descriptive than creative with your writing.

Prompt 2: Re-read your response to the first prompt. In terms of a larger context, what did you leave out and why?

Prompt 3: Prompt 1 asked you to focus on a larger encapsulating social context. For this prompt, focus on the self more narrowly. What do you think represents you as a self? There might be some overlap with the first prompt.

Prompt 4: How might your responses to prompts 1 and 3 sound differently would you have done this assignment five years ago? Why?

It is important to note that there is plenty of question and answer that goes on prior to, and even during, this assignment. We talk a bit about culture and context so that they have some place to start. With that said, the ambiguity leads to some divergent responses, which is great for conversation and dialogue.

Re-Presentation of the Other

As indicated by the name, this assignment is a follow-up to the previous one and generally occurs a few days after studying and reading about the Oceti Sakowin. The previous assignment asked students to go deep within, to turn the gaze of study inward before turning their gaze to the other. This assignment asks students to inquire into the cultural concepts of the

“other” and begins a distinct point into finding resonances. There are two prompts to this assignment:

Prompt 1: The first assignment asked you to think about your larger context as a way of helping you think about what makes you, you. This assignment asks you to identify what makes the Oceti Sakowin who they are. Identify 3 specific cultural “things” from the readings that you think re-present the Oceti Sakowin. Follow the example: Colors are extremely important to this group of people. There are four that stand out. Black is a representation of the West, where the Thunder beings and weather come from; White is a representation of the North, where the cold white winds come from; Red represents the East, the place of the rising star; and, Yellow is a representation of the South, where the summer and power to grow come from (Neihardt, 2004, p. 2).

Prompt 2: This prompt asks you to dig deeply within to figure out why you chose those cultural concepts or “things” found in prompt 1. Write a couple sentences defending your choice, but defending it in a way that indicates how your chosen concepts “resonate” with you. Follow the example: In Catholicism, colors are quite meaningful to the mass, such that the altar is at times adorned with different colors during the different times of the liturgical calendar coinciding with certain celebrations. A few examples follow. White is used during Christmas and Easter and during feasts and ceremonies like nuptial ceremonies. It means light, innocence, purity, triumph, and glory. Red is used for the Lord’s Passion, Palm Sunday, and Pentecost. It means the Passion, blood, fire, martyrdom, and God’s love. Black is used on All Souls Day, for the dead, and for mourning in general. Black means mourning and sorrow. Though there are a few others, the ones above are in resonance with the Lakota concepts from prompt 1, and resonate with me personally.

Through these two assignments, students start developing the habit of mind required for a resonances- and inquiry-based classroom. They start looking at the self in a more critical manner, they start looking for connections, or resonances, between their culture and that of the Oceti Sakowin as a way to understand better the self and the other, and they do so without looking to dissolve uniqueness.

5 Things ...

The third assignment is, on my view, what gives meaning to the other two assignments. This assignment is generally sandwiched between the previous two and is an accompaniment to several different kinds of readings and sources. This assignment is simply titled “5 Things ...”.

As the semester moves pretty fast, and as there is much brand new material, this assignment is quite simple and straight forward. Each student is required to identify five “things” from the reading she/he thought was quite interesting. I ask that some of those “things” be explicitly cultural, but they

can also be a point made by an author or a turn of phrase that caught one's attention. Not only are the students to identify a "thing," they are to respond to that "thing." I ask that each response be an explanation of why the identified "thing" was interesting, or, it can literally be a response, visceral, intellectual, or otherwise, to something in the text. Students generally have fun with this and much discussion and boardwork happens as a result. It is a quick and simple way to get the students interacting with the texts, leads to quite a bit of discussion, and, when the assignment occurs later in the semester, resonance seems to be a natural outgrowth.

This section provided insights into how resonance-based inquiry might occur as pedagogy in a course. As developed in this chapter, resonance-based inquiry is a form of inquiry in which students delve into culture for the purposes of looking for resonances, and in so doing, students are given the opportunity to learn about the "self" and the "other" in ways that do not seek to dissolve differences and uniqueness. The next section provides commentary about the model's relative success.

COMMENTARY: SUCCESSES AND LIMITATIONS OF RESONANCE-BASED INQUIRY

I have no empirically based research to indicate whether this model is a success. I have no rubrics comprised of nicely laid out tables indicating how I measure the level of success or achievement of my students *because* of resonance-based inquiry. No factor analyses are forthcoming. Quantifiable ways to indicate success would be specious at best. So, how do I know this model of inquiry works? This is a tough question. How do any of us know the methods we use in our courses work? We use a suite of assessments and trust our ability to evaluate student work in accordance with the expectations set out by the assessments. Even so, this is an unfulfilling answer to an honest question.

The honest answer to the honest question is that I do not really know whether students learn *more* about the Oceti Sakowin using this particular inquiry-based model. To a large extent, I use many of the same readings as I have in the past, and, by and large, many of the assignments are of the same ilk, with the obvious exceptions being the "re-presentation" assignments and the fact that I require students to read through texts and take "fieldnotes" while reading. The final, which is a response to the "essential understandings" in the Oceti Sakowin standards document, is a mainstay.

And though I cannot necessarily prove that my students are learning *more*, they are learning *differently*, and this difference has had a profound effect on the quality of student interaction with the readings and with each other. The learning *feels* deeper and more enduring than at any other time I have taught the course. I understand this is a significant claim requiring some support. The only support I can muster, and something others can look to research more deeply in their own iterations of similarly related resonance-based courses, is phenomenological in nature.

Of the many understandings of phenomenology, it can be understood as the study of “sense experiences – what the researcher heard, saw, or felt – [and those experiences] become an important part of the data for phenomenology” (Burke, 2009, p. 38). Phenomenology in this sense helps protect “the subjective view of experience as a necessary part of any full understanding of the nature of knowledge” (Moran, 2000, p. 21) and of coming to know things as they appear to the observer.

Phenomenologically, I know this model is more effective in terms of helping my students learn more deeply and more enduringly because my sense experience suggests this is the case. Through resonances, it simply feels, sounds, and looks like my students are learning more deeply and more enduringly. I ask the reader not to dismiss this claim, but to call upon their own experiences in which they knew learning was occurring simply because it looked, felt, and sounded like it was; or, on any life experiences in which they knew something good was happening absent any available empirical evidence.

Moreover, at the end of the course, I ask the students to reflect on this type of learning and whether resonance-based inquiry was helpful. The question is found on the final assignment, and is not graded. The responses are overwhelmingly positive, though they also indicate levels of frustration. One of the more frustrating elements of the course is the challenge to think of oneself as a context-bound cultural being, and to subject oneself to a level of scrutiny through the autoethnography required to find resonances. Resistance to this way of thinking is quite palpable at first, but gives way. This sentiment is captured nicely in a few representative comments.

Student A: Resonance-based inquiry “required a much different way of thinking and studying things than what I was used to. To be honest, I really didn’t care for it in the beginning (because it was new, so it was really time consuming), but with each assignment I found myself getting better at just naturally thinking of things using this framework. I think it’s a great thing to challenge the mind to find these sorts of [resonances] instead of just black/white answers for everything. When you are forced to study a

culture and yourself on a deeper level, you get more out of the study and it sticks with you (because of the connections you've made). All in all, I would say it was helpful."

Student B: Using the framework of resonances as the basis of thinking and responding to the readings and assignments was a daunting task. This was especially true at the onset of the class as this is a concept that is foreign to me. My initial reactions and thoughts were mostly negative ... and this action requires much time and effort. After beginning the readings and the work with this approach, I did begin to appreciate the value in making connections and thinking about how the readings and information about a completely different culture could resonate with me. This can be an effective way to learn more about not only another culture, but also about your own and yourself.

Student C: I enjoyed wrestling with resonances and re-presenting. Initially, it was a bit of a challenge. I'm accustomed to being asked to write with my head and not with my heart. When trying to understand a people, we are frequently asked to analyze their history and make psychological conclusions about their behaviors, beliefs, and customs. I think approaching culture with this idea of resonances encouraged me to relate to the Indians and feel more united with their humanity.

Student D: When I began reading the first two days' assignments, I thought 'Where is he going with this?' It was a lot to comprehend for someone who doesn't think about anthropology questions. It took all day to process the readings and wrap my head around the autoethnography and resonances approach. It was taxing and time consuming, but worth the learning curve. After internalizing this verbiage and making my own connections/resonances, it is a wise way to study 'the other'. This approach will help me avoid 'ignorance is bliss'. Sincerely appreciative.

Student E: I really enjoyed using the framework of resonances. I think that it made me understand my own culture better. I was able to make connections between my traditions and practices that matched some of the practices of the Native Americans. I think that this is the key to understanding other cultures. When we make connections [resonances] we are better able to understand why a certain group of people are the way that they are.

The above are representative of the comments regarding resonance-based inquiry.

Though no overtly negative comments were provided, there are some limitations to be sure. Class size matters. This particular course numbered 22 students. To help students through the structure of the course, and on the front-end, I spent roughly five hours per meeting day on this course, generally talking students through the resonance methodology and responding to frustrated students' emails. Another limitation is that I tend to think, at times, resonances watered-down some of the distinct cultural differences that exist, let us say, between the pipe and the Eucharist. Lastly, and because an inordinate time was spent on methodology, teaching about pedagogy was limited.

In light of the difficulties, resistances, and limitations, I believe that through resonance-based inquiry, the objective of this course – to help pre-service and inservice teachers become “citizens who are well educated about the Oceti Sakowin history and culture [and who] will be more likely to make better decisions in the arena of Indian issues and to get along better with one another” – was accomplished in a deeper and more profound way than previously accomplished. Through the use of resonances, I believe juxtaposed cultural “objects” harmonized while maintaining their separate-ness, distinctness, and uniqueness.

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DEVELOPING AN INTERDISCIPLINARY INQUIRY COURSE ON GLOBAL JUSTICE: AN INQUIRY-INFORMED, CROSS-CAMPUS, COLLABORATIVE APPROACH

Beth Marquis and Vivian Tam

ABSTRACT

Higher-education institutions have an increasing responsibility to foster “global citizenship,” enabling students to recognize injustice and pursue equity. As a first step to creating a larger “hub” for global justice, McMaster University set out to develop an interdisciplinary course on the topic. With high-level institutional support, a cross-campus, interdisciplinary course design team was formed to further investigate effective pedagogy. Inquiry-based learning (IBL) was considered a foundation for other learning strategies within the course because of its evidenced ability to instigate a process of “learning by doing,” requiring students to both self-direct their education and develop their capacities as independent

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learners. To provide a further evidence base, a student member of the committee also conducted a pan-Ontario study surveying relevant instructors on successful global justice pedagogies. Collectively, these findings were integrated to inform the development of “Global Justice Inquiry,” which is characterized by its small course size, open-inquiry style, and engagement of alumni, community partners, and faculty from across campus. This chapter details the process followed to develop this course, presenting it as a model that might be helpful to others looking to develop interdisciplinary inquiry offerings.

INTRODUCTION

Recent scholarship has emphasized the ways in which education can contribute to the pursuit of social and global justice (Adams, Bell, & Griffin, 2007; Shultz, Abdi, & Richardson, 2011; Trifonas, 2003). While taking a number of different approaches, such work frequently argues that colleges and universities (alongside other educational bodies and institutions) have a responsibility to help students become active “global citizens” who appreciate difference, recognize injustice, and begin to accept responsibility for working toward a more just world (Banks, 2004; Flowers, Bernbaum, Rudelium-Palmer, & Tolman, 2000; Nussbaum, 1997; Van Gyn, Schuerholz-Lehr, Caws, & Preece, 2009). As Abdi and Shultz (2008) define it, global citizenship

aims to expand inclusion and power and provides the ethical and normative framework to make this a legitimate and far-reaching product of diversity rather than an institutional tool serving particular groups. This global ethic should affirm, for all of us, that citizenship is not just a mechanism to claim rights that are based on membership in a particular polity, but that human rights are based on membership beyond any state or national boundaries, inherent to all individuals and groups in all places and times. (pp. 3–4)

From this perspective, then, higher-education institutions have an ethical obligation not only to help students succeed in an increasingly globalized world, but also to support them in developing a liberatory, global consciousness that will enable them to contribute to the large-scale pursuit of equity and human rights (Kahane, 2009).

Like many other institutions, McMaster University – a mid-size, research-intensive university in Hamilton, Ontario, Canada – takes seriously this responsibility. As a signatory to the United Nations Academic Impact (UNAI), McMaster is committed to upholding the mandate of the

United Nations generally, and to realizing the principles of the Millennium and “Post-2015” Development Goals specifically (United Nations, 2013). While the university is currently pursuing many initiatives to advance this commitment (see Baumann et al., 2012; Deane, 2014), one exciting project is the creation of a campus “hub” that will convene and support students, faculty, alumni, staff, and community members engaged in global justice work. This initiative originated from an idea developed by the former Director of McMaster’s Arts & Science program and other faculty members on campus, who wanted to establish an institutional forum that would create opportunities for a wide range of people interested in justice work to explore specific global challenges collaboratively and critically. Activist alumni were a central part of this vision, and one of the initial ideas proposed for the hub was that it might offer an annual conference and “think tank” session at which graduates engaged in global justice initiatives could collaborate with each other and other members of the campus and local community on pressing challenges and questions. Another idea was to develop a course that would allow current undergraduate students to learn about global justice in partnership with these alumni and others.

While the specific vision for this hub is still being determined, the university elected to establish an upper-level global justice course to be housed in the interdisciplinary Arts & Science program as a first step. This course, which is open to enrollment from students across campus, involves a wide range of faculty, alumni and community partners, providing a foundation for the larger hub while simultaneously ensuring that the goal of educating global citizens remains a core focus of this emergent body. The course itself is intended to develop students’ global consciousness and ability to engage with social justice issues by providing them with an opportunity to learn with and from a range of partners who conduct global justice work. It aims to enable students to self-direct their learning with the close facilitation of experienced global justice professionals, fostering a sense of solidarity and community amongst individuals with variable levels of experience and a common goal. The present chapter will describe the process used to develop this novel course offering.

While the developments described above are promising, there are a number of challenging questions that must be considered in the establishment of this course and of the larger hub it is intended to initiate. Indeed, despite being increasingly heralded, global citizenship education itself is not without its uncertainties and challenges. As Roman (2003) point out, for example, the very term “global citizenship” is highly contested, and many curricular and pedagogical initiatives that are developed under its mantle in

fact serve to reinforce existing structures of power and privilege (see also Andreotti, 2011; Shultz et al., 2011). At the same time, best practices for the structure, content and delivery of global justice education have yet to be fully defined. A large number of pedagogical approaches for developing global citizenship and social justice have been proposed, including learning communities (Kingston, MacCartney, & Miller, 2014), study-abroad or fieldwork opportunities (Richardson, De Fabrizio, & Ansu-Kyeremeh, 2011), international online courses (Swanson, 2011), and contemplative pedagogies (Kahane, 2009). Service learning, sometimes involving study abroad, has been discussed particularly frequently (e.g., Cress, Collier, & Reitenauer, 2013; Einfeld & Collins, 2008; Mitchell, 2007; Redman & Clark, 2002), with several authors providing evidence for the efficacy of this approach.

These strategies certainly constitute promising practices for meaningful global justice education, but there is also reason to suggest that refinements or further additions to this pedagogical repertoire might be beneficial. For example, some studies of service learning or study-abroad programs suggest that such initiatives are not always fully successful at creating commitment to social justice or reducing prejudice, although these approaches may have many positive outcomes nonetheless (e.g., Einfeld & Collins, 2008; Erickson & O'Connor, 2014; Jorgensen, 2011). Erickson and O'Connor (2014), for instance, point out the complexity of attitude change, and argue that service-learning opportunities that fail to include key components (e.g., relatively long-term contact with community partners that actively combats stereotypes) can actually heighten student prejudice. Consequently, we believed that in setting out to develop our new global justice course at McMaster, further attention to effective means of educating global citizens was warranted.

INQUIRY-BASED LEARNING AND GLOBAL JUSTICE

Inquiry-based learning (IBL) enters interestingly into this discussion. Like global citizenship, IBL has been understood in many ways (e.g., Hudspith & Jenkins, 2001; Justice et al., 2006; Lee, 2012; Levy & Petrusis, 2012). Most definitions, however, agree that IBL is an active, student-centered approach to education, wherein students learn by exploring and responding to significant questions (Aditomo, Goodyear, Bliuc, & Ellis, 2013; Levy, 2012; Spronken-Smith & Walker, 2010). In some versions of inquiry, these central

questions and the processes for addressing them are determined by instructors. Conversely, in this chapter we focus more on what has been called “open inquiry” (Spronken-Smith & Walker, 2010; Vajoczki, Watt, Vine, & Liao, 2011) or “student-framed inquiry” (Levy, 2012), which is predicated on the principle that students are most motivated to learn if the question is one that is self-defined (Justice, Rice, Roy, Hudspith, & Jenkins, 2009; Levy & Petrusis, 2012). In this version of IBL, students are expected to develop and refine the questions they explore as well as the procedures by which that exploration takes place, shaping their own learning processes with support from an instructor (Vajoczki et al., 2011). Whether their explorations lead them to develop new knowledge or simply to identify “new-to-them” responses (tasks Levy (2012) calls “authoring” and “pursuing,” respectively), students engaging in this self-directed brand of IBL are required to take responsibility for their education and to develop their capacities as independent, lifelong learners in the process (Justice, Rice, Warry, & Laurie, 2007; Lee & Ash, 2010).

It is widely accepted that IBL enhances student learning by instigating a process of “learning by doing,” as opposed to more traditional pedagogical methods that allow the student to be comparatively passive (Jenkins & Healey, 2012; Justice et al., 2007). Existing research has demonstrated a number of positive outcomes attached to IBL, including enhanced academic performance, a greater sense of student responsibility and self-direction, and the development of research-related skills such as critical reasoning, information gathering, oral communication, and self-assessment (Justice et al., 2007; Justice, Warry, & Rice, 2009). These outcomes seem potentially valuable in the context of teaching for global citizenship specifically, insofar as they might equip students to view social justice issues through a critical lens, to engage actively and effectively in exploring means to address world problems, and to develop a sense of responsibility and agency that can fuel global justice work.

Indeed, some preliminary scholarship corroborates this sense that global justice-related outcomes might be bolstered by IBL. For instance, a small number of participants in a study by Aditomo et al. (2013) indicated that they employ IBL to help students interrogate their beliefs and preconceptions about other people and groups. Likewise, work by Justice and colleagues (2009) demonstrates that students who took an inquiry course with “representations of the Other” as its theme reported greater gains in social awareness and in understanding other cultures than did students who did not take such a course. While further research is needed in this area, these provocative findings, alongside a history of successful IBL at McMaster

(Cuneo, Harnish, Roy, & Vajoczki, 2012; Justice, Rice et al., 2009), suggest that inquiry might be an effective part of a design for global citizenship education within our emerging global justice course.

DEVELOPING ARTS & SCIENCE 3GJ3: GLOBAL JUSTICE INQUIRY

Against this backdrop, McMaster set out to develop a new inquiry course focused on global justice in 2013. As noted above, the course was initiated by and will be housed within the Arts & Science program – an interdisciplinary program whose founding Director proposed the idea for the global justice hub, and whose current Director has been a driving force in moving it forward. This institutional placement constitutes a prime enabler for the development of the course, insofar as Arts & Science has a long history of interdisciplinary, IBL (Jenkins, Ferrier, & Ross, 2004), and thus some of the challenges described in the literature in terms of acquiring departmental “buy in” and support (Justice, Rice et al., 2009) are not an issue in this case. At the same time, the fact that current and former Directors of the program have been actively involved in advocating for the initiative means that the idea comes with high-level backing, a factor which was further enhanced when the university President agreed to have his support of the course registered in initial documents and conversations about it. This type of acknowledgment from senior administration has been positioned as a facilitator of IBL on university campuses (Cuneo et al., 2012; Levy, 2012), and receiving it early in our development process seems to have laid the groundwork for success accordingly.

Recognizing that both the global citizenship education (e.g., Shultz et al., 2011) and IBL literatures (e.g., Cuneo et al., 2012; Levy, 2012) advocate for approaches that are interdisciplinary and/or incorporate multiple perspectives, we wanted this course to draw from the experiences of students, staff and faculty members from all programs and Faculties on campus, in addition to alumni and community partners. To this end, we sought to develop a cross-campus course design team in order to cultivate this approach from the outset. The current Arts & Science program Director, along with the two former program Directors who helped initiate the development of the course, sent invitations to Chairs, Directors, and Associate Deans of relevant units across campus, soliciting participants for a standing committee tasked with collectively conceptualizing this novel educational

opportunity. Through this process, we developed an initial course design committee comprising faculty, staff and students from the university's six Faculties, the Arts & Science program, the Institute for Teaching and Learning, the Office of the President, and the Office of Alumni Advancement. In addition to ensuring the wide range of perspectives we sought for the course and for the larger hub it is intended to seed, this diverse group of people also allowed for the creation of an expanded network of advocates and champions of the new initiative, a factor which literature suggests is instrumental to garnering support and sustainability for inquiry programs (Cuneo et al., 2012). While this process did open up the possibility of creating tensions by including on the course development team people who might be minimally experienced with or supportive of innovative pedagogical approaches, McMaster's history of IBL and the high-level support for the initiative described above meant that this proved to be less of a challenge in practice. All members of the development team came open to considering a variety of pedagogical models, while the ongoing support of the Arts & Science program specifically meant that the resulting course would always have an institutional home and a set of inquiry-experienced people with ultimate responsibility for course-related decisions.

This cross-campus committee, which was chaired by the first author of this chapter, met sporadically throughout the 2013–2014 academic year. Early on, the group focused on conceptualizing the broad goals of the proposed course, and on considering how some of these goals might be realized through specific pedagogical practices within an inquiry course frame. Consistent with the argument that it is important to devote time to discussing what inquiry means (Justice, Rice et al., 2009), some initial meeting time was also spent unpacking our understandings of the term and how it might apply to this particular course. It was noted early in our conversations that the issue of definition might be especially important within the kind of interdisciplinary course we were proposing, as inquiry can and often does play out in different ways within different disciplines and departments (Jenkins & Healey, 2012; Levy, 2012). As such, an early insight from the committee was that the approach to inquiry to be used in the course needed to be clearly defined and explained to students, who might arrive in the course with different understandings of IBL based on their diverse academic disciplines and experiences.

Nonetheless, we also remained conscious of the fact that it might be unwise to make too many specific decisions about an approach to inquiry in the absence of the course's ultimate instructor. Some existing scholarship

(e.g., Cuneo et al., 2012) suggests that there is value to allowing inquiry instructors to establish their own means of actualizing IBL principles. Through much of the time our committee was meeting, however, we were not at all certain who might end up teaching the course. Consequently, the focus we developed rather intuitively revolved around generating ideas and finding potential models that could later be passed on to a course instructor who would make more specific design decisions. As part of this process, one committee member conducted a scan of global justice-related courses already available at the university, such that we could make suggestions that would complement rather than overlap with or replicate existing offerings. Others shared examples of relevant courses or programs they thought might provide useful models. An interdisciplinary course offered at Nipissing University (<http://www.nipissingu.ca/academics/faculties/arts-science/Pages/DIRT.aspx>) was raised and discussed as an especially fruitful possibility.

The Nipissing University course, which focuses on helping students develop the capacity to think and work in interdisciplinary ways, takes “dirt” as a broad topic focus. A number of faculty from across the university campus facilitate individual class sessions that explore this topic from their particular disciplinary perspectives, while an overall course instructor leads additional class meetings that help students to integrate, work with and build on these diverse approaches. Although inquiry is not a stated part of this innovative course’s design, it struck our committee that this kind of model might be adapted to employ an inquiry methodology, and that it would also provide a potential framework for including the diverse faculty, alumni and community participants we hoped to engage. To that end, we earmarked this course as an exciting possibility for further consideration.

INQUIRY BEGETS INQUIRY: A STUDENT RESEARCH PROJECT TO INFORM COURSE DESIGN

As we were conducting our review and discussion of relevant models for the new global justice course, a student member of the standing committee also initiated an independent research project designed to provide additional information upon which we might base our recommendations. Recognizing the need for further evidence about means of effectively teaching global citizenship noted above, this study involved a survey of

instructors from Ontario post-secondary institutions who were currently teaching global justice-related courses. In particular, it sought to gather these instructors' perspectives on how global justice might best be taught within the context of a university course, as well as information about how such teaching is presently conceived and constructed in Ontario universities.

The survey, which was developed by the authors and refined in consultation with the global justice committee as a whole, consisted of both open-ended and multiple-choice style questions. As a result of the limited timeframe attached to developing the course, the survey instrument was not validated beyond the course design team. Given the relatively large number of people on the committee who reviewed it and the pilot nature of the study, however, we decided to proceed with the instrument nonetheless, as doing so would allow us to test the survey for future use while simultaneously acquiring information that might inform the course if interpreted cautiously. Copies of the full survey instrument are available from the authors upon request.

Participants were recruited from 12 post-secondary institutions across Ontario, with the purpose of sampling from both research-intensive and non-research intensive institutions (U15, n.d.). Global justice-related courses at these universities were located via a thorough scan of online course listings, with the sole inclusion criterion being relevance, defined broadly, to the United Nations post-2015 development goals (United Nations, 2013). After receiving clearance from the McMaster Research Ethics Board, an invitation to complete the online survey was sent via email to 205 individuals listed as instructors of these courses in March 2014.

Responses were received from 28 instructors at 9 of the surveyed institutions (a response rate of ~14%). Five research-intensive and four non-research-intensive universities were represented in the data. Qualitative data provided by these participants were iteratively coded using constant comparison (Merriam, 2009), and basic descriptive statistics were computed for multiple-choice style questions.

While a full discussion of the results of this study is beyond the scope of this chapter, we would like to highlight several key findings that informed our subsequent thinking and that may be of relevance to others considering similar courses. First of all, it should be noted that – in response to a multiple-choice question that asked participants to select from a list of pedagogical strategies they used within their global justice courses – 8 of 28 respondents (28.6%) reported using IBL as one strategy amongst several. Since a definition of IBL was not provided in the survey, these numbers

should be interpreted carefully as they may over or under represent the proportion of instructors actually employing the method as we understand it. It should also be acknowledged that other pedagogical methods, such as class discussion, were reported more frequently than IBL and may themselves involve inquiry elements. Nonetheless, this finding provides tentative support for our hypothesis that IBL may be a feasible means of teaching global justice in some cases and contexts. Moreover, the strategies selected by some instructors alongside IBL (e.g., community-based learning, other experiential learning, discussion, lectures, guest speakers) suggest the potential value of thinking about inquiry as one pedagogical approach to be complemented by others as suits the needs of the course.

Secondly, many respondents (14 of 28, or 50%) reported on another multiple-choice question that their global justice courses took a multidisciplinary approach. Multi/interdisciplinarity was also raised in response to an open-ended question about the key benefits of participants' courses, as one participant suggested that the most beneficial aspect of their class is the fact that "it is topic driven, not discipline driven, [and] borrows heavily across different issues not defined by [the participant's home discipline]." Acknowledging that our numbers are small and our findings are thus inconclusive, these preliminary results nonetheless offer further evidence in favor of an interdisciplinary approach to global justice teaching.

Another central theme arising from the data relates to the issue of course size. Overall, many instructors in the present study appeared to believe that relatively small course sizes are particularly effective for teaching meaningful global citizenship. For example, 10 of the 12 instructors (83%) who reported class sizes of 30 students or fewer expressed that this size was appropriate, pointing in many cases to the discussion-intensive format that their courses employed as justification for this response. The remaining two respondents in this group indicated that the 30 students they had were, in fact, too many. Large class sizes were also discussed relatively commonly in response to an open-ended question about challenges attached to participants' courses, as sizeable numbers of students were seen to preclude in-depth discussion, student presentations, and interpersonal interaction that many respondents viewed as valuable and/or essential. While such concerns are not uncommon in discussions of teaching and learning generally, they may be particularly important for global justice education, wherein students are often expected to develop their abilities to engage actively in and take responsibility for the issues under consideration.

Other predominant ideas that emerged from the open-ended questions included the importance of providing students with theoretical foundations

for justice work, providing opportunities to explore how these theories and concepts can be applied in relation to current examples, discussing issues in their sociopolitical and cultural contexts, and enabling students to understand their roles in pursuing global justice and, conversely, in perpetuating injustice. These findings are in accordance with literature that suggests the need to equip students with fundamental tools for understanding and acting on global justice issues (Banks, 2004), and with a strong sense of self-awareness and responsibility that might help them meaningfully engage (Flowers et al., 2000). One respondent stressed this idea when they suggested that a course on global justice should not be an experiment in activism, but should instead provide a solid indication of *how* students might successfully initiate change, in addition to providing them with the tools that would enable their success. “If you want them to change thing[s],” this participant wrote, “make them capable of doing it. The pedagogy should be transformative.” Given its proven ability to help students ask and explore meaningful questions and engage in effective self-assessment, IBL, when combined with fundamental content about approaches to global justice work, might constitute a strong means to rise to this challenge.

SYNTHESIS AND IMPLEMENTATION

Working with this series of findings, and with our discussion of relevant examples such as the Nipissing “Dirt” course, our committee derived a broad series of recommendations for what our new, global justice course might look like. We reaffirmed the initial argument that the course should be meaningfully interdisciplinary (particularly given the support of interdisciplinary approaches to global justice teaching in the survey), and proposed a model based on the Nipissing example. In contradistinction to the Nipissing model, however, we proposed that our version should involve alumni and community partners as co-leaders and mentors for the course alongside faculty. In addition to providing a basis for the larger global justice hub which we always kept in view, this connection to alumni and community who are engaged in justice work ought to provide one means of helping students in the course learn and explore existing ways of “doing” global justice, as suggested by some survey respondents. Moreover, this choice was also seen to reflect the survey finding that strategies like guest speakers might be deployed effectively in combination with IBL.

Perhaps most importantly, we also suggested that a self-directed, inquiry capstone project should be added to this basic course structure in order to

build on the diverse foundational ideas discussed by faculty, alumni and community partners. Such a project would require that students – with the support of a faculty instructor and a range of collaborating mentors – engage in developing their own justice-related questions and further hone their abilities to explore and act meaningfully on those questions – the prime elements of inquiry as defined above. In response to the survey findings about class size, and to existing scholarship that suggests small class sizes are appropriate for IBL (e.g., Justice, Rice et al., 2009; Justice et al., 2007), we recommended that the course be capped at a maximum of 42 students, with places held for five or six students from each of McMaster’s six Faculties and the Arts & Science program. As a means of focusing the course, we suggested developing a broad topic area that would serve as a trigger for students’ self-directed inquiry projects, a practice common in IBL courses (e.g., Justice et al., 2006). While this trigger could rotate with subsequent offerings of the course, we proposed an initial topic focus of “water.” As a vital resource and a human right that many people worldwide are denied, water offers a rich entry point for considerations of social and global justice. It is also an issue that can be usefully explored from a wide range of disciplinary vantage points, thus fitting effectively within the interdisciplinary framing we envisioned.

Our next step was to work with the Director of the Arts & Science program to secure an instructor for the course who might take this broad framing and develop more specific course objectives and teaching strategies. Given the extent to which existing literature emphasizes the importance of securing able, facilitative instructors for inquiry-based courses, as well as respected champions who can speak persuasively on behalf of IBL initiatives (e.g., Cuneo et al., 2012; Justice, Rice et al., 2009), we were thrilled to be able to engage an award-winning instructor with years of experience teaching interdisciplinary inquiry courses, and teaching and engaging in global justice work, as the inaugural instructor. As a first step, this instructor suggested adding a reflective component to the course assessments that would encourage students to consider further their own roles and relationships to global justice, precisely as recommended by some survey respondents. He also began work with the global justice committee and the Director of the Arts & Science program to refine and specify the course objectives and ensure that these align with the proposed course structure and assessments, and to identify and recruit faculty, alumni and community partners to become members of the multidisciplinary instructional team. Drawing from these efforts, the following course description was created (Box 1).

Box 1. Course Description.

**Arts & Science 3GJ3 / Global Justice Inquiry
Selected Topic in 2014–2015 (Term 2): “Water”
Instructor: Dr. Gary Warner**

Water occupies a central place in contemporary global justice work. Billions of people live without access to clean drinking water or to adequate sanitation, while increasing rates of consumption continue to deplete the world water supply. This course engages students in exploring the intersections of water and justice from a variety of perspectives, and by focusing on concrete examples develops their abilities to contribute to the pursuit of global justice. The course will take an interdisciplinary, student-centered approach. Each week, one class meeting will be facilitated by one or more contributing instructors: a diverse team which includes faculty from across campus, McMaster alumni engaged in global justice work, and members of community organizations related to the course theme. These people will lead students in exploring a range of topics (e.g., water security, access to water, women and water, water and both human health and ecosystem health), and will introduce them to diverse perspectives on each. A second weekly session, led by the course instructor, Dr. Gary Warner, will give students an opportunity to work collaboratively to integrate the perspectives and approaches explored and to apply these in the service of addressing contemporary problems in water and justice.

Students will be expected to contribute actively to all course meetings, developing and raising questions for exploration, participating in collaborative activities, and presenting ideas and findings for discussion. Registration is open to students from across McMaster's Faculties and programs, thereby creating the context for them to work closely with colleagues from a range of disciplinary backgrounds.

Course assignments will ask students to conduct individual and collaborative research into issues of water and justice, to communicate the results of this research in a variety of forms (written, oral, audiovisual), and to reflect critically on personal learning and development. A final capstone project will provide students with the opportunity to develop an action plan for addressing a topic of their choice related to the course theme.

A flyer containing this course description was subsequently created and circulated to Faculty and program offices to alert students about this novel opportunity. The course itself was taught for the first time in Winter 2015, little over a year after the global justice committee's initial planning meetings.

CONCLUSION: DEVELOPING AN INTERDISCIPLINARY, GLOBAL JUSTICE INQUIRY COURSE

The collaboration involved in developing this novel inquiry initiative has been exciting and rejuvenating. We believe the process outlined here has resulted in a course with the potential to contribute meaningfully to McMaster's commitment to developing global citizens, as defined above, and we look forward to assessing its efficacy moving forward. As part of this process, the first author is currently working with Arts & Science students and the global justice course instructor to develop a research project that will explore the experiences of students, faculty, alumni and community partners engaged in the course, and provide information about the extent to which it is meeting its significant objectives. In line with [Levy's \(2012\)](#) argument about the importance of collecting data about IBL experiences on college and university campuses, we see this ongoing research as an essential part of the model of course development described in this chapter, as it will provide a means to evaluate and refine the evidence-informed strategies devised to date. Like the research conducted by the second author of this chapter as part of the process of conceiving the course, this ongoing research will also involve students meaningfully. This is a central recommendation we would offer to others interested in devising such novel inquiry courses: engage in inquiry as part of conceiving and refining the new offering, and allow students to participate in this process, providing them with another kind of IBL experience as a result.

As a result of our experiences, we also advocate establishing a cross-campus planning committee that can contribute to the design of interdisciplinary inquiry experiences, before passing ideas off to an experienced, respected instructor who makes final decisions. In our case, this has resulted in a course with space for, and buy in from, partners across the institution while simultaneously allowing for clarity of vision, purpose, and responsibility. Meaningful support from a particular program that will

agree to house, support, and provide resources for the interdisciplinary initiative long term is also integral. Just as the Director of the Arts & Science program has been a necessary advocate for the global justice course described here, a dedicated administrative champion should be secured wherever possible, if novel, interdisciplinary courses are to take root and flourish.

Perhaps most importantly, we hope the course described here and our process for developing it encourage others to consider the ways in which IBL might be used as part of a process to help students become ethical and active global citizens. Given the significant challenges and inequities facing the world today, the ongoing uncertainties about best practices for educating students to address these problems, and the potentials of IBL to aid in this process, the time is ripe for further research addressing this issue.

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INQUIRY-BASED LEARNING AS FOUNDATIONAL PEDAGOGICAL TOOL FOR CRITICAL EXAMINATION OF SOCIAL JUSTICE IN THEORY AND ACTION

Alia Sheety and Nicholas Rademacher

ABSTRACT

This chapter describes the unique journey of two faculty members and six undergraduate students through the field of social justice theory and practice during the implementation of inquiry-based learning (IBL) in a social justice course. The two faculty members, from different departments, Education and Religion Studies, collaborated to structure and co-teach the course using IBL pedagogical strategies. This collaborative opportunity was made possible through a generous grant from the 1976 Hamilton Faculty Fellowship that was administered through the college's Center for Teaching and Learning (CTL). The six undergraduate students represented majors from different disciplines. The goal of this chapter is to share the IBL implementation and to discuss the advantages

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and limitations from the perspectives of both the students and the two faculty. The chapter describes: (1) our exploration of the practice of social justice including how it ties to the mission and core values of the college and the theoretical framework of IBL, (2) implementation of IBL, (3) student and faculty feedback on the experience, and (4) advantages and limitations of the practice in higher education with suggestions for future practice.

INTRODUCTION

Social Justice and the College's Mission and Core Values

Distressing global events (e.g., the Syrian refugee crisis) and various local events (e.g., Boston Marathon bombing of April 15, 2013, the deadly shooting in Ferguson, Missouri on August 9, 2014) provide an urgent impetus for critical reflection on an “Education of the Heart,” the mission of Cabrini College, a liberal arts institution of higher education located in Southeastern Pennsylvania. In its mission statement, the college identifies itself as “a Catholic institution of higher education that welcomes learners of all faiths, cultures and backgrounds and prepares them to become engaged citizens of the world” through “academic excellence, leadership development, and a commitment to social justice” (Cabrini College, 2010).

In an increasingly globalized world, twenty-first century leaders require an ability to respectfully engage with others across differences of race, ethnicity, and religion. They need appropriate skills to recognize, question, and critically respond to various injustices. The goal of this project, then, was to promote leadership development by: (1) increasing students’ awareness and knowledge of difference and (2) training them in dialogue and cooperation with people of diverse backgrounds, including religion, race, and ethnicity through engagement and promotion of critical thinking skills, problem solving, and the ability to raise meaningful questions. Through a grant from the 1976 Hamilton Family Faculty Fellowship we were able to restructure one of the college social justice courses titled *Social Justice in Theory and Action*, using different teaching and learning strategies to encourage student participation and engagement in the process. Inquiry-based learning (IBL) seemed a valuable tool that could guide our students in achieving the skills identified earlier.

Theoretical Framework of Inquiry-Based Learning and Student Engagement

IBL describes a learning environment in which learning is driven by a student-implemented process of inquiry, exploration, examination, questioning, understanding, creation of knowledge, assessment, and reflection. Mäeots, Pedaste, and Sarapuu (2009) go further to explain that IBL is not only about creating new knowledge but also developing and enhancing the skills needed for the inquiry process. In order to facilitate this process, the learning environment must be changed. However the idea of making change in the learning environment is not new. In *The Pedagogy of the Oppressed*, Freire (1970) discussed and shared the importance of the shift in a teacher's role from that of a "banker" who doles out information to a facilitator who guides the learning process and offers opportunities for dialogue. Likewise, the student's role shifts from passive listener to active learner engaged in dialogue. Ultimately, the classroom becomes student-centered (Doyle, 2011; Jones, 2007; Weimer, 2002).

Appleton, Christenson, and Furlong (2008) studied student engagement, describing it as typically having two components, behavioral (participation) and emotional (positive attitude about learning) (p. 370). More recent models of engagement include "a tripartite conceptualization that included a cognitive (self-regulation) subtype" (p. 370). Yazzie-Mintz (2010, 2007; cited in Appleton et al.) developed a three-dimensional model of engagement composed of cognitive (engagement of the mind), behavioral (engagement in the life of schools), and emotional (engagement of the heart). Going further, Harada and Coatney (2013) introduced four concepts, inclusive of "tasks, feelings (affects), thoughts (cognitive) and actions (physical)" (p. 72). The above review of literature about the importance of students' engagement in the learning process and the various models describing aspects of engagement are supported by recent neuroscience research findings on how humans learn (e.g., Appleton et al., 2008; Jensen, 2005; Siegel, 2012). The important relationship between students' engagement in the learning process and the development of cognition, behavior, and emotions seems to be appreciated by various research and publication (D'Argembeau, Comblain, & Van der Linden, 2002; Darling-Hammond & Orcutt, 2005a, 2005b; Goleman, 1995; Jensen, 2005; Kosslyn & Miller, 2013). In order to pursue IBL, it is necessary to create an environment in which students feel safe and supported.

Creating opportunities for dialogue and participatory learning between and among the members of the classroom community – students and students, students and instructors, students and content – enhances student

engagement and thus promotes safe environment for IBL. Cameron (2002) emphasized the importance of student dialogue. She holds that creating dialogue and contradiction within student’s learning fosters social change. She goes on to discuss knowledge production, which places the “teachers and students as equal subjects in the learning process” (p. 1). However, a similar idea is prompted by the restorative practice approach. According to Wachtel and McCold (2001), “Individuals function best when those in positions of authority do things ‘with’ them rather than ‘to’ them or ‘for’ them” (p. 124). This approach seeks to create a community of learners who are actively engaged. Adamson and Bailie (2012) propose that creating a community could be achieved by “providing participatory learning processes that balance the need for limits, boundaries, and structure with engagement, support, and nurturing” (p. 147). They suggest further that “this is accomplished by providing a range of informal and formal engagement practices that are designed to encourage learners to take personal responsibility for their own learning, share ideas and opinions, and collectively negotiate expectations for behavior” (p. 148) (see Fig. 1).

Cameron’s assumption of the importance of student dialogue and the restorative approach noted above, both tie well with constructivist theory. On the cognitive level, constructivists such as Vygotsky (1978)

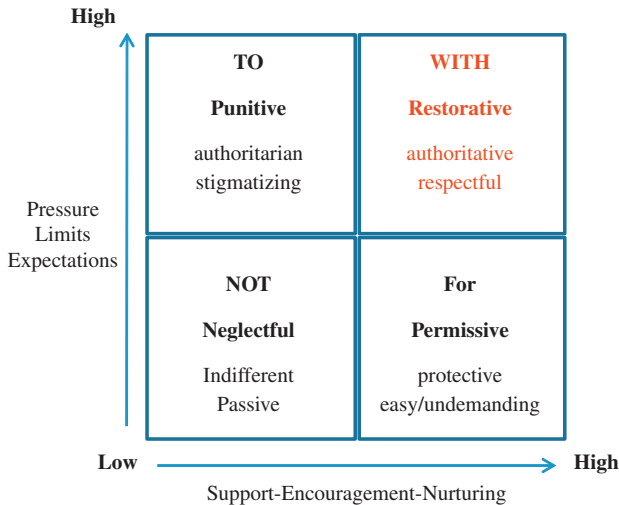


Fig. 1. Restorative Practices Social Discipline Window Represents High Support and High Control Simultaneously, Wachtel and McCold (2001, p. 117).

emphasized the importance of social interaction between learners. He used the term “Zone of proximal development” and indicated how “knowledgeable others” could contribute to the learning process of their peers. Friedman et al. (2010) drawing on Palincsar (1998), shared that “social constructivist perspectives that focus on the interdependence of social and individual processes in the co-construction of knowledge inform IBL methods” (p. 768).

Day, Foley, Groeneweg, and van der Mast (2004, cited in Friedman et al., 2010) developed a model of interactive process in which students go through the cycle of *ask, investigate, create, discuss, and reflect*. As we reflected on how best to engage the students in the course through IBL while ensuring that we would achieve the course learning outcomes, we decided to adopt the Day et al. cycle with some modification. We chose the cycle process because we determined that it would facilitate student engagement and the development of critical thinking within a feedback loop. Most importantly, the cycle process appealed to us because it promotes a learning community that facilitates collaboration and support among its members. We adjusted the cycle process by including assessment and by adding reflection into each of the stages (see Fig. 2). Because we placed such high importance on reflection, we restructured activities to grow students’ skills in reflection and to allow space for the students to review, question, and reflect on each stage.

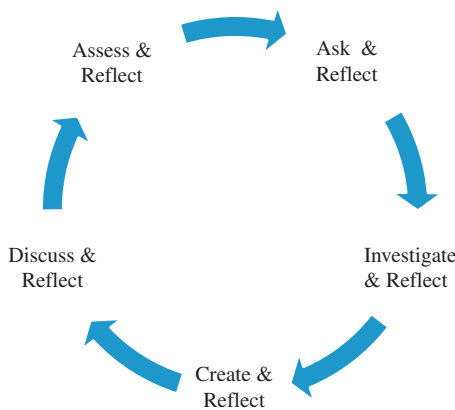


Fig. 2. Inquiry-Based Learning Model. Source: The model adapted from Day, 2004 and modified by Sheety and Rademacher (this volume).

Why Inquiry-Based Learning?

According to Stephenson (n.d.), the National Research Council states, “The meaning of ‘knowing’ has shifted from being able to remember and repeat information to being able to find and use it.” The process of IBL enables students to question and inquire to gain deeper understanding of the topic they choose to study, one in which they are interested (emotional aspect). The expectation in class then is that they would be more motivated to explore and develop knowledge (cognition) and be more engaged and ready to collaborate with their peers and teachers to test and reflect on their learning (behavior). By creating a collaborative group of student researchers, we expected that leadership skills would emerge throughout the semester as each student took ownership of learning about and sharing from their research into a particular social justice topic. The above mentioned skills of inquiry, questioning, and being critical consumers of information are necessary for lifelong learning in an age such as ours, where we are flooded with data.

IMPLEMENTATION

Participants

Students

The group of students in this course included six undergraduate students who took part in a social justice course in spring 2014. The students were in different stages of their studies (second, third, and fourth year) and majored in various disciplines such as Business, Communication, Religious Studies, and Social Work. The differences in the student majors were both enriching and challenging. They allowed for scaffolding and different perspectives. The common denominator among the students was that each of them was a social justice minor, which means they had an intrinsic motivation to discuss and learn more about the topic and to creatively seek social change.

Faculty

One faculty member is a member of the Department of Education and was recently hired. The other faculty member is from Religious Studies. As coordinator of the social justice minor, he is quite familiar with the college’s mission and was involved in the college-wide process of revising the

mission statement. Both faculty are interested and involved in social justice issues. Our goal in this course was to help students realize the importance of being an engaged citizen and a leader who actively seeks to build a better world. Furthermore, we sought to encourage curiosity, critical thinking, and the skill of posing sound questions. As Donham (2013) stated, “curiosity is the catalyst that sparks the inquiry process” (p. 3). The idea of raising curiosity and interest in our students guided our interdisciplinary collaboration in facilitating this course.

Course Content

This course was designed “to introduce students to the interdisciplinary nature of social justice, with a particular emphasis on various definitions and approaches to the field. Additionally, students were introduced to people and groups engaged in social justice work in the local community, such as the neighboring communities of Norristown and Philadelphia” (SOJ150, Social Justice in Theory and Action Course Syllabus, spring 2014).

The course goals included the following:

- Students will learn about and communicate effectively on theory and practice of social justice.
- Students will reflect on the intersection of their own values, commitments, and beliefs in light of the social justice theory and action that they encounter in the course.
- Students will learn about and practice the interfaith dimension of social justice action.
- Students will become familiar with various social inequalities and learn about multiple social justice modalities ranging from direct service to advocacy.

In order to emphasize the importance of balancing theory and action, belief systems with real world commitments in relation to social justice topics and issues, we incorporated theoretical material (various readings) and experiential learning modules (visits to and collaboration with community partners) that built on foundational definitions of key terms and concepts like faith, social justice, diversity, equality, and pluralism. Drawing on the work of Rakoczy (2006), that one’s deepest held beliefs and convictions must be joined to the transformation of unjust social structures, we sought to investigate our role in transforming cultures and societies to be more just and peaceful according to our deepest held beliefs and convictions.

Through experiential learning modules, students visited the Medical Mission Sisters (MMS), an international community of women religious

who are active in the Philadelphia area. The students learned of the global social justice initiatives of this international community and listened to the endeavors of individual women who had returned to the United States from decades-long overseas assignments. The students also participated in an “Alternatives to Violence” workshop led by a member of the MMS community and visited the New Jerusalem Now community in North Philadelphia. New Jerusalem Now is “a non-denominational spiritual community, focused on the principles of nonviolence, simplicity, and cooperative living” (<http://www.newjerusalemnow.org/home.htm>). Later in the semester, the students and faculty participated in the Philadelphia “Walk and Run Against Hunger,” an event that raises resources, both food and money, for regional hunger-relief agencies.

As faculty members we realized that if we sought to encourage students to be engaged citizens then, as instructors, we should model engagement. At the very first class meeting, in an effort to create a student-centered classroom, the students were invited to take part in structuring the course, to be actively engaged in the learning process and in decision-making. In other words the two faculty implemented the restorative model of working *with* students as presented earlier in Fig. 1 (Wachtel & McCold, 2001).

In the first meeting, we provided the students with the course goals and asked them for feedback on how they thought they could best achieve the course goals. The first reaction was ... silence in the room. These students were not used to being asked to take part in structuring the course assignments or even in mapping the learning process. They were used to receiving a syllabus that provides systemic structure and includes all course assignments and corresponding rubrics. The course facilitators began to provide some ideas in order to motivate students to take part in the discussion, for example, how they viewed this course as a combination of theory and practice. Shortly thereafter, students began to share their own ideas and even question the various ideas that were shared.

By the end of the first session, students and faculty agreed on the following course of action:

- Students would engage in producing a research study in a topic of their choice, utilizing IBL. The faculty will support students’ choice of topic help with framing of a question to guide the research as students develop in-depth knowledge on the topic utilizing non-traditional sources of data, such as conducting interviews.

- Students would take an active part in deciding at what point in the semester it would be important to have the reflection journal/assignment submitted.
- Students would be partners in deciding at what points in the semester the class would have face-to-face meetings versus online meetings.
- Students brainstormed and chose what actual events the class would attend and actively engage in during the semester, for example, the “Walk against Hunger.”

For each decision above the students provided a rationale for justification. With this information, the faculty, serving as facilitators, was able to create a more structured syllabus with a schedule that included time and supporting resources for the students to prepare their final papers before the end of the semester. Students would present their findings at the college undergraduate research symposium.

Through having students be part of the decision-making about what specific social justice issue they would study, focusing on what was relevant to them and what questions they wished to raise about the issue, we hoped to raise student curiosity and to motivate them to want to learn, to ask, and reflect on their research question, investigate existing knowledge, question the existing knowledge and reflect on it, and, in the process, add to their existing body of knowledge, and, throughout, to create new knowledge (see Fig. 2). To support the process we utilized various resources and strategies that will be shared next.

Supportive Resources and Strategies

To best achieve what students and faculty agreed upon (conducting an inquiry about a topic of interest and writing a research paper to share with others), we pursued the following course of action.

We created a community of learners through collaborative work within class. For this to happen, we first needed to create a safe environment in which students could share. Utilizing the professional learning groups model (PLG) (Sheety & Rundell, 2012) all members in a PLG team, including the facilitator(s), are equal members sitting around one table, in this case it was a rectangular shape, since the class met in a conference room. There, students shared their exploration and challenges and asked for feedback from the group.

At each face-to-face meeting, students started with a “check-in” reporting on the progress they made. Each student received feedback from the rest of the group without making any judgmental comments. Rather, they creatively asked questions of one another and explored other ways of thinking about and researching their topics. In such an experience, each participant contributed to the learning process of the others, and, through analog and knowledge transformation, learners could apply what they learned from the dialogue with the group in their own project. From the constructivist viewpoint, the different perspectives allowed scaffolding for each learner to grow and stretch their own thinking. It provided different levels of understanding. The multiple ideas generated by all participants “allowed for greater diversity and the learners were able to combine different perspectives, raise additional questions and explore solutions” (Sheety & Rundell, 2012, p. 49). These professional learning groups represent a strategy that allowed each student to share their topic, the progress they were making, and the challenges they were facing; subsequently, each student received feedback from the rest of the group. The feedback included ideas and suggestions that could support or challenge the ideas and research that their peer student raised.

Taking part in the community-based activities fostered experiential learning in a manner that gave students the opportunity to learn by listening, exploring and questioning others, which all are aspects of IBL. For example, when the class visited the MMS, the students had a chance to hear from the sisters about their work in different domains (health, education, etc.) and in different parts of the world. Most importantly, they were able to witness how small gestures could make a difference in the lives of many people. Each experience produced an opportunity for students to raise questions and inquire about the topic and even tie it to their own project.

Working in a flipped classroom – a flipped classroom delivers the content to students outside of the classroom using technology. What would traditionally be considered the “teaching portion” of the class session now occurs in the students’ own time. When students are in class, they participate in discussion and other application activities using the content they have watched and/or read (Tucker, 2012) – students were able to learn and explore on their own and arrive to class ready to share what they learned, question, and reflect on it. In Tucker’s words “the core idea is to flip the common instructional approach ... class becomes the place to work through problems, advance concepts, and engage in collaborative learning” (p. 1). The model of the flipped classroom is helpful when using

IBL since it allows time for students to engage in brainstorming, questioning, inquiring, and reflecting instead of being passive listeners to a lecture. Using blended strategies (of class meetings and discussion supported by online discussion forums); students were able to discuss issues even in weeks that we did not meet face-to-face in the traditional classroom. Blackboard, the learning management system at the college was utilized for discussion, posting, and sharing materials and uploading the various assignments. Vaughan (2014) indicates that the use of technology and flipping the classroom “addresses the needs of millennial learners by allowing them to learn on their own time and integrate technology in an authentic manner” (p. 28).

To make sure students would be able to complete a research study that was presentable to outsiders and within a tight timeline, we posted the reflection questions early in the semester and uploaded a timetable for draft submission. In the weeks that we did not meet, we created online discussion boards.

Inquiry-Based Learning Steps

As noted earlier, we used the IBL cycle developed by Day et al. (2004) but added *reflection* to each of the stages (see Fig. 2). In order for students to prepare their research paper on the topic of interest they chose, we facilitated a PLG (Sheety & Rundell, 2012) to share and generate ideas and to reflect on each of the following phases of the IBL process:

1. *Ask*. Students began with the following questions: What topic did you choose to research and study? Why did you choose this topic? What did you know about the topic? What do you want to know about the topic? What questions do you have on the topic? What do you hope to learn about the topic? To answer the above questions students started with reflecting on their own interests and the rationale for choosing a particular topic. Then they moved to the next stage while continuing to revisit the questions they raised and their preliminary answers.
2. *Investigate*. Students looked for existing research on their topics and were encouraged to use critical thinking while reading the literature, to question their findings, and to reflect on the process. In-class, discussions helped to generate ideas for additional sources for data collection and to raise additional questions about the findings. In this way, each student had an opportunity to reflect on the best means to gather additional data, whether by interviews, surveys, content analysis, etc.

3. *Create*. Although students were in the midst of data collection and analysis, early on they started thinking on how they would present what they were learning in creative ways in order to be of service to others. In addition to presentations on campus, ideas surfaced as to how the students might share their work in national conferences and publications.
4. *Discuss*. Each student had to be ready not just to present their findings, but also to discuss and answer questions. Some of the students presented in other courses while some students presented at a campus-wide research symposium. In both cases, students had the chance to practice answering questions and discussing their work in larger forums than their own classroom learning community. Again, the students were encouraged to reflect on how their presentations went, where they felt they were challenged, and how they could overcome anxiety and other aspects of presenting in a forum where audience and questions were constantly in flux.
5. *Assess*. Both facilitators provided feedback throughout the process. The facilitators first read and provided written comments on student work and then met either face-to-face, virtually, or by the phone to discuss the project and to reflect on the assessment process. At the end of the semester, we provided a final grade. Later in this chapter, we will discuss the limitations of our assessment process.

The students were provided with additional opportunities for reflection. For example, they wrote short reflections after participating in the “Walk against Hunger” and our visit to the MMS and the New Jerusalem Now community. Additionally, their final research paper included a reflection section in which they reflected specifically on the process of IBL and the stages they went through to produce the paper. Some of their thoughts will be shared in the findings section.

FINDINGS

By the end of the semester each of the students successfully produced a research paper presented and shared their work with the broader campus community. Preparing for the presentation occasioned them to investigate and learn lifelong skills, such as how to prepare a professional presentation, how to respond to questions from a general audience, and most of all how to critique one’s own work by sharing limitations and pointing toward future research.

Two of the students presented their work at a national conference and intend to pursue further inquiry with future research questions they have on the topic they studied.

In this section we provide analysis of the outcome from both students and faculty perspectives.

Student Feedback

As we mentioned earlier, reflection is an important piece in the process. As in any qualitative data analysis reading, coding, and analyzing student reflection resulted in themes. It was obvious that students utilized critical thinking while reflecting on the two activities in which they took part. For example very different reactions were provided to the two experiential learning opportunities, the “Walk against Hunger” and the visit to the “Medical Mission Sisters.” When reflecting on the “Walk Against Hunger,” the students raised a series of questions, including: “What is the point?,” “How did it help raise money, if at all, when they provided free food for participants in the walk instead of directing the sources to those who need it most?,” “What did it mean to have all those people doing the walk?,” “I looked for information around the fundraising totals from last year and I couldn’t find any specific information ...,” “I wonder if the walk raised awareness!”

The students used such terms as “*amazing*” and “*inspiring*” in nearly every reflection after the full day that students and faculty spent with the MMS. As explained earlier, on this day students and faculty had a chance to listen to the sisters who served in different parts of the world and to ask them questions. Additionally, one of the sisters led the group through a powerful experience by running an “Alternative to Violence” session, in which the sister tried to create a community that cares. The day ended with an afternoon visit to the New Jerusalem Now community. Before the trip, one student posted, “I did the readings, but I look forward to hearing first-hand experiences.” After the visit, reflection on the various activities included, “transforming power happens throughout the whole meeting [circle] it started with communication, community building and conflict resolution,” or other comments included “hearing the sisters sharing their stories first-hand really challenged me to think about the impact that these women were having globally ... and questioning my role,” “I firmly believe that this experience has shaped the way that I view things ... this was the first real social justice experience that I had ... my college experiences have

mostly been within the classroom and the readings.” Other students made connection between their personal life experiences and what they had seen. For example, “I grew up in a relatively violent household ... this led me to appreciate the message of the greater nonviolence movement”

As for the research study, each student shared that they would have preferred not to need to complete a submission for each section of the research project according to a schedule (we asked them to upload a draft of each section to make sure they were making progress and to provide continuous feedback). They would have rather shared only the final research paper on the due date. In spite of the challenge, the facilitators decided to maintain the arrangement to have due dates for each section. In this case, we were faced with the challenge of accommodating students’ perspective in relation to the college requirements and expectations vis-à-vis learning outcomes and incremental progress reports.

The research studies resulted in six papers that dealt with six different topics, including just peacebuilding, homelessness, rape awareness and prevention, just wages, immigration reform and women’s rights in India. By the end of the process students were proud of what they contributed to their own and their fellow students’ learning. During the process, they commented, “interesting stuff came up [in] my research” and “challenging but I’m learning a lot.” However, they shared some challenges and even provided suggestions that could enhance the process in future classes, such as “too much to do in such a short time,” “announce earlier that [the assignment will] involve inquiry beyond literature review,” “maybe [provide] an introduction letter early in time and ask students to think about a research question ahead of time and arrive ready with that for the first class,” “in my other papers [for other classes], [I have] never had to do actual data collection and analysis,” “it is a challenging process.” While students had some experience in preparing a literature review that incorporated their own ideas and experiences, they found it much more challenging to come up with questions, to apply critical thinking to their topic, and to investigate thoroughly the ways in which their questions could be explored.

The reflection papers included less encouraging comments and feedback on the IBL process at the beginning and more positive ones as students started to make progress, especially after they started to come up with ideas and discovered ways to better understand and learn about the topic they chose. One student shared, “it was interesting for me to learn how my actual community thinks and perceives homelessness. It is one thing to read about it in an article vs. looking at the actual data I collected. When I interviewed homeless members in the shelter, it made me realize it is not

only about numbers. It kind of shed a light, it is not always about what we want, it is also what the homeless feel they need.” Another student, who studied male rape, was very surprised of the small amount of research on the topic, and questioned the reasons.

To summarize, students’ feedback to utilizing IBL and preparing the final paper: they were hesitant at the beginning, expressing confusion at the mid-point, and they were positive toward the end when they realized how their inquiry gave rise to new insights and further research questions into the various topics they studied and how what they studied could be of service to others. This outcome directly aligned their project with the college’s mission.

Faculty Feedback

The combination of theory and practice with IBL exposed students to real life situations and challenges with questions that they had to investigate and explore, whether by talking to others, surveying the community, or even searching existing literature for answers. Some went further and provided high-level analysis on topics such as peace and justice, presenting their own hypotheses and providing in-depth discussion.

Reflecting on the model we utilized (see Fig. 2) in this course, at the end of the semester, we were disappointed that we were unable to involve students in the assessment process. The plan was to have students edit a peer’s paper and also have them take part in assessing their own work. Due to time limitations, we had to sacrifice this dimension of the course with the result that only faculty assessed the students’ projects. Furthermore, both faculty agreed that we need to revisit the hybrid model to determine how to utilize more effectively the online system to keep students engaged during the weeks when the group does not meet in class.

Co-teaching provided an invaluable opportunity to collaborate in the creative process, designing, and teaching the course; it provided a context for mutual support during challenging times and a venue for semester-long “brainstorming” as we and the students adapted to course events; and it provided a venue for ongoing reflection on each of the course steps and the unfolding stages of learning. In addition, as we hail from different disciplines, we each brought additional value to the setting and allowed for better mentoring of students’ IBL.

Dr. Rademacher’s research focuses on exploring the contemporary relevance of historical people and movements in various religious social justice traditions in North America. Principally, he draws on primary source

material from archival documents across the United States and Canada. Dr. Sheety pursues systematic quantitative and mixed methods research in which she collects and analyzes new data. Having both areas of expertise in the classroom provided an opportunity for students to pursue various research designs according to their respective majors and disciplines.

Advantages, Limitations, and Suggestions for Further Implementation in Higher Education

Based on our own reflection as learning facilitators and the feedback that we received from students, we would like to see the processes and the assessment emerge in new ways. For the next iteration of this project, we will develop and implement tools that will enable us as facilitators and our students to better assess students' awareness, understanding, and engagement in the topic and the assignments before, during, and after the course. Instead of the formal assessment during the process we could utilize informal assessment so that the process contributes to the enhancement of learning, or what [Stiggins and Chappuis \(2012\)](#) call assessment for learning. Likewise, we plan to work with the students to establish and refine effective channels of communication, which we expect will vary from semester to semester. In this way, our goal is to better facilitate their growth and development as independent learners.

We will continue to consider the students as partners in the learning process by developing additional strategies to better engage them in the various aspects of the course. We need to be clearer about our expectations. While we thought we had been clear with the students, the deeper we moved into the semester, the more evidence we discovered that we and the students were not "on the same page" on all aspects of the course. The online component of the course is one area where communication could be improved. For example, we would be better served by informing the students – even before they register – that the course will include robust online interaction. In this way, they will know that they are expected to log-in and take part in various course activities during the weeks that the class does not meet face-to-face.

We would like to see students more involved in the assessment process. Since students are not familiar or used to being partners in assessment practices, we must undertake some preliminary work in this area during the first few weeks of the course to prepare students for it. Furthermore, we do not believe that we spent sufficient time on the topic of ethics in research, which

ties to social justice, nor did we sufficiently discuss professional presentation skills, which ties to leadership. A one-semester course may not be sufficient if a majority of enrolled students require this kind of development.

We sought to cultivate independent learning among the students and to help them to exhibit leadership skills around a particular social justice topic by utilizing IBL to better question injustices and seek methods of inquiry to address various questions. Since the spring semester course is so rooted in community-based activities, the underlying challenge remains how to promote skills that one might expect college-level students to possess while promoting new learning experiences, especially in the community.

We agree that what we tried to do in one semester might have required more time, especially since our students arrived from different majors, different levels of experience, with various skills with regard to IBL and the ability to integrate practical aspects with theory. This program might work better as a two-semester module, working with the same students the entire year.

While there were many challenges in running a course based on IBL – such as the short duration of a one semester course, students with disparate experience in scholarship (including a few who had no experience with hands-on research), and professional skills – we believe that it was an important experience in the development of our undergraduate students.

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INQUIRY-BASED LEARNING AS A GATEWAY FOR EXPLORATION INTO HUMAN ENVIRONMENTAL CONFLICTS

Becky Boesch

ABSTRACT

Inquiry-based learning (IBL) coupled with integrative and deep learning can result in learning that is expansive and comprehensive. Integrated learning, in essence, is helping students develop the ability to make connections and see relationships between subjects, themselves, and the world around them. But these student-driven integrative learning experiences should also encourage deep, long lasting learning. Based on the theoretical underpinning of these three areas – student-driven learning, integrative learning, and deep learning – I designed a term-long inquiry-based project for university freshman at the end of a year-long (three terms) Freshman Inquiry class. The primary project associated with the term is an electronic magazine which addresses an overall conflict, each major stakeholder's perspective of the conflict, statistical data, a joint conflict resolution piece, and other supplemental information the group deems important. This project which is largely student-driven allows students to explore areas of

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interdisciplinary interest in a variety of ways. Such a multifaceted project challenges students to make connections between themselves and the seemingly disparate fields of science and social science on a local, national, and international level and ultimately allows them “ownership” of their learning.

Students graduating from universities today will face a myriad of challenges in their lives. They enter a workforce that is increasingly competitive. One that will require them to continually learn, change, and adapt. Most students who graduate today will not remain with the same employer or even in the same career (Huber, Hutchings, & Gale, 2005). Besides the challenges of their future work, students are entering a very different world socially and culturally. The world is shrinking. Cultures are colliding like never before. People need to not only understand themselves but also be willing and able to understand those who are different from themselves. Finally, students are also entering a world that, more than ever, requires them to be responsible citizens. To make choices for themselves and for the collective that promote peace, unity, and health.

Fortunately, many in higher education have begun to examine what we do in regards to how we are preparing our college graduates for these future realities. In fact, The Association of American Colleges and Universities has recognized the need for reconceptualizing what we do in higher education by identifying four essential areas that need to be addressed in a college education: knowledge of human cultures and the physical and natural world; intellectual and practical skills; personal and social responsibilities; and integrative and applied learning (Hovland & Schneider, 2011). Various institutions have implemented new and innovative programs to try and address these areas. These programs have tried to address at least one of the following learning outcomes areas: critical thinking and inquiry skills, social responsibility and civic engagement, and interdisciplinary and culminating studies (Schneider, 2003). Some of these programs are first year experiences, across-the-curriculum courses, field-based learning, community-based research, learning communities, e-portfolios and capstones, and/or culminating projects (Schneider, 2003).

THEORETICAL UNDERPINNINGS

Along with these programs have emerged learning concepts which underpin these innovations: integrated learning and deep learning. The Association

of American Colleges and Universities define integrative learning as “an understanding and a disposition that a student builds across the curriculum and co-curriculum, from making simple connections among ideas and experiences to synthesizing and transferring learning to new, complex situations within and beyond the campus” (Rhodes, 2010, p. 51). Others have defined integrative learning as “developing the ability to make, recognize, and evaluate connections among disparate concepts, fields, or contexts” (Huber, Hutchings, Gale, Miller, & Breen, 2007, p. 46). Integrated learning, in essence, is helping students develop the ability to make connections and see relationships between subjects, themselves, and the world around them. Taylor (2011) states that “integrative learning is, at its core, a process of synthesizing learning across multiple experiences, coalescing meaning, and also creating new learning and meaning.” Integrative learning and interdisciplinary learning are often confused as one and the same. However, integrative learning differs from interdisciplinary learning. Interdisciplinary learning draws connections between seemingly disparate areas of study. Integrative learning draws these connections but then synthesizes them into a larger understanding, a sum greater than the parts.

But integrative learning cannot be sustained without deep learning. The idea of deep learning surfaced initially with the work of Marton and Saljo (1976a, 1976b) and was further developed by Ramsden (1992), Rhem (1995), and Biggs and Tang (2007). It was juxtaposed against surface learning which translates into a transitory and shallow understanding. “Students who use a surface approach to learning substitute memorization of facts for learning and use quotes to pad their papers without really interpreting their significance” (Biggs & Tang, 2007, p. 23). Surface learning is short-lived. Deep learning, on the other hand, leads to a genuine understanding which encourages long-term learning that can be drawn upon in the future (Millis, 2010, p. 1). Teaching methodology consistent with inquiry-based learning classes such as encouraging active learning, and building on what students know have shown to be effective in developing deep learning (Biggs & Tang, 2007, p. 25).

Deep learning occurs when it is meaningful, significant, and life changing. McKay and Kember (1997) articulated the characteristics necessary for deep learning. They are:

- (1) A well-structured knowledge base with a focus on concepts, integration of knowledge, and a cumulative experience.
- (2) An appropriate motivational level, with an emphasis on intrinsic motivation and a sense of “ownership” of the material.

- (3) Learner activity associated with active, not passive, learning.
- (4) Interaction with others, including student-teacher interactions and student-student interactions. (p. 65)

According to **Laid, Seifert, Pascarella, Mayhew, and Blaich (2014)**, deep learning is “also associated with greater enjoyment of learning, reading widely, drawing on a variety of resources, discussing ideas with others, reflecting on how individual pieces of information relate to larger constructs or patterns, and applying knowledge to real world situations” (p. 403).

But neither integrative nor deep learning can occur without that learning being student-driven because motivation is one of the key ingredients for learning. **Biggs and Tang (2007)** endorse the need for student interest in order for deep learning to occur. “When students feel this need-to-know, they automatically try to focus on underlying meanings, on main ideas, themes, principles or successful applications” (p. 24). In inquiry-based learning, students not only have choice in what they study but they are architects of that learning. This is particularly true when they must integrate ideas/information from multiple disciplines and synthesize those into a personal understanding of a situation or idea. Or, to borrow Freire’s idea, students need to engage in problem-based learning, learning which allows them to ask the questions. This way, “[t]he students – no longer docile listeners – are now critical co-investigators in dialogue with their teacher” (Freire, 1993, p. 81).

PROGRAM AND COURSE DESIGN

Fortunately, I teach in a general education program at Portland State University which allows me to address many of the current innovations being explored in higher education. This program is a year-long freshman program with four learning goals: inquiry and critical thinking, ethics and social responsibility, communication, and diversity of human experience. These year-long courses are organized around interdisciplinary themes which are created by faculty from a variety of disciplines. When entering the university, freshman can choose from 10 different themes, thus allowing for student interest, choice (and hopefully motivation) from the very beginning of their general education experience. The theme I have been associated with for a number of years is Human/Nature. The very foundation of the year-long course is inquiry-based learning as it revolves around

questions which the students explore and explicate. The course description for Human/Nature is as follows:

The human animal is considered to be both a part of and yet distinct from nature. This relationship between our human selves and the natural world we inhabit is complicated and perplexing. This theme explores the complex connections between humans and nature. In what ways are we humans “natural”? Is there such a thing as human nature, and if so, what is it? How are we related to nature and our larger natural surrounds? How have we described and represented nature to ourselves? How have humans over the course of time understood and interacted with the natural world? How have our understandings of nature changed? Do humans have unique responsibilities toward the natural world and if so, what are they? Over the course of the year we will attempt to answer these questions, drawing on the resources of the social and biological sciences, history, literature and the arts.

The university where I teach is on a 10 week quarter system and in order to encourage integrative and deep learning, I intentionally design the terms to develop increasing intellectual and educational autonomy in my students. Even though the topics of the terms are different, the content explored is cumulative and builds upon itself. The classes are primarily discussion and small group based. If lectures are given, they are to supply necessary content for students to explore ideas. During fall term, we address the question, what does it mean to be human? We use such disciplinary lenses as Evolutionary Biology, Neuroscience, Linguistics, and Cultural Anthropology to try and answer this question. The students are assigned texts to read and are given specific journal questions and paper assignments. Winter term explores how humans have understood their relationship with nature. Movements such as the European Enlightenment and Romanticism as well as American Transcendentalism and the current Wilderness ethic are examined through historical and literary sources. Once again, the readings are chosen for them but students’ learning becomes more self-driven through the assignments given. Students visit western and non-western gardens of their choice to analyze the ideology/ideologies of nature surfacing in the design. They also are introduced to art analysis through visiting the local art museum and analyzing specific works of art for the representations of nature which surface from a large list of art and explore their own understanding of nature through biographical writing and poetry.

As the two terms progress the students are given more and more ownership over the material and coursework in order to encourage deep learning. Also, in order to help students make connections between the interdisciplinary nature of the material and application to their own lives, students’

work regularly involves self-reflection through journals wherein they try to place themselves and their understandings within the material studied. Each of these terms also culminates in a project (either individual or group) that allows them to apply/integrate their learning into their own understandings and is designed to make them more autonomous and self-directed in their learning. This is done in the hope that “meaning making results in both weaving together disparate knowledge and creating new, more sophisticated ways of knowing and acting in the world” (Taylor, 2011, p. 16).

These two terms and the skills learned in them culminate in the final term. Conceptually spring term looks at contemporary conflicts between humans and nature. These conflicts are steeped in how we define ourselves (fall term) and how we define nature (winter term). The previous two terms provide them with a “well-structured knowledge base with a focus on concepts (and) integration of knowledge ...” (Millis, 2010, p. 1) which is essential for deep learning. Because of the knowledge foundation the previous terms provide, the curriculum final term can be primarily student-driven and inquiry-based. At the end of the winter term, students are given time to search out current conflicts in the world between humans and nature. Students can explore any topic as long as it clearly demonstrates conflict between multiple groups and differing understandings of the natural world. Students then present the conflicts they are interested in exploring to the class at the end of winter term and students are encouraged to explore these conflicts on their own over spring break.

Upon returning, the students spend some more time discussing the possible conflicts and then collectively choose six conflicts that they would like to explore in depth. The only stipulation is that two of these conflicts be local, two regional/national, and two international in scope. I have discovered that often when students only choose conflicts that are national or international in nature, they have difficulty seeing their specific role and responsibility in the issue and therefore struggle with integrating this knowledge into their daily lives. Some of the topics which students have chosen in the past are local – Introduction of Wolves into Oregon, Coal Train proposal in the Columbia River Gorge, Killing of Sea Lions at the Bonneville Dam; regional/national – California Drought, Fracking of Natural Gas, Invasive Aquatic Species in the Great Lakes; international – Whaling in International Waters, African Land Grab, Bleaching of Coral Reefs, GMO Soybeans in Argentina.

Once these six topics/conflicts have been chosen, students choose one of these topics that they would like to explore in depth collectively with

approximately five other students. Part of the reason that this decision is class based and the project is done in groups is to help create student centered learning through a learning community because “learning communities can integrate the content of courses, promote deeper learning, and foster personal development” (Mahoney & Schamber, 2011, p. 234). In essence, learning communities help promote both integrative and deep learning. The culminating project is a web-based electronic magazine which the students construct together but there are a number of coinciding assignments/class activities that feed into this final project. This is because “integrative learning is, at its core, a process of synthesizing learning across **multiple experiences** (bold added), coalescing meaning, and also creating new learning and meaning ...” (Taylor, 2011, p. 14). This allows the students to learn about their topic through a variety of means and also allows for the diverse way that students learn. Because of the variety of assignments connected to this project, each student can find one “way” that helps them enter in the material.

But first, in order to give students time to examine their issue, the class reads and discusses a book, *The Golden Spruce* by Vaillant (2005) which models brilliantly an environmental conflict and the drastically differing views/understandings toward it. Key stakeholders are identified in the conflict and how their views differ (sometimes radically) from other key stakeholders. This is meant to help give them the tools to identify the particular stakeholders in the conflict they are examining. While the discussion of this text takes place in class, each group is charged with finding readings on their conflict that would give the entire class a basic understanding of their specific issue and the groups involved. Each group meets with me over the articles chosen to make sure they provide enough depth and perspective for the class to understand the issue on a basic level. These articles are then uploaded to the class website for the class to read and each group is given an entire 60 minute class to lead the class in a discussion of the articles as well as present other information such as guest speakers, films, or other activities. In her address to The Carnegie Foundation for the Advancement of Teaching, Pat Hutchings states that “one of the best ways ... to make students smarter and more intentional and more able to engage in integrative learning is to involve them in the work of teaching” (2005, p. 4). Each group is evaluated by the rest of the class as to the effectiveness of the class session and this figures into their final grade. In addition to leading class discussions as a group, each individual student writes a research paper from the perspective of one of the stakeholders identified in their conflict. This chapter is supported by an initial library session and feedback from

me on multiple drafts. All of the above activities are heavily interactive either with myself as the teacher or with fellow students (McKay & Kember, 1997, p. 65; Rhem, 1995, p. 4). In addition, students build on the numerical/excel skills developed in a first term assignment by finding appropriate numerical data sets involving their issue and representing them accurately in graphical form for the website.

All of these assignments help students construct the major project, an electronic magazine about their issue. Each student chooses a particular role for which they will be primarily responsible even though each role is expected to receive input from all the students in the project. Some of the roles are web page designer, content editor, overall editor, and statistic and graphical information. The electronic magazine is a published website which requires students to apply a variety of skills and contribute on multiple levels. First, they must look at effective web page design and layout. Time is given for them to look at web pages and discuss such things as use of space, image choice and placement, color and font, and ease of navigation. "Today's students want to create their own meaning through self-expression" (Millis, 2010, p. 16) and designing their own web pages allows them not only to construct their own meaning through inquiry with materials and themselves but also through creative expression of that understanding in virtual media. Students can create these web pages through web software such as Wibly, Wix, Yola, or Google or they can, if they have the knowledge, use code to construct the site. Second, the web page needs to provide an introductory explanation of the conflict. Third, students contribute a written piece explaining the perspective of their particular stakeholder on the issue. Fourth, students need to include numerical data in the form of graphs and charts which illustrate the conflict/problem. Finally, some type of conflict resolution needs to be offered, which takes into account the concerns of all the key stakeholders. Besides these necessary pieces, students can also attach any other material that they think would help inform the reader of the situation. In the past, students have uploaded informative videos, interviews with experts, surveys, and helpful web links. Below is a sample of opening electronic magazine web pages in order to demonstrate the variety and creativity that can surface in this project (Figs. 1–3).

To encourage student participation and investment, students in each group anonymously grade the other students in their group in general areas such as dependability and commitment but specific areas as well such as the effectiveness of each student in the particular magazine role for which they were responsible (see [appendix](#)). This is done so that students have a

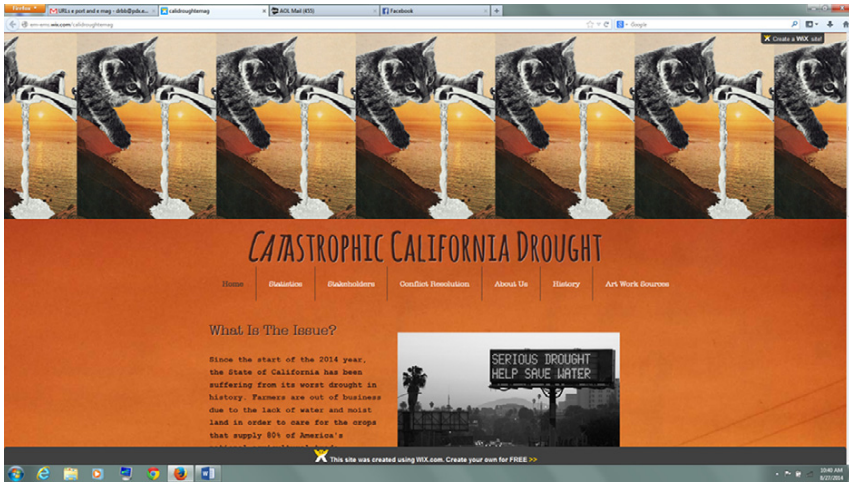


Fig. 1. Electronic Magazine Whose Topic Examined the California Drought in 2014. The Identified Stakeholders in the Conflict Were: United States Department of Agriculture, California Department of Water Resources, Californian Farmers in the Central Valley, US Food Consumers.



Fig. 2. Electronic Magazine Whose Topic Examined the Ongoing Use of U.S. Navy Sonar Testing in the Pacific Ocean. The Key Stakeholders Were the National Oceanic and Atmospheric Administration, the U.S. Navy, National Defense Resource Council, and US Federal Government.

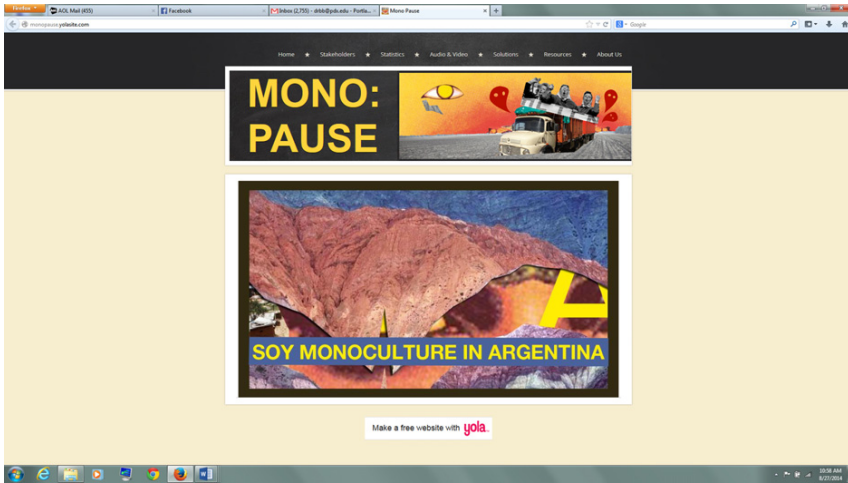


Fig. 3. Electronic Magazine Whose Topic Covered the Restructuring of Argentinian Agriculture to a Soybean Monoculture. Key Stakeholders Were Argentine Farmers, Monsanto, Soybean Consumers, and Environmental Groups.

voice in their own learning and assessment which, in turn, hopefully will positively affect their motivation. Finally, at the end of the term, the students present their web pages to the rest of the class as a kind of celebration, explaining their rationale for designing the website as they did and giving a brief explanation of the material within that website.

OUTCOMES OF THE PROJECT

Hopefully, at the end of their freshman year experience, as evidenced in this final project, students will have embraced both integrative and deep learning through an inquiry-based exploration of their choice. The final electronic magazine project is, in essence, a small-scale version of what students have been encouraged to do all year. This seems to be the case as evidenced by the reflections of students. The elements of integrative and deep learning surface throughout their words. One student iterated her experience and learning from the project.

This last term (spring) focused on humans' impact on the environment and what current issues we have with the environment. We did this by researching these

environmental topics, creating an e-magazine on them, and writing a research paper. We also read the book *The Golden Spruce* and reflected on it We also in our research had to really think about how we as people could help the environments and ecosystems that are being threatened. Mostly I learned that humans are flawed with many things such as being anthropocentric but they are also capable of goodness and can do amazing things

The student's final statement shows that she has moved beyond just being able to integrate the knowledge she learned but has applied it to a larger meta-idea of human anthropomorphism. Another student stated in his year-long reflection that the final project and the class caused him to see the value of integrative learning within the collective inquiry of the class.

This topic was really enlightening and enjoyable researching and talking about sonar with my group opened my eyes to the variety of positions on the issue. Not only did the various stakeholders involved in the conflict have different opinions on sonar use, but members in my group also had differing ideals. This process of active discussion and exposure to a variety of opinions on a topic mirrors critical thinking This is not only shown in my work, but in the very nature of the course. Most of the class is discussion based, where we explore various ideals on topics regarding humans and nature by reading about them and expressing our own opinions in discussion There is value in exposing yourself to ideas that you may or may not like or agree with ... If one does not appreciate the diversity of ideals in the world, how can they peacefully coexist with others in society?

Another student noted how this project allowed her to apply her learning to real world situations while at the same time learning within a learning community, a necessary part of both integrated and deep learning. Clearly the foundation which allowed these types of learning was her interest in the subject.

Doing this research project, and listening to the presentations of the other projects done in the class were great experiences because they made me more aware of what's going on in the world, which is something I rarely experience in other classes. Being able to combine school-work and an important world issue is a very beneficial project and it makes engaging in my work much easier In this project we were each responsible for representing a different stakeholder, rendering each of our research papers very different It gave us the opportunity to develop a small network of peers while still maintaining large personal responsibilities. I feel that this project made me more responsible as a group member, as each of us was counting on one another for a large portion of the project.

Finally, a student noted how by the spring term her learning had become truly student-driven because she saw the import of her life and actions within the topic she explored. This result was a deep learning experience

because of her personal connection to the topic. It is clear that this understanding will impact her future choices.

Spring term dealt with the ethical issues surrounding humanity and nature. Beginning with the case study of Grant Hadwin, the course right away connected to the epiphany I had experienced [in previous terms]. My ideas became more concrete in my writing and in class discussions. As we progressed into our group projects in current world issues, I felt very empowered, ready to investigate in order to educate myself on an issue I am actively perpetuating. My personal learning from this project supported my new philosophy. As I recognized what steps are needed to be taken in order to solve the issue of the sea lions at the Bonneville Dam, I also saw how humanity's knowledge has become destructive That is why education is so vital. Without the truth that can be discovered through learning, our contribution to the world is useless. Einstein once said, "Knowledge exists in two forms – lifeless, stored in books, and alive, in the consciousness of men. The second existence is after all the essential one; the first, indispensable as it may be, occupies only an inferior position."... I made these connections because it was only when I discovered how much nature impacts me as a learner that I realized the mind itself is able to process and flourish when it is introduced to new concepts.

While integrative and deep learning surfaced in the electronic magazine specifically, it was also a central focus for the entire year-long class which uses interdisciplinary material and assignments from such disciplines as evolutionary biology, neuroscience, linguistics, cultural anthropology, art, literature, landscape design, history, and conflict resolution to develop an understanding as to how all these areas define who we are as humans and how we interact with the natural world. The bases of these explorations are inquiry driven. Within these explorations, students are allowed the latitude to explore their own questions within these interdisciplinary lenses. But more than just understanding these concepts through a disciplinary focus, the students integrate them into a larger understanding. For example, students don't just understand human evolution but how that evolution connects to other disciplinary areas as well such as language development, consciousness, and self-expression through culture and art. Throughout the year, students are encouraged to allow this integrative learning to become deep learning through reading, discussing, and self-reflecting in terms of their world. This comes through in the words of the students.

One student states how the entire class, for him, resulted in a deep learning experience primarily because it allowed him to be engaged. He was at the center of learning, not the periphery.

As a student, I would say that it is extremely difficult to learn when the topics are not of interest It was a fascinating turn of events when I started this course and found out that it was student driven and not a standard lecture course. This of course meant

that my thoughts and ideas and entire concepts would be tested not only against the “might” of the professor, but against my fellow students as well It has been over the last two terms that I have really begun to understand the learning environment that best fuels my drive a class that forces me to create ideas, to question my own reality, a class that is more than just a teacher passing on information, that is where I excel Courses where I am presented an idea or skill and it becomes my responsibility to craft the final piece, those are the classes that I learn best in, and that I prefer I have found that making the discussions class-led have made it so those students who truly want to learn end up having the ideas they have addressed and can further their own thinking because of it My views have changed, my ideas have evolved, my fundamentals have shifted, but I still am who I am I know that my experiences are unique, my thoughts my own, and my ideals are lone in the world, however they are also part of a greater essence.

It is clear the whole design and content of the class allowed this student to have a significant learning experience and an epiphany about himself. Central to his experience was the student-driven nature and the inquiry-based design of the course. Students were the ones that asked questions, probed ideas, and challenged each other. Another student also recognizes the role of her own motivation in integrating learning into one’s world view.

I have learned from observation that teachers are here to help but they cannot teach those who do not try or do not care to try This shift has been most prevalent in this ... class. I have been allowed to explore my personal experiences and incorporate them into my learning. I have also been able to better understand different perspectives on issues in order to better understand that issue. I have been able to freely discuss issues with others in order to get a better idea of how to solve them. Overall I feel that the ... system has allowed me to go from retaining information to expressing my voice and opinion Because the ... course is the only one of my classes that allows me to freely think in a problem posing system, it has become very valuable to me.

This experience of deep learning as opposed to surface learning is echoed in another student’s sentiment at the end of the year.

So ... Knowledge is not merely knowing things, like memorizing terms from a test, but truly understanding them and learning from them so you can use that information/ understanding in other areas of your life. An education is not something you wait around for there is always something more to be learned, something beyond an “ought” or “is” and this is how I see my education ... something that is life long and is going to be layered and challenging but what will, in the end, make me a well-rounded person.

Clearly this student recognizes the power of knowledge beyond the classroom.

It is clear from these reflections, that this year-long course and the spring term electronic magazine project, in particular, created significant learning experiences for these students. This is because the course allowed inquiry, first and foremost, through discussions, readings, and assignment explorations of the students. This inquiry encouraged the integration of knowledge from a variety of disciplines and challenged the students to move from a surface understanding to a deep one. By doing this, students left the class with a broader understanding of the world and themselves. They, in essence, became empowered to continue their own inquiry into knowledge.

CONCLUSION

Students in higher education are entering a world very different from previous generations. Because most will change their careers several times, they need to know how to continually learn, change, and adapt their skill set. Most will interact with people both at work and home who are potentially quite different from themselves in culture, language and lifestyle and will need the tools to be able to successfully interact. We can prepare students for this world by designing learning situations that develop these abilities by allowing activities that develop multiple ways of knowing and encourage application to their own lives and choices. In other words, we need student-driven inquiry-based learning which allows for integrative learning and encourages deep learning. It is my hope that by sharing my electronic magazine assignment that you will be inspired to design similar experiences with your students. The world has changed and continues to change and we, as educators, must create learning situations that allow our students to enter the world knowing how to learn, seeing the interconnect- edness of knowledge within their world, and applying this knowledge in their own lives.

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APPENDIX

Human/Nature

Peer Assessment of Electronic Magazine Contribution

DUE: Last Day of Class

Working with a team can be a delightful as well as challenging experience. In this final project, you have had to work collectively to produce an electronic magazine. To achieve this each of you need to demonstrate commitment to the project and each other. Below is your opportunity to assess your fellow team members as well as yourself in those areas.

Your evaluation is worth 10% of the overall grade in the class.

Group Participation and Commitment

Assess how well each of your members as well as yourself demonstrated their commitment to participating in the team by attending team meetings and communicating with other team members. Also, how well did they meet their responsibilities in terms of meeting deadlines and completing their work in a timely manner?

1. _____ Name	1 _____ 2 _____ 3 _____ 4 _____ 5 (low) (high)
2. _____ Name	1 _____ 2 _____ 3 _____ 4 _____ 5 (low) (high)
3. _____ Name	1 _____ 2 _____ 3 _____ 4 _____ 5 (low) (high)
4. _____ Name	1 _____ 2 _____ 3 _____ 4 _____ 5 (low) (high)
5. _____ Name	1 _____ 2 _____ 3 _____ 4 _____ 5 (low) (high)
6. _____ Self	1 _____ 2 _____ 3 _____ 4 _____ 5 (low) (high)

Individual Magazine Responsibility

Each member assumed a particular responsibility in completing a successful electronic magazine. As a team member assess how successfully each person did in their assumed roles. I am attaching a description for each role for you to examine again in terms of your assessment.

Editor _____ (name)	1 _____ 2 _____ 3 _____ 4 _____ 5 (low) (high)
Design _____ (name)	1 _____ 2 _____ 3 _____ 4 _____ 5 (low) (high)
Tech _____ (name)	1 _____ 2 _____ 3 _____ 4 _____ 5 (low) (high)
Statistics _____ (name)	1 _____ 2 _____ 3 _____ 4 _____ 5 (low) (high)
Content Editor _____ (name)	1 _____ 2 _____ 3 _____ 4 _____ 5 (low) (high)
_____ (write in) (name)	1 _____ 2 _____ 3 _____ 4 _____ 5 (low) (high)

Take a few minutes to explain the reasons for your assessment given.

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DEVELOPING DIGITAL STUDENT SELVES: USING AN INQUIRY-BASED APPROACH TO EXPLORE DIGITAL CONFIDENCE IN CREATIVE LEARNING

Vic Boyd

ABSTRACT

This chapter reflects on the outcomes of the Digital Student Selves project at a small, specialist arts institution in the United Kingdom. The project aimed to promote increased student understanding of the research process as well as increased reflexivity by engaging students in an inquiry-based approach to unpacking experiences and perspectives of the role of technology in learning. Specifically, students were asked to consider the contribution of programme-specific learning technologies and social media to their creative identity and lifelong professionalism.

Discussion within this chapter outlines strategies that students employed in adopting blended approaches to learning and also presents key aspects of students' negotiation of digital selfhood. The discussion therefore has

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relevance in considering current practices in support of digital confidence and how these might be refined or augmented. In this way, the student contributors become co-creators in the learning environment, influencing recommendations for institutional change and best practice.

INTRODUCTION

Curricular use of learning technologies is increasingly expected by students on joining programmes of Higher Education (JISC, 2009; Kim & Bonk, 2006). A blended approach to embedding technology in learning and teaching practices and activities allows for engagement in multiple domains of learning that may be physical or virtual, formal or informal (Milne, 2006). Blended modes of learning offer possibilities for flexibility, choice and autonomy (Bach, Haynes, & Lewis Smith, 2007; Hilton, 2006) and encourage students to participate in potentially new and distributed ways of communication and self expression. However, arguably the effectiveness of a particular blended learning approach is determined by the theoretical foundations and pedagogical design of its composite online learning activities rather than being attributable to specific qualities intrinsic within the media or technology (JISC, 2009). Principles such as constructive alignment are as possible and necessary in the design and delivery of online activities as they are in any other learning environment (Bach et al., 2007) in order to ensure that technology's educational use is contextualised, relevant and situated.

Whilst students may be confident users of technology for personal reasons, often adjustment and support may be required in transferring digital confidence to the academic domain. Prensky's digital native versus digital immigrant (2001a, 2001b) construct is now arguably largely dismissed as outdated and reductive, and a clearer and more nuanced view of students' interactions with technology for educational purposes has long been sought. White and Le Cornu's (2011) notion of digital residents and visitors offers a much more fluid and transient perspective of users' technological interactions, whilst Boyd's concept of digital navigation (2013) suggests an holistic way of considering structured migration between technologies according to context and task.

This chapter reflects on the outcomes of the *Digital Student Selves* project at a small, specialist arts institution in the United Kingdom. The project aimed to promote increased student understanding of the research process as well as increased reflexivity by engaging students in an inquiry-based

approach to unpacking experiences and perspectives of the role of technology in learning. Specifically, students were asked to consider the contribution of programme-specific learning technologies and social media to their creative identity and lifelong professionalism.

Discussion within this chapter outlines strategies that students employed in adopting blended approaches to learning and also presents key aspects of students' negotiation of digital selfhood. The discussion therefore has relevance in considering current practices in support of digital confidence and how these might be refined or augmented. In this way, the student contributors become co-creators in the learning environment, influencing recommendations for institutional change and best practice.

STUDENTS, DIGITAL CONFIDENCE AND TECHNOLOGY

As students' interactions with technology become increasingly complex, personalised and agile, there comes a need to greater understand strategies, competences and ways in which those undertaking learning might be more effectively supported. Recent trends in massification and internationalisation of education have, in part, had an impact on the types of non-linear, non-mainstream knowledge, discourses (Eijkman, 2009) and learning and teaching practices currently in use, highlighting a time of great flux and uncertainty. Whilst undoubtedly exciting, such ambiguity carries implicit pressure for staff to 'stay ahead of the curve' in being confident users of emerging and disruptive blended learning tools. An interesting reciprocity exists here between student expectations and faculty's approach to embedding technology in the curriculum.

McKenzie (1998) describes a practice of students 'grazing the net', of becoming critical 'infotectives' who must evolve into discerning consumers of data and information with advanced competence in evaluating resources, their efficacy and importance. Milne (2006) points out in his summary of blended learning principles that in this context, not only are many web-based resources likely to bypass peer review, but also that increasingly students have become authors of content as opposed to passive consumers. This creates an ever-changing set of responsibilities for students in becoming critically aware, selective and yet potentially peer content creators. With the endless rhizomic possibilities that 'grazing the net' offers, students

can engage in expansive and unstructured learning that has the capacity to infinitely broaden and deepen knowledge in specific areas.

This is arguably and particularly important for students in the creative disciplines, for whom experimentalism and unintended learning can be key. For students studying on art, design and architecture programmes, technology can be not only a tool through which they learn and create, but through which they enact and project professional identities. The residence, situatedness and ownership associated with studio pedagogies can be enhanced and complemented by online activities, including remote access learning material delivery through a Virtual Learning Environment (VLE), professional and creative development through ePortfolio tools, and continuing critical conversations either on social media or through other asynchronous discussion fora. This exemplifies Milne's model of multiple domains of learning in a blended model – formally in the studio or classroom, the VLE, on structured online discussion environment, or informally in the library, students' association or on one of many personally moderated social media platforms. Potter (2011) discusses 'third spaces' for learning (such as in students' personal activities or homes) where a separating 'semi-permeable membrane' allows selective transference of some concepts to new contexts and locations. For students in creative disciplines, where boundaries between multivariate personal, private, academic and professional domains may be ever-blurring, this is of interest to note.

Students, too, with pervasive mobile device ownership, are likely to have increasingly embodied and tactile experiences of using technology. A techno-phenomenological lens allows us to re-consider human computer interaction and re-evaluate the 'subject-object divide' (Conty, 2013). Such an approach offers a hypothetical consideration of omnipresent digital devices as a metaphysical extension of the self, able to act and interact on our behalf and at our will. In many ways this echoes Clark and Chalmers' (1998) notions of 'extended cognition' in which actors make use of the environment to maximise the effectiveness of their actions. In this way, students are now able to rely on and embrace technology to carry out either routine or complex tasks in both their personal and creative lives. The sense of ownership and affiliation with some forms of technology can unequivocally shape a creative practitioner's future professional self.

Though not uncontested, the impact of technology on creative learning practices is undeniable. Souleles (2011) has argued that traditional forms of studio pedagogies and web-based interactions are uneasy bedfellows, but as with the entire educational and technological landscape, drivers in this debate are changing. Conversations about the democratisation of learning,

open education and connectivist approaches to learning through Massive Open Online Courses (MOOCs), for example, are changing the dynamics of and priorities in the learning landscape.

ABOUT THE PROJECT

The *Digital Student Selves* project, conducted in the spring of 2014, aimed to collect and share student-authored perspectives on the role of technology in learning. The project was a small-scale, institutionally funded, inquiry-based initiative, led by the institution's Blended Learning Co-ordinator, and was intended as an exploration into the complexities of students' use of technology within their academic programmes, project work and in developing professional identities and networks. Within the research, students were asked to reflect on their usage of learning technologies and social media within their programme of study, and how this might facilitate participation and creativity and impact on lifelong professionalism. The project aimed to promote increased student understanding of the research process as well as increased reflexivity by engaging students in an inquiry-based approach to unpacking experiences and perspectives of the role of technology in learning. Healey and Roberts (2004) suggest that active, inquiry-based approaches to learning facilitate a greater understanding of the role and value of research, whilst Badley (2002) argues for 'seeing both research and teaching as different forms of inquiry'. In encouraging students to participate in inquiry-based, reflexive activities, the project aimed to develop confidence in inquiry as well as underscore the value of research in the curriculum. Students were able to adopt a strong focus on self-awareness in their evaluations in order to offer insight into the complexity of ways that technology may impact on learning and how digital confidence might impact on strategies and participation. The research outputs include a series of case studies that contribute to a more in-depth institutional understanding of the strategies and solutions students might make use of in engaging with technology as part of their learning journey.

Key research questions that drove the research included:

- (1) *How might students develop strategies for use in engaging with learning technologies as part of creative learning?*
- (2) *In what ways might students' experiences of using technology influence institutional change?*

25 students across a variety of academic disciplines and levels responded to an opt-in email invitation to participate in the research. Of these 25, eight undergraduate students from within Communication Design, Fashion and Textiles, Fine Art Photography, and Sculpture and Environmental Art agreed to document and evaluate their digital preferences through capturing ongoing reflections in their learning processes. The contributors were given small, portable audio and video recording devices with which to create and collate artefacts to be shared via an online diary or journal. Student authors were also invited to contextualise these artefacts through explanatory and reflective text.

Benefits to this approach included: a high degree of student autonomy; potential for flexible and inclusive participation through accommodation of different learning or creative preferences and responses; scope for the development of improved digital confidence for lifelong learning and employability; engagement in an inquiry-based approach to develop reflexivity and an enhanced understanding of the research process; exploration of a breadth of inter-cultural applications and endorsements of learning technologies within the curriculum.

Accounts from three of the eight students who took part in the research are used for discussion within this chapter. The discussion is intended as an illustration of nuanced and personalised insights into the role of technology in learning as opposed to suggesting a generalised and reductive model.

METHODOLOGY

The research design aligns with past and current priorities in support of the UK Quality Assurance Agency for Higher Education (QAA) Enhancement Themes (Research Teaching Linkages, Graduates for the 20th Century, Developing and Supporting the Curriculum) as well as current debate on the role of students as co-creators of the curriculum (Bovill, Cook-Sather, & Felten, 2011). In offering students autonomy within the research process, and in so doing the opportunity to influence institutional change, issues prevalent in literature surrounding the 'flipped learning model' (Hamdan, McKnight, McKnight, & Arfstrom, 2013) and students as authors of learning opportunities are also relevant. The research also presents an opportunity to contribute to an emerging body of research on students' digital identities (Cronin, 2013; Savin-Baden & Tombs, 2010), in considering

narrative positionings of self within journals and the creation/management of online learning experiences.

Riessman (2008) refers to narrative analysis as ‘a family of methods for interpreting texts that have in common a storied form’ (p.11). In considering how the student journals might be analysed, the research draws on Riessman’s interpretation of thematic narrative analysis. Thematic narrative analysis, according to Riessman, offers scope to keep accounts “‘intact” by theorising from the case rather than from component themes (categories) across cases’, (p.53). Riessman (1990) counsels that thematic narrative analysis has distinct differences from grounded theory:

Unlike traditional qualitative methods, this approach does not fragment the text into discrete content categories for coding purposes but instead identifies longer stretches of talk that take the form of narrative – a discourse organized around time and consequential events in a ‘world’ recreated by the narrator. (p. 1195)

Riessman and Speedy (2007) further note that adopting a thematic approach to narrative analysis ‘explores the extended account rather than fragmenting it into discursive meaning laden moments or thematic categories’ (p. 430) as opposed to foregrounding ‘snippets of talk (mostly non narrative, stripped of sequence and consequence)’ (p. 434). Though the entirety of text shared by students in their journals has not been included, in thematically analysing them it is hoped that each account has a sense of being ‘intact’ by considering the evolution of the observations shared. The text has been taken from students’ online diaries and has been used to illustrate aspects of their digital preferences, creative practices and enactments of self.

Sparkes (1999) notes that in performing narrative, people ‘must resort to a mode of telling with which they are familiar’ (p. 20) to ensure that the narrative is a social practice based on that person’s cultural and social ‘repertoire’ and context. Each of the student participants chose their own mode of storytelling (Tumblr, Blogger or Word) and as such could be considered to have a familiarity with their chosen technology.

STUDENT PERSPECTIVES

Three student narratives are discussed below in order to highlight some of the personalised aspects of the role of technology in creative learning. These accounts have been identified as providing complementary and

contrasting perspectives on the student experience, and were selected from the range of student accounts for their depth and breadth of discussion.

Jade

Jade is a Fashion and Textiles student who uses a breadth of both digital and analogue technologies in her learning and practice. She uses a powerful desktop computer to work with complex, layered compositions in Photoshop, a graphics tablet for digital drawing, a digital SLR for photography as well as a sewing machine and hand-knitting techniques. She uses streamed music to structure her creative thoughts and a Kindle for accessing ebooks, both for ease of use and because of the substantially lower purchase prices of content. Jade described how some of the tools that she used allow her a certain degree of much-needed accuracy in the design and development process:

For my collage roughs I drew the outline by hand using my graphics tablet. This is an excellent piece of kit and allows me to interact with the computer using a pen rather than a mouse. Using a mouse in Photoshop is a bit like drawing with the centre of your hand, whereas the tablet comes with a pen and an airbrush, and a variety of nibs.

Jade relies heavily on her home PC that is now beginning to display signs of wear and tear. As a result of this, she backs up her work and also has contingency workarounds for when software crashes, for example, regular Photoshop restarts. She has experienced a disparity between how things appear on screen and when printed on textile, and adjusts for example darkness accordingly to achieve balance. Jade also discussed the complex process of putting together her portfolio, which required her to collate and capture some of the artefacts that she had created, write accompanying explanatory text, define the layout of the final document and then ensure accurate formatting before sending to a printing company:

Swatches and research materials had to be gathered together, edited and photographed. As I print my portfolio at an online print on-demand company I also have to convert all files into the CMYK profile. I also need to check that all images are at 300ppi, and order and file name them in an appropriate manner so that they are logically arranged. I write up the text that I am going to put with the images in Word, and then the project is typeset in Adobe InDesign.

Jade's use of technology enables her to document her creative process, taking photographs at various stages of design and development. She combines her digital design and manipulation techniques with hand knitting

and sewing to create garments, as well as adding detail by hand to computer generated images. This hybrid approach allows for experimentation as well as preserving versions. Jade discussed how one process can inform another and she ultimately uses both digital and analogue processes to develop her final designs:

For studio work I continued to swatch hand knitwear samples, and also to draw placement images. For these I made a basic outline of the garment in Photoshop, and then printed out lots of copies and hand drew the details in pencil. This actually worked very effectively.

As a result of her hybrid approach to using technology, Jade discussed an almost problem-solving approach to responding to her creative assessment briefs and an experimental outlook in finding a best fit solution. In outlining both her contingency plans as well as for example outsourcing large print jobs, she took an almost entrepreneurial approach in balancing complex digital/analogue tasks and the production of long documents, drawing on her extensive experience and networks. Jade has, over a number of years, refined the hardware and software that she uses to have a depended-upon toolkit to use in a modular way to complete diverse assessments. Her in-depth knowledge equips her with experience on which to draw in selecting technologies for use in a particular creative learning scenario.

Sarah

Sarah is a Communication Design student. In her learning and practice, she uses a diversity of technology for creative, employability and personal purposes. Sarah uses discipline-specific software packages (InDesign) as well as connective social media (Twitter) in her creative practice. She also makes strategic use of music sharing platforms such as Soundcloud in acting as a backdrop to her work and web searching for creative inspiration. She used Skype to secure a summer internship abroad, and discussed how the technology enabled her to participate in a way that might otherwise not have been possible:

Skype is an amazing technology, the past week I have had 2 Skype interviews for an artist residency in Germany. Skype and the internet have made such opportunities possible. From the comfort of my own bedroom I could communicate with someone in Germany, it meant (as they could only see what my laptop camera could see – my

face) I could cover the wall behind my laptop with notes of what I wanted to say and possible answers to possible questions.

Despite using technology to define the layout of her work, Sarah feels it is more ‘finished’ when printed and tangible. She acknowledged that whilst formatting packages are still time-consuming, they are considerably less so than the manual alternative. Sarah admitted reliance on technology and the internet, and the importance of keeping backups of important work. She also spoke about the importance of her smartphone:

Since getting an iPhone I’ve noticed I use my phone much more mindlessly much more often. It has basically exactly the same setup as my old smartphone but for whatever reason I am more inclined to interact with the iPhone, sometimes I find myself just scrolling through the app pages because there is something satisfying in swiping through.

Here Sarah presents a very gestural approach to interacting with technology. In this context, Sarah also noted that many computer commands, conventions or technological gestures mimic ‘real life’ actions (the nomenclature of a font *book*, the ‘swoosh’ of a turning page on an ebook). Sarah described this as ‘resistance against the unfamiliar’ that illustrates pervading attitudes toward technology, in incorporating every day phrases or acts into potentially unfamiliar contexts.

Sarah also noted the perceived importance on the part of the institution of the role of social media in sharing a professional profile. However, she admits a certain reluctance in doing so:

I use social media both in a professional and friendship sense. It is drilled into us to use Twitter etc, and have an online presence with your work to help us get jobs. I have to admit I feel more like I’m forcing myself to use it than want to.

For Sarah, technology is functional as well as recreational. She described how social media platforms and networks had been part of life since childhood, though the sophistication of the software had grown and her own use has diversified. In discussing how she felt ‘forced’ to use social media for creative and professional purposes, she highlighted a dissonance in natural inclination versus the expectations of her community and the institution – an endorsement of a public and active social media presence as arguably an assumed and integral aspect of student identity (Kear, Chetwynd, & Jeffris, 2014). Sarah also noted how ‘liking’ photos on Instagram or posts in isolation on Facebook is, despite perceptions of interactivity, a highly passive act – endorsing a picture or comment as opposed to engaging in critical discussion. This resonated with Sarah’s observations

of the blurring of boundaries and supposed transference of various concepts and acts between the real/digital world and a superficial replication of what might otherwise be a complex and protracted exchange.

Stephanie

Stephanie is a Communication Design student. She uses a variety of different media capture and graphics/media manipulation packages in her studies. Stephanie uses video editing (Premier) and desktop publishing (InDesign) packages in her projects and coursework. Stephanie actively uses the web (browsing, tangential research, shopping) for distraction and procrastination. She uses basic laptop note-taking tools for developing expanded planning for coursework, and a paper notebook/sketchbook to capture ideas quickly:

It seems like when I am having very rough thoughts or brainstorming a notebook suits me better, if an idea rushes to my head I grab my pen rather than opening my MacBook. However, when I am trying to assemble my ideas into a more concrete structure or whatever, I notice that I use my MacBook.

Stephanie uses Text Edit for note-taking in class, however acknowledges limitations in terms of including non-typographical content or emphasis (arrows or highlighting). Additionally, she has run into backward compatibility software versioning problems after an operating system upgrade which can make continuity of work or working between different computers difficult. Despite taking some effort to become confident in using InDesign, Stephanie certainly sees the benefit in making her layout workflow more streamlined and manageable:

I'm using InDesign now to work out what my layout will be like. I feel it is easier and quicker than trying to arrange it all on big sheets. This way, I can figure it all out now, work out exactly what size everything needs to be printed and where everything is going, so when it comes to assembling the actual portfolio, I can do it quickly.

Stephanie believes that technology facilitates group work by allowing remote and distributed access to documentation and project resources. She uses Dropbox for sharing versions of resources, particularly large files which may not be transferrable by email. She also noted the value of team work in problem solving using technical equipment in project work:

When we were first shown all the strange looking machines we needed to complete our project I was dismayed, I wondered what I had gotten myself in for. However, working

as a team and learning as we went has meant I am now confident using pretty much all the equipment, from the clip mics to the camera itself.

Like Jade, Stephanie makes fairly strategic use of technology in her work. She too is guided by a pragmatic, problem-solving approach to finding the best solution for a particular activity and shows a high degree of reflexivity in evaluating her choices according to task. She is aware of and maximises the usefulness of technology in planning and completing complex tasks, and is particularly keen on technology's application to partnership working. This adds a collegiate and collaborative dimension to Stephanie's use of technology, in addition to her self-determined and self-regulated use. Stephanie acknowledged that communal use of technology can be a learning experience in and of itself.

DISCUSSION

The inquiry-based approach that the *Digital Student Selves* project took enabled students to become autonomous authors of their own personalised and reflexive accounts of technology-enhanced learning and practice and to review influences on their digital confidence. In so doing, the accounts offered the institution an insight into the complex ways that students make use of resources, the environment and their own preferences to strategically and contextually navigate between technologies for specific purposes.

One of the ways in which the participating students shared personalised perspectives of technology use was in terms of process. Stephanie suggested that whilst a sketchbook may be useful to quickly capture ideas, the sophistication of software on her laptop allowed her greater command and flexibility for larger pieces of work. Sarah noted that although learning some software packages could still be time consuming, the benefits offered in project and process management far outweighed time invested in familiarisation. Jade highlighted how the creative process itself was influenced by a flexible and dual perspective of technology as both analogue and digital, and by embracing the possibilities offered by convergences between the two.

Both Jade and Stephanie also spoke about contingencies that they had in place to protect interim work or to progress work should technology (software or hardware) be unreliable. Whilst technology played a key part in the practice of the contributing students, it was on the proviso that there was an alternative process that would allow a similar output or a

protection mechanism to safeguard ongoing work. Both drew on problem-solving skills to find workarounds for maintaining workflow (for example, increased layering, keeping more frequent history instances). Technology was thus seen as crucial, but not infallible.

Sarah and Stephanie discussed strategic use of the internet for either structured (research) or unstructured (procrastination) browsing for different academic or personal purposes. Whether for subject-specific knowledge expansion or consolidation, advice on interview preparation and techniques or for connecting with extended networks, the participants discussed the importance of and dependence on connectivity. However, whilst they felt it important to have ready access to build an idea or complement existing information, participants also felt that there was something to be gained from restricted access, to minimise for example online shopping and to challenge their creative thinking and originality.

Streamed music was also noted by the students as a way of facilitating either concentration or creativity. Listening to either familiar or new songs, in the studio or in transit, are ways in which both Jade and Sarah illustrated conditions which helped them to be focussed or open to new ideas. Both highlighted their self-awareness in sharing examples of the importance that portable MP3 players, smartphones or streamed music through a desktop or laptop computer in the creative process beyond the studio.

Sarah also discussed the interactional aspect of using technology in learning, in terms of replication or mimicry of real world acts and gestures as well as in the limits and protocols of using social media. For Sarah, one of the ways in which the divide between the real and digital was tangible was when her work was printed, as though when in its digital form, a lack of dimensions compromised its efficacy.

These perspectives are useful to consider in returning to the research questions identified at the outset of the project.

(1) *How might students develop strategies for use in engaging with learning technologies as part of creative learning?*

In the reflections that students shared, they highlighted numerous examples of self-awareness in their use of technology. This influenced choice, strategy and process in how various complementary forms of technology were used in a breadth of assessment and professional development activities. Students noted, within their own habits and preferences, tendencies to use devices, media or the internet for distraction, for focus and in strategic ways to complete tasks. The conscious consideration of creative profiles and networks and how students feel about social media platforms suggests a varied

picture where relevance can be identified but is not always immediately welcomed. Technology makes these topically and geographically diverse communities possible, as it does with more localised groups within the institution. The activities of these groups has a discernible effect, according to the student reflections, on how and when learning itself can occur.

(2) *In what ways might students' experiences of using technology influence institutional change?*

Perhaps an increased awareness of the breadth of different technologies and students' diverse ways of engaging might influence changes to how digital tools and solutions are regarded in the learning domain and how they integrate into the curriculum. Whilst students may be given instruction in assessment briefs as regards how technology might feature in their submissions, self-awareness on the part of the student will inform individualised and potentially quite unique approaches to how the capabilities of different software, hardware or media might be incorporated. Furthermore, how students choose to interact with social networks, and feelings about their professional online presence, can be a source of dissonance as opposed to an assumed aspect of identity. Further assumptions about students' innate digital confidence should also be challenged, and revised to consider a structured approach to ongoing support.

CONCLUSIONS

Contesting assumptions about students' use of technology in learning is central within the preceding discussion. It is important that institutions take a nuanced view of diverse digital practices and confidence within the student population, and acknowledge the influence of students' prior experiences, areas of interest and expertise have on the creative and professional choices that they make. Institutions have a responsibility to provide ongoing, structured and flexible support for students in the knowledge that their technological journeys will be ever-evolving, according to unavoidable technological advances and obsolescences. Whilst some students may be digitally confident enough to seek tailored support through their own networks, in order to take an embedded approach to blended learning, institutions must acknowledge the importance of visible, timely and relevant support. This is of importance to consider not just in support of students' curricular activities, but in the preparation of confident, problem-solving

graduates who are able to apply diverse and practical creative concepts and competencies to their lifelong professional activities, presence and practices. In support of this, an holistic and integrated programme of professional development activities aimed at staff is imperative in engaging colleagues in discussion about students increasingly diverse, complex and autonomous practices.

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A MASTER'S LEVEL RESEARCH METHODS CLASS: A PRACTICE EXAMPLE OF INQUIRY-BASED LEARNING

Kathleen B. Duncan and Teresa Martinelli-Lee

ABSTRACT

This chapter presents a practice example of inquiry-based learning. A graduate level research methods course was designed to be student-centered and inquiry-based utilizing scaffolding assignments (Skene & Fedko, 2012), small group discussions (Huang, 2005), peer feedback (Skene & Fedko, 2012), and collaborative interactive exercises (Volet & Mansfield, 2006). Having students ask the questions in which they are interested (Jansen, 2011), find the resources to answer those questions, which then leads to new questions (Stripling, 2009), eventually culminates in the creation of a literature review and research proposal. The course concludes with a number of application exercises that connect theory to practice (Kuh, Chen, & Nelson Laird, 2007). Many of the specific in-class practices that support this inquiry-based approach are presented.

**Inquiry-Based Learning for Multidisciplinary Programs: A Conceptual and
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OVERVIEW

This chapter presents a master's level research methods course predicated on student-driven inquiry-based learning. Inquiry-based learning is ideal for teaching a research class, especially with adult learners. The instructor sets up the tasks and facilitates, while students build on their existing knowledge. Inquiry-based learning supports and stimulates students to pursue areas of interest to them. It often involves small group work in partnership with an instructor who acts as a facilitator. Students are required to find support for their ideas and synthesize what they have learned to apply it to the task at hand. In effect, students and instructors collaborate to enhance learning on multiple plains (Kahn & O'Rourke, 2005). In the context of inquiry, the faculty instructors help guide the learning that is taking place. Assessment changes within this context require that assessments occur at intervals along the way, so there can be coaching for improvement (Maniotes, 2010).

The course has been taught by both authors to working adult classes with domestic and international students. The class has been re-designed over the years to ensure a smooth flow from the methods course to the associated capstone course. During course revisions, the design has developed into one that guides the student in an inquiry-based process through scaffolding assignments (Skene & Fedko, 2012), small group discussions (Huang, 2005), peer feedback (Skene & Fedko, 2012), and interactive exercises. The final product of the course – a research proposal – contains a literature review, research purpose and questions, research methods and approach – all generated by each student within the context of a leadership and management master's degree which emphasizes the human aspects of organizational life and theory to practice.

SCAFFOLDING ASSIGNMENTS

Teaching using an inquiry-based approach may be new to many teachers/faculty (Gonzalez, 2013). It may also be new to students. Because of the uniqueness of this course within the degree, in that students write and revise a research proposal, they are sometimes a bit confused about how everything fits together. The linkages between scaffolding assignments are explained at the beginning of the course and throughout, but one way to assist them, and to begin the term with a bit of humor, is to show an

excerpt from the *Karate Kid*. Using movies or television in teaching has been going on for some time in classrooms to teach a variety of topics such as management and organizational behavior (Bumpus, 2005). In the scene known as Daniel's training "wax on wax off" (<http://www.youtube.com/watch?v=Bg21M2zwG9Q>), Daniel complains to Mr. Miyagi about all the work he has been doing instead of learning karate. Mr. Miyagi listens and then shows Daniel how each task he has completed such as waxing the floor and painting the fence has actually been teaching him karate moves. After showing the scene, we then explain to students that if the assignments are not making sense to them at the time, to please trust that they are "wax on, wax off" exercises and that it will come together eventually.

One of the uses of scaffolding assignments is to break down complex assignments into smaller parts. This approach gives students frequent feedback during the development of assignments as a way to keep them on track (Skene & Fedko, 2012). Table 1 shows the steps in the development of the research proposal, the smaller assignments for mastering each step, and the associated in-class exercises that build the skills to support the assignments.

The sequence of the assignments also represents higher order thinking skills. Using the revised Bloom's taxonomy by Anderson and Krathwohl (2001), students move to higher level thinking – from understanding to applying to analyzing to evaluating to creating. Each student begins by selecting an organizational problem in his or her current organization or in an organization or industry in which the student will work after

Table 1. Developing a Research Proposal.

Steps in Assignment	Smaller Assignments to Master Each Step	Interactive In-Class Exercises to Support Assignments
Choose topic	Online library tutorial	Brainstorm topics ^a Brainstorm search terms ^a
Research	Literature map	Librarian visit Mind map ^a
Evaluation of resources	Literature map revised	How to read a book Literature meal
Draft Research	Draft literature review Methods assignment	Paraphrasing/synthesizing exercise ^a Methods presentations
Revision	Purpose/research questions	Purpose statement ^a Research questions ^a

Source: Adapted from Skene and Fedko (2012).

^aPeer feedback.

graduation. This problem choice leads to a topic for developing a literature review. Many courses give standard topic lists from which students may choose. However we find that, “Inquiry-based research allows the student to ask questions in which he or she is interested and use all available resources to investigate the problem” (Jansen, 2011). Students then narrow their topics through a series of in-class exercises and by investigating the existing research on their topics. Scaffolding assignments (Skene & Fedko, 2012), such as the use of a mind map and literature map, lead to the creation of a literature review using guided and independent library searches (Maniotes, 2010) complemented by in-class discussions (Huang, 2005). Small group discussions, organized by topic, create communities of learning that support and help to direct students throughout the course (Jansen, 2011; Tillema, 2006).

In our in-class exercise titled “Literature Meal,” students place a list of books into categories: key theorists (main dishes), additional authors and research (side dishes), references for definitions (appetizers), and additional sources for quotes or metaphors (desserts). This assists them in critically assessing the sources they are finding along the way and whether or not they are appropriate for a scholarly literature review. There is also a class discussion of how to discern whether a book or an article is “scholarly” using sources such as *How to Read a Book* (Adler & Van Doren, 1972). Individually, and then in small groups, students brainstorm potential search terms and the best places to search for literature. Often students begin with Google or Google Scholar, Amazon, Blackwell’s Encyclopedias, even Wikipedia (for the references only!), before moving on to the university’s books and online databases (which contain journals, conference proceedings, dissertations, and so forth).

The process of using the “Literature Meal” tends to follow a previously arranged visit from one of the university librarians. Often the librarian’s visit may be the first time working adults are exposed to the available services. The librarian presents advanced techniques in searching for current and historical literature and an update on the most relevant databases available through our university (Maniotes, 2010). Our purposeful use of the librarian squares nicely with the research conducted by Brown (2012) who asserts that the use of inquiry-based teaching aligns well with library science in that it encourages intellectual freedom, vets information, increases capacity for change, and promotes reflection particularly about theory to practice. Subsequently, the visit offers students new insights and resources when researching their topic of choice within a specific discipline. The use and recognition of library terms is typically helpful and can alleviate

the impediment frequently experienced when initiating a mind map building toward a literature review. Hutcherson (2004) and Partello (2005) both indicate recognition of terms offers rational comprehension when computer-specific terms such as Boolean logic and truncation are needed to filter and narrow discipline specific topics. Given the accessibility and pervasive level of databases sources available at a global level, it is imperative students take advantage of the resources at their fingertips by networking with reference librarians.

Granted, most students apply the convenience of Google or Google Scholar to initiate exploration of a topic. Yet both the librarian and the instructor warn students that while such a process can be simple and efficient, the resultant tends to take students away from vetted and scholarly sourcing, which is more highly regarded in an academic institution. While topic items in a Google search render a multitude and nearly infinite supply of information, the yields do not necessarily result in peer-reviewed content. Much of what the Google search engine provides can be credited to business consultant sites, which in truth provide good information, but fundamentally, the information is not necessarily supported by scientific study. The standard for using peer-reviewed content validates that articles have been assessed for quality, been impartially reviewed, validated for methodological content and procedures, and endorsed via scholarly rigor within the discipline of study by experts in the field. Thus, such sources can generally be trusted for exemplifying a scholarly level of publication.

Since this is a graduate level course, students are expected to use primary sources as much as possible. Primary sources encourage students to evaluate literature in critical ways. Students are challenged to question the conclusions in the sources and to form new questions. As their search progresses, students are encouraged to compare and connect primary sources to secondary sources and textbooks (Stripling, 2009). Accordingly, avoiding internet sourcing is recommended because quality assurance is not evaluated, accuracy is not required or standardized, and most websites have sponsorships, which results in bias in terms of opinions, voice, and purpose. To this extent, the level and quality of internet sourcing may not be suitable for academic content. Consequently, credibility is the key constituent that provides reasoning for students to use trusted sources when conducting research.

Instructing students to use library databases is less important than demonstrating on screen or building in hands-on practice. Using examples from students' interests, the instructor can familiarize students of the accessibility of library databases as well as the use of the Google Scholar

research engine. Indeed, students are encouraged to use this initially because articles will be ranked in order of relevance. The number of times an article is cited is also provided giving indicating that the article may be useful as a literature source. Furthermore, some articles are directly accessible and available at no cost. Still, such is not the norm because most articles require a fee. However, students are instructed to take that very article and find the full text or PDF through the library's subscription databases, thus positioning their tuition dollars to full use. Experience and practice in the classroom validates that students both appreciate and take the process much more seriously once they have comfort and can meander through the databases independently.

An important training is the use of a mini-workshop that teaches the accepted or approved academic convention for the college or university. Whether using APA, MLA, Turabian, or Harvard exposure to the commonly used conventions help students find original sourcing. However and most importantly, learning the basics of the convention helps to prevent plagiarism. According to [Brown \(2012\)](#), the inquiry-based approach can clarify future questions on the basics of citation formatting, quoting, and general content organizing. Simple and quick how-to samples and hand-outs help ease frustrations and at times fear of a particular academic convention.

Later, students are asked to "mind map" their topic and give feedback to one another (for step-by-step instructions on mind mapping see http://innovationnetwork.biz/mission/workout/mindmapping_intro.html). [Edwards and Cooper \(2010\)](#) support mind mapping as a way for students to organize and display key concepts from multiple sources. At this point, the visual, kinesthetic, and tactile adult learner must connect the map from an obscure and somewhat ambiguous idea in their mind, into a visual map on paper. This action can more easily support the flow of ideas from concept to reality in an organizational setting. A touch of creativity is needed such that the adult can preserve the spirit of imagination leading toward opportunities and possibilities. Learning with shapes and colors is not limited to young children ([Knowles, Holton, & Swanson, 2012](#)). Indeed, adult learners can instinctually adapt personal learning styles to incorporate existing toward designing a literature map. For this reason, an array of colored pens, markers, and pencils along with large sheets of paper are distributed such that students may benefit by put paper shapes, images, and words on paper. This action engages the visual, kinesthetic, and tactile learner and reinforces the material because the student is more likely to incorporate a learning style that works best ([Honigsfeld & Dunn, 2006](#)).

The key outcome in this mind mapping process is to explore the student's chosen topic through the framework of organizational behavior. Going beyond the facts provides deeper integration and clarity of thought where the map makes sense more so to the student than to the instructor. For, if the student, can explain the map clearly by linking the ideas (i.e., make the connections), then the contents of the map can enrich the student's writing of the literature review. The mind map aligned to the scholarly references can easily become an outline for developing "the story" of the topic, which is student-driven, but not student opinion. Mapping concepts are useful at the graduate level because the activity generates thinking skills useful outside the classroom. Mapping can be a cultural convergence aiding business and community environments with a variety of conditions including conflict resolution, team dynamics, and a simple but clarifying purpose of *form follows function* modality (Margulies, 2004).

Finally, after finding relevant and scholarly literature, students are assigned the completion of a literature map. The literature map links the key words from the mind map to the related literature. Creswell (2013) in *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* has a chapter on writing a literature review that includes an example of what a literature map looks like when completed (p. 39). The instructor gives feedback on the direction of the search and the quality of the sources to assist the student in continuing to narrow the topic with the best literature. Keeping in mind that the methodology chapter will follow the literature review, students are guided to retain the topic as "manageable" by being focused rather than broad, such that the discussions are retained within the confines of the topic.

LITERATURE REVIEW AND RESEARCH PROPOSAL

Reviewing content that is relevant and provides critical evaluation is the purpose of a literature review (Fink, 2005). Yet equally important is the balance within the literature review that provides support for the yet to be designed methodology. This provides a challenge for the instructor as in putting the cart in front of the horse, because the development of literature reviews, much as a puzzle is a staged evolution, should lead to the necessity for a scientific study. Therefore, aligning the topic to correspond to the methodology chapter is challenging, yet not impossible.

The completed and revised literature map acts as a guide to organizing the literature review. In-class exercises, with coaching, focus on how to synthesize, paraphrase, select a few (very few) choice quotes, and proper citing. It is our experience that writing a literature review often seems overwhelming to students who have not completed one before. By practicing paraphrasing one paragraph or one page at a time in class, students begin to see how the task can be broken into smaller, more manageable steps. By focusing on one paragraph under one heading at a time, they see how the literature can be integrated into a logical sequence as well. First individually, students choose a paragraph in a book or journal article and paraphrase it. They then exchange the original and their paraphrase with another student to check for clarity, that they have captured the meaning, and that the paraphrase is not so close to the original as to be considered plagiarism. Best examples are read aloud in class. Then in groups of two or three, students choose one paragraph from each of their sources that have a common theme or topic and synthesize them to create an integrated paragraph. Students submit a draft literature review for feedback on writing and direction, and then they submit a revised and completed literature review with the final research proposal.

The next assignment is to develop a research purpose and questions based on each student's topic and research of the literature. Small group discussion and faculty facilitation help to hone the purpose and questions. The process mirrors the Stripling Model of Inquiry (Stripling, 2009) in many ways such as developing questions, finding information to answer those questions, connecting the new knowledge to previous knowledge and experience, leading to reflection and asking new questions. The purpose and questions also help to guide the students in which areas to focus for the completion of their literature reviews.

Next, individual or small teams of students select a research method to present to the class exposing students to a variety of potential methods from which to choose for their final research proposal. Each student or group must present an assigned method by giving an oral presentation using a one page handout. The handout includes a basic overview of the method, the type of research for which it is used, strengths and limitations/weaknesses of the method, a brief description of the procedures to use the method, the history and discipline of the method, and at least three references for additional information. At the conclusion of the evening each student has several handouts, which in essence constitutes a mini research methods book. The collection of handouts provides information needed to complete the final steps of the research proposal.

Students develop skills in analyzing and synthesizing literature, succinctly presenting in both oral and written form, and learn from one another – not just another lecture by the instructor.

Students then plan how to choose potential methods to answer their research questions. Considerations include resources, best match to answer a research question, skills and preferred approaches of students, access, and so forth. When available, a diverse group of faculty researchers, from a variety of fields, is invited to present during one class session as a way of modeling different research approaches and for the students to better choose their own research style.

THEORY TO PRACTICE EXERCISES

Maniotes (2010) reinforces years of study that field-based education results in long-term retention based on association (i.e., connection to a condition). Students do not often realize that the application of research methodologies and statistics are part of their daily business operations and professional careers. Equally, students often overlook the use of statistics in the applications of personal decisions.

One assignment that tends to foster students' critical thinking skills is called the Radio Blog assignment. In an online (web based) discussion forum, students are instructed principally to *listen*. Whether listening to podcasts, public radio, or internet radio, students are asked to pay attention to the story or the news where statistics are used to define, explain, or validate a story. Oftentimes, the story of interest is said quickly and the student cannot obtain sufficient details. Therefore, rather than listen to arbitrary stations, students are directed to listen to National Public Radio available worldwide or Ted-Talks or campus-based radio stations.

These specific radio stations offer a website to listen repeatedly as well as read the transcript, which is very useful for the auditory learner. Students are to then select a story of their choice, and submit via the discussion forum the reasoning for the particular story, how the research methodology was applied, or how the statistics rendered made sense and why the story was important to society. The discussion forum then populates with multiple discussions on a diversity of topics. Recognizing that such constructive investigation is inquiry-based **Maniotes (2010)** contends that "As students immerse themselves into the inquiry, the instructional

team encourages them to bridge the connections from the information they are finding into their own interests and lives” (p. 36). Thus, learning takes place within a social framework yet inquiry becomes intrinsic as students connect social learning based on firm scientific exploration.

In their study of cultural diversity and intercultural learning on college campuses, Volet and Angm (1998) show evidence of distinguishable and interpretive development by adult learners when in-group work. Similarly, Volet and Mansfield (2006) determined encouraging behavior when considering group work of college students. The indication is that diversity and inclusivity are concepts best learned when working together to determine a solution to a problem or a condition. This distinguishes the balance between learning ideologies. The first is that there is value in traditional pedagogy in terms of the application of visuals (clips and videos), textbooks, journals, brick-and-mortar classrooms, and instructor-led lectures. The second is an inquiry-based approach whereby discerning questions are both expected and uncontested, are discussed with care resulting in valuable yet perceptive awareness that leads to consensus and situational change.

A blend of both of these approaches takes place in an assignment called Solaris 5. Students are to imagine living in the 25th century and are assigned as a social scientist of a starship deployed to explore a planet much like earth of the 20th century, but which is no longer inhabited. Students are shown two videos one regarding living the life of a gangster called *Gangster Paradise* by Coolio (<https://www.youtube.com/watch?v=cpGbzYlnz7c>) and the other called *Weapon of Choice* by Fatboy Slim (<https://www.youtube.com/watch?v=XQ7z57qrZU8>).

In groups, students are to analyze burned out fragments of what was left behind by this society given only the videos and charred remains, and determine two research questions that may provide insights to the reasoning why the society behaved in the manner portrayed in the videos. Upon completion, the groups present their developed questions to the class. An open discussion is held to discern the value of each question, and a suitable methodology to answer said questions is proposed. The idea is to identify solutions for assessment of organizational behavior, such that when individual students explore their methodological approach, experience with a group would provide useful strategies.

Science and geography field trips have long been a standard in K-12 education, but not so prevalent in higher education and even less so at the graduate level. In the social sciences, the effect of student learning through field activities and group work has had positive results in terms

of pre and post retention learning (Sturm & Bogner, 2010; Volet & Mansfield, 2006). For university graduate students, cooperative learning has empirical rationality whereby cognitive, motivational, and social benefits aimed at applicable and practical objectives are desirable attributes. As such, higher education engagement and curriculum development play a significant role in collaborative learning environments. Accordingly, Toma (2007) would attest that institutions should not “neglect core principles, such as freedom of inquiry, love of learning and openness to new idea” (p. 68).

Empirical studies over the past two decades have revealed that experience garnered through group work supports the theory of student self-regulation and incorporates personal goals as necessary elements for team-building skills (Bosworth & Hamilton, 1994; Burdett, 2003; Fenwick, 2002; Salonen, Vauras, & Iiskala, 2004; Volet & Angm, 1998; Volet & Mansfield, 2006). Thus, interpersonal, motivational, and socio-emotional aptitudes are influential to group processes and performance. Whether using a team-based approach, group projects, or other collaborative learning activities, teaching and learning are systematic to student learning and expected outcomes (Kuh, 2008).

Some 20 years past, Bosworth and Hamilton's (1994) sourcebook on collaborative learning in higher education set the precedence and initiated a theoretical framework for promoting emotional and cognitive learning in the social sciences. The approach taken sought to assess collaborative activities specific to group learning environments. With group dynamics in mind, the authors identified critical thinking skills, peer interaction, problem solving, and learning processes as components of a positive environment. Relationship building and structured group studies were key outcomes for collaborative learning.

Through this, early empirical approaches converging evidence as to the importance of collaborative learning resulted in a plethora of innovative learning processes and effective teaching techniques for university faculty. Research by Barkley, Cross, and Howell Major (2005) affirmed that university students are more likely to be engaged in their learning outcomes when such techniques are utilized. In an Institutional Research conference paper, Umbach and Wawrzynski (2005) explain the role of faculty as key to cultural learning, awareness, and participation. In this respect, Kuh, Chen, and Nelson Laird (2007) acknowledge that while teachers as scholars matter, when the emphasis is on collaborative learning, the effects of the participating is as a rule positive.

Field Discoveries

The opening of doors to new discoveries and cultivating collaborative learning outcomes can expand the learning experience beyond the brick-and-mortar classroom setting. The notion of using field teaching as an engaging example of innovation reinforces the attitudes and behaviors cultivated by the use of field trips is supported by research conducted by [Shakil, Faizi, and Hafeez \(2011\)](#) and [Gill, Adams, and Eriksen \(2012\)](#). When triangulated with primary, well established, and effective educational practices, the use of field trips as a course component can underscore learning in the social sciences. A collaborative learning setting can be meaningful and vivid while inspiring concrete, yet pedagogical experience. To view and explore the setting for observational research methodologies can provide an opportunity to tactically and visually connect with a potential empirically based study. Such a process can “open the eyes” of students when combined with structured, clarified, and stimulated guidelines. The concept of group work and collaboration is realized when students can conceptualized taking theory to “real-life” practice ([Lonergan & Andersen, 1988](#)). Granted some logistics matters may need to be arranged, yet the intent of the field activity or excursion is clarified by the learning benefit.

While taking into consideration course learning-objectives, available timeframe, travel, student cooperation, and availability of resources, the field trip for the graduate course discussed in this chapter has very specific objectives, although results have varied depending on student participation and group dynamics. As a course component of this master’s level research methods class, students are asked to meet at a local In-n-Out Burger, a popular yet regional to American Southwest fast food restaurant chain. With an old-fashioned menu and a tradition set in the California way, In-n-Out Burger is highly regarded as a popular place to eat by most students. Most of the locations provide indoor as well as outdoor seating permitting a relaxed and casual classroom setting. At the beginning of the course, students are told of a pending field trip, but not told where to meet until a week prior. Company headquarters are called to apprise them of the visit to one or more of their restaurant locations.

Given that course content requires students to research a number of methodologies building toward their final Research Proposal, having hands-on experience with fieldwork with one of these methodologies connects theory to practice. Class is held outdoors initiated with roles followed by a review of previously discussed methodologies such as case study, ethnographic, observation structured, observation unstructured, and survey

instruments. Because the methodology applied is a mix of approaches, students are given the freedom to choose based on their initial research questions. Students are then asked to self-group to build a team sized to the class count. This can be as small as three teams and up to five teams. Each team is then handed an envelope with specific instructions as to which group they will need to observe. However, the class is instructed not to discuss or share information with other teams until the end of the session. The assignees include employees, customers, drive-through customers, eating habits, and classmates, although other observations can be designated. Unbeknownst to groups is that the Objective, Procedures, and Items to Consider for the group are essentially the same. That which differs is the design, research questions, and the approaches, which are independently developed by the group.

As students review their assignments, they are instructed to partake (non-mandatory) of food or beverages in order to blend-in with other customers so that those being observed do not change their behavior. Students are not specifically told which variables to analyze as this is part of their development, but may be given suggestions or guidance as to what is suitable based on their research questions, which too are to be established. As teams relocate, they are given the freedom to choose observation posts based on their variable development. Some will use stopwatches; others will be active by moving about, while others will sit in observation and notation throughout the process. The period allowed to conduct observations, data gathering, and analyzing varies, but tends to be between 40 and 60 minutes depending on the number of students and weather conditions.

Once a sense of completion is in order, students are instructed to stop gathering data, analyze the results, and be prepared to present results and recommendations when the class regroups. In order, each group presents their findings with as much detail as warranted with an open question and answer period to follow. The team that had been assigned their classmates always presents last because all are very surprised that they too were a part of the study. This last observation renders a positive conclusion to the field trip as students consider themselves a part of the whole. Prior to the next class, the team leader is to post results, recommendations, and team member participation on the web-based learning management system (i.e., Blackboard, Canvas, or Moodle). Although initially students are briefed on the purpose of this process, it is crucial to maximize their field learning via a debriefing whereby students can best determine what they learned from the process of going outside the brick-and-mortar classroom.

The aim of this field activity is to derive a real-world experience, expand quality of education, and provide a positive, yet practical approach beneficial to students' professional careers. Affirming this notation and believing that students are the natural focus of their learning, [Greene, Kisida, and Bowen \(2014\)](#) extol the field trip or field activity utilizes an approach permitting students to experientially enrich their learning and retain a higher degree of information. The result of this graduate level field activity suggests effectively convening research methodology learning in addition to the traditional academic content.

The goal of this inquiry-based research methods course is to develop critical thinking and research skills that can be applied to real-world organizational problems and situations (although students often think the purpose is solely to help them in getting ready for the capstone course). An additional application exercise during the course includes an analysis of the research found in the documentary [Supersize Me](#). A seven-minute version of the film highlights is available through YouTube (<http://www.youtube.com/watch?v=N2diPZOty0>). Students are asked to analyze the methods, sample size and selection, intervening variables, and procedures and to critically analyze whether or not they find the results reliable or generalizable.

During the final class meeting, students are asked once more to think of current organizational problem they would like to solve. This time, in small groups, they find they can quickly think of ways to research the problem searching for solutions using literature and the data they would collect through their chosen methods. They are often amazed at how much they have learned and how easily they can see the connections between the theory they have learned and their professional practice.

CONCLUSION

There are many complex steps to teaching any course. Designing this course to have the student in the center in a collaborative process with a faculty facilitator has created a partnership that enhances the learning for both student and teacher ([Kahn & O'Rourke, 2005](#)). Allowing students to guide their own learning by seeking answers to the questions in which they are most interested is at the heart of this inquiry-based approach ([Jansen, 2011](#)) and gives students a level of ownership that carries through into their capstone course. Lastly, especially for adult learners, creating the linkages between theory and practice is the final connection

that ties together what they have learned to how they can be effective in their professional settings.

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PROBLEM FINDING THROUGH DESIGN THINKING IN EDUCATION

Gavin Melles, Neil Anderson, Tom Barrett and
Scott Thompson-Whiteside

ABSTRACT

Design thinking has become something of a buzz word in innovation discussions and has recently also invested occupied education spaces. In this chapter we briefly compare design thinking to problem-based learning (PBL) and enquiry-based learning (EBL) approaches to problem solving in education before focusing on the approach itself and current debates about its meaning and significance. This chapter focuses particular attention on the problem finding aspect of design thinking and its integration of creative methods for solving a range of tame to wicked problems in a variety of spaces. We ground our analysis in three environments of design thinking and five specific cases of application across education sectors from primary through to university. The examples focus on the generative potential of design thinking for all students and especially those from non-design disciplines. It is this capacity of design

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thinking to complement existing pedagogies and provide inspiration for change and innovation that is the strength of the model.

INTRODUCTION

The origins of PBL in medical schools (Neville, 2009) and then its subsequent spread especially into other professional areas such as engineering, nursing and education has been well described elsewhere (Boud & Feletti, 1998). The approach describes a series of principles, for example constructivist small-group learning, teacher facilitation, learner-centredness, which allows for some variation in execution and emphasis (Maudsley, 1999). Thus, some refer to it as a ‘strategy’ rather than a ‘method’ (Walton & Matthews, 1989). In PBL students are presented with a problem and it is theorized that ‘students working in teams learn by solving real or realistic problems’ (Allen, Donham, & Bernhardt, 2011, p. 21). While the students explore the problem’s definition and boundaries they use prior knowledge combined with information they seek that is relevant to the problem in order to reach a solution. The ‘instructor’ becomes a facilitator of problem solving rather than a presenter of facts and information. Enquiry-based learning (EBL) takes a similar approach but in many instances, provides a question rather than a problem (Roberts, 2013). In a similar fashion to PBL, it advocates a change in the teacher’s role from using ‘expertise to transmit knowledge to using it to guide learning’ (Roberts, 2013, p. 51). Both PBL and EBL models are consistent with the principles of constructivism in education, where learners as constructors of knowledge apply that knowledge in a similar context (Wilson, 1996).

In the context of design education, problem-based learning has often been conflated with project-based learning. Green and Bonollo (2003) argue that design education is more attuned to project-based learning where students often have to establish the problem, where as in problem-based learning, students follow accepted theories and principles to solve a clearly defined problem given by the teacher. Not all problems in PBL are equal and the problem definition and difficulty plays an important role in the effectiveness of student outcomes (Jonassen & Hung, 2008). The design thinking process begins with a problem finding process that engages with the world around to discover needs and insights that might drive the innovation of products, services or systems of various scales and complexities. Compared to the design thinking approach, PBL and EBL

emphasize the educator in scaffolding the problem solving process but rarely is any attention given to strategies that the instructor can use to facilitate this process. It also involves the educator in framing and supplying the problem or question and then students are encouraged to follow a relatively linear process from the problem or question to the solution or answer. There are then similarities between design thinking and PBL/EBL and certainly the Deweyan impetus behind EBL to focus on enquiry and experience as critical is a common reference point for both methods (Buchanan, 1992). Thus, Savery (2006) notes that ‘Inquiry-based learning is grounded in the philosophy of John Dewey (as is PBL), who believed that education begins with the curiosity of the learner. Inquiry-based learning is a student-centered, active learning approach focused on questioning, critical thinking, and problem solving’ (p. 16).

DEFINING DESIGN THINKING

Over the past two decades, Design Thinking has been viewed as an approach to human-centred product innovation, and subsequently as an approach to strategic decision making in business, social innovation and other areas. The term design *thinking* is unfortunate as it suggests a cognitive or philosophical focus where the approach is about practical engagement with problem solving.

The term began life naturally enough as a description of the creative process in architecture, engineering and industrial design practice (Dym, Agogino, Eris, Frey, & Leifer, 2003; Lawson, 2005; Rowe, 1987). One of the lead industry voices for the approach as a way into design innovation (and latterly for its application into education) has been the design agency IDEO (Brown & Katz, 2009) and Stanford University (Plattner, Meinel, & Leifer, 2012) who developed the approach as a standalone and transferable method out of human-centred design principles (HCD). In many respects, HCD continues to be the preferred term to design thinking in human–computer Interaction (HCI), and in social innovation space in the third world (Sanders & Stappers, 2008), while design thinking has bifurcated into other domains. It has been claimed that the spread of the approach has led to the emergence of perhaps five ‘discourses’ about its meaning (Johansson-Sköldberg, Woodilla, & Çetinkaya, 2013; Kimbell, 2011; Lindberg, Noweski, & Meinel, 2010) that have more or less to do with design as a field per se (Cross, 2001). For example, these discourses

range from Design Thinking as a process of reflective practice to an act of creating meaning, to a way of problem solving.

The shift of design from some of its traditional material spaces of graphic, product and interior design into services, interaction design and more broadly into innovation strategies helped create the impetus for the idea of design as a pragmatic approach to wicked problem solving in multiple domains (Buchanan, 1992). Thus, one argument for design thinking ubiquity relies on the ‘contentless’ nature of design and its capacity to provide a common language of creativity and innovation to multi-disciplinary teams (see Lindberg et al., 2010). Thus, Buchanan (1992) notes that ‘design problems are “indeterminate” and “wicked” because design has no special subject matter of its own apart from what a designer conceives it to be’ (p. 16); it is partly this dematerialization of design that has contributed to the spread of the approach.

The method is described as a sequence of phases linking discovery through to ideation and then prototyping. Brown (2008) calls these Inspiration, Ideation, Implementation; others describe the phases in more detail and using other terms. All versions of the approach however, begin with a scoping of the problem space with more or less detail about the specific issue, and leading eventually to outcomes that take on board user and other stakeholder views. In addition to the anecdotal enthusiasm of articles in the business sector describing success stories (e.g. Clark & Smith, 2010), however, there has been limited study of the realities of implementation of the methods (e.g. Seidel & Fixson, 2013). In the broad business and strategy domain where it has had some traction there is some scepticism about the clash of cultures between design and business thinking, the dilution of the creative message, and the overall credibility of the approach to deliver results rather than just stimulate short-term enthusiasm (Carr, Halliday, King, Liedtka, & Lockwood, 2010; Sobel & Groeger, 2013).

Over time, as design thinking has spread from product innovation into other domains, for example management (Dunne & Martin, 2006), up to five new discourses have developed about its meaning that stress either direct links to design practice, innovation or the universality of the approach as a complementary approach to humanities and science thinking (Johansson-Sköldberg et al., 2013; Kimbell, 2011). Whether these ‘discourses’ are just the product of the application of a broad process into sector domains, similar to PBL, with their own central concerns or more substantive distinctions remains unclear. The term design thinking refers to the practices of working designers (e.g. Cross, 2006; Dym et al., 2006; Lawson 2006). In fact, as Kimbell (2011) also points out the practice not

the theory aspect is the element that if anything defines the method – it is a ‘making’ and ‘doing’ approach based on a set of heuristics, for example show don’t tell. This relates to the principles of experiential learning first popularized by Kolb (1984), which is commonly referenced in design education. Experiential learning is ‘the process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping and transforming experience’ (p. 41). It is a process of learning by doing, often through the crafting or prototyping of concepts and new ideas.

Design thinking can, it is claimed, improve decision making practices in other fields, such as health care systems and services (Duncan & Breslin, 2009), strategy and management (Lester, Priore, & Malek, 1998), operations and organizational studies (Romme, 2003), and more recently in projects where social innovation and social impact matters (Brown & Wyatt, 2010). In these fields, the employment of designerly strategies, for example designing with and for stakeholders, through the decision making process creates a better environment, it is argued, for quality outcomes. In engineering education, design thinking has been suggested to improve student retention, student satisfaction, diversity and students’ learning (Dym et al., 2003). Beyond sectoral reports, attempts have been made to generalize the approach as a ‘third way’ distinct from science and humanities approaches to problem solving (see Owen, 2007).

Focusing on organizational change and accepting the three-way distinction above, Romme (2003) meanwhile links the designers ‘third way’ with pragmatism and resolving wicked problems in organizations (see Australian Public Service Commission, 2007). The openness, practicality and transferability of design thinking is precisely its strength and it may be that, as some argue, a design (thinking) attitude or mind-set across a company or organization, for example Proctor & Gamble, Mayo Health Clinic, is a recipe for innovation success (Beverland & Farrelly, 2010; Venkatesh, Digerfeldt-Mansson, Brunel, & Chen, 2012).

Unlike approaches which begin with a defined problem or project, in design thinking significant time and energy are dedicated to the problem finding phase (Beckman & Barry, 2007). The techniques deployed during these phases are well-known investigative techniques, for example observation and customer journeys. It is the transferability of the approach and these techniques to other areas that has contributed to its appeal. This also makes it an ideal element to ‘mix’ with other considerations and approaches in research and practice contexts, for example health (Duncan & Breslin, 2009). The relevance and application of the approach into education spaces

at all levels both for innovating pedagogy and learning spaces has received limited attention in the literature (Carroll et al., 2010) but is generating enthusiasm from primary to higher education sectors.

There has been limited focus on the clash of cultures or discourses that results when design thinking is deployed into other fields, including education. What adaptations must be made? There has also been limited attention to the long term viability of solutions. Do design thinking innovations create long term impact and do they scale? Examples like the Mayo Health Clinic (<http://www.mayo.edu/center-for-innovation/what-we-do/design-thinking>) demonstrate the capacity of design to contribute to change. Is this example unique and how well does the approach scale, including globally? Finally, the value of the approach seems to be as a heuristic – a set of ‘designerly’ principles about problem solving – rather than as a new theory or epistemology (Rylander, 2009). In the examples below, students were responsible for developing their own problems using the support of strategies aimed at a balance of divergent and convergent thinking and focus. Dorst (2011) points out that ‘designers have been dealing with open, complex problems for many years, and the designing disciplines have developed elaborate practices to do this’ (p. 522) and illustrates the importance of students finding, framing and sometimes re-framing problems and working backwards from a possible solution or knowledge of an appropriate system or processes to achieve a value.

EXAMPLE ONE: DESIGN THINKING AT SWINBURNE UNIVERSITY – EMBEDDED WITHIN UNDERGRADUATE CURRICULUM

In the following section we discuss several examples of implementation into education environments and emphasize the challenges (and benefits) of the problem finding process. We begin with a brief vignette of an undergraduate course developed and delivered by one of the authors, which has been described elsewhere (Melles, Howard, & Thompson-Whiteside, 2012).

Case Study One: Design Thinking for Undergraduate Designers

Design Thinking strategies were developed and delivered by one of the authors beginning in 2010 as part of the Design Management Minor and

available as an elective subject to design and other students. The development of the course benefited from international input and motivations, including an international two day seminar in late 2009 on the nature of design thinking organized by Swinburne University. The course development was linked with a three-year, funded EU-ICP Development Grant focusing on design thinking in the curriculum and involving seven institutions with degrees of commitment to design thinking (Melles & Thompson-Whiteside, 2013). Until 2013 it was taught simultaneously in Hong Kong, as part of a transnational programme, and Melbourne with cohorts numbering between 10 and 35 in Melbourne and 60 and 70 in Hong Kong.

The teaching component comprised a one-hour lecture and a two-hour tutorial each week with guest lectures delivered by industry experts, for example from the National Australia Bank (NAB) and the financial advisory and audit firm Deloitte Australia, and where possible, these lectures complement internal teaching. These guest lectures from practitioners in the field proved valuable, providing students with the insights into how design thinking is being practically applied in industry. Complementing the readings and the lectures were segments from online video channels, such as YouTube, that included Tim Brown (IDEO), Roger Martin (Rottman School of Management) and Shelley Evenson (Carnegie Mellon). Assessment outputs included an annotated bibliography assignment, weekly forum discussions of readings, a group project delivered via a Pecha Kucha presentation in week 12 and a final report, latterly incorporating a business canvas model of the start-up economics.

The main lesson learnt from several years of teaching and evaluation was that it was difficult for design students to move from a narrow product, space or interface design perspective to one encompassing a broader system and organization sense. There was a tendency for the project problem to be too quickly scoped to a particular material product as this is the conventional approach in design schools. A second 'intellectual' problem was reading texts critically and writing about these is also not a typical strength in design schools. The third major problem was the time limitation, which did not allow, given other challenges, for students to fully develop and test proposals but only to develop proof of concept ideas that could eventually be further developed. The fourth was the integration (or lack of) and different approaches brought by students whose major studies were in design, and students from other disciplines, like engineering, business or the arts. Over time we have shifted emphasis to social innovation and the incorporation of business modelling. This integration into a specific sectorial space has provided constraints that reposition design thinking as a

contribution to broader human development goals, a move that resonates with the field (Brown & Wyatt, 2010). The real capacity of the method, however, is to invigorate problem finding and solving in non-design areas, as we show in what follows.

EXAMPLE TWO: JAMES COOK UNIVERSITY – AN INTENSIVE MODE FOR CROSS-DISCIPLINARY PROBLEM SOLVING

Two case studies involving the use of design thinking conducted at James Cook University will be used to illustrate the difference between a design thinking approach and alternative approaches such as PBL (problem-based learning) or EBL (enquiry-based learning). The case studies span the creative arts/design and education discipline areas. Research examining the university's use of design thinking in various discipline areas was supported by funding from the Australian government OLT (Office for Learning and Teaching) in 2012 and 2013.

Case Study Two

The first case was completed over a six-week period by a group of 19 final year students studying design in the School of Creative Arts. The project was based around the development of empathy and understanding of the needs of elderly people and involved determining the types of problems that exist around products and services to enhance health, well-being and quality of life for the elderly. As part of the brief, the student teams would produce a product or service to run on a touch device such as an iPad.

Initially, the students were introduced to the design thinking process and the underpinning strategies. Initially, under the general heading of 'understand', the students engaged in studying strategies to enhance empathy, especially considering that many of the participants expressed a lack of understanding and connection with older people. Students studied the literature on the ageing population, including emerging and existing issues related to people over the age of 60. Once the students studied the general literature in this area, they then focused on the elderly and the use of technology, along with a scan of the existing apps targeting the elderly. In their examination of existing applications designed for the elderly, students were encouraged to

take a critical stance and they subsequently identified many issues of usability evident in the existing software. They were then required to form pairs to interview at least two people in the target demographic to directly engage with people and to gather valuable insights into habits and daily routines and attitudes to products of digital technologies. The students produced tables to summarize the habits, routines and attitudes of individuals and examples were presented in a subsequent research paper (Fleischmann, Visini, & Daniel, 2012).

After developing their understanding through research and observation, the students in design pairs, created informed personas that would be helpful in the overall process of designing the product or service. Students participated in workshops that enabled them to master the use of Adobe Flash Catalyst for prototyping and began presenting their personas and brainstorming in larger teams of six or seven to gather and present ideas for touchpad-based products or services that would solve particular problems, add value and/or meet the needs of older people. During this ideation phase, ideas were presented on whiteboards. Each design team elected a facilitator to ensure that the discussion continued smoothly. Finally, each team decided on one idea to develop further.

For the final part of this project, the students worked individually to engage in developing multiple prototypes for the idea and then continued to the iteration phase. Fully interactive prototypes were created with Adobe Flash Catalyst and the academics concluded, ‘in the end, several of the 19 designers created thoughtful and well-designed apps’ (Fleischmann et al., 2012, p. 14). In this project students were engaged in developing empathy through understanding, which led to uncovering issues faced by older people. In doing this, the students needed to frame problems and look at possible solutions or ways that value could be added to existing solutions. Throughout this process, the students reviewed design thinking phases and strategies that scaffold this process and began to build their repertoire of transferable skills.

Case Study Three – Creating Online Educational Activities Using Design Thinking

In the third case, 246 second and third year undergraduate students in teacher education subjects studied design thinking models and strategies as part of their core coursework. This subject was delivered in four different modes, including totally online, face-to-face and blended models. Students

studying education in Australia need to be prepared to teach the new Australian school curriculum, including a new subject, 'Design in Technologies' which has design thinking at its core. Since the compulsory stand-alone subject spans the foundation years, through primary school and to at least the end of Year 8, it involves Early Childhood, Primary and Secondary teachers. Practicing teachers will also need extensive professional development to increase their knowledge and application of design thinking strategies. It is envisaged that this initiative will help achieve the major objective of the Australian Creative and Cultural policy to embed design thinking across all sectors of education and to promote its use in industry and government.

Students began with an exploration of the design thinking literature that had an emphasis on the non-linear Stanford Model (https://dschool.stanford.edu/groups/k12/wiki/17cff/Steps_in_a_Design_Thinking_Process.html). This was followed up by formal lectures (face to face) and shorter video lectures (online and blended) and discussion about strategies that would underpin the major 'steps' in the process. Students also watched YouTube and TED Talks of design thinking proponents such as Tim Brown and David Kelley.

Students were then introduced to the major practical activity that involved the design of an online learning activity for their school-based students that would make use of selected web resources. The online learning activity needed to be designed in such a way that the school-based students must be engaged in higher order thinking and collaboration. Another constraint was that the online learning activity needed to be hosted on a web page created within Google Sites. This presented the students with multiple challenges such as designing an effective and age appropriate online learning resource as well as mastering the functions of Google Sites.

Students undertaking this task in previous years had experienced difficulty in designing a task that would ensure the development of higher order thinking and collaboration. To scaffold this task, students were required to develop an understanding of the 'Webquest' model, through readings, discussion and exploring the model on the Internet. Since the 'Webquest' model uses a PBL approach, this provided an opportunity to discuss the differences between the design thinking and PBL approaches. In using the PBL approach, the pre-service teachers needed to think of a problem related to the 'design in technologies' context themes such as 'investigate and make judgments on the ethical and sustainable production and marketing of food' or 'the role of people in design and technologies occupations' (ACARA, n.d., Scope and Sequence Chart, p. 2).

In order to fulfil the task, the students needed to engage in problem finding construct the activity within the restrictions of the Webquest format – making sure that the problem led to engagement around the selected theme from the design subject. They also needed to show how they used the design thinking methodology and associated strategies to design the website and to create the learning activity. Strategies that increased an awareness of empathy were prioritized as a way of ensuring that the resultant online learning resource was appropriate for the users in terms of interests and age and that it would be workable within the particular system that the activity would be used in. This brought into play elements of ‘systems-based thinking’, which is often subsumed in the design thinking phases. Within the new Australian curriculum (ACARA, n.d.), systems-based thinking is treated separately to design thinking within the subject, ‘design in technologies’. Students attend practicums in schools where they have the opportunity to observe, interview and teach the ‘users’ and to build up empathy and knowledge of the system, which can vary significantly, even within the state or non-government systems.

Further scaffolding was provided in the form of face-to-face tutorials where students were engaged in brainstorming ideas, learning the functions of Google Sites within context and prototyping activity ideas and websites. In the online and blended models, videos were produced that replicated the way the functions of Google Sites appropriate to this task were undertaken in the computer labs and the whole group brainstorming occurred within online discussion boards.

Student feedback was sought during the last three years that design thinking has been used as an additional scaffold in the completion of this activity. Prior to this addition, students completed a similar activity where they produced a web-based learning activity following the Webquest PBL approach. The staff involved in delivering the subjects has remained consistent over the last five years. Student feedback supported the use of design thinking as an effective methodology in the design of the website and the learning activity. Staff involved in the subject report that there was a clear increase in the quality of the websites and the learning activity after the introduction of design thinking. However, one major challenge was convincing students that making a mistake was part of the process and that multiple prototypes were desirable.

When academics were questioned in formal interviews about any difficulties experienced in introducing students to design thinking, their response centred on concerns that students were reluctant to try multiple prototypes or take too many risks due to their fear of failure. Academics

with experience in the United States or United Kingdom expressed a view that Australian students in particular were risk averse. For example (from an academic, originally from the United States) ‘Probably the biggest thing I have noticed after 20 years teaching in Australia is having students not willing to make mistakes. Risk – take a risk! ... Because they have got it majorly ingrained in this society that you don’t make mistakes, you don’t stand out, you don’t take a risk’. Another academic with experience in the United Kingdom stated, ‘Australian students are not open to taking a risk and I believe it is partly caused by working with rubrics. Everything is standardized and it limits their ability to be creative. Students look at the rubric as a recipe and they don’t try to surprise me with something different – something unknown, as they do in Europe.’ Another US born academic with experience working in Australia and the US argued, ‘many Australians view higher education the same way. What boxes do I need to check to get the certificate or the degree? It’s not experimental. It’s a path to employment.’ In order to support design thinking in Australian schools and higher education, we need to consider what constitutes a nurturing and supportive environment for creative and innovative thinking.

EXAMPLE THREE: DESIGN AND LEARNING CONSULTANCY NOTOSH

In both of the following case studies the schools have been involved in a significant period of professional development with the design and learning consultancy NoTosh (<http://notosh.com/>). For the UK school this was from 2011 through to 2013 and for the primary school in Queensland, Australia it was throughout 2013.

A design thinking process was used to strengthen and underpin enquiry learning. The most significant differences included, not presenting the children with a ready-made problem at the beginning of the period of learning and seeking authentic connections with the world that the children were experiencing. The NoTosh design thinking process (NoTosh, 2013b) used the following five phases of design thinking: Immersion (learning about a broad curriculum topic), Synthesis (exploring connections between what has been learned, identifying a line of enquiry that is phrased as a How Might We question, Berger, 2012), Ideation (developing a range of potential ideas to solve the problem that was found and defined), Prototyping (communicating the idea to elicit feedback) and Final Presentation or

Pitching (presenting and sharing the ideas with an authentic audience that has, in some way, been involved in the work).

An important contribution to the pedagogy that underpins this approach to design thinking enquiry is the focus on Three Rs and Three Cs (Claxton, 2008). Six key factors contributing to successful learners: Responsibility for learning; Respect for their views on their education, being taken seriously; Real things to explore, not pseudo contexts; Choice in what, when, where and how they are learning; Challenge of getting their teeth into something difficult, but not demoralizing, and experience the satisfaction of making genuine progress and Collaboration so that thinking and struggling happens with others.

Case Study Four – Prototyping and Design Thinking at Primary Schools

During 2012 Meshendia Dampier developed a curriculum topic for her Year 4 (8 and 9 year olds) class at Rosendale Nursery and Primary School in South London, UK. The work centred on the topic of space within the core subject area of Science. A generative title (NoTosh, 2013a) for the work was developed to hook the children in and present a learning provocation that would engage the primary children immediately. For this topic Meshendia crafted the title: ‘Above Us Only Sky?’ The science topic was planned to last for approximately two months with regular sessions throughout the normal timetabled week. During the period of Immersion the children learned about the solar system, and specifically about the Earth, Sun and Moon through a range of different activities. This included didactic sessions and other areas that were explored independently and during studies at home.

One of the key Immersion experiences for the children in Meshendia’s class was their trip to the National Science Museum in London. They visited as part of the planned immersion into the topic and spent some time exploring the Space Gallery within the Museum. Back in school, as the children began to collate their thinking, their experiences and make connections between what they had learned (Synthesis) they identified that the Space Gallery was a particularly disappointing experience. The whole class felt that more could be done to engage young children visiting such a centre and they outlined a line of enquiry to explore: ‘How might we enhance the learning opportunities, for a child in the space gallery, at the Science Museum?’ In this example Meshendia’s class had uncovered or found the problem through their own strong reactions to the experience. The

emotional connection they had with the mediocre experience at the Science Museum had resonated with them all and remained strong throughout the Immersion period of the topic. When seeking out connections and in discussion with Meshendia the feeling re-emerged and formed the basis of the line of enquiry they all committed to try to solve.

With the line of enquiry now identified the children set about working collaboratively on exploring interesting ideas to interact with and present information about space and the solar system. They were able to draw upon the concepts and new understandings they had learned from the Immersion period and began to apply their thinking in creative ways. It was around this time that Meshendia contacted the education team at the Science Museum and shared with them the details of their problem finding and their progress in generating some new ideas. The education team agreed to come into school and act as an audience for the children to pitch their ideas. This encouraged the children further and ensured that the work was worthy of their time. This pattern of inviting experts, guests or organizations involved in the Immersion phase back towards the end of the period of learning to share ideas and prototypes, has proven very successful for many schools.

Children built prototypes of their ideas for interactive space displays out of simple paper 3D modelling materials and developed pitches in small teams, practicing on invited classes from around the school and during an afternoon when parents were also invited to visit. When the day came round for the visit from the Science Museum Education Team, the children presented their ideas in small teams. Although the opportunity for investing in the children's ideas was slim – the purposeful nature of the closing pitch, the authenticity of the audience ensured that the learning experience was real and indeed had a tangible impact on the world. The children not only identified the problem themselves, they generated unique ways to solve it.

Case Study Five – Creativity and Exploration Using Design Thinking in a Primary School

Elisabeth Hales is a Year 5 (10 and 11 year olds) teacher at Sacred Heart Catholic Primary School in Queensland, Australia. One of her design thinking enquiry projects was developed around the commonly taught primary History topic of the Gold Rush era in Australia. This covered a range of perspectives and key experiences about work on the goldfields and the worker uprising at the Eureka Stockade.

The Generative Hook that Elisabeth designed for this topic was ‘Mine, Mine, Mine!’ to emphasize the personal conflicts of greed and the changing prosperity of those involved. Importantly this offered an immediate provocation to the children and their own perceptions about ownership, value and prosperity. Such a provocation, carefully crafted, contributed to the immediate engagement from the young learners and sparked their natural curiosity at the commencement of the period of learning. It is in contrast to the usual curriculum title: ‘Gold’ or ‘Goldrush’. To begin the Immersion period Elisabeth shared with her students a discovery box filled with artefacts about the topic including: museum loans, panning trays, printed images, topic books, maps and imagery from the Ballarat goldfields. The children generated a range of questions they had from these provocations and after recording these on Post-It notes, they sorted them under the heading ‘Googleable’ and ‘Non-Googleable’ (NoTosh, 2013c) helping them think critically about the question type.

A key text that was used with the class to promote discussion and to help them understand the Eureka Stockade events was ‘The Night We Made the Flag: A Eureka Story’ by Carole Wilkinson. A fictionalized account of the story of Eureka, it struck a chord with the children in Elisabeth’s class and after a number of weeks learning about the topic they returned to this story as part of their Synthesis. As they began to make connections between what they had learned, the class recognized the importance of the flag making in the overall story and how it symbolized the unity of the people involved. The class displayed a strong empathic response to the characters depicted in Wilkinson’s book and upon reflection about their own school community identified that the school did not have a flag. After a number of versions and collaborating together the children defined their line of enquiry or problem as: ‘How might we design a new flag that can unite all students and teachers, past and present, and acknowledges our school history?’

The next period of the project-included learning about the perspectives of children in other grade levels and what sort of ideas needed to be included in the production of a new school flag. The children collaborated in small teams of two and three, drafting many versions of their ideas, seeking feedback from peers and adults working with them. In order to make the process link strongly to the real world around them Elisabeth and her teaching colleagues invited the school Principal and regional consultants from the Catholic Education system to explore the ideas. The children were set the challenge of pitching their flag designs, justifying the design choices, explaining the links with the school history and the symbols or motifs they

had used. In response to this challenge the children presented in a range of creative ways to articulate their choices.

Once again the problem they defined had not been set from the beginning. Elisabeth was able to cover her curriculum goals and then turn her student's attention to seeking and making connections between what they had learned and experienced (Synthesis). It was only during this critical thinking process that they uncovered an issue that they might explore. A key element of the motivation shown by the Year 5 students was the level of empathy they had for the Eureka story, this proved to be significant stimulus for their problem finding.

CONCLUSION

In this chapter we have examined the relevance of design thinking to education at various levels. We have focused on the similarities and differences with PBL/IBL and also uncovered some of the challenges. On the one hand, it is clear that the growing collection of cases deploying design thinking into education globally shows its potential to engage students at all levels in the problem finding process and the eventual proposal of solutions. In all cases it is the case that the approach, like PBL/IBL is a means to an ends, that is a systematic approach to the scoping and innovation of solutions to science, social and other problems. The experimental and risk-taking aspects of the method in an environment of highly structured curricula as in Australia have proved, however, problematic. This risk-averse perspective is even more ingrained at university than at primary school levels. As indicated above, design students face particular challenges in grasping the potential of design thinking given their conventional focus on material making, while their counterparts in other fields, including management, social innovation, inter alia, seem less stifled by this 'designerly' (see Cross, 2001) predisposition.

Design thinking has developed its reach and relevance from product innovation into a range of disciplinary spaces, including latterly education. Non-design spaces such as education offer particularly rewarding environments for challenging students to approach problem finding and solving differently. This is the evident strength of the model. It is this capacity of design thinking to *invigorate* debates and practice that is in evidence in our examples above. These examples from higher and school-based education illustrate two important differences between problem-based learning (PBL) and

design thinking approaches. The first difference is that problems were generated and framed by the participants rather than students being given pre-determined problems. These problems were generated from the students' experiences and resultant empathy with users or protagonists in the topic studied. The second difference involves the use of explicit strategies that underpin non-linear phases that typify design thinking approaches. Common across all of the cases illustrated in this chapter, is the element of encouraging 'risk-taking' and a process of 'learning by doing' through visual and physical prototyping. Further research is needed to develop and trial innovative strategies to further enhance the design thinking approach, along with a more rigorous examination of the transferability of these phases and strategies across multiple discipline areas and education stages and systems.

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CONNECTING INQUIRY-BASED LEARNING WITH COLLABORATIVE WORK IN ONLINE EDUCATION

Albert Sangrà, Mercedes González-Sanmamed and
Montse Guitert

ABSTRACT

This chapter aims to show how the inquiry-based learning (IBL) approach can be successfully used in online education. To this purpose, we will present the experience of the Digital Competence Program at the Universitat Oberta de Catalunya, which is designed considering the principles of collaborative work, implemented with a wide range of educational resources taking advantage of ICT benefits, is delivered online, and is finally evaluated from opinions voiced by students. In addition, it is a good example of a multidisciplinary approach since it covers several disciplines and helps to acquire a number of skills that professionals require in their personal and social environments and at the workplace.

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INTRODUCTION

Universities are probably today in a stronger position than at any other time in history, but they are also currently being challenged by the continuing changes in society.

Historically, they were created to serve a small, elite minority of students from wealthy families. In 1969, just less than 8% of 18-year-olds got into university in Britain (Perry, 1976). However, in the last decades these figures have dramatically changed, resulting in a rate of 34.8% in 2014 (UK Government, 2014) and in most developed countries, Higher Education has become an extension of systems of mass education (OECD, 2012; Trow, 2011). On the other hand, completion rates did not rise as expected, but remained under 60% in most public universities (Bowen, Chingus, & McPherson, 2009).

At the same time, other aspects of Higher Education changed in that students became more and more diverse (Morrison, Ross, & Kemp, 2007; Stöter, Bullen, Zawacki-Richtel, & von Prümmer, 2014), their mean age was higher due to the number of part-time students that wanted to get a degree after having left university or because they had never attended it before. Studying and working at the same time became a common trend (Ke, 2010).

These new kinds of students are demanding more flexibility, a more modern organization and structure of programs (Barnett, 2000), and alternative ways for the teaching and learning processes to be negotiated. On the other hand, universities had made an important effort to accommodate all these changes and demands (Barnett, 1990, 2013).

With the increasing tendency for the social use of Information and Communication Technologies (ICT) and the conceptualization of education as a lifelong process, universities have been dramatically challenged, as stated by Bates and Sangrà (2011), due to the pressure of introducing more flexible learning provision, both through traditional online courses (Allen & Seaman, 2011, 2014) or through the new emergent MOOCs (Daniel, 2012) as a means of integrating technology into their structure and, especially, into the teaching process. Even though it is obvious that this challenge does not reach everywhere with the same intensity and at the same moment, given that the technology itself is a product of the social and economic conditions of every period and of every country, it is true that it is becoming an element which has provoked important life-changing decisions in existing teaching models. From the simple and prompt uses of ICT for the enhancement of

face-to-face teaching and learning to the use of virtual environments for learning with courses carried out completely online and with a great variety of instructive models, the incorporation of ICT in the educational processes is being carried out from very different perspectives and also from an extensive range of formulae (Sangrà & González-Sanmamed, 2004).

According to researchers Bates and Sangrà (2011), the main reasons why universities are moving in this direction are: (a) enhancing the quality of teaching and learning; (b) accommodating to the learning style of millennials, (c) increasing access to learning opportunities and flexibility for students; (d) developing the skills and competencies needed in the 21st century; and (e) improving the cost-effectiveness of the system.

Online education has been growing in the last decade as some studies have concluded (Allen & Seaman, 2014). Online or blended programs are the most significant way in which most universities are facing this situation, even if their aims are twofold: to increase the number of students and to adapt to the new methodological approaches in the best possible way.

It is seen as an opportunity for adult working people who need permanent training and upgrading to adapt to the constant changes they are facing. This training has to be carried out through acknowledging the needs of people and organizations and this need is not only to provide access to university, but to bring the university home.

Online education may bring about economic benefits, but its main aim is to point out those more related to the way it can make learning more accessible. In this sense, there are four main pillars (Sangrà, 2001) in which the benefits of online education could be founded:

- *Flexibility*. It deals with the adaptation to students' needs, and allows having a system which can be easily adapted to the professional, family and personal reality of the students. Flexibility goes beyond overcoming time and space constraints, and so learning styles and assessment methods should also be considered.
- *Collaboration*. The students should not feel isolated while studying, because they are not alone at all in their learning process. Group work and the establishment of cooperative relationships between them bring about the creation of an authentic virtual learning community.
- *Personalization*. Every student is different. The previous background could and has to be considered to give students appropriate paths to convey their learning itineraries. Their main interests and speed of progress can and must be taken into account when designing online education courses.

- *Interaction and interactivity.* The revolution in distance education came about with the emergence of virtual teaching and learning environments, which permit students to interact with each other and with their teachers. Any advanced online education model cannot avoid considering interaction as a key issue of its quality, as well as the interactivity of the resources and educational materials is “a must.”

In addition, online education has become a trigger in overcoming the traditional teaching and learning models and changing the teacher’s and student’s role.

THEORETICAL FRAMEWORK

The inquiry-based learning approach fosters students’ active engagement in online learning. Garrison and Cleveland-Innes (2005) and Oliver (2008) consider it an effective method of leading the student learning process to higher-order learning in university-level educational programs. Several techniques can be applied when using an IBL approach, such as case studies, problem or project-based activities, or collaborative work (Weerasinghe, Ramberg, & Hewagamage, 2012).

Even if the simplest consideration of IBL is that it is a question-driven approach, or as learning based on research, a number of authors underline that technology facilitates that IBL could have a strong component in collaborative learning, since it requires the active participation of students (Brindley, Walti, & Blaschke, 2009; Garrison, 2006; Harasim, Hiltz, Turoff, & Teles, 1995).

Garrison, Anderson, and Archer (1999) conceptualized a means of organizing inquiry-based online learning called the Community of Inquiry (CoI). The need for social, cognitive and teaching presence supports the idea that collaboration is the main concept underlying CoI, and that should be appropriately organized and not left to chance (Garrison, 2006). Anderson (2008) also reports that the teaching role in an online CoI can be considered as collaborative work.

Online collaborative learning assumes the principles of cooperative knowledge acquisition and takes advantage of the potential of technology for a more satisfactory and efficient implementation in the creation of online learning communities. Harasim et al. (1995) define collaborative work as an activity in which several people work together to define a meaning, explore an issue, or improve some skills. Particularly, and as Johnson

and Johnson (1999) pointed out; collaborative work goes beyond simple teamwork because there are shared objectives and common beneficial outcomes both for the individual and for the whole group. As Guitert, Guerrero, Romeu, and Padros (2008, p. 27) highlighted: “*collaborative work is a process in which every single person learns more than what he or she would learn on his/her own, as a result of the interaction between the components of the team.*” In addition, the emphasis is on the idea of “built knowledge” (Scardamalia & Bereiter, 1994; Stahl, 2006), which happens when the group progresses through shaping meanings that allow the discovery of knowledge and achieving the expected skills from joint reflection.

Thus, interaction becomes the key element, both for forming the group and making cohesion easier and for achieving common purposes, especially those related to learning. The vision of learning as a process of construction of shared meanings through social communication represents the theoretical foundation of collaborative work (Brown & Duguid, 2000; Hiltz, Coppola, Rotter, Turoff, & Benbunan-Fich, 2001).

In online learning environments, learning is conveyed through working with different tools and materials, and from the dynamics of relations and exchanges between the students themselves and those with their instructors (Palloff & Pratt, 1999). For this reason, some authors point out that collaboration is one of the hallmarks of learning in online environments (Dillenbourg, 2003; Garrison, 2006; Guitert & Pérez-Mateo, 2013; Harasim et al., 1995; Kirschner, 2002). As an example of the scope that collaborative learning through technology currently possesses, the research line known under the acronym of CSCL (Computer Supported Collaborative Learning) deserves a mention. The theoretical and practical contributions of this line of research are helping to conceptualize and generate proposals for action based on methodologies consistent with the inquiry-based learning approach.

For effective learning in online communities to come about, at least two areas of specific interest should be taken into account. First, as identified by Stahl, Koschmann, and Suthers (2006), it should not be assumed that students know about group work, consequently, it is not recommendable to let them collaborate in a spontaneous way. On the other hand, there is the need to be aware that technology-based tools by themselves warrant neither collaboration, nor learning (Nardi, 1996; Onrubia & Engel, 2012). It becomes essential to design an online learning proposal in which the whole set of elements of curricular design are considered and the dynamics of interaction and the pursued purposes are defined (Echazarreta, Prados, Poch, & Soler, 2009; Guitert et al., 2003; Medina & Suthers, 2008; Oakley, Felder, Brent, & Elhadj, 2004; Rubia, 2010). The lack of instructional

planning or inappropriate design can be harmful at the academic level and can cause students to reject collaborative work. Contrarily, the students with which collaborative learning is planned, structured and monitored are more satisfied with their learning process (Felder & Brent, 2001). Another recommendation that might lead to successful collaborative work involves the type of tasks the students are required to do. Escofet and Marimon (2012) suggest procedural tasks, such as analysis and problem solving, and highlight collaborative work to be more significant when it involves the solving of a complex activity which demands different actions and decisions. Gros and Adrián (2004) also link collaborative work with problem solving, project implementation or interactive discussions, stressing the need to assign roles within the group and highlighting the tutor's role as a guide which warrants collaborative activity.

Another key factor in the development of collaborative work pertains to the configuration of the work groups (Isotani, Inaba, Ikeda, & Mizoguchi, 2009). There is agreement in considering that heterogeneous groups lead to more effective learning, due to the contrasting of different points of view and the degrees of understanding coming from diversity, as well as the fact that the process for shaping and creating the groups seems to be crucial to ensure learning (Dillenbourg, 2003; Exley & Dennick, 2007; Felder & Brent, 2001; Guitert et al., 2003; Pujolàs, 2008). Exley and Dennick (2007) mention the importance for making the fundamental aims of collaborative work explicit, and fall upon the need to establish some basic rules and an attitudinal and rational framework for all the work the group has to carry out and the importance of making the schedule and distribution of tasks public and clear. Several authors (Haake & Pfister, 2010; Hernández-Sellés, González-Sanmamed, & Muñoz-Carril, 2014; Onrubia & Engel, 2012; Sobreira & Tchounikine, 2012) study the need for generating collaboration scripts, which can provide the students with instructions on structuring, interacting and collaborating around the task or problem, and hence becoming a means for agreement and commitment between the students and the teacher, and to support the goal of organizing the work to be done.

Definitely, the need for overcoming the traditional transmissive teaching models and encourage the change of the teacher's and the student's role, could be done through the current digital technologies which allow developing collaborative processes thus fostering the social construction of learning. Especially, and thanks to the tools grouped around Web 2.0, activities that will support the inquiry-based learning approach can be designed (Rhoades, Friedel, & Morgan, 2009).

CONTEXT

The Universitat Oberta de Catalunya (UOC) is a fully online university founded in 1995. The UOC developed a new brand of educational model in which the concept – and the tool – of *Virtual Campus* was the main element, using Information and Communication Technologies (ICT), particularly the Internet, as a means to make students, online tutors and instructors interact. This particular educational model was developed from its very beginning and has been continuously improved. Student enrollment has dramatically increased during these years, starting with 200 students in 1995 and having over 60,000 right now.

The inquiry-based learning approach through collaborative learning techniques has been applied in a number of educational and training activities since 1998, when it was included in two courses as a pilot project. Today, this methodology is a consolidated course component, systematically applied and planned through a wide range of different types of educational action.

At the UOC, in particular, this collaborative e-learning model starts by placing the student firmly at the very center of the learning process; and the educational resources are all based around the student. Not only does the UOC provide a “virtual campus,” but it also includes other elements such as teaching materials, a virtual library and a continuous assessment system, resulting in a truly integrated system providing all the required support for a successful e-learning experience.

Fig. 1 sets out the UOC teaching model. The student interacts with all the different components, normally by means of the “Virtual Campus.”

The role of teaching at the UOC is to provide students with tools and guidelines which facilitate their learning processes, while also responding to their needs. Instead of functioning as mere sources of information, online tutors become facilitators of learning and a means for triggering the inquiry-based learning approach.

Once the course starts, the *course plan* establishes a learning process and working methodology for each student, as well as planning the content and the assessment criteria for each subject. This work is designed collaboratively by the instructor and tutors. The aim is to orientate and guide the student’s work throughout each semester (Guitert & Romeu, 2009). As an instrument for facilitating learning, the course plan is a fundamental tool. The system of continuous assessment is outlined within the course plan for each subject. Throughout the semester, a series of activities must be completed and these are guided and assessed by the instructor responsible for each subject.

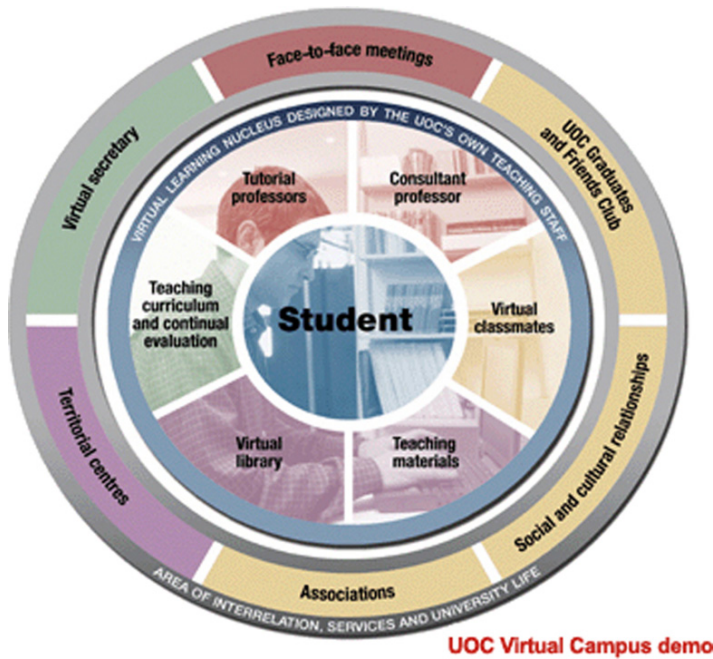


Fig. 1. UOC's Teaching Model.

This assessment system allows them to trace the continuous development of their learning, assessment and measurement of progress on a daily basis promoting the acquisition of competencies in each course. At the same time, it allows them to plot the continuous development of their learning process, evaluating and measuring progress on a daily basis.

In the virtual classroom, the student interacts continuously with both online tutors and other classmates, experiencing the joy of learning and generating knowledge by sharing ideas and proposals and resolving doubts on course content, either individually or collectively. The virtual classroom provides the student with planning, communication, evaluation functions and resources.

Collaborative work is a fundamental element of this ICT-based teaching model, and any such model sees the student at the core of the learning–teaching process.

From the very beginning, one of the main concerns at this university has been to make the students skilled at using all the digital resources available for learning in order to help them to become digitally competent citizens.

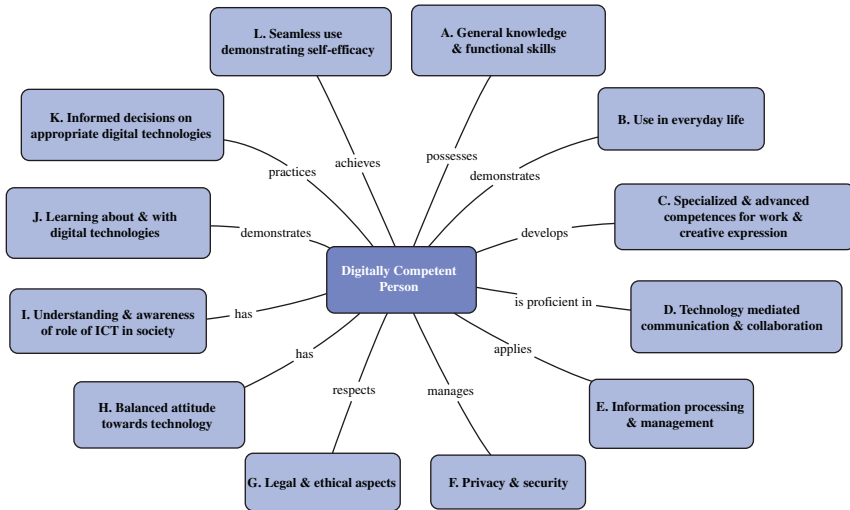


Fig. 2. Mind Map of Digital Competence Areas. Source: Janssen and Stoyanov (2012).

For this reason, from the very creation of the university it has been a compulsory subject in order to achieve this goal. Bearing in mind the quick changes of digital technologies, “digital competence requires the ability to learn about and with digital technologies, to choose the right technology and to do so confidently (Janssen & Stoyanov, 2012, p. 25).

Ferrari defines Digital Competence as “the set of knowledge, skills, attitudes (thus including abilities, strategies, values and awareness) that are required when using ICT and digital media to perform tasks; solve problems; communicate; manage information; collaborate; create and share content; and build knowledge effectively, efficiently, appropriately, critically, creatively, autonomously, flexibly, ethically, reflectively for work, leisure, participation, learning, socializing, consuming, and empowerment” (Janssen & Stoyanov, 2012, pp. 3–4) (Fig. 2).

THE DIGITAL COMPETENCE PROGRAM

At the UOC, the Digital Competence Program is made up of a set of courses that are cross-sectional to all the undergraduate degrees at the UOC.

It aims to give students the opportunity to acquire from the very beginning those cross-sectional competencies and skills that are needed for successful study and achievement in online environments (Pérez-Mateo, Romero, & Romeu, 2014). The program annually serves 4,000 students.

In this framework, ICT Competency (CTIC hereafter, for the Spanish acronym) is a six ETCS (European Credit Transfer System) cross-sectional course which is compulsory for the whole set of programs at the UOC. It is recommended to take it in the first semester of the student's stay at the university. Its main aim is to make the students work on two cross-sectional institutional competencies: "Use and application of ICT in professional and academic environments" and "Online teamwork." These general competencies encompass a number of more specific ones:

- Search and selection of information on the Internet
- Processing and elaboration of digital information
- Presentation and dissemination of digital information
- Basic notions of digital technology
- Work and study planning in a virtual environment
- Digital project management
- Net communication strategies
- Teamwork in online environments
- Digital attitude

The course's methodological approach is based on project working (Railsback, 2002), and leads to elaborate a digital project through collaborative work. Students are grouped in 3–4 members and have a shared online work space in which they have several tools, among them, the wiki stands out as the tool that conveys all the project creation process.

The elaboration of the digital collaborative group project is planned in four phases: Starting, Structuring, Development, and Closing and Dissemination (Fig. 3).

The subject works on a set of content-type reflexive, methodological and instrumental tools that facilitate the acquisition of specific skills in ICT. One of the methodological materials is the guide to collaborative work; "collaborative learning in virtual environments: methodological development."

The evaluation is based on the continuous evaluation from a series of activities that assess the learning process. The achievement of each stage of the online project is linked to an assessment activity.

The students, in the digital group project, value the process and the obtained results and they make a self and group assessment. The teacher

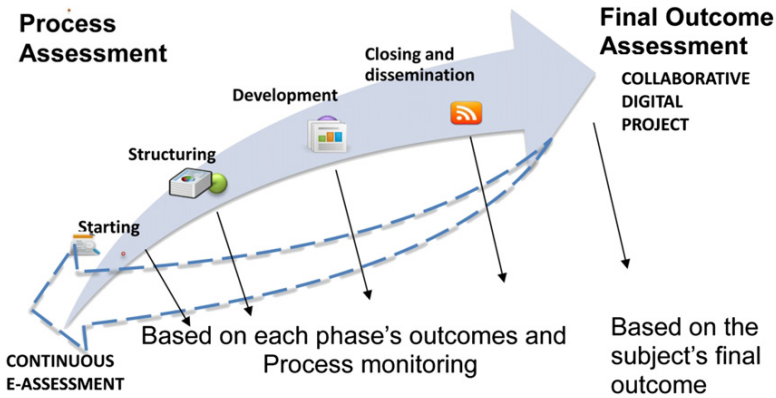


Fig. 3. Phases of the Group Collaborative Digital Project.

facilitates students the process of group learning and helps them to reach the mentioned competencies.

COLLABORATING DIGITALLY: HOW IT WORKS, HOW IT IS ORGANIZED

Considering all the previous literature and the context, the program is being developed under the principles of collaborative learning within the framework of the inquiry-based learning approach.

The approach to be carried out is not only oriented to the use of technological instruments but also to the putting into practice of key methodologies and skills for working in a virtual environment. The teacher orients and facilitates this process of construction in an ongoing way through his/her online teaching presence. Assessment is based on continuous evaluation and on the pertinence of the activities, designed as authentic experiences which help to develop critical thinking and problem solving skills (Herrington, Oliver, & Reeves, 2003).

The technology has currently developed ubiquitous systems which permit the user to try out actions in a totally transparent way, without perceiving what the technology which is supporting them is really about. Students usually use resources for developing collaborative learning processes with applications that are already fully integrated in them. This online collaborative learning approach is defined by the Collaborative Learning in

Virtual Environments Research Network (RACEV)¹ as “*a shared, coordinated and independent process, in which the students work together to reach a common goal in a virtual environment. Collaborative learning is based on a process of activity, interaction and reciprocity between the students, making the joint construction of meaning and an individual advance toward higher development levels*” (Guitert & Pérez-Mateo, 2013).

As stated, developing a collaborative digital project is considered. Project-based working could be defined as a methodology in which students are distributed in small groups to explore, investigate and analyze authentic problems. Accordingly with the Buck Institute for Education (BIE),² Project-Based Learning (PBL) leads students to carry out a search process of which the main aim is to answer a question, problem or challenge. From this approach, the students not only learn from the content, but they bring into play a range of skills related to information (such as searching, processing or dissemination), collaboration, communication, critical thinking and organization, among others.

STAGES OF THE COLLABORATIVE DIGITAL PROJECT

These four previously mentioned stages are critical to the success of the virtual team as they involve making decisions on several key aspects of the process (communication, organization and planning, the role of the tutor, and others). In general, the characteristics of each phase can be summarized as given in [Table 1](#).

Table 1. Features at Every Phase of the Digital Project Development.

Phase	Features
Starting	<ul style="list-style-type: none"> • Approach to the terms of the project • Creation of working teams • Establish the guidelines for collaborative time work
Structuring	<ul style="list-style-type: none"> • Structure them and the objectives of the digital project • Search and share collaboratively the selected information
Development	<ul style="list-style-type: none"> • Organize information for structuring the project • Process the information of the project
Closing and dissemination	<ul style="list-style-type: none"> • Draft a first version of the project • Finalize the collaborative digital project • Present and disseminate the project • Debate the results of the project

Therefore, an effort has been made to systematize these stages and describe them as accurately as possible in order to be able to recommend activities to facilitate online tutoring and student dynamics, and ongoing assessment throughout each of the four stages.

The *Starting* phase provides the context to create the work teams and carry out the first searches. This helps the students to focus on the project, and to establish collaboration and interaction patterns within the team as well as the planning and distribution of the project tasks among all its members (Table 2).

In the *Structuring* phase, the work team goes deeper in the search of information. At the same time, they organize themselves to adequately structure the project. In this phase, the work becomes consolidated and the initial planning is reviewed (Table 3).

Later on, in the *Development* phase, the project has to be implemented: the gathered information is classified and processed. Then, a first version of the digital project is reached, considering format and content elements. Self and peer-assessment of the work in the group are also made at this point. The digital project can be a wiki that has been collaboratively created by a group of students on a particular topic such as: networking, cloud computing, among others (Fig. 4).

Table 2. Student Activities During the Group Formation Stage.

1. <i>Introductions in the Discussion Forum</i>	Students present personal details in the “virtual classroom” forum in order to get to know each other.
2. <i>Tutor-managed introductions</i>	The tutor sets out guidelines for introductions: personal details, studies, profession, areas of interest, time available for this subject, previous conceptions of group work, factors which they consider vital in cooperative projects, etc.
3. <i>Discussion of case studies in relation to group work</i>	Cases are presented for discussion by students. These normally involve group work to overcome a challenge or problem. The aim is to enable the students to foresee situations which might occur and take action to avoid them.
4. <i>What does group work mean?</i>	At the start of the course, students explain what they understand by group work in a virtual setting. The aim is to provide the tutor with information enabling him or her to provide appropriate guidance.
5. <i>Group work commitments and responsibilities</i>	The tutor presents a document setting out the main characteristics of virtual group work.

Table 3. Student Activities in the Consolidation Phase.

1. *Naming the group*
An informal activity involving an informal group decision on a name to identify the group.
2. *Establishing the group planning chart*
Preparation of a planning chart – a working calendar for the subject content.
3. *Initial agreements*
Agreement on a set of working procedures.
4. *Establishing group structure*
Definition of the internal group structure. Sometimes the group may decide to assign specific roles and responsibilities (coordinator, secretary, practical work coordinator, etc.).
5. *Discussion of the feedback on the group's planning*
Group discussion of the tutor's feedback on the group planning chart.
6. *Reaching consensus on the rules and procedures for group functioning and organization*
Once the initial agreements document has been prepared, the group must reach consensus on internal procedures and criteria for organization.
7. *Distribution of tasks*
Members must organize and distribute functions and tasks among the group.

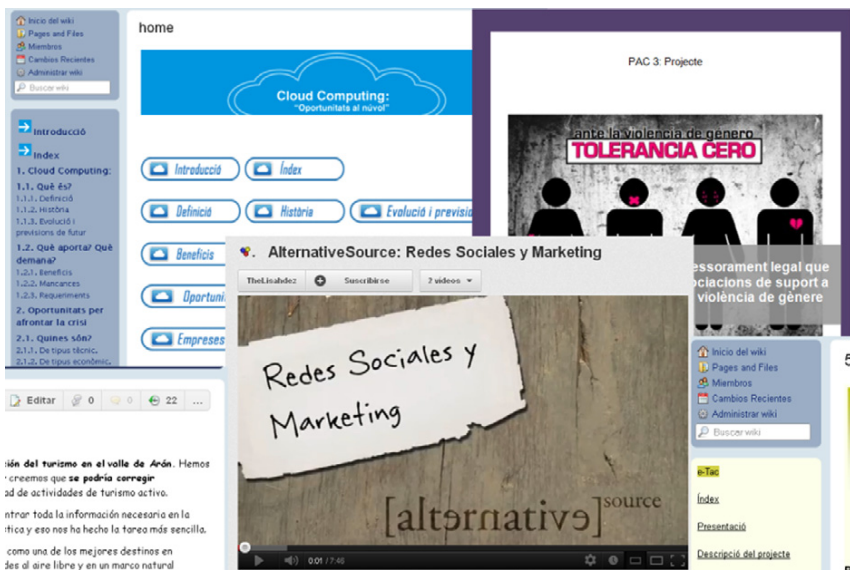


Fig. 4. Digital Project's Wiki.

During this phase, it has been observed that the online tutor tends to play a monitoring role (Guitert, 2011), intervening when the group needs help to overcome a problem or conflict, yet remaining sufficiently distant for the group to function and develop autonomously. This monitoring role includes the following:

- Monitoring group members who are not sufficiently active or participative so as to determine the causes and provide support as appropriate.
- Providing advice regarding working calendars, evaluation criteria, etc., yet trying to play a less active role as group autonomy increases, so as to avoid that the group becomes overly dependent on the online tutor's help.
- Fostering frequent contact and communication between group members.
- Providing help with the work group tool and program activities.
- Qualitative evaluation of the team's working process, on receiving student assignments.

The online tutor does not intervene directly at this stage, nor does he or she protect or control it excessively. If a problem occurs, the online tutor tends to wait and create the conditions in which the group members ask for help. Since the group's activity takes place in a monitored virtual environment, if the instructor observes some unusual behavior, he/she might ask for explanations. When the group has presented their completed assignment, the online tutor evaluates the work done and returns it along with the feedback designed to help the students improve both the task and their functioning as a group.

It has been observed that as teams grow in autonomy, the online tutor's role diminishes progressively to the point where he or she only provides help when explicitly asked to by the team or when further progress is impossible without intervention.

When conflict occurs (a member drops out without warning, failure to meet task deadlines, domination by one member rather than consensus, etc.), group members often ask the online tutor to intervene.

Finally, the last stage is reached at the *Closing and Dissemination* phase. The final version of the project is shared and discussed with the classmates. A final evaluation of the whole process of the development of the digital project is also carried out. The approach employed is not only aimed at the utilization of technological tools, but also in the acquisition of digital competencies to study in a virtual environment (Pérez-Mateo et al., 2014).

The teacher guides and makes this process of construction each time easier. Evaluation is based on a continuous assessment system (in group

Table 4. Student Activities in the Closure Phase.

1. <i>Group evaluation</i>	Evaluation by the tutor and students of work done and the overall process.
2. <i>Self-evaluation</i>	Self-evaluation form covering main features of the group working process: communication, organization and planning, participation, consensus.
3. <i>Co-evaluation</i>	Students assess the team work, developed skills and attitudes of their classmates.
4. <i>Consideration of the tutor's feedback</i>	Consideration of the tutor's evaluation of the group's work.

and individually), which guarantees the progressive acquisition of the competencies that should be reached in every phase (Table 4).

EVIDENCE OF ACHIEVEMENTS

The data presented below was gathered at the end of the 2012–2013 academic year, and complements some previous research on online collaboration in the same institution (Guitert, 2011; Pérez-Mateo et al., 2014) and transferred to other institutions (Hernández-Sellés et al., 2014).

As an institutional policy, general surveys to evaluate the quality of the programs and the satisfaction of the students are launched at the end of every term in order to get them to voice their opinion.

In the framework of these surveys, three Likert-type rating scale questions and two open ones are focused specifically on the inquiry-based learning approach through collaborative learning techniques. In the last term, the survey was submitted to a population of 3,183 students (second term), getting a response of 36.6%. This means that the total number of respondents was 1,167, which can be considered significant (error sampling $\pm 2.32\%$).

The students were asked to score the degree of usefulness of the proposed methodology for the acquisition of digital competencies. As a result, 81.78% consider it “very useful,” 13.1% just “useful,” and 3.15% “not very useful.”

The mean of students passing the course is 77.4%, and they show a high level of satisfaction about it (83.31%).

Students explicitly express the usefulness of the approach when they state “digital project work implementation using the wiki has been very useful to carry out group work; it is a tool that I will be able to use in other

learning situations at the university and outside it” (STU-05). Another student states: “at the beginning, we were all a little bit lost, but we were learning how to support each other; it demands some practice, especially when you’ve never worked with this approach” (STU-09).

Teachers play a significant role to guide the students in the use of the tool. As one student affirms; “I found it interesting that the teacher encouraged us to use the wiki comments as an element for communication and that encouraged it to be customized towards a more personal one” (STU-03). The satisfaction level regarding the teachers is very high (97.6%).

Going deeper in this issue, comments on the teachers’ role are quite positive: “Contributions from the teacher, through either e-mail or the discussion board, have been the best tool to achieve the required knowledge to successfully pass the course” (STU-11). “The teacher has been the essential support to solve any doubts, which given my lack of experience on the subject had created some uneasiness” (STU-07). “I would like to thank the role of the teacher on monitoring; giving feedback and guidance that has been constantly provided” (STU-09).

Students also score team work highly, and they consider it is worth it even if the effort is significantly high too. “I have enjoyed this course very much; despite the different problems we found in our group; it has let me learn how to work asynchronously and to achieve some digital skills” (STU-13). “What I have learnt working in a group, I couldn’t have done it alone. Initially, asynchronous group work is very hard, but when you learn how to plan and organize it, you can carry out the project that couldn’t have been done on one’s own” (STU-07).

Finally, the overall satisfaction regarding the inquiry-based learning approach is clear: “Definitely this course, the first I’ve taken, has allowed me to acquire some online group work strategies, and to have sufficient mastery to use the tools to study in a virtual environment. In addition, I learnt how to plan my work, to have a critical attitude, in sum, to be a competent digital person” (STU-03). “It is a course that has made it easier for me to access and has provided tools and strategies to study in a fully online university” (STU-11). “I really had a nice time in this course” (STU-09).

FINAL REMARKS

Data shown previously, and especially those related to student satisfaction, conclude that the experience has been really successful. It demonstrates that the inquiry-based learning approach, mainly through collaborative

activities, is very valuable in online education contexts. It has been proved that a good organization of the different stages of a collaborative digital project result in a high level of student satisfaction and achievement. In addition, teachers have shifted their role in order to become facilitators of the learning process of their students: asking questions, organizing the environment, giving support and advice and assessing – collaboratively with the students, too – the achieved learning. Students not only learnt to handle some technological tools, but got a good basis for developing critical thinking, to get, select and introduce information, and to collaboratively work in a group (Dillenbourg, 1999; Onrubia & Engel, 2009; Van Boxtel, Van der Linden, & Kanselaar, 2000).

NOTES

1. RACEV, for the short of the Spanish “Red de Aprendizaje Colaborativo en Entornos Virtuales” (<http://blogs1.uoc.es/racev/>).
2. www.bie.org

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USING INQUIRY-BASED LEARNING OUTSIDE OF THE CLASSROOM: HOW OPPORTUNITIES FOR EFFECTIVE PRACTICE CAN ANIMATE COURSE-BASED LEARNING

Michelle Bata and Amy Whitney

ABSTRACT

This chapter explores how Clark University's recent educational innovations in liberal education and effective practice (or LEEP) have led to a cultural shift in how "real-world," "off-campus," and "hands-on" experiences are viewed on campus. Instead of supplementing academic coursework, inquiry-based learning (IBL) opportunities that take place outside the classroom are being embraced as a fundamental mode of learning that animates what goes on inside the classroom. The goal is to engage students throughout their academic career by challenging them to take responsibility for connecting their learning through exploration, inquiry and by defining solutions to real-world issues. We connect IBL to the

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curriculum of one academic program, the entrepreneurship minor, to illustrate how a recurrent feedback loop emerges as the student moves through academic, co-curricular, and extracurricular experiences. We do this by mapping the student experience onto the curriculum and creating individual student pathways. With an emphasis on student-as-conduit, we demonstrate how non-course-based experiences can reinforce course-work, as well as how the curriculum can be responsive to the experiences of individual students.

INTRODUCTION

Inquiry-based learning (IBL) continues to thrive both as a specific instructional method as well as a curricular philosophy (Boud & Feletti, 1997; Hmelo-Silver, Duncan, & Chinn, 2007; Casotti, Rieser-Danner, & Knabb, 2008). Clark University has gone one step further, and is making IBL central to the student's entire undergraduate experience, taking seriously students' participation in co-curricular and extracurricular activities as arenas for continued, unstructured learning. The intent is that such experiences will serve as another fount of knowledge for the student in their pursuit of lifelong learning in professional practice. What we are also finding is that such effective practice experiences are also becoming part of a curricular feedback loop, animating traditional course-based learning.

The core educational philosophy underpinning Clark's efforts to incorporate IBL into the totality of the undergraduate liberal education experience is a deeply held belief that a student-initiated approach to exploration and discovery promotes deep and engaged learning. Indeed, it is a philosophy supported by multiple substantive areas in the scholarship of teaching and learning, from research on liberal education (Association of American Colleges and Universities [AAC&U], 2011) and high-impact practices (Brownell & Swaner, 2009; Kuh, 2008), to models of learning such as problem-based approaches (Hmelo-Silver, 2004; Savery, 2006) and action-based approaches (Lizzio & Wilson, 2004).

By placing the student at the center of the learning model, the student becomes the conduit for question-generation, evidence-gathering, and knowledge-construction, relying on the sum of their experiences – academic, co-curricular, and extracurricular. What is particularly exciting about this approach from a scholarship of teaching and learning perspective is what the student co-curricular and extracurricular experience can

reveal about the curriculum. Two questions thus emerge: (1) What can evidence and artifacts about a student's co-curricular experience tell us about how well the curriculum is preparing students for such experiences? and (2) How can courses be responsive to student experiences to further develop their capacities?

We begin this chapter by providing some background on the philosophical motivation for Clark's approach to undergraduate education, followed by a description of a recent innovation, the LEEP Project program. Next, we provide a case study of select LEEP Projects and their relationship to a specific academic program, the entrepreneurship minor. We end by reflecting on the students' gains as they made their way through our new model of undergraduate education.

BACKGROUND: ABOUT LEEP

In 2009, Clark University launched the most sweeping reform to its undergraduate curriculum in thirty years. Entitled LEEP – Liberal Education and Effective Practice – the new curriculum understands a student's pursuit of liberal education as a developmental and socially situated process that engages students actively in constructing knowledge, solving problems, and exploring connections (Budwig, Baird, Wright, David, & Carville, 2011).

The road toward LEEP actually began in 2005 when the Association of America's Colleges and Universities launched LEAP – liberal education and America's promise – an initiative that champions the value of a liberal education in the 21st century (AAC&U, 2011). The LEAP initiative emerged largely as a response to the burgeoning, popular media-driven questioning of the value – in real dollars, of course – of a college degree that was not specifically focused on pre-professional training or vocation (Humphreys, 2006). This chorus has become increasingly loud in both popular and academic media as the cumulative effects of the 2008 recession and Obama's score card, to name but a few recent events, has been a call for liberal arts colleges in particular to demonstrate their value, or “return on education” (Gasman & Nettles, 2013).

Clark University's response to the AAC&U's LEAP initiative was, by and large, a wholehearted embrace. While the value of a liberal education was never a question, the puzzle – for Clark – was twofold: (1) how students might obtain and recognize the valuable skills needed to participate

in both the 21st century workforce and civil society; and (2) how employers could recognize those specific skills and capacities in students.

Clark's answer to these questions emerged with LEEP. Many agree that the value of a liberal education is that it provides a broad level of preparation for a variety of personal and professional paths as the key components – including critical thinking, critical inquiry and analysis, diversity and ethics – provide strong general preparation to deal with complexity and change. But to this Clark saw an opportunity to integrate effective practice, which is the ability to apply knowledge and skills in order to thrive in a complex and changing society by building capacities of effective practice, including creativity, resilience, and collaboration (Budwig et al., 2011). Prior to LEEP, “learning through inquiry” was one of the “three signatures” of a Clark education – the other two were “making a difference” and “experience diverse cultures” – such that students were encouraged to ask questions and find solutions to real-world problems. This inquiry-based approach to liberal education provided Clark with the rationale for connecting liberal education with effective practice.

LEEP PROJECTS: AN EXAMPLE OF EFFECTIVE PRACTICE

As the academic departments and programs begin their work to integrate LEEP into their respective curricula, a university-wide approach has already been implemented in the form of LEEP Projects. LEEP Projects are problem-based projects that students complete during the summer working alongside a faculty mentor and with an external organization. These projects offer real-world applications of course material, allow authentic problem-solving experiences, and provide an opportunity to engage with others outside of Clark. For these projects, students construct a plan to achieve a project deliverable. As the student works to complete the project, he/she must problem-solve along the way, overcome unforeseen challenges and obstacles, and refer to previously learned as well as new academic material.

The genesis of LEEP Projects is modeled loosely after other successful project-based approaches, for example, Worcester Polytechnic Institute's (WPI) Interactive Qualifying Project (IQP) requirement (Elmes & Loiacono, 2009; Grogan, Schachterle, & Lutz, 1988). The difference between LEEP Projects and other approaches, as Table 1 indicates, is that

Table 1. LEEP Projects Compared.

Mode of Learning	Inquiry-Based Learning	Problem-Based Learning	Action-Learning Projects	Applied Research
Key components	Self-directed “learning by inquiry” through guided mentorship	Hands-on, student-driven training/review/discussion of patient case studies	“Learning by doing” through team-based, real-world projects hosted by an external organization (often corporations)	Team-based, “real-world research projects” hosted by either an external organization (often nonprofit, municipal, or government agencies) or a faculty member
Example	LEEP Projects, Clark University	McMaster University School of Medicine	Action Learning labs, MIT Sloan School of Management	Interactive Qualifying Project, Worcester Polytechnic Institute
Description	Undergraduate liberal arts institution	Graduate medical school	Graduate business school	Undergraduate engineering school
Defining programmatic characteristics	<ul style="list-style-type: none"> – Student-driven, optional participation – Projects can be sourced by the institution or student-initiated – Reflective 	<ul style="list-style-type: none"> – Connected to coursework – Required for course grade Constructed by faculty 	<ul style="list-style-type: none"> – Connected to coursework – Required for degree – Sourced by faculty – Reflective 	<ul style="list-style-type: none"> – Graduation requirement not related to a specific course or major – Projects are sourced by the institution
Programmatic goal(s)	Develop capacities of effective practice, such as creativity and resilience	Develop professional competencies, including teamwork and lifelong learning	Develop professional competencies such as problem-solving and leadership	Develop intellectual and professional competencies, such as learning to do research and work in teams

LEEP Projects are student-driven and take place outside of the classroom *as well as* the curriculum. Another significant difference is that LEEP Projects are part of a liberal education curriculum, whereas other, similar approaches are typically found in professional schools and STEM-based programs. With the student-as-conduit approach, LEEP promotes a highly individualized approach to learning, and LEEP Projects are constructed accordingly.

LEEP Projects encourage the move from theory to practice but, perhaps most importantly for Clark, also encourage the student to think more broadly about their education as a whole. LEEP Projects differ from other inquiry-based techniques in that, while the experience can start from a place of questioning – about a project, problem, or application – it becomes holistically situated in the cumulative sum of their undergraduate experiences. Thus, the projects become both a reflective and connective part of the undergraduate experience.

The projects are *connective* in the sense that students are actively seeking and making connections to their coursework – major, core, and other – as well as other experiences, including previous employment, service, creative endeavors, etc. The idea is to focus on how the student – with their own repertoire of experiences, learning, and capacities – approaches an issue and how they make connections beyond the generation of new, interdisciplinary knowledge (which is fascinating in and of itself), but connections between different experiences. It is an inherently inquiry-based learning experience as students are challenged to take responsibility for their learning, continually ask questions and redefine their question as information is gained (Justice, Rice, Roy, Hudspith, & Jenkins, 2009; Pittaway, 2009).

The projects are also *reflective* because they encourage the student to think about the process: How did they arrive at a place of understanding? What information did they need, how did they find it, and on whom did they rely for assistance? More importantly, the experience ends with the student contextualizing their efforts not only in terms of the larger academic/professional literature/community, but also within their own personal and professional development. The reflective nature of the LEEP Project program mirrors the flexibility of the IBL process; as students work through developmental stages and reflect and question their status, progress, and execution, they are able to refine and reconsider their way of proceeding (Magnussen, Ishida, & Itano, 2000). It is a highly iterative process that engages the student deeply on multiple levels.

LEEP Projects Described

The goal of LEEP Projects is to focus on providing students with capacity-developing experiences that enables them to make important connections among their own personal repertoires of academic and non-curricular experience(s). The outcomes would, hopefully, be threefold: (1) focus on giving students a focused experience that would make them competitive for future opportunities; (2) help students (and the university) make important external connections; (3) help students gain skills.

In order to meet these objectives, LEEP Projects were piloted for the first two years. In AY14, LEEP Projects were in the third iteration as a university-wide initiative, which involved a re-branding and a soft re-launch of the initiative with a focus on pre-experience preparation and post-experience integration and reflection. Both the pre- and post-experience provided the students with the opportunities to think about how they talk about their projects to different audiences. This meant that a student had to be prepared to connect their project to the scholarly literature, other practically oriented approaches to the same or similar problem, as well as their own academic background and future professional goals. Continuous coaching, feedback, and reflection beginning prior to the start of the project and finishing several months afterward helps the student digest their project experience in meaningful and intentional ways.

As the program is structured to try to meet the developmental needs of many students, two different types of projects are offered. Existing projects are those that have been secured by Clark staff working in conjunction with alumni, organizations with close ties to Clark, and faculty. Self-designed projects are those crafted by the student with guidance from a faculty mentor and should have a connection to an external organization. [Table 2](#) summarizes the program stages since the program inception.

Table 2. Overview of LEEP Projects by Year, 2012–2014.

	LEEP Projects 1.0 AY12	LEEP Projects 2.0 AY13	LEEP Projects 3.0 AY14
Number	49	109	103
Type	– Sourced	– Sourced – Student-initiated	– Sourced – Student-initiated
Examples	– Created a feature-length documentary – Developed a project management web application	– Created wayfinders for museum exhibitions – Designed and executed a children’s reading festival for a nonprofit	– Constructed a business plan for an NGO – Designed health-based workshops for immigrant teens

Sophomores, juniors, and seniors are eligible to complete a project as long as the project is developmentally appropriate and the student can make a compelling case as to how the project relates to future goals.

Funding is provided by Clark; students receive \$2,500 in support of their project or work on their project (unless they are receiving funding from another source). Participation in LEEP Projects is competitive. Depending on the type of project they are completing, they are either selected to participate by the project host (i.e., site supervisor at the off-campus location) or by a committee comprised of faculty and staff who make the determination that the project is eligible for funding based on project feasibility and the student's preparedness to complete the project.

Students completing LEEP Projects benefit from two additional types of support – a project supervisor from the host organization, as well as a Clark faculty mentor. The idea is that the student will receive direct project guidance from the site supervisor, and subject matter expertise (when required) from the faculty mentor. This dual support structure is intended to provide direct project guidance to ensure that the student both learns effectively as well as completes the project satisfactorily (Kirschner, Sweller, & Clark, 2006; Savery, 2006).

How LEEP Projects Are Different from Other Types of Project-Based Learning

It is perhaps important to point out that LEEP Projects are not course- or curricula-embedded, meaning that the curricular connections and learning outcomes are not pre-defined. Instead, LEEP Projects are very much a student-driven mode of learning. The student arrives at a LEEP Project developmentally, choosing for themselves when is the right time to complete a project, and what type of project is appropriate for them to complete based on both their individual level of preparation as well as their own professional aspirations.

The fact that LEEP Projects are not constructed such that they “fit” into a major or programmatic curriculum at any particular point of the curricular trajectory is significant as it is up to the student to try to decide if they have the foundational knowledge, skills, and abilities to complete the project; the person or committee deciding whether the student should move forward with the experience does not necessarily have a good way to determine the student's level of preparedness either (much beyond the traditional means of selecting a person for employment or funding a grant).

Since the student is the one creating this highly individualized journey and collecting knowledge and information from a number of different places/experiences/opportunities, a post hoc examination of their pathways can be particularly illuminating.

So what can student experiences completing LEEP Projects tell us about the curriculum? The questions that necessarily emerge from these projects are: (1) Do students have the foundational knowledge necessary to construct and carry out these projects? (2) How is a student making connections between their project, their coursework, and their previous experiences? (3) How can the student experience shape the curricular experience?

To answer these questions, we examine the four projects that were completed by five students enrolled in the Innovation and Entrepreneurship minor. We measure their progress toward completion of their respective projects, and map that progress onto the entrepreneurship curriculum, with the goal of evaluating how a student's experience completing these projects can tell us what students need from the curriculum as well as how the curriculum might be responsive to student experiences outside the classroom. Finally, we examine student reflections that were submitted as part of their participation in the program to gauge the student perspective on their learning trajectories.

CONNECTING PRACTICE TO THE CLASSROOM: A CASE STUDY OF ENTREPRENEURSHIP

This section will review four declared entrepreneurship minors who completed self-directed LEEP Projects. The purpose of this discussion is to highlight the trajectory of their learning during their LEEP Project as part of the students' journey through the entrepreneurship minor.

About the Innovation and Entrepreneurship (I&E) Program

The Innovation and Entrepreneurship (I&E) Program couples an academic minor in entrepreneurship and co-curricular learning opportunities for all students from any major. I&E's goal is to prepare students with the knowledge and tools to follow their passion through active learning experiences both inside and outside the classroom. Students pursuing a minor in

entrepreneurship work toward demonstrating proficiency in their ability to understand business fundamentals, solve problems, implement ideas, communicate effectively and collaborate with others. The minor requires the completion of six courses, two from the management major and the remaining four from the entrepreneurship minor. One of the required courses is a capstone course, intended for the senior year. The courses are not sequential, and there is no formal introduction to entrepreneurship course, though most students enter the minor through the introductory management course, MGMT 100, a required management course for the entrepreneurship minor.

Examples of Entrepreneurial LEEP Projects

Four LEEP projects completed by five students engaged in the I&E program were selected for evaluation. The projects were selected as follows: All LEEP Projects from AY13 ($N=109$) and AY14 ($N=103$) were reviewed, and students who were enrolled in the I&E minor were identified from each pool ($n=7$ and $n=4$, respectively). Of those, students who were completing an entrepreneurial project (as opposed to a project conducting lab-based research in the sciences, for example) were selected. This process yielded the following projects, summarized in Table 3.

When one engages in entrepreneurship, a standard five-step process is typically followed: (1) developing the question/idea; (2) identifying the market; (3) developing and testing a prototype; (4) developing a business plan; and (5) idea execution (Baron & Shane, 2008; Kuratko, 2008). Among college students, when beginning at the idea development stage and thinking about commercialization opportunities, it is very rare that an idea will actually be brought to market, particularly given the short development timeframe. For example, if most students begin their entrepreneurship coursework in the second semester of sophomore year, or first semester of junior year, they will find that they typically only have two academic years and one summer to make their idea a reality. Since many ideas can take years to come to fruition, it is much more realistic to expect students to spend their time refining their skills on the earlier stages of idea development rather than an expectation for execution/production/implementation.

Given that it was highly unlikely that any of the I&E students would expect to take their project through all five stages in one summer, we analyzed the business plans and project descriptions they submitted in order to receive funding to determine which stage of the entrepreneurial process

Table 3. Description of I&E LEEP Projects.

	Project 1	Project 2	Project 3	Project 4
Project title	“The Fashionistas”	“The Children’s Community Charity”	“Menswear for college students”	“Inflatable river boats”
Project description	Launch a fashion website	Create a functional business plan and fiscal model	Create a menswear line for college-age men	Create an inflatable kayak that is portable and adaptable
Target deliverable	– Refine brand – Market test content with target market – Launch product (website)	Development of a business plan for an NGO that included an outline for planning operations as well as a fiscal model	Developing prototypes for a line of menswear	Development of a business plan that is adapted to the U.S. market
Deliverable stage	5 – Execution	3 – Develop prototype	3 – Develop prototype	3 – Develop prototype

Table 4. Completion of Entrepreneurship “Stages” by LEEP Project.

LEEP Project	I Question	II Market	III Prototype	IV Plan development	V Execution
Project 1	Yes	No	Yes	Yes	In progress
Project 2	Yes	Yes	Yes	n/a	n/a
Project 3	No	Yes	In progress	n/a	n/a
Project 4	Yes	Yes	No	n/a	n/a

they intended to meet during the course of their summer experience. Using the post-experience material they submitted, including artifacts, reflections, and self-reports, we determined their progress toward meeting their goals. Table 4 reflects both of these steps, and reveals by and large that the students made significant progress toward their project goals.

However, this analysis also revealed interesting insights as to what (1) the students were capable of producing in such a short timeframe; and (2) their capacity to meet their goals given their preparation. Three of the four projects managed to meet their target goal for the summer, indicating that the students were able to set realistic goals that were supported by an

accurate set of benchmarks and a timeline. This ability to create a project plan and follow it is an important step in entrepreneurship. In reviewing the materials that pertained to the fourth project – the one that did not meet their target goal for the summer – upon closer review we realized that the project actually had an ill-defined goal along with superficial and unclear benchmarks and target dates. This exercise reveals to us that I&E students benefit from a clear understanding of project management.

Despite the fact that three of the four projects met their target goals, upon closer scrutiny we see that the quality of their deliverables varies. To determine quality, the director of the I&E program examined their deliverable with a critical eye toward writing quality, structure and organization, and depth of background research. The director also compared the deliverables to the proposal that was originally submitted to assess whether benchmarks were met, and solicited feedback from the faculty mentor who provided support for the project. For example, for Project 1, the market analysis was much too vague and needs further refinement. For Project 3, the idea was much too broad, and as a result it is unclear how innovative the prototype will be. As we consider how the quality of the deliverable for each stage might be improved, we take a closer look at the sum of the students' experience.

Table 5 represents the developmental trajectory of each student-project mapped onto each student's experience with both the minor curriculum as well as their own professional experience, as with internships for example. From this analysis emerge two patterns: (1) a back-loaded experience, in which students begin the bulk of their entrepreneurial coursework and experience in the junior year; and (2) a longer, more spread-out trajectory in which the entrepreneurial experience begins earlier, often in the sophomore year.

An earlier hypothesis of ours was that students who took the longer road would be better prepared and thus would have more positive LEEP Project outcomes, simply because they would have more time to integrate their entrepreneurial experiences. It appears that when the students take the courses and when they gain experience does not seem to have much effect on project outcome, so long as the bulk of the coursework and the experience takes place prior to the undertaking of the LEEP Project. We see this clearly in the case of Project 4. With such little experience – academic or co-curricular – under their belt, it is clear in hindsight that this particular project was perhaps doomed to failure.

To further elaborate on the student-project experience, more detail is provided about the three successful projects below.¹

Table 5. Pathways of Selected I&E Minors Who Completed LEEP Projects.

	First-Year	Sophomore Year	Junior Year	Senior Year
<i>Project 1 (2014)</i>				
Student 1 Management major I&E and Economics minor	MGMT 100		Internship ENT 202, ENT 216 ENT 215, ENT 245	ENT 265
Student 2 Communications major I&E minor	Internship	MGMT 100 ENT 202	UREKA! Contest ENT 215, ENT 222	ENT 265 MGMT 210
<i>Project 2 (2014)</i>				
Student 1 International development major I&E minor	Internship	Internship Transfer student ENT 202, ENT 215, ENT 245	Internship MGMT 210 MGMT 100	ENT 265
<i>Project 3 (2014)</i>				
Student 1 Political science major I&E minor	Summer course	ENT 215, ENT 202 Internship	MGMT 100, ENT 216 MGMT 210	ENT 265
<i>Project 4 (2013)</i>				
Student 1 Management major		MGMT 100	Study abroad MGMT 210, ENT 215	ENT 245

Notes: ENT 202, Entrepreneurial Communication and Influence (required); ENT 215, The Art of the New – Entrepreneurship (required); ENT 216, Financial Intelligence (elective); ENT 222, Entrepreneurial Design Thinking (elective); ENT 245, Social Entrepreneurship (elective); ENT 265, Entrepreneurship Capstone Project Seminar I (required); MGMT 100, The Art and Science of Management (required); MGMT 210, Management and Behavioral Principles (required).

Project 1: The Fashionistas

The Fashionistas project began as an idea for custom-made jeans due to personal challenges faced by one of the students. A course instructor challenged her to identify an idea or problem she was passionate about solving. She met a like-minded student during sophomore year in another entrepreneurship course. An instant bond over both fashion and women empowerment was formed as they moved to conduct market research, test their idea and examine the feasibility of their concept in their course. Their research resulted in a discovery neither of them expected. Their analysis demonstrated that the initial idea of custom-made jeans had a more fundamental solution. They identified that the real problem and question was to figure out how to “encourage clients to feel empowered, instead of making them feel like their clothes determine their beauty” (Personal communication, September 2014). They developed the concept of “The Fashionistas,” which centered on creating a fashion resource for women to experience fashion in an authentic way. Their deliverable was to develop a professional image and brand for their business. This required them to collaborate with a professional designer on developing a logo, refine their professional image, develop expert level content on their blog, create a formal website and test their image consulting packages for price and fit with their target market.

Project 2: The Children’s Community Charity

The student who completed the second project wanted to test an assumption that she could work as an entrepreneurial-minded consultant for NGOs that were helping communities build business models. She created a self-designed LEEP Project in collaboration with the Children’s Community Charity (CCC) in a central African country. She capitalized on relationships with this organization from a previous volunteer service trip with them during a gap year experience. As a student, she has studied international development. Her question, specific to CCC, but more broadly for her own professional interests was, “How can we turn a working farm into a social enterprise that financially sustains organizational programming?” (Personal communication, May 2014). This question required her to engage with CCC over many months and struggle with the relevance of her formal academic training. Her work to formalize a business model required her to foster relationships in a foreign country with organizational and community partners, research and forecast a financial model and propose an operational plan realistic for their local community conditions.

Project 3: Menswear for College Students

The student who completed the third project wanted to learn how to design clothes that appeal to college-age men. His question focused on the feasibility of developing an independent menswear line. Interest in this topic began at a young age, was refined during his early entrepreneurship course work, and continued through an internship experience with a tailor. It was after this internship that he felt prepared to take on a self-directed LEEP Project and answer his ultimate question of whether an individual clothing label was realistic for him. He decided he would design and develop five, locally made samples to test with his target market during his fall entrepreneurship Capstone experience.

*Reflecting on the Work of Entrepreneurial
LEEP Project Fellows*

What we learn from the wealth of information we have collected – including application essays, post-experience reflections, as well as artifacts – is that the students felt academically prepared to complete their projects, but were challenged by unexpected issues that inevitably arose during the course of their project.

For each, there was at least one point in their experience when a challenge seemed impossible to surmount. For example, the student who was working at CCC found herself redefining her problem and question on a weekly basis as she pursued her research, developed relationships and started to analyze the political, financial, and cultural realities in the community. “Navigating local markets proved nearly impossible since record keeping did not formally exist ... the financial strain of doing honest business in a dishonest business landscape ... monkeys eating the maize that feeds the students, the irrigation system breaking, uncontrollable pets and hippos making their home in the nursery beds ...” (Personal communication, August 2014). The student faced new challenges or came upon information that changed the potential direction of her business model. As new information was discovered through her outreach, she realized that answering her one overarching question might not be possible but answering other smaller questions may be. As she noted in her project reflection, “Within a week of arriving, I realized that the farm faced many plaguing challenges ... traditional business templates held little relevance ... It became critical to identify and evaluate key business model factors but I

had to rethink my approach to business modeling entirely” (Personal communication, August 2014).

For others, the rather mundane or “realness” of the experience was enough to force them from their comfort zone. At multiple points during his LEEP Project, the student who was completing the menswear line reported that motivation and responsibility were a challenge. He also noted how hard it was to connect his formal learning against the challenges he was facing with developing relationships and creating partnerships to bring his designs to life. “I sent out over 500 emails without any response. I realized it was more effective to start calling and visiting people if I had any hope in creating an authentic relationship” (Personal communication, July 2014). In his project reflection he wrote that he “was challenged by [his] own motivational issues ... and proved that a one-person label is unfeasible at this time. I learned I can’t do this alone” (Personal communication, August 2014). Students are taught through coursework and other project-based experiences that collaboration and strategic partnerships are hallmarks of entrepreneurial success and a necessary tool to manage time, responsibilities, and the demands of launching a business. For this student, that reality was confirmed.

The students working on the fashion website experienced basic operational obstacles due to their need to pursue this project together but from their respective home towns. This is a functional business reality for many organizations and their LEEP Project exemplified this learning experience for them. To test their image consulting services, the students recruited clients in their target market through their personal networks. Due to financial pressures and the need to work from their respective homes for the summer their consultations were conducted individually. Therefore, the consultations did not always benefit from the combined knowledge of both students as each one has a different strength. One could not rely on the strength of the other based on the distance and inability to be together for the consultations. “... the lessons we learned were irreplaceable and together we have found ways to utilize time management and open communication ...” (Personal communication, September 2014). The self-directed learning experience of this LEEP Project allowed them to appreciate the realities of operating their own business. As they approached fall semester, their project is poised to file official limited liability corporation paperwork, a website launch date for late September was set and additional business partners were being brought into the business.

DISCUSSION AND CONCLUSION

It is perhaps important to note that we have conducted this analysis wearing two hats. First, as director of innovation and entrepreneurship, we are primarily concerned with whether the coursework (1) is responsive to student needs; and (2) that it prepares students well as they pursue their own ventures. Second, as director of the Liberal Education and Effective Practice (LEEP) Center, we are interested in how students are gaining experience and whether they are able to align such experience with their interests to truly engage in effective practice. These caveats bring us back to the questions we originally posed at the beginning of this chapter: (1) What can evidence and artifacts about a student's co-curricular experience tell us about how well the curriculum is preparing students for such experiences? and (2) How can courses be responsive to student experiences to further develop their capacities?

We begin with the first question. From our analysis mapping the progress of the projects onto the curriculum, coupled with a review of their program material, we find that significant pre-project experience is most helpful in ensuring a positive project outcome. This experience is not solely limited to coursework, however, but also includes co-curricular opportunities such as internships and participation in student ventures. Timing and sequencing of the coursework does not seem to matter, so long as the coursework is completed prior to the project term. We find that when students have comprehensive pre-project experience, they are able to set realistic project goals, as well as benchmarks and timelines to achieve those goals. The art of project management is a skill that they have been able to put into practice. There remain a few quality questions with respect to some of their deliverables. We intend to research that question further in order to assess whether the quality issue is a result of a hole in the coursework, or inadequate mentoring as the project progressed.

In regards to the second question, we see an opportunity to make some recommendations specific to the I&E program. For example, knowing that the I&E minors are already engaging in entrepreneurial ventures, and using LEEP Projects as mean to kick start their own ventures, is important as we think about the required senior capstone. We are most excited by the potential for both the projects and the students as they continue to work on their projects this fall in the capstone. Because of the wealth of information we have about the students' projects, we are able to inform the capstone instructor about specific needs, which can be addressed accordingly

during class time. We recommend that the capstone accounts for students' existing entrepreneurial experience, and that space is created to help students make further progress on their venture, with an emphasis on problem-solving, troubleshooting, and a more in-depth focus on project management. This responsive approach to student learning maintains the spirit of IBL as well as supports the students in their entrepreneurial endeavors.

The primary benefit of offering a program like LEEP Projects to entrepreneurship minors is that the functional message of entrepreneurship – innovation is risky, challenging, humbling, yet personally rewarding – is reinforced by their summer experience. Further, the LEEP Project experience provides an opportunity for entrepreneurship students to take responsibility for making real-life decisions about starting a business with the knowledge that there is guidance available to help them succeed before they have to do it alone in the real world. “Without this experience we never would have been able to reach our goals ... This experience has been challenging, exciting, empowering and fulfilling” (Personal communication from *The Fashionistas*, September 2014).

More importantly, the LEEP Project experience makes the theoretical material they had been studying suddenly more relevant. Thus, they are able to return to the classroom with a unique, fresh, and informed perspective. The student working at CCC reflected upon her summer and concluded that “... it was easy to try and apply learned knowledge to an entrepreneurial venture, but nearly impossible to be successful at applying such knowledge without first suspending all preconceived beliefs that my learned knowledge was correct” (Personal communication, August 2014).

IBL and LEEP Projects share a goal of connecting learning through self-directed, question-driven experiences. The outcome is to provide an occasion for students to explore and reflect upon how their accumulated knowledge and co-curricular experiences translate into a real-world opportunity. For each student, the take away from the project was as diverse as their deliverables and goals. In her final project reflection, one noted the value of connecting formal learning with real-life solutions. “One of the greatest lessons I can attribute to my formal education so far is the understanding that just because I am educated, experienced, or prepared does not necessarily mean I will have the right solution or any solution at all” (Personal communication, August 2014). This statement captures beautifully how LEEP Projects encapsulate the spirit of IBL – that it is not a form of learning through which students answer questions. Rather, LEEP

Projects demonstrate how IBL is iterative, processual, and reflective in that questions sometimes lead to more questions, allowing the student to engage in continuous inquiry beyond the problem, project, and even the classroom (Eyler, 2002; Kolb, 1984).

NOTE

1. Names of projects and students have been changed to preserve anonymity. Project descriptions have also been changed slightly in this spirit.

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CHAOS AND ORDER: SCAFFOLDING STUDENTS' EXPLORATION DURING INQUIRY-BASED LEARNING

Debra L. Gilchrist and April D. Cunningham

ABSTRACT

This chapter describes the benefits for learners when librarians collaborate with discipline faculty to design inquiry-based learning experiences. The authors purport that the research strategies and information literacy that form the basis of student inquiry are as critical to student learning and success as discipline-specific course outcomes. Drawing upon research in librarianship and educational psychology, the authors demonstrate benefits from direct instruction in information literacy that maximizes the depth and breadth of inquiry, brings more sophisticated questions to course topics, and acknowledges cognitive, metacognitive, and affective facets of the research process. This closes learning gaps and builds students' confidence as researchers while simultaneously encouraging openness to ambiguity and diverse ideas.

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Improving students' ability to strategize about the information landscape, approach literature of various disciplines, and determine information quality are all critical to learning transfer and the scholarly process. The authors discover alignment between inquiry models and the information search process and demonstrate how using models facilitates instructional design and communicating expectations to students. Practical examples illustrate how faculty might embed information literacy into inquiry-based courses to scaffold, challenge, and support inquiry.

INTRODUCTION

Learning through inquiry is a powerful pedagogical strategy that results in students learning the content of their disciplines as well as the processes used by experts to create new knowledge (Aditomo, Goodyear, Bliuc, & Ellis, 2013; Hmelo-Silver, Duncan, & Chinn, 2007). The inquiry-based learning (IBL) experience will be its richest when students are capable of fully exploring the complexity, depth, and breadth of the course topic. The quality of students' exploration relies on their abilities to effectively analyze and engage with the scholarly literature in a manner that elicits thoughtful evidence, information, and questions (Aditomo et al., 2013). With appropriate support, students will build confidence and persistence to achieve a deeper level of questioning (Friedman et al., 2009; Kuhlthau, 1988).

IBL varies by discipline and by the amount of structure the educator provides to learners (Levy, Little, McKinney, Nibbs, & Wood, 2010). Although these differences can be significant, we will focus on the common element in inquiry-based design: open-ended questions that students engage through genuine exploration and investigation into authentic questions and issues – questions and issues to which there might well be conflicting responses and solutions. Since IBL embeds scholarly investigation in an authentic manner, students' abilities to thoughtfully, logically, and critically plan and pursue their inquiry will determine their success in these courses (Aditomo et al., 2013; Hepworth, 2009).

Discussions of IBL have recognized the value of these abilities, which are often called information literacy (Levy et al., 2010). Information literacy (IL) is widely considered both a foundational capacity for learning and a core outcome of education (Association of American Colleges & Universities [AAC&U], 2007; Lumina Foundation, 2011; SCONUL, 2011). This recognizes that it is a responsibility of all educators to contribute to

learners' IL development and that IL is best learned in the context of disciplines (Diekema, Holliday, & Leary, 2011). In this chapter we will review relevant research about students' information behaviors and how they develop their IL. We also suggest techniques and describe assignments that align with the models of the information search process and IBL cycle that educators can use to deliberately build students' IL and strengthen inquiry.

INFORMATION LITERACY IN THE 21ST CENTURY

Students who are confused and overwhelmed with information rely on the same limited set of tools and techniques when they begin an investigation, are unsure of how to determine the quality of information, and are inexperienced with handling the biases or perspectives they encounter (Head, 2013). They often stop their searches with the first available information, even when it is incomplete (Prabha, Connaway, Olszewski, & Jenkins, 2007), and base their opinions on prior experience rather than gaining perspective from the literature (Whitworth, 2006). Librarians and information behavior researchers have studied how learners pursue information, evaluate it, and apply the information to build their knowledge base (Budd, 2008). Recognizing gaps in students' preparation, librarians have created pedagogies to facilitate students' inquiry. Students can particularly benefit from librarians' expertise when they are learning search strategies, identifying social and political issues related to information, developing critical thinking in the analysis of the literature, and developing questions that deepen their engagement with their topics (Simmons, 2005).

Information Literacy is an umbrella term that includes all of the skills, strategies, attitudes, and conceptions of information that are necessary to effectively use information in any setting (AAC&U, 2007; Bruce, 1997; Budd, 2008; Elmborg, 2006; UNESCO, 2014; Webber & Johnston, 2000). In 2014, a taskforce of the Association of College and Research Libraries (ACRL) drafted a revised definition of IL, describing it as a set of "abilities, practices, and habits of mind" that make learners flexible and critically reflective as they engage with their information ecosystem (Association of College & Research Libraries [ACRL], 2014). This evolving conception of IL emphasizes that learners are participating in communities when they learn and create, which will shape how they ask and answer questions and how they create new knowledge (ACRL, 2014). With its focus on social rather than individual information practices, IL provides a

valuable set of theories and strategies for educators implementing IBL and preparing students for fully engaging that experience.

Since information is dynamic and information practices are social, students must “learn a process that places an emphasis on continuous questioning and examination of knowledge” so that they are prepared to manage the evolution of knowledge when they enter their chosen discipline or profession (Brown, 2012, p. 190). Research suggests that recent graduates may struggle to apply the standards and expectations of their new information environment (Head, 2012). Faculty creating IBL experiences can bridge student learning gaps related to inquiry and deepen the experience by collaborating with a librarian to intentionally integrate learning the research process into the course design (Cheney, 2004; Pelikan, 2004; Raspa & Ward, 2006). An IBL approach that explicitly incorporates IL and the stages of the research process will assist students in developing the qualities of mind, including metacognition, confidence, and persistence, that are hallmarks of the IBL experience and essential attributes for successful learners in our current information environment (Delta College, 2004; Elmborg, 2006).

THE BENEFITS OF IBL AND IL MODELS

One of the educator’s roles during IBL is to provide appropriate support for “two inter-related elements of student inquiry – its topic and its process” (Levy et al., 2010). To support faculty exploration of IBL, Levy and her colleagues proposed an IBL cycle that educators can use for planning. This model of the IBL cycle emphasizes the importance of IL as an institutional learning outcome as well as a vital component of a successful IBL experience (Levy et al., 2010). Because of the role professors plays in supporting their students’ inquiry, they should think carefully about the IL skills and habits students need. One way to explicitly incorporate IL into the IBL process is to adopt a model of students’ IL development.

Using a model of IL development in IBL empowers students to monitor their progress and recognize when they need assistance; and, because of the power of the model to communicate expectations and provide students with a guide for meeting them, it can result in professors receiving higher quality work (Donham, 2001; Levy et al., 2010). The Information Search Process (ISP) model (Fig. 1), a key work in IL research developed by Kuhlthau (2004), analyzes the stages of information seeking and offers

IBL Cycle (Levy, et al., 2010, p. 6)								
Stages	Students establish question, problem, theme		Students draw on existing knowledge and, with support, decide on the direction and methods of inquiry	[no equivalent stage]	Students explore evidence, interrogate texts, conduct experiments, etc., interacting with a range of sources	Students reflect, discuss, critique, analyze, create, receive feedback	Students share results	[process may begin again]
Model of the ISP (Kuhlthau, 2004, p. 82)								
Tasks	Task Initiation	Topic Selection	Prefocus Exploration	Focus Formulation	Information Collection	[no equivalent stage]	Presentation	Assessment
Feelings	Uncertainty	Optimism	Confusion/frustration/doubt	Clarity	Sense of direction/confidence		Satisfaction or disappointment	
Thoughts	Vague			Focused Increased interest				
Actions			Seeking relevant information Exploring		Seeking pertinent information Documenting			

Fig. 1. Inquiry-Based Learning Cycle (IBL) and Information Search Process (ISP).

guidance about when educators can intervene to have the most meaningful influence on students. Because it conceptualizes research as a process, rather than a set of discrete skills, the ISP model aligns naturally with IBL cycles (Fig. 1). Like the stages of IBL, the stages of ISP may be extended or compressed and returned to iteratively when learners recognize a gap they thought they had filled. This resonates with newer conceptions of IL, which emphasize the process of using information to learn (Bruce, Edwards, & Lupton, 2006; Diekema et al., 2011).

Overlaying Kuhlthau's ISP on the IBL cycle has the added advantage of revealing an affective trajectory that is common during the research process. The ISP model explains the stress students feel when they are trying to formulate a focus from all of the disparate messages they have found in their own experiences and in the sources they have encountered. This "zone of intervention" is an opportunity for the professor or librarian to offer "mediation and education" at the point where the learner is most open to receiving help (Kuhlthau, 2004, p. 202). Professors and librarians should be conscious of the role of focus formulation in the inquiry classroom because

Encouraging the students to generate hypotheses can help students focus their inquiry and become aware of the limitations of their knowledge. This is important in promoting effective reasoning and self-directed learning as well as keeping the learning process moving along. Without this, students may engage in unfocused data collection. (Hmelo-Silver & Barrows, 2006, p. 32)

Librarians can be a powerful resource for students at the stages where they become aware of their need for information and begin their focused research. By encouraging discussion about alternative approaches, helping learners predict information outcomes, and giving learners the opportunity to test their logic and receive feedback (Hmelo-Silver & Barrows, 2006) librarians can apply the open-ended questioning techniques they use in reference interviews to elicit deeper learning and keep students' inquiry on track. The ISP model provides educators with insight into which IL abilities and understandings students will need at each stage of their research and when students are most likely to benefit from interventions.

METACOGNITION AND IBL

Metacognition, the ability to think about our own thinking through knowledge control and cognitive control (Flavell, 1976), encompasses

both self-understanding and self-regulation (Imel, 2002). Self-directed learners become aware of their own cognitive processes (Imel, 2002), but developing that awareness requires structured support, or scaffolding, from educators. Scaffolding enables more efficient and effective student learning and is strategically designed to fade as students progressively internalize knowledge of themselves as learners (Pea, 2004). The goal is that students will achieve the full transformative benefit of IBL as their own learning becomes transparent to them (Hmelo-Silver et al., 2007). Metacognition empowers students to make better-informed decisions during their inquiry now and in the future. Specifically in IBL, the necessary metacognitive habits include planning research tasks; monitoring progress to meet timelines and goals; taking appropriate steps to engage the research questions; persisting in the face of ambiguity and conflicting information; and reflecting on past performance for future improvement (Quintana, Zhang, & Krajcik, 2005). Because IBL can develop students' metacognitive abilities it is a high-impact practice for creating "lifelong learners and citizens in a knowledge society" (Hmelo-Silver et al., 2007).

An effective ISP requires both self-understanding and self-regulation, making it a natural partner in the inquiry-based classroom. Self-understanding means that students will reflect on what they do know and do not know about the phenomena they are investigating, use prior knowledge as a starting point but not an ending point in their understanding, and pose initial questions to the literature. Self-regulated inquiry means planning a strategy, monitoring their progress, seeking help when appropriate, consciously seeking multiple perspectives, confronting previously held conceptions, and evaluating both the quality of the resources consulted and whether they have sufficiently answered the question.

Incorporating instruction about the ISP into IBL course design facilitates self-understanding and self-regulation. It permits the professor to scaffold metacognitive development by emphasizing not only finding an "answer," but framing that answer to include students' rationale for their research process, what remains unanswered, and potential next steps. Because answers do not just emerge but are instead constructed through the ISP, students should be expected to interrogate their thinking at each stage of information seeking as thoroughly as they monitor their thinking regarding the discipline content. When students reflect, educators can evaluate the extent to which students have built a critical and comprehensive understanding during their progression from exploration to focus formulation as well as evaluate the metacognitive facets of self-understanding and self-regulation.

WHERE LEARNERS REQUIRE SUPPORT

Teaching the ISP needs to cover research tools and techniques if professors want to forestall common inquiry pitfalls, like unmindful trial and error or overreliance on information habits (Head & Eisenberg, 2009). But these research basics are not the only areas where students will benefit from scaffolding. Learning to manage emotions, evaluate sources using unfamiliar standards, persist beyond the first search results, and navigate the information environment are necessary skills for inquiry but often go unremarked in classrooms. Studies by librarians and information behavior researchers can guide educators employing IBL to make tacit expectations explicit to students (e.g., Budd, 2008; Simmons, 2005).

Experiencing the Emotions and Stages of the ISP

Educators supporting learners through an IBL cycle will note that some of the emotions students experience during IBL result from the process itself while others have structural causes but still influence students' learning. Educators can help by pushing students to "challenge their emotionally laden assumptions" about their environment and explain the underlying causes of the barriers students will encounter during their inquiry (Given, 2007, p. 174). Researchers have found a positive correlation between emotional intelligence and IL skills, which suggests that students who struggle to understand and manage their emotions may struggle with research tasks and could benefit from IBL facilitators who prepare them to anticipate and manage the emotions they experience as their inquiry progresses (Matteson, Farooq, & Mease, 2013).

Studies of students' ISP describe how uncertainty grows as learners explore the issue and realize its complexity, making that stage in the process an optimal zone of intervention when a facilitator's guidance has the most chance of benefiting learners rather than overwhelming or frustrating them (Kuhlthau, 2004). Educators should consider giving the ISP model to students to help them make sense of their experiences. Students who used this model reported that it decreased their anxiety, normalized their negative feelings, and encouraged them to persist even when they felt frustrated or overwhelmed (Kracker & Wang, 2002). Creating a version of the ISP model to share with students may require updating the terminology and using discipline-specific language to describe the stages and actions.

Judging Relevance

Surrounded constantly by information sources, students are experienced at judging relevance, but observation and research suggests that many are not yet skilled at making these judgments about information on unfamiliar topics (Fister, 1992). Studies of information behavior show that evaluating information starts intuitively and only becomes deliberate through practice followed by feedback (Steinerova, 2010). By scaffolding students' information experiences during IBL, educators can help expand their "information horizon," forming their "hierarchy of information sources" to align with standards within their disciplines, and mapping the information environment that includes sources, experts, evaluative criteria, "information pathways," and the context in which they will use the information (Steinerova, 2010, p. 4). Developing a mental map of the information environment strengthens students' evaluative abilities and helps them internalize standards against which to measure their own performance. They can use this schema to challenge themselves to use appropriate but unfamiliar sources of information, something that research shows students find daunting but also exciting as they become familiar with their disciplines' expectations (Head, 2013).

Positive Interdependence and Help-Seeking

The success of IBL rests on learners' opportunities to create knowledge collaboratively, not simply displaying their existing knowledge by responding to professors' questions (Hmelo-Silver & Barrows, 2008). Inquiry-based classrooms involve extensive collaborative learning and facilitators push groups to "question their own thinking" in order to "monitor their progress" through the IBL cycle (Hmelo-Silver & Barrows, 2006). Because IBL gives students the experience of working toward goals in a group, developing interdependence and practicing appropriate help-seeking are valuable IL outcomes of IBL. Anxiety about using libraries can be reduced when students work in groups and students with high scores on scales of cooperative perceptions tend to have lower library anxiety, probably because they practice positive interdependence with librarians, professors, and classmates and feel comfortable asking for help when they encounter challenges (Jiao & Onwuegbuzie, 2002).

Despite these benefits, group relationships by no means remove all research challenges on their own and educators can provide more effective

support if they are familiar with some of the ways that working in groups can complicate the ISP. Research suggests that individuals working together as groups on inquiry projects do not necessarily constitute a single “cognitive unit” that shapes all members’ behavior to a group norm (Hyldegard, 2009, p. 155). Instead, individuals’ experience of the IBL cycle and ISP will vary within the group despite the fact that they are each progressing through the same stages (Hyldegard, 2009). Learners may find that they can easily share information to create a common knowledge base but that it is harder to create common criteria for judging sources’ relevance (Hyldegard, 2009). Since the ability to internalize a community’s standard for evaluation is an important step toward joining a discipline or profession, it may help learners if the professor or librarian provides support for the process of negotiating group criteria for judging relevance.

When they begin working, whether as academics or in any other field, students become part of an information ecology where they will apply IL and the skills they learned during IBL to transform information into knowledge in cooperation with their colleagues (Steinerova, 2010). Employers report that newly hired college graduates struggle to solve information problems within the information ecology of their organizations (Head, 2012). When IL is scaffolded in IBL, students gain experience building knowledge collaboratively, working toward inquiry goals interdependently, and building their information horizon to meet the expectations of their community. This prepares them to transition into their chosen fields.

FACILITATING STUDENTS’ IL DEVELOPMENT DURING IBL

Students do not necessarily respond to high-level tasks by applying learning strategies (Pea, 2004). Therefore, as discussed above, educators should scaffold the IL learning process to make tasks manageable and encourage students to use increasingly complex metacognitive processes (Clark, 2009). Professors can use scaffolding in two ways. One is to support “students’ learning of both how to do the task and why the task should be done that way” (Hmelo-Silver et al., 2007, p. 100). The other use for scaffolding is to problematize important aspects of students’ work in order to force them to engage with key disciplinary frameworks and strategies (Reiser, 2004). Such scaffolds can stop students’ mindless progress through the task, thus redirecting their attention to the “rich connections of their decisions to the

domain content” (Reiser, 2004, p. 288). Without scaffolding and modeling, students are likely to rely on their existing information habits and miss the opportunity to build new ones.

Table 1 provides a structure for designing scaffolded interventions by connecting theory with practice, elucidating the alignment between stages of inquiry, IL concepts, and student application. The table outlines learners’ stages of inquiry, which is our adaptation of Kuhlthau’s ISP model (2004) and the IBL cycle (Levy et al., 2010). We chose these models because they capture the undergraduate experience in the inquiry classroom, including the recursive elements of inquiry. The Information Literacy Concept column of the table defines what the learner should understand at each stage; and the Information Literacy Strategy Applied column of the table illustrates what the student will be doing at that stage.

From Strategies to Assignments

The following examples of assignments are typical of librarians’ contributions to inquiry courses as collaborators designing lessons, co-teaching, and evaluating student work. These assignments align with IL strategies in Table 1 and provide students with the opportunity to demonstrate their thought process and practices during IBL in a scaffolded manner. Three assignment topics are described: (1) pre-search and reflection, with additional extension to include a comprehensive search strategy, (2) evaluating sources, and (3) bias and perspective.

Example 1: Modeling Steps of Pre-search and Reflection

Assignment A

1. Students are guided through an overview search process using a worksheet created by the professor and librarian that includes methods for analyzing a topic, defining search language, brainstorming synonyms, determining what kind of information might answer their inquiry, who might know about this topic, and what kinds of sources might contain the information.
2. Students carry out the search, locating one scholarly article that matches the assignment criteria. Students retrieve information that confirms or denies an existing argument or point of view that is synonymous with their own views.

Table 1. Connecting Elements of the Research Process: Stages, Concepts, and Strategies.

Undergraduate Learners' Stage of Inquiry	Information Literacy Concept	Information Literacy Strategy Applied
Establish a question and information need	<p>Personal conceptions of the world are defined by our experiences</p> <p>Openness promotes understanding and learning</p> <p>Questions can be analyzed by sub-topics, time, people, region, etc.</p> <p>Different types of resources yield different levels of information (e.g., journals, books, visual media, newspapers, annual reports; primary and secondary)</p> <p>Overview sources such as reference books assist in analyzing and identifying sub-topics; reference sources employ organizational systems for direct retrieval of information (e.g., subject, time, person, issue, region)</p>	<p>Relate prior knowledge. Analyze how prior conceptions were built/learned</p> <p>Analyze the question or topic to determine information needs and next steps</p> <p>Consult several types of reference sources for overview, key authors, key ideas, or varied ways of approaching the topic (e.g., by time – what was happening?; by key people – biographical sources; by discipline – social science, science, arts/humanities; by numbers – statistical source)</p> <p>Extract key ideas, questions, and sub-topics for further investigation</p> <p>Brainstorm, consider possibilities, tolerate uncertainty, and predict outcomes</p>
Explore resources to frame direction of inquiry	<p>There are differences between the internet, proprietary databases, and the library catalog and each demands a unique approach</p> <p>Library databases and catalogs are collections of records. Records contain searchable fields such as title, author, source, subject headings, date, and abstract</p> <p>Publications are designed for different types of audiences</p> <p>Scholarly articles are formatted to include an abstract, literature review, construction of new ideas, and a bibliography</p>	<p>Match type of information to the scope of the question</p> <p>Extract keywords from overview sources and use them to structure an inquiry</p> <p>Use materials retrieved in initial search to build conceptions of topic. Determine sub-topics based on findings</p> <p>Manipulate keywords and adjust the search based on initial findings</p> <p>Consult primary and secondary sources as topic dictates</p> <p>Evaluate initial findings for relevance and narrow the inquiry. Consider publication date, audience, level of scholarship, author, and source</p> <p>Use a reliable method of tracking sources and which ideas are found within each source</p>

	Scholarship includes the ethical obligation to respect intellectual property, cite sources, and attribute ideas	Use article abstract as an introduction to the text and to discern initial relevance Tolerate inconsistent and incompatible information Identify possibilities Determine direction and methods and commit to an initial approach
Define methods of focused inquiry	<p>Authors, catalogs, and databases use different language to describe the same topic. Flexible language yields optimal results</p> <p>Databases are indexes to the contents of publications; each database has a unique subject scope</p> <p>Libraries classify information using several different systems. Call numbers indicate the location of a book as well as the subject</p> <p>Librarians can help clarify search processes and develop strategies for inquiry</p> <p>Scholarly disciplines structure information in different ways</p> <p>Sources imbedded in a text provide access to additional resources on a topic</p> <p>There are differences in the quality of information sources; the use of the information will dictate the level of quality necessary</p>	<p>Narrow topic to key questions</p> <p>Design an overall search strategy. Consult most promising information sources first</p> <p>Employ a variety of electronic tools and techniques to maximize success (e.g., truncation, Boolean operators, controlled vocabulary)</p> <p>Redesign/refine search strategy for greater focus. Consult the bibliography in overview articles to determine authors for further exploration. Consider publication dates in relation to topic development</p> <p>Combine themes</p> <p>Discard less promising alternatives</p> <p>Compare and contrast databases and select appropriately for type of inquiry</p> <p>Retrieve full-text and print information from electronic and library locations. Use classification systems to browse materials</p> <p>Summarize information to demonstrate understanding</p> <p>Verify facts in more than one source; obtain more than one perspective</p> <p>Apply criteria to evaluate authority, currency, validity, comprehensiveness of source</p> <p>Identify the balance of beliefs and knowledge presented in a source (point of view, bias, deception, and manipulation)</p> <p>Relate disconnected pieces of information to discover patterns or make generalizations</p> <p>Consult librarians or experts in content and process. Ask for help</p>

Table 1. (Continued)

Undergraduate Learners' Stage of Inquiry	Information Literacy Concept	Information Literacy Strategy Applied
Collect evidence from a range of sources	<p>A range of perspectives is needed to capture a full scholarly argument</p> <p>Scholarship is a conversation and bibliographies trace that conversation over time</p> <p>Bias and perspective are inherent in literature</p> <p>Social, cultural, historical, and economic issues inform production, dissemination, and access to information</p> <p>Authority is constructed and contextual</p>	<p>Integrate previously held beliefs, assumptions, and knowledge of new information</p> <p>Consult different types of publications and collect evidence</p> <p>Evaluate results for voice and opinions different from their own</p> <p>Trace publications of key authors to follow development of an idea</p> <p>Select appropriately among sources that vary in content, format, structure, and scope</p> <p>Seek pertinent information from appropriate sources</p> <p>Consider social/political/economic implications of the evidence they located</p>
Refine, re-strategize, and adjust	<p>Research is recursive; initial insight and judgment needs to be examined in light of subsequent discoveries</p> <p>Frustration, ambiguity, and anxiety occur throughout the research process</p>	<p>Assess process, results, and performance</p> <p>Return to fill in gaps</p> <p>Determine if the inquiry needs to begin again</p> <p>Identify need for further information</p> <p>Critically reflect on the search process and adjust</p>
Reflect and evaluate	<p>Critical, reflective practice is inherent in being an effective researcher/scholar</p>	<p>Analyze, synthesize, reflect, and receive feedback</p> <p>Identify the impact of the learning (both about the topic and from the research process)</p> <p>Evaluate what they would do differently next time and predict how results might be improved</p> <p>Transfer concepts and skills between information environments</p>

3. Students describe the method the author of the source used to reach their conclusions.
4. Students reflect on both the process and the type of source that they ultimately selected, considering questions such as: What surprised you about the search process? What barriers did you encounter and how did you overcome them? What are you looking forward to learning more about? What element of the research process was new to you?

Assignment B

1. Students determine what other viewpoints might be held by experts on this same topic.
2. Within inquiry groups, students carry out an initial overview search without the support of a guided worksheet.
3. Students use overview sources to identify other major viewpoints on the topic, break down those viewpoints into relevant sub-topics and further add to the argument by locating relevant data from a statistical source.
4. Students cite the overview sources they used and what process they used to find them. When and why would they use them again? What did they learn about overview sources and their role in inquiry?

Extending Example 1 to Include a Comprehensive Search Strategy

Assignment C

1. Students look for theories and scholarly research that provide context for at least two of the new viewpoints they identified in their exploration.
2. Students develop keywords, select two databases to search, and compare and contrast the results in each of the database searches.
3. Students retrieve two scholarly articles from each database and explain why they directly relate to the topic. They also search for information on the topic on the open internet and compare/contrast with the types of information found in the library database.
4. Students describe the database they consulted and why it was a good choice for the topic, consider whether it was a specialized or general database, contained citations, abstracts, or full-text, and contained scholarly or popular information.
5. Students retrieve scholarly articles, locate a book, and search the open internet; they compare/contrast how effective their keywords were in

leading to the sources, and how they modified the search for each tool.

Assignment D

1. Students develop a new inquiry thread based on the scholarly articles they retrieved in the former assignment.
2. Students analyze scholarly materials for keywords, timelines, authors, and other contextual elements they might explore; they design a search strategy and execute it with the expectation of retrieving diverse sources that are relevant to the topic.
3. Students include a justification of why their sources are relevant and critique their research strategy. The justification considers questions such as: How did you know you had sufficient information to answer the question? Why is it good evidence for your argument?

Example 2: Evaluating Sources

Assignment A

1. Students are presented with a scholarly article to analyze for evidence of quality/trustworthiness.
2. Students analyze for surface clues including references; author; source of the article; and balance of opinions, analysis, research, and data.
3. Students identify what questions are raised and remain unanswered by this research, and what information should be verified. In their inquiry groups with their professor or librarian, they develop criteria for quality/trustworthiness of information they will use to pursue their inquiry.

Assignment B

1. Students search a database for articles relevant to the assigned topic.
2. Students select the two scholarly articles most interesting to them. Analyze the articles for trustworthiness using the criteria developed in class.
3. Students search the open internet for information on the same topic. What additional criteria, if any, would you add to the list we developed in class to evaluate open internet sources? Why or why not?
4. Students respond to questions about the process of evaluating sources. For example: How did your decisions about which articles were relevant change as you looked at more sources in the databases

and on the open internet? How did you use techniques of narrowing your search, filtering your results, and browsing titles to identify trustworthy sources? How did the content and form of the information you found influence your judgments about the sources? How did your knowledge state, mood, goals, and interests influence your judgments about the sources?

Assignment C

For a subsequent class paper/project: Students include a paragraph at the top of their bibliography analyzing why their sources meet a standard of quality/trustworthiness and match the level of scholarship required in the assignment. They consider the same criteria developed in assignments A and B.

Example 3: Bias and Perspective: Social/Political/Economic Implications of Information

Assignment A

Students search for information on a topic with social, political, or economic implications or dimensions. If it is early in the course, the search is guided by a professor or librarian (see aforementioned examples). If it has been scaffolded earlier, it is unguided.

Assignment B

Students locate a public policy that impacts your topic. What information was difficult to find and what was easy to find about your topic? Was most of the information in scholarly, popular, subscription, or open sources? What social, political, or economic factors might explain availability of information on this topic?

Assignment C

In subsequent assignments, students consider the political, social, or economic influences on information found while researching their topic, including whose voice was most available and why.

Additional Assessments

While these three examples modeled developmental approaches to inquiry, any of the following assessments could be added to an existing course assignment to encourage reflection, skills, and strategies.

- Students list citations for four sources in their order of importance to the development of their ideas. For the first three citations, students include an annotation that summarizes key ideas and evaluates the quality of the source. For the fourth citation, students list a source they considered and then rejected and explain why.
- Students compare and contrast popular articles and scholarly articles on the same topic, analyzing the audience for each and what each contributes to their inquiry.
- Students analyze how they have incorporated multiple voices and perspectives, and how they included viewpoints different than their own.
- Students describe the bias or perspective of the information source and what that means to the development of the ideas within the source itself and their paper/project.
- Students research the author of one source and include with their paper a paragraph describing the author's expertise.
- Students analyze a bibliography of core sources prepared by the professor. They describe why the professor identified them as core and trace the evolution of one author's idea through the literature.
- Students complete an "Information-Seeking Profile" that prompts them to record how they handled the elements of the IBL cycle and stages of the ISP model (for example [Shenton & Hay-Gibson, 2012](#), p. 40). Students compare their profiles with others in their class or inquiry group to develop a shared knowledge base and criteria for judging relevance.
- Students complete a search strategy worksheet and reflect on how they designed their search strategy and how successful it was.
- Students reflect on how they have developed as researchers during the course of an assignment or group of assignments.

SUMMARY

The Boyer report described IBL as a pedagogy that develops a "spirit of inquiry in students" (1998, p. 13). Skilled, thoughtful inquiry is a complex

process that requires a range of metacognitive, cognitive, volitional, and affective practices. The power of IBL is fully realized when students' inquiry is integrated into the course and supported with an IL framework. Librarians and discipline faculty should connect early in the instructional design process to assure optimal scaffolding and intentional integration (Raspa & Ward, 2006). Librarians also need to consider preparing collections, library space, and services to deepen the IBL experience for students.

Questions are at the center of the IBL model and the "quality of students' exploration relies on their abilities to effectively analyze and engage literature in a manner that elicits thoughtful evidence" (Aditomo et al., 2013, p. 16). Students will engage with those questions when they have the understanding and ability to be both competent and confident in their information seeking and knowledge creation roles within the classroom and in their personal and professional lives. And with this strong foundation, they may pursue their own questions and embrace inquiry as central to lifelong learning.

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THE LIFE ARTS PROJECT: APPLICATION OF AN INQUIRY- BASED LEARNING MODEL FOR ADULT LEARNERS

Darryl E. Jones

ABSTRACT

Inquiry-based learning (IBL) is one of many approaches that enhance the quality of education by moving away from teacher-centered instructional methods and toward more student-directed approaches. This chapter describes the adult-centered program delivered by The College of New Rochelle, School of New Resources – a northeastern, liberal arts institution that is a pioneer in educating adult learners. A model program for educating today's adult learner is introduced with particular emphasis on faculty implementation of IBL in the classroom and student's responses to the Life Arts Project (LAP), which is incorporated in each six credit course seminar. Through the LAP, adult learners investigate course content through exploration and discovery, participate in critical inquiry, investigate various research methodologies, and experience project-based learning.

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INTRODUCTION

The purpose of this chapter is to illustrate the practical application of an inquiry-based learning (IBL) approach utilized with a diverse population of adult learners enrolled in The College of New Rochelle, School of New Resources (SNR). At the core of the SNR mission is the recognition of the adult learner as central to the learning process and the validation of their prior learning experiences. This chapter discusses how the implementation of IBL has enhanced the SNR academic curriculum. Presented in the chapter is a model of IBL that influenced SNR's early adopters of adult education and a discussion of SNR's classroom implementation of IBL through the Life Arts Project (LAP). The LAP is a multi-disciplinary project that allows students to draw upon material from the course and creatively apply that material to a real-life situation of particular interest to them. Through ongoing review and examination of the LAP model, it is suggested that IBL has enhanced SNR's ability to educate the adult learner and that students therefore acquire a deeper level of understanding of course material through examination of their prior experiences as prior learning.

Established in 1972, SNR fulfills the mission of The College of New Rochelle as its specialist in higher education for adult learners living in a complex urban world. The non-traditional student population is 95% minority (77% Black and 18% Hispanic) and 82% single. Average age is 38 and all students are at least 21 years of age at enrollment. The diverse student population is noteworthy as it contributes to a richer and fuller higher educational experience for administrators, faculty, and students.

Although the racial composition of the workforce reflects a diverse population, current patterns of participation in education point to less presence in educational settings by minority groups. Groups who have been historically marginalized by race or class continue to struggle to partake in educational opportunities and encounter many impediments especially financial barriers to participation. Race, gender, and previous educational experiences continue to be accurate predictors of participation in education, even among older learners. Blacks and Whites have higher rates of participation than Hispanics or those of other races; women continue to outpace men in both work-related and leisure learning ([National Center for Education Statistics \[NCES\], 2007](#)). In order to remain employable in the current and future labor market, adults must learn new skills and adapt to new roles and work situations.

THE IDEA OF INQUIRY-BASED LEARNING

IBL is not a new concept. In fact, IBL predates Socrates and his method of developing self-knowledge through intensive questioning. Early proponents for progressive education like Dewey (1938) continued the inclusion of inquiry learning when his reform of the educational system led to one of the first IBL methods in the United States. Dewey propounded that child-centered learning should be based on real-world experiences. SNR has transformed the IBL method primarily focalized on the cognitive development of the child – to the cognitive development of the adult learner.

An IBL approach encourages students to develop critical skills that enable them to seek truth, information, and knowledge. Inquiry derives from the Latin *quaerere*, which means to ask, look for, or seek. Finkel (2000) defines “inquiry” as the process of attaining knowledge, arguing that inquiry should exist in the foundational fiber of any higher learning institution. In order for IBL to be effective, students must question and investigate new information while constructing knowledge. IBL is fundamentally rooted in the concept that pursuing information and knowledge through the process of inquiry can lead to understanding and mastery of skills. Clifford and Marinucci (2008) state the quality of student’s questions determine the quality of their thinking.

Within the SNR model, students engage in self-directed learning and then apply their new knowledge to the problem and reflect on what they learned and the effectiveness of the strategy employed. Faculty act to facilitate the learning process rather than to provide knowledge. IBL encompasses a broad spectrum of pedagogical approaches that ground the learning experience in a process of self-directed scholarly investigation and research. A key consideration in pedagogical design for IBL is that learning activities need to be open-ended enough to allow students to engage in genuine exploration and investigation in relation to authentic questions and issues to which there might well be alternative responses and solutions (McKinney & Levy, 2006).

IBL actively engages students in learning and encourages them to strive for a richer understanding of the process or concept (Havasy, 2001). The pedagogical theory of Brazilian educator and philosopher Freire (1970) was instrumental in the development of the SNR curriculum. Freire (1970) theorized effective learning takes place when students are given work they can own. He uses an illuminating metaphor about teaching and learning. The traditional approach to teaching can best be described by the banking system. In this banking system, students sit in front of (or at the feet of, in

much earlier time periods) the master teacher, the students open their heads, and a sage pours knowledge and wisdom into their brains. To this end, the exchange of knowledge occurs. It is assumed that students take this newly acquired knowledge out into the world to make their lives better and ultimately contribute to the greater good of society.

The demonstrated use of the knowledge is to withdraw the information for test purposes, after which the knowledge is spent and often forgotten. This has been known to leave some adult learners bankrupt when they attempt to function in the world beyond academia. Freire's (1970) theory asserted that students learn best when they are embedded in a learning environment, which provides them the opportunity to create their own knowledge in relation to the knowledge being sought. The educator's role is to encourage, guide, and support the discovery process. IBL is an approach that equips adult learners with the necessary tools to create knowledge through active engagement; this approach is in contrast to the passive receipt of knowledge transmitted through the banking system. The use of IBL in the classroom increases motivation and provides a venue for students to reflect on prior learning. Research into why adults are motivated to learn as uncovered a range of factors includes: communication improvement, educational preparation, professional advancement, social contact, cognitive interest, and family togetherness (Dymock, 2007). The reasons that adults learn are varied especially at different stages in an adult learner's life.

The implementation of IBL creates opportunities for educators to help students acquire a deeper understanding of content and concepts and can lead to enhanced critical thinking skills. When implemented effectively, IBL transfers a balance of power. The process of transferring information becomes a shared responsibility between student and teacher. Teachers are no longer the primary holders of information for students; they now assume the role of facilitator and join students in the inquiry process. The faculty's classroom role will not remain the same throughout the IBL process. At first, it is recommended that faculty validate student responses to encourage participation. Then, the faculty should focus answers to promote logical and analytic thinking (Malacinski, 2003). Discomfort with IBL by faculty and the possibility of being overwhelmed using this instrumental modality are limitations of IBL. The amount of learner self-direction and the amount of teacher direction involved during the IBL process will serve as a major factor in determining the level of the change in the instructor role (Kirshner, Sweller, & Clark, 2006).

Today, students are encouraged to be independent thinkers and take more responsibility for their learning, acquiring skills to retrieve, analyze, and

synthesize volumes of data leading to an ultimate quest of knowledge throughout one's lifespan. SNR's commitment to IBL reflects the widespread move in higher education over recent years from a teacher-centered approach of the learning process toward an increasingly student-centered model. Pedagogic research has demonstrated that students are more likely to adopt deep learning strategies when they are both challenged and supported to engage actively with the questions and problems of their discipline (Marton, Hounsell, & Entwistle, 1997; Prosser & Trigwell, 1999; Ramsden, 2003). The idea of IBL requires students to not only seek knowledge but also examine the information through effective reasoning. Seeing learning as a process of knowledge construction means that teaching advances from transmission of information toward the design of learning tasks and environments that will support student's active engagement with their subject (Biggs, 2003).

IBL is a more pertinent learning tool today than it was in the past because of technology. According to Carr (2010), technology is a tool that is used to support learning and increase inquiry. Carr uses the example of students creating websites that allowed them to synthesize the many concepts they learned through their own independent studies. Technology allows information to be readily accessed and as a result the need to memorize is not as critical as it was with more traditional learning models. The most significant trend that continues to make an impact on the facilitators of adult education is the demand for incorporation of technology into the content and delivery of professional development (King & Lawler, 2003). Research conducted by Bruce and Levin (1997) found that by allowing students to use the technological tools they interacted with on a daily basis, they could increase the IBL going on within their own classrooms and allow students even more freedom to develop individualized learning experiences.

HIGHER EDUCATION FOR ADULTS

The founders of SNR, Thomas Taaffe and Joseph McDermott, opined that the most radical commitment of any higher learning institution would be the commitment to take the adult learner serious. Taaffe and McDermott inspired and structured a program of liberal arts studies designed for a flexible and dynamic educational partnership with the adult learner. In 1972, this unusual partnership involved the ongoing task of learning better ways to respond intellectually, academically, and humanistically to the needs of the adult learner in an urban community. Such an approach was radical because

the founders believed whether the partner is an animal, a child, the earth, or a fellow adult, there is always a revolution implied in meeting any partner with full seriousness and with mutuality (Taaffe & McDermott, 1973).

Taaffe and McDermott (1973) contended that when Paul Cezanne took color itself seriously a revolution in visual sensation and in modern art resulted; when Sigmund Freud took his patients seriously and sincerely listened to the neurotic, we inherited the modern psychological revolution. When Albert Einstein became serious about the speed and constancy of light, we had a revolution in modern physics and modern technology. When Jane Goodall took the study of the chimpanzee in the Gombe Stream completely serious, humanity achieved a revolutionary knowledge in primatology and in social sciences. Color, neurosis, light, and primates, all have been with us for quite some time but Taaffe and McDermott believed that the revolution only came when each of these issues were taken absolutely seriously and met on their own terms. Likewise, adult education has been around for a long time and the program at SNR was preeminent in introducing an ultraist approach to accept the adult learner in their communities as a partner in life-long learning.

In its beginning, most academics regarded the new adult education emphasis as simply a more flexible way of doing undergraduate education for older people, those who could not manage the expectations of traditional college scheduling. However, adult education is not a minor variation of conventional undergraduate education. Taaffe and McDermott recognized that adult learners were radically different in experience, motivation, life connections, initiative to access professional resources, and in their ability to exchange ideas and tested values. This is one of the primary reasons that adult education emanated as a unique educational form. Boud, Keogh, and Walker (1985) found that adults have a broader base of experience to which new ideas and skills can be attached; a broader experience base allows adult learners to incorporate new ideas and skills with much richer and fuller meaning than do youths.

Additionally, adult learners differ specifically in self-concept, experience, readiness to learn, time perspective, and orientation to learning. Traditional teaching applied to children is “jug and mug” with the big jug (the teacher) filling up the little mugs (the students). Students are asked to pay attention and have few opportunities to make use of their own experience (Klatt, 1999). SNR is an innovative program that emerged to partner with adults in their urban community. SNR was founded on the belief that without the inclusion of adults as co-determinants of their educational process, without the advisement, consent, cooperation, and creative initiative

of the mature student, no sustainable success was possible in their educational career (Taaffe & McDermott, 1973). In any form of authentic adult education, that incorporates IBL, the learner is an active participant in the learning process: always asking questions and always responding. Adult students bring a broad range of experiences and perspectives to any instructional setting and are most likely to be motivated when they see a connection between the learning objectives and activities and their own work or life (Edmunds, Lowe, Murray, & Seymour, 1999).

Proponents of adult learner theory realized that teaching students to think analytically and critically was a key objective of educators. Critical thinking skills have an impact on student's ability to be successful in the classroom and have an impact on overall student achievement (Williams & Worth, 2003). The concept of critical thinking is connected to Blooms Taxonomy, a classification system for levels of learning (Bloom & Krathwohl, 1956). Critical thinking occurs at all levels of learning. For example, a lower level of learning according to Bloom is the ability to understand and the highest level of learning is the ability to create. Thus, more critical thought is required to create as opposed to understand. Bloom and Krathwohl (1956) developed the classification of levels of intellectual behavior in learning with three domains: cognitive, psychomotor, and affective. Even today in adult education, Blooms six levels of learning: creating, evaluating, analyzing, applying, understanding, and remembering continue to be utilized by adult educators to aid student's development of critical thinking skills. IBL-focused learning is an important approach to assist students through the critical thinking process.

Since the early 1970s, adult learning theory has offered a framework for educators whose responsibility is to educate adults. Knowles (1973) was among the first proponents of this approach. In his book *The Adult Learner: A Neglected Species*, he resurrected the word "andragogy," a term popular in German education in the 1800s, and used it to identify his approach to create a unified theory of adult learning. Knowles' contributions to adult learning theory have been many and have influenced the thinking of countless adult educators. The Andragogical model promoted by Knowles is predicated on four assumptions about adult learner behavior:

1. Adults tend to prefer self-direction. The role of the educator is to engage in a process of inquiry, analysis, and decision-making with adult learners, rather than to transmit knowledge. This self-concept of an adult moves from that of being a dependent person toward being an independent, self-directed person.

2. Active participation in planned experiences – such as discussions, or problem solving exercises, an analysis of those experiences, and their application to work or life situations should be the core methodology for educating adults.
3. Adult learners' needs and interests are the starting points and serve as guideposts for training activities. An adult's readiness to learn is increasingly enhanced when resources for learning are associated with life events such as marriage, divorce, parenting, a new job, loss of a job, retirement, and so on.
4. Adult learners strive to master communicative competence based on problem-solving solutions. They want to learn a skill or acquire knowledge they can apply pragmatically to their immediate circumstances. Life or work-related situations present a more appropriate framework for adult learning than academic or theoretical approaches.

Adult education is a highly developed sub-discipline of education whereby people whose major social roles are characteristic of adult status and who undertake systematic and sustained learning activities that bring about changes in knowledge, attitudes, values, or skills (Darkenwald & Merriam, 1982). Adult education includes, but is not limited to, continuing education, adult literacy education, vocational and rehabilitative training, and education for community mobilization and transformation. The practice of educating adults can occur in the workplace, extension sites, and at community centers. SNR recognizes this approach as taking theoretical perspectives and making them practical and convenient for the adult learner. While the adult learner educator is not a dictator, they do have responsibility for making decisions, providing guidance, and for being a resource for students. Although adult educators often view themselves as the ultimate authority on the subject matter, it is still up to the adult learners to determine whether the ideas presented in the session should/could be incorporated into their work or personal lives. In their research on adult learning, Sullivan, Wircenski, Arnold, and Sarkees (1990) assert the establishment of a positive learning environment hinges on understanding the characteristics of adult learners who will be participating in the instructional process. While andragogy has been widely debated by scholars, who note the situational variables that influence the degree to which adults exhibit these characteristics, this framework is one of the most enduring and widely cited theories of adult learning (Merriam, 2001). Additionally, faculty play an important role as change agents in creating supportive learning environments for adult learners both by incorporating theory and research on adult learners into

their own classrooms and advocating for adult-centered programs and services on their campuses (Blair, 2010). As a result, the design and delivery of relevant programs is a contributing factor to the successful experiences of adult learners.

THE LIFE ARTS PROJECT

Within an IBL framework, SNR recognizes the adult learner as being inquisitive, self-directed, and a seeker of knowledge. IBL is predicated on the belief that understanding is constructed by the process of people working and conversing together as they pose and solve problems; make discoveries, and rigorously testing the discoveries that arise (Wells, 2001). IBL in its purest sense can be defined as a learning approach focused on learning processes in which asking questions, thinking critically, and solving problems is encouraged (Friedman et al., 2010). Through IBL, the adult learners in SNR explore valid questions like how does one gather the data based on experience and apply it to not only what they know, but how they know? In a traditional form of teaching, the process of inquiry is discouraged. It makes the student less prone to asking questions as they move through their educational process. Learning through inquiry is a strategy that, in making the links between research and learning more explicit, has the potential to strengthen the teaching nexus within universities (Elton, 2001; Marsh & Hattie, 2002; Neumann, 1994). IBL should not solely be considered a tool for asking questions, but a means of developing critical thinking skills and translating information into knowledge.

Through prior experiences, adults enter higher education with intriguing information and clearly defined data points. The adult-centered program within SNR, coupled with the inclusion of the IBL method within the curriculum, encourages students to analyze that information and data and transform it into useful knowledge. The educator's role in the SNR classroom, serving as a facilitator, must demonstrate the ability to analyze that data with the student and convert it into useful, practical knowledge. In the early 1970s, The College of New Rochelle embraced the adult learning model and recognized early on that IBL would be an effective and necessary learning tool for the adult learner. Adults who were returning to school were curious, inquisitive, and had age-old philosophical questions; many of these adults believed a quality liberal arts education could help them address some of these questions (i.e., Who am I and How do I fit into a collegial environment as an adult learner?)

Critical thinking and inquiry are regular features in SNR's curriculum emphasizing both breadth and depth in the liberal arts through questions, discussion, and logical reasoning. In addition to traditional course requirements, the curriculum includes a hands-on project that aids the adult learner in attaining the overarching goals of SNR: the ability to think analytically and critically and the ability to direct and complete self-initiated learning. SNR offers a unique adult-focused curriculum that offers a six credit course model that meets for 4 hours per week over an 18 week semester and includes the LAP. The LAP is at the heart of SNRs' philosophy of adult learner education. The LAP requires students to demonstrate learning by synthesizing course content, research, and their life experience into a required written and oral product. The LAP affords students the opportunity to formulate case studies, questionnaires, interviews, observations, reflective analyses, and/or artistic work.

The LAP allows each student to draw upon material from the course and creatively apply that material to a real-life issue of particular interest to them. Through these projects, students not only begin to understand the true relevance of the liberal arts for current and future learning, but they also learn more about themselves as a parent, community member, citizen, and employee. The LAP is a key component of SNR's focus on experimental, self-directed, IBL. A requirement of each LAP is a written contract (see [Appendix A](#)) outlining what they will do, what they hope to learn, and how they will achieve their learning goals through the project along with an oral presentation on the LAP that is delivered to the class participants. Students are also given rubrics for the Written (see [Appendix B](#)) and the Oral (see [Appendix C](#)) components of the project. When implementing IBL in the classroom, a clear method to measure student's knowledge and critical thinking skills must be developed. The measurement can not only be accomplished through the use of appropriate inventories, but may also be accomplished using well-constructed rubrics. Rubrics are used to incorporate students in the process to further support knowledge and problem solving (Yoshina & Harada, 2007).

Explicit in the philosophy of SNRs is the significance of the LAP as a means for students to take control of their learning by integrating their experiences, research interests, and goals with content generated in each of the six-credit seminars. Through the LAP, students have the opportunity to generate creative responses to course material and share results of their investigation with their peers. Additionally, students assume the role of facilitator and present their LAP findings to the class. The LAP focuses on primary and secondary research. Students' research involves not merely

employing the written work, but also utilizing community agencies, institutions, and their families, and various organizations. The guiding tenets of the LAP encourage the adult learner to inquire, investigate, design, discuss, decipher, and reflect. Learning through inquiry in its many forms is, increasingly, recognized as a powerful pedagogical strategy and one that can be applied successfully to lower as well as higher levels of education (Elton, 2001; Jenkins, Breen, Lindsay, & Brew, 2003). Its further benefits include the development of a wide range of meta-cognitive and other learning skills, and the enhancement of student motivation and commitment in relation to both the process of studying and the discipline itself (Brew, 2001; Jenkins et al., 2003).

The LAP, developed from SNR's rich history, has been enhanced with the IBL approach. Through exploratory and careful review of prior learning, students develop the framework from which they learn and develop understanding. The LAP poses questions that challenge the student to examine and conceptually inquire about their own life experiences and develop a contextual framework to explore prior life experiences. Some examples of the diverse projects students submit include, but are not limited to, researching the impact of international adoption on families and communities; social media as a risk factor for isolation; challenges and aspirations on being released from prison; experience with being bullied and educating others on the inhumane effects of bullying; and investing the classical debate between W.E.B. DuBois and Booker T. Washington and its contemporary relevance.

Other examples of student LAPs include, but not limited to, analyzing life situations that create a sense of anger and frustration and developing positive ways to manage anger; creating a 3D map of a local community documenting fast food restaurants and fresh fruit and vegetable options; research on Ainsworth's Strange Situation Experiment; investigation of the impact of domestic violence; a survey instrument assessing academic self-confidence and self-efficacy; and researching the personal experiences that indicate the correlation between depression and divorce. These topics represent a myriad of the LAP projects presented by students each semester that demonstrate their ability to analyze how past experience affect learning and how learning is applied through the inquiry process.

The utilization of the LAP in the classroom coupled with the guiding principle of IBL has enhanced adult student learning in SNR. Over the years, specific strategies that have aided in increasing student achievement and learning include: (a) implementation of a standardized definition of the LAP and assurance of its inclusion on each syllabus, (b) establishment of a

LAP week at each branch campus in which students, staff, and faculty would focus, in class, on the importance, purpose, and process of the LAP, (c) a mandatory LAP workshop at each branch campus for all adjunct faculty, and (d) revision of the LAP contract to make it more student accessible by revising and placing an interactive LAP contract online. Through demonstration of the written LAP and presentation of the oral LAP students have obtained higher levels of knowledge and have developed enhanced critical writing and thinking skills as evidenced in the LAP course audits of the most recent years.

CONCLUSION

An educational model that is based on IBL enables students to engage in an in-depth exploration of course content associated with critical thinking and analytical skills. IBL-focused learning provides variant ways of viewing the world, communicating with it, and successfully introducing new questions and hypothesis. Students can readily apply what they know to what they are learning. This is at the heart of IBL in the adult academic environment offered within SNR. Inquiring and discovering the answer is an exorbitantly important factor of IBL as the inquiry and discovery process aids in effectively generating knowledge for the adult learner. Through continued implementation of IBL, it is hoped that SNR remains at the forefront of innovative teaching that empowers adults as inquiring individuals who are able to engage effectively and critically within an evolving world.

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APPENDIX A: LIFE ARTS PROJECT CONTRACT

Campus: NR CO JOC RP DC BK

Semester:

Seminar Code:

Student Name:

Project Topic:

Project Title:

Group: Y N

1. **CONCEPTS:** Name and describe two ideas and/or concepts from this course you intend to use in your LAP:

a.

b.

2. **EXPERIENCE:** What in your life experience has inspired this project?

3. **LEARNING OBJECTIVES:** What do you hope to learn as a result of completing this project?

At the end of this project I will be able (See terms to consider on the back of contract.)

a. TO:

b. TO:

4. **LAP METHOD/PROCESS:** (Primary Research) what will you do? **BE SPECIFIC**

___ Case Study –
of _____

___ Questionnaire –
for _____

Interview –
whom _____

Observation – whom or
what _____

Reflective Analysis – on
what _____

Artistic
Work _____

Other – (explain)

5. **LEARNING PRODUCT:** What will you submit? (See back of contract for possible modes of presentation.)

Case Study Analysis Completed Questionnaire & Analysis Interview Transcript & Analysis

Observational Charts & Analysis Reflective Analysis: Integrative (Research/Experience) Paper

Work of Art/Analysis Brochure Documentary

Documentary Performance
Other _____

6. **REFERENCES:** (Secondary Research) List your references below in the appropriate format MLA or APA.

DUE DATE: _____

PRESENTATION DATE: _____

Faculty Signature: _____ Date: _____

Student Signature: _____ Date: _____

Instructional Staff/Resource Faculty Signature _____ Date: _____

**This Contract will be Reviewed for
Grammar, Content, Clarity, and Overall Neatness**

Terms to consider when listing your learning objectives:

A Level	B Level	C Level
Introductory courses	Intermediate courses	Advanced courses
Define	Compare	Assess
Identify	Contrast	Analyze
Outline	Categorize	Synthesize
Describe	Defend	Defend
Indicate	Review	Explain
Summarize	Describe	Evaluate
	Apply	Critique
	Demonstrate	Compare/ contrast integrate

Examples of possible modes of presentation using media/technology

CD	Podcast
CD ROM	Smart board
Power point	Video streaming
Website/blog	Photo journal
Digital media presentations	

APPENDIX B: LIFE ARTS PROJECT GRADING RUBRIC

(Check Appropriate Box for Grading)

Project Component	A + /A/A– 4.5/4/3.7	B + /B/B– 3.5/3/2.7	C + /C/C– 2.5/2/1.7	D 1	X	0	Avg. Grade
<i>LAP contract</i>	Superbly written or typed; snapshot of a doable, narrowly focused and appropriate project; reference page appropriately documented and attached	Neat; doable, somewhat focused and appropriate project; attached references in appropriate format but fewer than required; appropriate level	Loosely related to course; less doable project; not appropriate to level of course; few ref re with inappropriate format	Somewhat sloppy; poor sentence structure; project loosely related to discipline under which the course falls; no references indicated	Sloppily written; project not doable and/or irrelevant to course or discipline, no references attached	No contract submitted	
<i>Project's relevance to course content</i>	Easy to put project in context of the course	Project can be put into context of course, but only loosely	Product is loosely related to course.	Little demonstration of project's fit with course material	Product is irrelevant to course or discipline and is not put in academic context	No product submitted	
<i>Project's relationship to experience</i>	Student superbly demonstrates experiential relationship to course content	Student demonstrates with good effort the experiential relationship to course content	Student loosely demonstrates experiential relationship to course content	Student briefly references experiential relationship to course content	Product has no experiential relationship to course content	No product submitted	
<i>Project's learning objectives</i>	Appropriate-level learning objectives are met in an efficient and focused manner	Appropriate learning objectives are met, but could have been demonstrated more efficiently	Learning objectives not appropriate to course-level and met in a round-about manner	Whether or not any learning objectives were met is questionable by reader	Meeting of learning objectives not demonstrated	No product submitted	

<i>Project's methodology</i>	Methodology is highly appropriate to topic, congruent with contract, and superbly developed and executed; substantial amount of time and thought in preparation and execution is evident	Methodology is somewhat appropriate to topic, congruent with contract, and adequately-developed and executed; good effort in preparation and execution	Methodology is loosely appropriate to topic, incongruent with contract, under-developed and executed; moderate effort in preparation and execution	Methodology is vague, incongruent with contract, undeveloped and only alluded to; little effort demonstrated	No methodology demonstrated	No product submitted
<i>Overall integration of finished product</i>	Excellent integration of research, course content, and experience	Reasonable integration of research, course content, and experience	Attempt at integration, but poorly executed.	Project demonstrates little effort at integration	No integration of material.	No product submitted
<i>Documentation/formatting</i>	Sources are appropriate and formatted impeccably	Some problems with appropriate sources and format	Substantial difficulty with appropriate sources and format	Little, if any, source documentation and poor formatting of sources	No source documentation and very poor format	No product submitted
<i>Language/usage</i>	Appropriate language usage and no grammatical errors	Appropriate language usage and few grammatical errors	Inconsistent lang. usage and many grammatical errors	Inappropriate language usage and poor grammar	Sloppy, very poor language usage and grammar	No product submitted

APPENDIX C: LIFE ARTS PROJECT ORAL PRESENTATION GRADING RUBRIC

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(Check Appropriate Box for Grading)

Presentation Component	A + /A/A– 4.5/4/3.7	B + /B/B– 3.5/3/2.7	C + /C/C– 2.5/2/1.7	D 1	X	0	Avg. Grade
<i>Introduction</i>	Presents clear and precise overview of topic, thesis, outline	Somewhat clear introduction	Sketchy introduction, direction is unclear	Very brief and unfocused	No introduction	No presentation delivered	
<i>Overall delivery</i>	Engaging. Clear and articulate – proper use of grammar and pronunciation, good eye contact. Neat appearance – varied tone	Somewhat engaging mostly articulate, good eye contact Mostly proper use of grammar and pronunciation. Neat appear., varied tone	Minimally engaging. Lapses of grammar and articulation, minimal eye contact Casual appearance and varied tone	Semi-prepared, long pauses, reading from notes or paper – little eye contact Overly casual appearance and mostly monotone	Unprepared, awkward Sloppy appearance and monotone delivery	No presentation delivered	
<i>Vocabulary: Use of concepts and terms</i>	Fluent presentation. Clear understanding of appropriate concepts and terms	Somewhat fluent and appropriate use of concepts and terms	Too many clichés and too much use of jargon	Minimum use and understanding of appropriate concepts and terms	No attempt to use appropriate concepts and terms	No presentation delivered	
<i>Coverage of material</i>	Thorough coverage of topic, balanced treatment of material	Somewhat thorough coverall of material	Generally thorough but lacks fluency	Minimal coverage of material, too many tangents	Does not cover the material in any significant manner	No presentation delivered	

DARRYL E. JONES

<i>Rationale: Explains terms, concepts, etc. Prov well researched argument</i>	Logical reasoned, presents evidence to backup argument,	Somewhat logical reasoned, but not fully organized	Generally logical, but scattered presentation of argument	Minimally articulated argument verging on opinion	No argument presented – merely opinion	No presentation delivered
<i>Discussion – Reflection</i>	Thoroughly engages audience solicits feedback and questions	Engages audience, but is somewhat abrupt in response to questions	Generally engages, but not comfortable with Q and A	Minimally engages audience	No discussion solicited	No presentation delivered
<i>Creativity/use of technology</i>	Very creative Excellent use of technology	Somewhat creative Good use of technology	Minimally creative Little use of technology	Standard project No use of Technology	No attempt to be creative/no use of technology	No presentation delivered

Avg. Grade: _____

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RECONFIGURING AFFECTIVE, CONATIVE AND COGNITIVE OUTCOMES IN IBL: A MULTI- DISCIPLINARY CASE STUDY

Mary Dickinson and David Dickinson

ABSTRACT

The reported inquiry-based learning (IBL) study was designed in 2012–2013 for the highest achieving undergraduate students at a research-intensive university in the United Kingdom (U.K.). In 2005, the University received national funding from the U.K. Higher Education Academy (HEA) to develop an innovative model of IBL to be used in a multidisciplinary context (Tosey, 2006). As a consequence, IBL was an obvious tool when, in 2012, the authors set out to design learning interventions to improve the teamwork and leadership skills of high-attaining students. In the process of exploring the application of IBL to this task, the need to ensure the intervention allowed for development in the conative domain was considered important. Historically, IBL practice at the University had catered well for cognitive and affective learning but had not been focussed to develop conation. A conative-heavy element was therefore purposefully designed into the latest IBL intervention.

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INTRODUCTION

In part one, the context of work with this particular cohort of students (high attainers) is provided, with an illustration of how their needs relate to the cognitive, affective and conative domains of learning. In part two, the theoretical conceptualization of conative-heavy inquiry-based learning (IBL) is explored, which introduces the presentation of the IBL in part three. Results demonstrate that students experienced meaningful development in all three domains of learning through completing the adapted IBL triggers. Within the students' articulations of their learning, there exists evidence of development in their self-regulation, self-efficacy and self-esteem.

PART 1: THE HIGH-ACHIEVING STUDENTS

In recent years, the University has moved towards a more inclusive learning development practice. Previously, learning development resources and research interests had focused exclusively on less successful or 'struggling' students. Differentiated approaches were offered in respect of a range of demographic variables (such as disability, ethnicity and nationality) to facilitate access and support students in reaching their potential. An awareness existed that high achievers did not engage with learning development services, but this had not previously been considered as an issue of access or inclusivity. Affirming the principle that learning development opportunities should be available to all students, questions regarding how and why provisions could be made available to support these students to reach their potential were considered.

As a result of this study, the research team believes that managing student talent is in every U.K. higher education institution's interest. This reflects a recognized position in the United States. Regarding high performing students, [Rinn and Plucker \(2004\)](#) stated that their 'attitudes and accomplishments ... help to improve an institution's academic atmosphere and differentiate a university from its peer institutions' (p. 54). Further, [Hébert and McBee \(2007\)](#) asserted the importance of attending to the 'intellectual, emotional and social needs of gifted collegians' (p. 136).

In an attempt to discover the needs of our own high achievers a programme of differentiated development ([Dickinson & Dickinson,](#)

forthcoming) was designed. Students were selected from all disciplines who had demonstrated high attainment (averaging over 70%) in year one, ($n=502$) to elicit their reported learning development needs. It was discovered that this population do have discernibly different needs (e.g. stress, teamwork, multi-potentiality and perfectionism – see Dickinson & Dickinson, 2014) that were not being routinely met by learning development services. At the core of the piloted differentiated approach was the aim to empower the development of resilient, self-aware and self-efficacious graduates. To do so, a number of bespoke interventions were designed, including the present IBL project. The data were congruent with findings presented in the research literature, suggesting that high achievers find group or team work a particular challenge (Rice, Leever, Christopher, & Porter, 2006). Research with 43 of our highest attaining students had previously demonstrated that this challenge can be attributed to a number of factors. Some can be seen to relate directly to their above-average academic success (e.g. perfectionism, independence, risk intolerance and communication apprehension); however, many of the high-achieving students also indicated the same group-work reservations as reported by average performing students including freeloading, differing levels of self-confidence and differing levels of language competency (Burdett, 2003; McCorkle, Reardon, & Alexander, 1999; Volet & Mansfield, 2006). In the literature, and amongst this student population, this group working challenge reportedly manifests in ‘maladaptive participation’, (e.g. behaviour such as withdrawal and avoidance of contributing or, conversely, over-control of groups) (Heron, 2009; Jaques, 1991).

Of both practical and ideological interest with regard to developing self-regulation was the fact that high achieving students frequently described this maladaptive participation as ‘non-volitional’ at some level. Our students claimed to know ‘in theory’ what was expected of them as members of high-performing teams (indeed, many had studied team management theories as part of their degree programme), but expressed frustration that this knowledge and their intention to modify their behaviour within the group was not translated into action.

Whilst most educators are aware of cognitive (student knows and understands) and affective domains (student feels and reflects), the conative (student purposefully chooses to act in a certain way – and then does) has been somewhat neglected theoretically and conceptually within the learning development literature.

What is Conation?

Hilgard's (1980) article is often cited as a landmark text in understanding the conative domain. There are also numerous more recent studies exploring it conceptually (Snow, 1989); biologically, as evidenced physiologically by electroencephalography (Mitelman et al., 2005; Reitan & Wolfson, 2000); quantitatively, measuring conation as talent (Kolbe, 1990) and applied in relation to commerce and marketing (Pike & Ryan, 2004).

Within the applied literature, reductionist conceptualizations seem to be common. Agapito, Valle and Mendes (2013) summarize the concept thus, 'what one knows about an object (cognitive), how one feels about it (affective) and how one acts using this information (conative)' (p. 472).

However, other reductionist definitions are more discursive:

Conation has to do with our volition, the way we strive, the effort we put into tasks, our natural tendency to do things. The conative is your will – how you act, your talents; it is what you will or will not do naturally. (Berry, 1996, p. 407)

Tait-McCutcheon's (2008) description of conation highlights its important connections to student self-efficacy, regulation and resilience:

Conation refers to the act of striving, of focusing attention and energy, and purposeful actions. Conation is about staying power, and survival. The conative domain includes students' intentions and dispositions to learn, their approach to monitoring their own learning and to self-assessment. ... It includes their inclination to plan, monitor, and evaluate their work and their predilection to mindfulness and reflection. (p. 507)

Reducing conation to the concept of *doing* makes it immediately comparable to cognitive *knowing* or affective *feeling* (which are both commonly reduced thus in IBL practice). Although reductionist, this approach has the advantage of transferring all three terms into equivalent conceptual units that eases application in practice, and a simplified definition of conation was therefore adopted for the work reported here. The links between conation and self-efficacy, self-regulation and self-esteem also signal its relevance to an IBL intervention intended to develop these traits in students.

Conation is not commonly referenced within the educational literature and there is little evidence of any meaningful studies linking conation with IBL (Table 1). This chapter represents one small step towards plugging this gap. For further reading on the subject of conation, Huit and Cain (2005) offered the most useful review of the conative domain for learning developers.

Although the term conation does not appear in the learning development literature, the domain may not have been similarly neglected in

Table 1. The Findings from Our Initial Data Base Literature Search (BEI and ERIC via Ebsco Host) Demonstrate the Paucity of Debate Linking the Two Terms.

Boolean search of Education Databases	Returns
I/Enquiry-based learning and conation or conative	0
I/Enquiry-based learning and cognitive or cognition	180
I/Enquiry-based learning and affective	19

practice. Recent advances in understanding student self-regulation, self-efficacy and academic self-esteem constitute developments within this domain of conation, concerning as they do the interplay between action and motivation. The relationships between self-regulation and conation (or even self-regulation as meta-conation) have continued to be explored in educational and marketing psychology research (Snow, 1996).

If one accepts that developing self-regulation and self-efficacy (the terms used more often in learning development) constitutes activity within the conative domain (a term more common in neuropsychology), then it may be that the two fields of study have both evolved in parallel, albeit with a semantic drift. We argue that considering the conative as a separate 'domain', alongside cognitive and affective, might maximize IBL process. More detail on the scope and derivation of these terms as applied to our high-achievers can be found in Dickinson and Dickinson (forthcoming) but we have summarized later for the context of the objectives of our IBL design.

Introduction to Additional Terminology Used in our Objectives

Academic self-regulation (Heikkilä & Lonka, 2006; Risemberg & Zimmerman, 1992; Winne, 1995; Winne & Hadwin, 2008; Zimmerman, 1989, 1998) refers to the patterns of learning behaviour exhibited by students, specifically the way students are 'metacognitively, motivationally and behaviourally active participants in their own learning process' (Zimmerman, 1989, p. 329). In our practice with high-achieving university students, this is a core goal: to enable our students to become capable assessors of their own performance and to possess the knowledge, understanding and motivation to modify their behaviour to occasion future change.

Academic self-efficacy refers to the combination of self-confidence with self-awareness (after Bandura, 1997). Self-efficacy therefore is important for our students in all three, cognitive, affective and conative domains. By their grades, one might assume that these students are efficacious in the cognitive domain – that is, they are aware of their own knowledge and have some conceptualization of its relative scope and quantity within their chosen field of study. Their grades have also proven them efficacious in applying their knowledge instrumentally (i.e. for assessment); however, self-efficacy is more often associated with ‘judgements we make about our potential to learn successfully and the belief in our own capabilities. The choices we make, the effort we put forth and how long we persist are influenced by self-efficacy’ (Tait-McCutcheon, 2008, p. 507).

If self-efficacy may be defined as our learners’ self ‘judgements’ about their ‘potential’, then academic self-esteem is closely linked to both efficacy and regulation. The affective domain in action, self-esteem influences the confidence with which a student takes responsibility and control for their own learning progress (after Jungert & Rosander, 2009; Miller, Greene, Montalvo, Ravindran, & Nichols, 1996; Romainville, 1994).

In translating these developmental goals of self-regulation, self-efficacy and self-esteem into practice we started with the following four precepts upon which any IBL intervention to improve teamwork and leadership skills would be built.

- Students should learn things about themselves and gain knowledge about their own interests and skills (Brannick, Miles, & Kisamore, 2005). The pedagogic emphasis should be on the process of tackling the challenge rather than the outcome or successful completion thereof.
- In self-managed teams, students should experience real-time, complex challenges that necessitate team-work, followership and leadership (after Taylor & Parsons, 2011).
- The student’s self-awareness should be the substantive topic. Their leadership development preferences, management and communication skills, empathy, strategic capability and resilience all form core aspects of the ‘subject’ being studied (Goleman, Boyatzis, & McKee, 2002).
- When designing tasks with inbuilt performance pressure, account should be taken of specific vulnerabilities (e.g. intolerance and risk aversion) that may adversely affect the wellbeing of participants (Dickinson & Dickinson, 2014).

PART 2: THE CONCEPTUAL EVOLUTION OF OUR MODEL OF IBL

Institutionally, our use of IBL has always been somewhat pioneering. There are both cultural and historical reasons for this pioneering perspective. The first European academic centre for transpersonal psychology and education was established here by Heron in 1977. Building on this legacy, our institution's master's programme in change agent skills and strategies had developed a unique conceptualization of enquiry learning (Tosey & Gregory, 1998). It was the recognition of this course's quality that led to our institution being awarded in 2005 HEA funding for an IBL study. This 'learning to learn' project (Tosey, 2006) brought about a subtle but dynamic shift in affective emphasis to IBL practice in the institution.

Alongside this shift has been the prominence given to the employability discourse with U.K. higher education (Boden & Nedeva, 2010; Yorke, 2006). Universities are ranked in order of how employable their graduates are. Our University has performed consistently very strongly in this area (HESA, 2014) and this success has come to form a substantial part of institutional identity and marketing. The employability of students is now expanding to become a factor in global league tables and this emphasis is fuelling change across the sector in the co-working practices of careers professionals, learning support departments and academic staff (Wilton, 2011).

The institutional setting for this study therefore included eight years of an affective-balanced IBL model, with concomitant staff and student familiarity and in addition a careers and employability-heavy culture that valued the development of transferable skills. As a multi-disciplinary team we possessed significant expertise in designing and delivering training. Our employability lead recently used scenario-based initiatives to develop graduate skills and the learning development practitioner was part of the original team responsible for mainstreaming IBL. These were significant factors in our subsequent decision to consider IBL as a pedagogic approach, being aware that staff and institutional cultural unfamiliarity with such techniques are reported barriers to successful implementations elsewhere (Cleverly, 2003; Spronken-Smith, Walker, Batchelor, O'Steen, & Angelo, 2011).

Since our 2005 affective-heavy model, IBL has of course continued to evolve both in our practice and in the wider literature and we had the benefit of meta-analysis and systematic reviews to inform our understanding. Arguably then, one might have expected that we should now know exactly

what is and what is not IBL (Prince & Felder, 2007; Sharpe & Savin-Baden, 2007).

Interestingly, the past decade has not seen this question definitively answered, and, indeed, the opposite can be observed, with IBL becoming a term that encompasses many other (pre-dating) learning typologies. For example, Aditomo, Goodyear, Bliuc and Ellis (2013) presented PBL as one form of IBL. This is interesting when compared to Atherton's (2013) view of IBL as the 'diluted sibling' of PBL. We consider this flexibility and breadth of applicability to be a valuable aspect of the IBL 'umbrella'.

For the purposes of this chapter we have used the recent review by Aditomo et al. (2013) to compare with our IBL. This Australian study examined 224 examples of IBL to explore its definitions, forms, key dimensions and educational objectives. In their paper, they proffer the following definition of IBL as an

umbrella term covering a range of pedagogical approaches that are united by the central place they give to students' investigative work (addressing questions and solving problems. (p. 1239)

Within the literature there are certain characteristics widely agreed to embody IBL in practice. The following highlights where our model shares most similarity.

- Action of students seeking truth, information or knowledge.
- This knowledge is acquired through active learning experiences.
- The students takes the lead over the process of that discovery of knowledge.
- The educator provides a trigger and facilitates learning.
- Student have sufficient prior understanding to reflect (in and on action) meaningfully on their learning.
- Students are decision makers about their in-trigger learning process.
- Finite pieces of knowledge are acquired and can be articulated.

From a purist's perspective, our implementation may not constitute traditional IBL, though it does clearly meet the criteria as defined earlier; however, our model does address the complexity of the post-modern student experience and assists in preparing students for the graduate employee reality.

Just as students have for some time been expected to work in a number of fields over their careers (Meijers, 2003), our model was designed to transcend disciplinary boundaries. Just as graduates will need to demonstrate a range of skills and attributes beyond technical knowledge in today's

workplace (CBI, 2009), our model was designed to transcend the dominance of the cognitive domain.

Additionally, the IBL scenarios used had no correct or ideal answer, just like many real world problems. This also echoes the early experiential learning models where process has the pedagogic emphasis over product (Kolb, 1984). Conceptual congruence also exists in the design of the triggers. First, our students work with real-time scenarios and have genuine experience of inquiry (as espoused in Higgs & McCarthy, 2008). Second, triggers are purposefully created to develop skills as well as facilitate meaningful learning. Third, the impact of learning is measured by self and peer feedback mechanisms (Chaves, Chaves, & Lantz, 1998).

The role of the tutor as facilitator is common in IBL practice in higher education (Wilkie, 2004). In our model, the facilitators act as guides through the procedural aspects of the triggers and observers of (later as commentators on) the students' actions. The dissimilitude between our IBL and that of others is clear: our IBL was purposefully designed to include conative components in the triggers, to facilitate student development in this domain.

Our practice places proportionately less emphasis on cognitive aspects than most other models of IBL (ostensibly due to the inversion of product and process). The discipline, topic or subject content in our example is essentially the student. Their learning progress is therefore evidenced by their development of self-awareness, communication, self-efficacy and maturing leadership. Traditionally these are presented as the peripheral benefits rather than intended outcome of IBL, although there have been some notable exceptions (Powell, Van Silfhout, & Hicks, 2008). If 1992 and 2005 saw the institution move onwards in considering the cognitive and the affective outcomes in dynamic ways, then this latest conceptualization encompassing the conative (the students' will, volition and drive) might be regarded as similarly evolutionary.

PART 3: THE STUDY

This section of the chapter outlines the IBL triggers used and explains the rationale for them. The IBL triggers were operated within a day-long development event at which a maximum of four teams of six students (purposefully allocated to maximize disciplinary diversity) and up to two staff facilitators per group were present.

The IBL Scenarios/Trigger Principles

Each trigger was designed to develop self-awareness, link teamwork and leadership theory to practice and enable students to experience realistic conative action and decision making in a safely facilitated environment; therefore, all three domains of learning were considered and designed into each trigger.

Cognitive

Prior to participation students received an outline of the day, its intended outcomes (to develop leadership, followership and team-working) and its methodology (i.e. inquiry-based learning). Students were invited to familiarize themselves with a discipline relevant theory of their choosing (e.g. Cohen & Cohen, 2005) but were made explicitly aware that the *subject* to be discovered was themselves and not the theory (Edelson, 2001). Significant to our IBL model was the fact that the students were fully aware in advance that the process of ‘doing’ the exercise had more value than the product that the exercise generated (team success in a task for example).

Affective

Knowing that high achievers might suffer from heightened anxiety (Cantopher, 2006), we attempted to present as much of the safe feel of the day in advance, whilst being mindful of not deterring attendance or adversely prejudicing their subsequent behaviour. Students therefore were aware that the exercises would contain affective activity and challenge. All participation was voluntary and students could leave at any time.

Conative

Each of the triggers enabled frequent opportunity for individual and group decision making. These require action/or the choice of inaction on behalf of each individual member. Knowing that action is the domain in which high achievers report difficulty (either over or under action in response to the performance stressor), it was important to ensure that sufficient time and other performance pressure existed to require frequent decision making (Fig. 1).

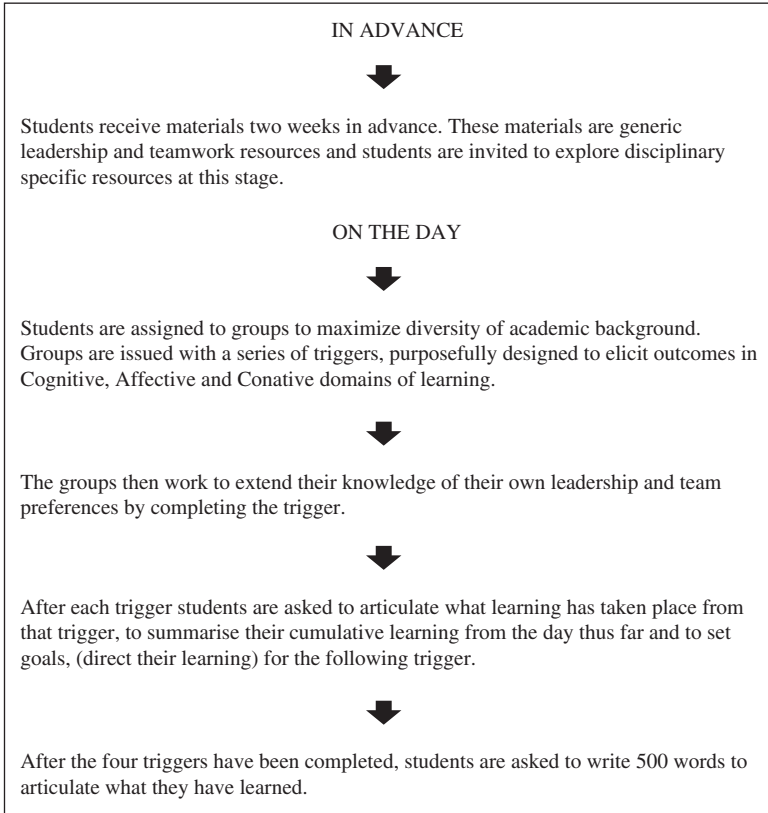


Fig. 1. Our Process of EBL.

Trigger Descriptions

Trigger one was a complex prioritization task, encompassing mathematical, ethical and logistical decision making. Students within the group had to reach a consensus and then both present and defend their decision (and its provenance) under facilitator interrogation.

Trigger two was a version of Kim’s Game ([Interchange Games, 2013](#)) complicated by many objects being unknowable to the teams (e.g. specialist veterinary equipment) and therefore students needed to engage with description. Given the differing levels of language proficiency in each team, this was essentially an exercise in communication and strategy (and

not memory as is more traditionally the product of a successful Kim's Game).

Trigger three was designed to challenge the affective domain. Our previous data suggested that presentation skills and performing were areas of anxiety for these highly academic students. Students were given simple traditional songs which they had to present using only non-verbal communication. The aim of the task was to present clearly enough to enable the audience to identify the song. The aim of the exercise was that each student would step-out a little further into their areas of communication apprehension (or communication dominance), note their reaction and then act. Trigger four was a communication and construction task. Each team was divided into two and each given battery controlled two-way radios. Both teams had to build identical vehicles from interlocking bricks, in separate rooms with only one team having access to pictorial instructions.

The role of the facilitator in all of the scenarios was to explain the task and then to observe and note individual and team performance. The facilitator clarified and enforced any relevant guidelines. In trigger one, the facilitator also challenged and sought additional information from the group as part of the articulation of the defense of their decision.

Method of Analysis

We chose a naturalistic perspective to analysis, specifically looking at how the participants subsequently made meaning from the experience and how they articulated their learning (Cohen, Manion, & Morrison, 2007). Deductively, we were also interested to see if the exercises had generated evidence of conative impact (i.e. development in their action in practice during the day and/or resolving to act in the future, from being informed by the day).

Data Collection

Before receiving any formal peer or facilitator feedback, students were required to write up to 500 words describing what they had 'learnt from the day'. Purposefully broad, in keeping with our inductive approach (LeCompte, Millroy, & Preissle, 1992), this instruction left the respondents free to write about what they had learnt about themselves, about teamwork and leadership theory, or about each other.

There were 63 of the 64 reflective accounts of learning that met the only selection criteria – being readable in their entirety.

Data: Research Design and Coding

Informed by LeCompte Preissle and Tesch (1993), the research team designed matrices, for each domain, cognitive (COG), affective (AFF) and conative (CON). The research team subsequently compiled a lexicon to apply as first-order codes. Reflections coded for first person accounts of ‘knowledge’, ‘feeling’ and ‘doing/choice’ (Table 2).

The second order codes extended the unit of analysis to include up to one or two sentences (i.e. coded according to their ‘deduced meaning’ in relation to the matrices). This may or not include first-order codes but ensures those that do not are still included for analysis. Both first-order and second-order codes were applied by the lead authors and discussed in the wider team to improve rater-reliability at this stage.

Once the data had been primarily coded into CON, COG and AFF relevant domains, the respondents’ reflections were analysed by meaning unit to elicit themes (Cohen, Manion, & Morrison). For example, this first sentence from Respondent 54’s account (R54) has two meaning units (MU): ‘I am never trying to be a team leader \\ however this time I tried to take up this role’ (R54:MU1,2).

The first meaning unit concerns self-awareness and knowing about leadership predilections, while the second unit is the resolution and action for change.

Table 2. The Coding Frame.

Coding	Cognitive – COG	Affective – AFF	Conative – CON
1st-order coding	‘I know that I am not good at public speaking’	‘I felt confident to speak’	‘I tried to take up this role’
Applying Lexicon	Knew, thought, realised, noticed, got it	All feelings and emotions: afraid, happy, scared, overwhelmed, nervous, proud	Choice, will, volition, decided to, tried, attempted, wanted to
2nd-order meaning units	‘Obviously our team success depended on good timekeeping’	‘What if they laughed, what if it wasn’t right?’	‘It will be easier to try and speak up next time there is a disagreement in the team’

Data Analysis

Stage one of analysis explored whether learning occurred in all three domains by mapping meaning units to the reflections as described earlier. Stage 2 then explored how our objectives for the IBL had been met. Specifically, we looked for evidence within the meaning units (Table 2) that students had developed their self-regulatory ability, their self-efficacy or self-esteem. The analysis would elucidate whether any evidence exists to suggest that our model of IBL enabled learning to occur in cognitive, affective and conative domains. It would also look at how this learning was articulated in terms of self-regulatory ability, self-efficacy and self-esteem.

RESULTS AND DISCUSSION

This section discusses what learning ‘looked like’ in our model in addition to the overt evidence of application of teamwork and leadership theory in practice (a more traditionally explicit objective for IBL). Within our data, development of all three domains was present in every account and the specifics of development in self-regulation, self-efficacy and self-esteem were identified and data coded as per the themes mentioned later (Table 3). We suggest that this constitutes a successful outcome of our IBL practice. Each one of these themes will now be presented with selected data.

Table 3. Discussion of Themes That Emerged from Our Data.

Theme	Self-Regulation	Self-Efficacy	Self-Esteem
Demonstrable self-awareness			
Resolutions to effect changes in behaviour			
Reflections of self developing as a leader or team-player			
Building personal resilience under pressure			
Application of theory to own practice or of IBL experience to degree/profession			
Acting with appropriate confidence			
Increased self-confidence and self-challenge			

Demonstrable Self-Awareness

All of the respondents demonstrated evidence of self-awareness. There were three core expositions of this in relation to awareness of their learning, with the first demonstrating preference for style of learning. One student noted that 'I excel most when the task is an active task' (R2:MU1). Another reflected that 'I would have been a lot more comfortable with PowerPoint lectures' (R9:MU1).

Students also described their self-awareness contrasted to the learning preferences of others: 'Realised that I need a bit more time to think and prepare than others' (R41:MU3). Another student reflected 'My style is to think things through carefully and quietly. When everyone else is talking I can't even seem to think, and when everyone else is hurrying I worry about detail and quality' (R58:MU4). Finally, another student stated 'Also, I feel a bit uncomfortable when people don't agree with me. I didn't realised (sic) it before' (R54:MU3,4).

Self-awareness within the data varied from very specific skills-related reflections: 'My time management was a huge drawback' (R30:MU4) and 'I do understand that my enthusiasm should be toned down a bit' (R8:MU2), to the more introspective: 'I had a long way to go in regards to my development. I really don't know where my confidence disappeared to over the last year or so' (R40:MU1).

There were also two examples that actually demonstrated the lack or limits of self-awareness of participants: 'It's not the first time I hear I'm a difficult person' (R14:MU2) and 'I've always been having problems with group projects and these tasks have helped me realise that I've been working with the wrong people, that's why I've always hated group projects' (R41:MU5).

Resolutions to Effect Changes in Behaviour (Pre, Peri or Post IBL)

The majority of resolutions to change behaviour (statements of conative intent) were in the context of post IBL reflection as one might expect; however, there was one example of pre-IBL conation: 'I am aware from previous diagnostics that I try and do everything myself so I made a conscious effort to delegate and share' (R13:MU2). There were also a small number of peri-IBL examples of student reflection on specific aspects during the day that catalyzed changing their behaviour: 'The second task taught me the importance of making difficult decisions and going ahead with it even if everyone does not agree with the decision' (R39:MU3).

Being familiar with reflective practice (Kolb, 1984; Schon, 1987), we anticipated much of the conative resolution to occur post-IBL, after students had time to contemplate their performance and synthesize their learning. All reflections contained content that was coded as conative intention. Many statements focused on either the under or over participation aspects that high achievers face in group work settings, to the extent that this became a theme in its own right. The remainder of conative intent was mostly skills-specific:

'I need to develop my strategic thinking skills and maybe spend more time planning before diving into a task' (R15:MU3). Three more examples stated by students include reflections that 'Stress can be difficult to deal with and affects performance. This is something I should work on' (R18:MU8), 'I prefer to talk rather than to listen, this is an important skill today I have realised needs developing' (R52:MU7), and 'I need to work on: calming my sense of urgency to complete a task asap and take time to form an effective strategy as urgency could have cost us the task'. (R27:MU3)

Reflections of Self Developing as Leader or Team-Player

Many of the reflections differentiated between leadership, followership and teamwork, with a number of students realizing their own preferences and identifying areas to develop: 'I feel like I'm better at providing strategy rather than leading a team' (R35:MU2)

I feel I have learned how to manage people from inside of team, even when I'm not a leader and how to convince them I've got good ideas. (R54:MU4)

Building Personal Resilience under Pressure

As we alluded to earlier in the chapter, we purposefully aimed to create a situation in which students experienced realistic pressure albeit in a benign environment. The following excerpts from the data demonstrate that we achieved this pressure, whilst ensuring the stress levels remained non-deleterious to student wellbeing:

I have learnt today that I am good at adapting a strategy when circumstances are changed. (R48:MU5)

Resilience is key as in all tasks we were basically out of our comfort zone. You never get straight lines in real life and from that angle this has been time well spent. (R56:MU4)

Look at all tasks in a positive manner and to think of how you can tackle them in an effective way. I was more involved in the last exercise and that helped me realize that I could also work under pressure. (R61:MU6)

When students reported feeling pressure as more of a challenge, the word 'stressful' was frequently the adjective of choice:

I learnt about the importance of staying calm under time pressure/stressful situations. (R47:MU4)

I found it a bit stressful when lots of people were talking at once and over each other, but tried to control this. (R15:MU5)

Application of Theory to Own Practice or IBL Activity to Degree/Profession

We went to considerable lengths to ensure the participants were aware that the learning objectives were within the process of the IBL, rather than the theories of leadership. This was reflected in the amount of cognitive versus conative statements; however, evidence of theory to practice or practice to theory learning did emerge in the data:

The words just make a sentence until the moment when you put them into practice – today I had the useful practice. (RU14:MU1)

Today I realised how hard it is for our lecturers to explain to us (the students) what they know. (R32:MU3)

Some of the students projected their IBL experience instrumentally onto their current field of study or their choice of future career:

The project manager structure works (i.e., comms go up and down). All important decisions must go through the PM. (R52:MU9)

Highlighted the communication difficulties that one might face while work on a project with off shore teams. // This was particularly useful in terms of highlighting the importance of taking orders from a middle man and how the client is very important in the project. (R39:MU2,4)

The majority of the data coded under this theme consisted of students who reflected on leadership and communication skills more generally:

Since in [a] real life environment everything changes rapidly, having realised and managed to display my adaptiveness will lead me to adapt and respond to changes quicker. (R51:MU4)

I felt that my understanding and appreciation of leadership grew. (R7:MU2)

Good communication goes two ways and I tried listening to my colleagues as well. (R19:MU2)

Organising other people can be challenging, especially when their strengths and weaknesses are unknown. (R57:MU3)

Acting with Appropriate Confidence (Over Confidence|Dominant)

As discussed earlier in the chapter we know from research literature that high-achieving students can be more likely to display intolerance in group work and this may manifest in over-behaving in the group (e.g. dominance and control). The facilitator role in our IBL did not include intervention into the group's functioning, although facilitators were responsible for ensuring healthy group practice (Brandler & Roman, 1999). There were many examples of over-controlling behaviour witnessed on the day but these were generally well modified in-group.

Research with perfectionists suggests maladaptive group behaviour can be manifested in terms of dominance and control (Sherry, Hewitt, Flett, Lee-Baggley, & Hall, 2007). Interestingly a number of our high achievers employed a similar locution within their reflections:

I found not being in control very strange. (R53:MU2)

I took too much control, I didn't take ideas on board, even when better than own. (R33:MU2)

I know that sometimes when I believe I am right I don't necessarily appreciate everyone else's thoughts ... [I need to] make sure that I am not too dominant in tasks. (R52:MU6,7)

Many of the cognitive and conative remediation strategies concerned listening and facilitating participation from others:

I should try and improve and work on asking quieter members of the group. (R18:MU7)

I have learnt to listen more. (R30:MU2)

I am also very competitive, which I tried to control and use to my advantage. (R50:MU4)

I understood the importance of trusting other people in a group. (R63:MU4)

Acting with Appropriate Confidence (Under Confidence|Withdrawal)

This theme had with the most discursive homogeneity between the meaning units and the most common area of resolution within the data set as a whole. Courage and confidence were the two key terms used most frequently by the student in their resolutions to change this aspect of their (under) behaviour. Communication apprehension is known to be a particular challenge faced by high achievers (Rosenfield, Grant, & McCroskey,

1995). The reasons put forth for this in the literature are varied and include: perfectionism, students over-think and then miss out on the timing to speak (Horowitz, 2002); personality type (McCroskey, Daly, & Sorenson, 1976); language proficiency (Carroll & Ryan, 2005); or low self-efficacy and self-doubt (McGregor, Gee, & Posey, 2008).

Find the courage to speak up! Especially if my view seems different from that of others.
(R58:MU7)

Sometime I would like to be a team member to lead the whole group, however I didn't have enough courage. (R31:MU3)

I could and will in the future be more confident when putting across ideas or thoughts.
(R12:MU3)

We do not have enough depth in our dataset to identify the grounds for these students' communication apprehension. Obtaining a clearer understanding of why high-achieving students find this aspect of participating in IBL so challenging would constitute a valuable contribution to IBL research.

Additional Suggestions for Future Research

Some longitudinal follow up on conative resolutions would be interesting as the next step, for these respondents. Of particular value from a service delivery perspective, would be exploring the role that we, as support staff, may have in empowering students to follow-through on their resolutions. Comparing learning accounts from students undertaking leadership skills intervention where the conative domain was limited or inhibited would determine whether development in this domain is inherent in any learning environment that involves interaction with peers, or whether the designed-in elements we introduced were truly catalytic.

We do not extrapolate from this data to comment on the impact of IBL on student learning generally. We are aware that we are reporting on a situated experience unique to these participants. Within our group, each respondent brought his or her own knowledge, feelings and volitional capacity. Making comparisons between students' articulations of learning realities is somewhat prone to interpretative nebulosity; however, by using reductionist principles in our methodology transparently, we have enabled the key themes created by IBL in our students learning domains to become more visible.

CONCLUSION

We designed our IBL scenarios so that first, they were applicable to all disciplines and did not unfairly benefit or prejudice; secondly, the specific needs, challenges and preferences of our high achiever cohort would be catered for (either in terms of ensuring emotional wellbeing or in terms of applying sufficient challenge); and thirdly, through participation students would have sufficient time and opportunity to actualize development in either their self-regulation, self-efficacy or self-esteem.

Our brief study has demonstrated that if the conative domain is considered along with the more commonly incorporated cognitive and affective domains when designing IBL triggers, the potential for students to develop their self-efficacy, self-regulation and self-esteem is evident. From the impact analysis we have undertaken, we suggest that purposefully incorporating a dynamic conative element (points of multiple challenge and decision) into the IBL trigger can create a seedbed for academic and personal skills development, one that can transcend disciplinary cultures and traditions.

The conative domain has always been inherently affected within our practice of IBL by the student-led, self-directed style of the approach. In this chapter we introduced conation in a more overt way to educational developers. We suggest that by explicitly targeting conation when engaging in the design of IBL triggers, we may well be able to maximize the value of the exercise for students.

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ENHANCING INQUIRY-BASED ONLINE TEACHING AND LEARNING: INTEGRATING INTERACTIVE TECHNOLOGY TOOLS TO SCAFFOLD INQUIRY-BASED LEARNING

Kathy-ann Daniel-Gittens and Tina Calandrino

ABSTRACT

This chapter provides guidelines and strategies for higher education faculty and faculty developers who wish to implement inquiry-based teaching models online. The chapter focuses on two specific inquiry-based (IB) instructional models: guided and open inquiry as these two models are considered more relevant to higher education students. The chapter will present validated processes for implementing IB teaching models and consider how these processes can be authentically replicated in online learning environments. The chapter will also examine issues and challenges involved in implementing IB teaching models online. Grounded in the challenges that faculty face in translating their

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instructional practice in online environments, the chapter suggests strategies and interactive tools to scaffold and model IB learning in online environments.

This chapter proposes strategies and guidelines for higher education faculty and faculty developers who are interested in implementing *inquiry-based* (IB) teaching and learning models online. The chapter identifies three commonly used *inquiry-based learning* (IBL) models but focuses on two – open and guided inquiry models as more contextually relevant for graduate and undergraduate education, respectively. The chapter also presents validated protocols for implementing IBL models in higher education settings. The chapter then goes on to describe and recommend categories and examples of interactive tools that can be used to implement the two IBL models online and to discuss how these tools can be used most effectively to promote and scaffold IBL learning outcomes in online environments. It presents practical guidelines for designing and developing scaffolds and explores the challenges of the environment, including required development time and technology skills, for faculty and faculty developers. The goals of this chapter are grounded in the challenges that faculty and faculty developers encounter when translating face-to-face pedagogical practices to online environments while seeking to retain the integrity of their learning outcomes.

DEFINITION OF IBL

IBL is an instructional process in which students are encouraged to develop discipline knowledge and skills by engaging in a self-initiated problem-solving cycle. IBL has its origins in inductive, constructivist theories of learning. It has been described as a process in which, “... students learn content as well as discipline-specific reasoning skills and practices ... by collaboratively engaging in investigations” (Hmelo-Silver, Duncan, & Chinn, 2007, p. 100). In IBL students identify a problem and follow a series of well-established steps to arrive at a solution to the problem they identified. For them, this process result can result in knowledge generation and knowledge refinement. (Edelson, 2001; Minner, Levy, & Century, 2010; Quintana et al., 2004).

To facilitate faculty's seamless implementation of IBL in online environments, the following section will present IBL models that are widely used in higher education and describe protocols for implementing these models online.

IBL models

IBL as an instructional strategy has evolved over time into three well-recognized instructional models: (1) structured inquiry, (2) guided inquiry, and (3) open inquiry (Kuhlthau, Maniotes, & Caspari, 2007; Lee, 2012; Sadeh & Zion, 2009; Spronken-Smith & Walker, 2010). Since structured inquiry is an entirely teacher-directed process that is seldom used in higher education, it will not be included in this discussion. Accordingly, the following section describes the defining characteristics of guided and open IBL instructional models.

Open and guided IBL models are differentiated based on two major criteria: the amount of scaffolding students receive during the inquiry process and the amount of student-centered direction that drives the inquiry process. In very general terms, scaffolding has been described as, "the process by which a teacher or more knowledgeable peer provides assistance that enables learners to succeed in problems that would otherwise be too difficult ..." (Quintana et al., 2004, p. 341).

In IBL, scaffolding is the process of providing students with support for their inquiry activities through the provision of learning resources and by the modeling of the inquiry process. When IBL instructional models are implemented online, scaffolding is accomplished through the provision of technology resources and by technology-mediated modeling of the inquiry process (Lee, 2011).

Guided inquiry is an IBL model that has been widely used in higher education and is well-suited to undergraduate education. It balances faculty direction with student initiative: in guided inquiry, faculty members provide students with direct instruction, access to learning resources (scaffolds) and they model the steps in the inquiry process. Modeling the inquiry process is one type of scaffolding or inquiry activity support. In guided inquiry, faculty do not select the inquiry question, rather they present students with problems or issues in the discipline from which they can select; they may also support students' search to identify an inquiry problem for themselves.

In addition to selecting the problem or issue for study, students also select the solution protocol for investigating their question or problem.

Faculty-created scaffolding may include learning resources that assist students in selecting a protocol. In this model, there is less direct instruction by faculty and more scaffolding of students' inquiry activities through the provision of learning resources and modeling of appropriate inquiry strategies. In guided inquiry therefore, while there is faculty guidance, it does not usurp or replace students' requirement to identify or select an inquiry problem, and to accomplish the necessary steps to produce a problem solution or answer. It is students who drive the inquiry process; the role of faculty is to support them in that process.

The open inquiry IBL model is one in which the inquiry process is completely driven by student initiative: from the identification of the problem, to the inquiry process used, investigation of the problem, data collection methods, and reporting. In this model, faculty guidance and scaffolding is reduced to a minimum: students undertake all parts of the inquiry process on their own (Lee, 2012; Sadeh & Zion, 2009; Spronken-Smith & Walker, 2010). In higher education, these types of inquiry tasks are usually carried out by advanced graduate students undertaking master's or doctoral theses.

Faculty may use the following validated inquiry steps to cognitively organize the IBL inquiry process.

STEPS IN THE IBL PROCESS

In order to support faculty who are interested in implementing IBL, researchers at the Sheffield Centre for Inquiry-based Learning in the Arts and Social Sciences at the University of Sheffield developed an IBL implementation protocol (Levy, Little, McKinney, Nibbs, & Wood, 2010). The utility of the protocol is that it provides a well-developed meta-cognitive scaffold for faculty, faculty developers, and students who engage in IBL activities. The IBL protocol consists of a five stage cycle and is very similar to the IBL protocol proposed by Lim (2004). According to Levy et al. (2010), the steps in the protocol for implementing IBL are as follows:

- (1) *Establish* a question or problem
- (2) *Decide* on a direction or method for inquiry
- (3) *Explore* or collect data or evidence
- (4) *Conceptualize/analyze/synthesize/reflect* on the problem and solution
- (5) *Communicate* and share results

The major difference between the steps in this protocol and the one proposed by Lim is his inclusion of reflection in the communication phase of his protocol (Lim, 2004).

IMPLEMENTING GUIDED AND OPEN INQUIRY MODELS IN ONLINE ENVIRONMENTS

As more universities move their course offerings online, more higher education faculty are faced with the challenge of implementing face-to-face IBL models in new online environments. The phases for a guided inquiry cycle remain the same online as they are offline. The absence of face-to-face contact in the online environments, however, signals that implementation of guided and open inquiry models will be technology-mediated. Technology mediation here refers to the intermediary role played by technology in producing learning resources (scaffolds) and models of the inquiry process. Scaffolding and modeling the inquiry process online will require faculty and faculty developers to utilize technology tools and produce technology products.

To successfully scaffold students' online inquiry activities, faculty and faculty developers will need to examine each phase in the inquiry cycle and identify the inquiry tasks and activities that typically require scaffolding for undergraduate and graduate students. At some universities, faculty design their own online courses, with or without the assistance of technical and multimedia staff, depending on the size of the university and the scope of their online programs. At other universities, online course design is carried out by course teams consisting of faculty members, faculty developers, learning technologists, and other technical staff. A major responsibility of online course designers, whether they are individual faculty members or course teams, is to identify the web-based technology tools that can be used to produce online scaffolding support for students' engaging in online inquiry cycles. A major consideration in this exercise is the identification of faculty who will be involved in designing the course and their access to the technical skills needed for online course design.

In their role as online course designers for IBL, faculty are required to engage in significant advanced planning. In advance of the course, schedules must be developed for the implementation of scaffolds in students' online inquiry cycles. Plans must be made for their timed access to learning resources and models of the inquiry process. In order to accomplish this

successfully, faculty and faculty developers will need to develop familiarity with a range of technology tools that can be deployed in the online environment (Sharma & Hannafin, 2007).

The role of faculty in this instance is to design the online scaffolding products and scaffolding processes that provide students with the necessary level of guidance to accomplish their inquiry tasks and activities. There are specific types of inquiry tasks that take place in every phase of the inquiry cycle. As a consequence there are specific types of technologies that are more appropriate for deployment in particular phases of the process.

In the first phase of the inquiry cycle, in guided inquiry, a question or problem must be identified for investigation. Students are usually presented with a selection of potential problems or questions that currently dominate the discipline. At the same time, they are also presented with an array of learning resources that are relevant to the problems or questions. Learning resources should be selected for their ability to illuminate the questions or problems and their contexts. They should also exemplify the current range of views and perspectives on the questions/problems and range in presentation style from succinct and introductory to detailed and expansive. This approach to selecting question and problem resources can assist students in moving from a peripheral conception of the discipline and question to a more knowledgeable and informed perspective. In open inquiry models, students seek out and identify a problem or issue on their own that they wish to investigate.

In the online environment, for the first phase, faculty can use two classes of web-based tools – presentation tools and interactive collaborative tools. Presentation tools are used to provide students with information required to initiate the inquiry cycle. They are also used to layout the selection of discipline questions to students and provide them with a collection of accessible resources that they can use in orienting themselves to the problem and problem space. Online presentation tools exist in a variety of media. For most faculty, this can be accomplished through the creation of course pages in the enterprise Learning Management System (LMS) used at their university. Enterprise LMS include systems like Blackboard, Desire2Learn, Moodle, Canvas, and Sakai. Faculty can also upload or embed slide presentations like PowerPoint, Prezi, or Google Slides. Some of these presentation applications give faculty the ability to create audio narrations to accompany slides and the ability to embed video clips they source from YouTube (Youtube.com), Vimeo (Vimeo.com), EduTube (edutube.org), or some other online video repository. In

addition to presenting information using slides, faculty can also elect to create video presentations.

In the first phase, interactive collaboration tools are used by students, individually or in groups, to brainstorm about the inquiry question/problem. They may use these tools to map their initial conceptualization of the problem, its origin, and context. “Traditional” classes of online interactive collaboration tools that were limited, but nevertheless used for these purposes, include text-based online tools like discussion forums available in enterprise LMS, email, and listservs. More recent online interactive collaboration tools allow students to work synchronously as well as asynchronously online. These applications typically allow the use of multiple media formats such as audio and video and students can also chat with each other while collaborating online. These collaboration tools include multimedia online whiteboards and online concept-mapping applications.

Online whiteboards allow students to write, draw, compute, add images, link to videos or audio, upload and share files to work on, and surf the internet together. Students can also communicate with each other by chat or voice over IP (voIP) while collaborating on whiteboards. Examples of online whiteboards that can be used include Twiddla (www.twiddla.com), Scribdlink (scribdlink.com), and groupboard (groupboard.com). Online concept-mapping applications allow students to, individually or collectively, develop concept maps that represent their understanding of the problem and the context of the problem within the discipline. These online concept-mapping applications also allow students to link to other online media and to their own media stored online. Examples of online concept-mapping applications include bubbl.us (bubbl.us), Mindmeister (www.mindmeister.com), or Coggle (coggle.it). Examples of online spaces where students and faculty can store media are text-based websites like SlideShare (slideshare.net) and Scribd (scribd.com). Image-based websites include sites like flickr (flickr.com), Pinterest (pinterest.com), and photobucket (photobucket.com), and instagram and video sharing sites such as YouTube and Vimeo.

In the second phase, students decide on a direction and method for their inquiry task. They plan out the inquiry process and the method they will use to solve the problem/question. In this phase, open inquiry students investigate and select an inquiry method on their own. They also select their own problem resolution process. Guided inquiry students are not usually left to select an inquiry method on their own. Rather, a menu of relevant inquiry methods in the discipline is presented to them with a

rationale for the selection of each method. Students are then given the opportunity to select the method they will use for their inquiry project. Online tools that can be used to present inquiry methods will be the same types of presentation tools used in phase one of the inquiry cycle. Other tools that can be useful here are rubric generator such as rubistar (rubistar.4teachers.org) and irubric (rcampus.com/indexrubric.cfm). There are some institutional LMS that allow faculty to create rubrics in the system itself, and attach the rubrics to course assignments; one example of this is the Canvas system (canvas.instructure.com).

Rubrics, like resources previously listed, are useful in scaffolding students' online inquiry activities. They do this by providing guidelines to students on what their inquiry activities should include and indicators concerning the levels of performance that are required for each stage in the cycle. Rubrics can be viewed as templates for students' completion of activities and tasks in the inquiry cycle. Presentation tools continue to be important in the second phase of the inquiry cycle; it is the way in which faculty communicate ideas, thoughts, and guidelines to students. Accordingly, faculty can use presentation tools to provide students with guidelines on how to seek out further resources on their own. By including these guidelines, faculty are continuing to scaffold students; in this case, they are scaffolding students' future transition to open inquiry models and independent research.

In phase three, students collect data or evidence. Based on the nature of the question or problem, students may be required to identify and work with primary or secondary sources of data. In the online environment students are more likely to work with secondary sources of data. There are many challenges to collecting primary data online, especially for disciplines including various STEM fields, e.g., geology, meteorology, chemistry, and some social sciences such as anthropology and political science. For some disciplines, there exist many online simulation and modeling tools that allow students to collect data from simulated primary research. Examples of these online labs include chemistry (chemcollective.org), physics (phet.colorado.edu), and biology (hhmi.org/biointeractive). In the social sciences, there are also simulation and modeling tools available online.

In phase four, students analyze and synthesize data and conceptualize solutions to the question or problem. Interactive online tools that can be used to support and promote these activities include data visualization and data analysis tools such as Google charts (developers.google.com/chart), Plotly (plot.ly/), and Weave (oicweave.org). Other data analysis and data visualization tools that work for recorded media include video and audio

annotation tools. For many online inquiry exercises, developing matrices, templates, and timelines in Google docs or other online presentation tool may be sufficient. Concept mapping and online collaborative whiteboards are additional useful tools.

In phase five, students reflect on and communicate the results of their inquiry exercise. They can use any of the previously listed presentation tools. Other presentation tools that encourage students to synthesize and summarize their data in condensed, accessible formats include infogram (infogr.am), picktochart, (picktochart.com), Prezi (prezi.com), and dipity (dipity.com). Online tools that support students' reflections include blogging tools such as Blogger (blogger.com).

STRENGTHS OF ONLINE TOOLS FOR IMPLEMENTING THE IBL MODEL

Supporting learners' inquiry activities through scaffolding is an important aspect of IBL. The strength of online presentations as scaffolding tools lie in their ability to incorporate multimedia elements through linking or embedding. These features allow faculty to utilize their online presentations as gateway documents, giving students access to a multitude of online learning resources in a variety of formats that may resonate with their personal learning style.

Currently, the course pages in most enterprise LMS allow embedding and linking of a wide variety of media, for example, flash animations, java applets, and videos. This is also possible with online presentation tools such as Prezi, Google slides, and Google docs. Online research repositories and archives such as Diigo (diigo.com), Delicious (www.delicious.com), and Scoopit (www.scoop.it) also allow highlighting, embedding, linking, and sharing of content.

Online video tools include applications that create as well as curate videos. Faculty can create their own YouTube or Vimeo channels where they can curate carefully selected collections of videos created by other users. These curated collections can be useful scaffolds for students in their online inquiry activities. Despite the fact that faculty's video channels may not contain personally created videos, their curated video channels can still present an archive of usefully relevant videos to which online students can refer.

Modeling is a particularly powerful scaffolding activity. An important aspect of videos is that they have the ability to demonstrate inquiry processes being modeled by others. This ability makes videos excellent scaffolding tools for students requiring demonstrations of inquiry processes. Through demonstrations of inquiry activities and tasks modeled in videos, students are provided with examples of what their own online inquiry activities should mirror. They can see and hear experienced practitioners engaging in inquiry tasks and activities and are able to model their own online inquiry activities based on their observations of practitioner examples.

Also, since online videos can be replayed in whole or part multiple times at the discretion of students, they have, in effect, extended access to models demonstrating appropriate inquiry practices. Faculty created online videos may be hosted online publically or privately on YouTube, Vimeo, or other video hosting sites. A significant advantage of creating and uploading videos online is that they can be used reliably for many semesters by students in succeeding iterations of the same course. They can also be used with similar courses in which IBL models are being contemplated. Currently, it is possible to annotate videos. This facility allows faculty (and students) to comment on videos within the video frame itself. It also allows the ability to highlight specific elements of the videos and invite discussion and comment on those specific elements. Annotated videos can be created on Open Video Annotation (openvideoannotation.org) and VideoANT (ant.umn.edu).

Some of the challenges of using online video tools to implement IBL online are locating relevant videos online, uncertain access to curated videos, and creating high-quality relevant videos.

Locating videos online that are of high quality and are relevant to IBL models being implemented requires a great deal of time and effort to comb through video-hosting sites databases. Faculty who are supported by faculty developers may receive some assistance with this type of task. If they do not however, they are left to complete these tasks on their own. After videos have been located and integrated into curated catalogs through links, a second problem can arise. Videos that are found online and curated or referenced in online courses are liable to be removed from online hosting sites at the discretion of their creators. This creates a degree of unreliability in their use: references them will have to be removed from courses and curated collections may be weakened or rendered unhelpful through the removal of vitally important videos.

To avoid these challenges, it is very helpful for faculty and faculty developers to create their own videos. The advantage of faculty-initiated videos

is that they remain available online for as long as desired by faculty. With increased usage of smart phones, tablets, and low-cost video recorders, creating custom videos is not as difficult as it once was. The challenge for faculty and faculty developers is that while the technology to create videos is readily accessible, the technology and media *skills* required to produce professional-level multimedia products are still high. This is visible in the quality differences between videos and screen-casts produced by faculty or faculty developers unaided and the videos and/or screen-casts produced by faculty in collaboration with multimedia specialists. Because multimedia specialists possess the experience and skills necessary to produce professional-quality videos, screen-casts, images, and animations, working with them to develop technology mediated scaffolds for students should be the first option.

While the cost of producing professional-quality, technology-mediated scaffolds may be high in terms of time, skills, and effort, the benefits are numerous and on-going, in terms of the extended utility of customized videos and screen casts. Thus, a cost-benefit analysis of the utility of creating online videos, screen casts images, and animations appears to indicate that they are worth the initial investment of time, effort, and skill required to create them.

CONSTRAINTS TO IMPLEMENTING IBL IN ONLINE LEARNING ENVIRONMENTS

As discussed previously, the difficulties of collecting primary research data online, still presents a major challenge to faculty attempting to engage students in completely online inquiry exercises. While there are advantages and positive potential to implementing IBL in an online environment, there are also constraints. Some of these constraints are, (i) the inability of scaffolding technology tools and inquiry supports to be dynamically responsive to students changing needs, (ii) the time and effort required for faculty to learn new online applications and to proficiently produce scaffolding resources and guides using the new tools, and, (iii) the availability of discipline-specific and topic-specific technologies to pursue data collection online. These will be examined in detail in the next section.

A major constraint that faculty face in scaffolding students online inquiry activities is the static nature of planned scaffolds. In order to

provide online students with a seamlessly organized IB learning experience, faculty must plan in advance for technology supports for students. Online inquiry activities must be planned for access to inquiry-related information, and activities. Guidelines must also be planned for in advance of students' online course experience. While this planning ensures that students' inquiry activities receive the necessary scaffolding support at the required intervals in the inquiry cycle, the planned nature of the online inquiry process limits responsiveness to emergent changes in students' learning needs. As a consequence, dynamic changes in students' need for learning support, guidance, or interaction during the online inquiry cycle will likely not receive needed responses (Sharma & Hannafin, 2007).

A second major constraint to faculty implementing IBL models online is the time and effort required for faculty to learn to use online tools proficiently such that they can develop technology-mediated scaffolding supports for students' inquiry activities. Faculty members at higher education institutions usually have strong research, publication, and service mandates. These competing demands on faculty's professional time mean that cost-benefit analyses and trade-offs are usually made. For faculty, online tools that require an extended investment of time to learn to use, but which have a limited range of utility in the inquiry process will be less attractive and less likely to be adopted. This is so since the time needed to learn to use these tools do not translate into an ability to use them widely throughout all the phases of the inquiry cycle.

Since these tools are not efficient in the use of time or energy resources, faculty who inadvertently initiate their use may find themselves discouraged by the lengthy process and therefore become more willing to abandon their use and the IBL model in whole. An example of this would be a generic simulation or microworld tool such as *Second Life* or *Sims*, which require significant effort to provide introductory students with the tools and guidelines to carry out inquiry activities.

A useful strategy that faculty and faculty developers can use to counteract some of these issues is to approach the task of learning to use online tools with the notion of *parsimony* in mind. By *parsimony*, it is meant that, in selecting online tools for faculty use, consideration should be given, at the outset, to the length of time and the amount of effort that would reasonably be required for faculty to learn to use the tools proficiently. Additionally, every effort should be made to select tools that can serve multiple purposes and can be used across several phases of the inquiry cycle.

Taking this approach reduces the time needed before and during the inquiry cycle to learn new tools. It reduces as well, the effort required to become functionally proficient in a range of tools. For example, for students, concept-mapping applications are useful for brainstorming, collaboration, interaction, communication, and presentation development (Novak & Cañas, 2008). For faculty, some online curation tools like Diigo (diigo.com) are useful for collecting, annotating, and sharing resources. Some online presentation applications can serve many purposes across many phases of an inquiry cycle. Some include the ability to collaborate through group editing of documents and the ability to communicate through allowed comments and chat features in the documents, for example, Google docs and Google slides. It is important to recognize that the “walls” that separate tools as presentation or collaborative—interactive are quickly falling as the technology advances. Many presentation tools are also collaborative and interactive.

As observed before, the availability of applicable, discipline-specific technologies to pursue primary data collection online is still scarce. Many of these tools are created as part of large scale research projects and may or may not be made available to the public. Some of them may be freely or cheaply available online, some of them may become expensive products that require a considerable financial outlay on the part of students or the university. This may not be financially feasible for institutions or students. This difficulty may well disappear in the years to come as technology advances and more discipline-specific research technologies come online.

For the most part, the technologies recommended in this chapter for online IBL are discipline-independent. This means that they can be used to support online IBL activities in multiple disciplines. Their drawback, though, is that they are not useful for discipline-specific online inquiry activities such as collecting and analyzing primary data in an online environment. This shortcoming means that there are limitations for learners using these technologies to engage in IBL activities online. Some faculty have found a solution to this problem; they engage students in the collection and analysis of secondary online data sources, that is, research reports and research articles that are available online or they themselves share online. They choose to focus on inquiry skills that can be practiced through online work. This strategy still allows students to engage in inquiry activities surrounding a current question or problem in the discipline, it is just that data collection and analysis is online and once-removed from actual fieldwork or lab work.

CONCLUSION

The many advantages of IBL explored above are balanced by challenges to its implementation online. These challenges are not minor; they include: time constraints, faculty professional commitments, the steep learning curve for some technology tools, and the challenge of injecting dynamic, responsiveness into planned scaffolds.

For faculty who are interested in implementing IBL online, utilizing a process of slow transition into utilizing this instructional model online can be the best strategy. Designing scaffolding supports for IBL phases online will include some trial and error since a mix of variables must be managed: technology tools must be selected and combined for maximal utility and efficiency, and scaffolds must be created, combined together, and curated to produce optimal learning support for students. Faculty may also need to learn to use many of the technology tools themselves if they do not have access to a well-developed technical support team. In the face of these challenges, faculty are advised to work with their strengths in terms of the technology tools they elect to use. For example, initially, it is wiser for faculty to focus on using technologies they have already mastered when developing scaffolds for online IBL. This does not suggest that faculty should not learn to use new or different technologies to create scaffolds. Rather, it encourages faculty to begin from their position of strength, by using the technology tools with which they already have proficiency. Simultaneously, it encourages them to develop new technology skills, while they are proceeding with implementing IBL models online, using the technology skills they already possess.

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MULTIDISCIPLINARY ONLINE INQUIRY-BASED COURSEWORK: A PRACTICAL “FIRST STEPS” GUIDE

Tanya D. Whitehead

ABSTRACT

Through use of a well-conceived and time-tested protocol that will be explained in this chapter, students learn not only how to produce an independent project with personal meaning, but also learn how to think critically, identify, and engage with a topic in a way that brings lasting skill in personal inquiry into their lives. The inquiry-based scaffolding method of leading students through several group projects conducted in synch with the thematic seminar and their independent reading demonstrates that students enjoy the process of growing intellectually through stimulating discussions with peers, and then are well able to generalize the process and produce independent papers.

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INTRODUCTION

While students may initially dread a class, they may change their minds about not only the course, but even the entire field, if class discussions introduce interesting ideas, the readings and discussions apply to student experience, and the material is intriguing. Inquiry-based learning is designed to do just that: help the student make the sea change from a passive, assessment-driven model of “getting a degree” to an active engagement model that serves as a springboard, thrusting the student forward into life, with their new critical thinking skills and shiny new ideas in tow. The goal is to help students learn how to explore new ideas and how to think critically about their own and others’ perspectives on those new ideas. The “downside” of the fact memorization is that even when it is most successful, the student only has a handful of memorized facts that have yet to be attached to meaning, if they are to be useful in the real world. Inquiry-based learning classrooms, on the other hand, provide the student with a set of critical thinking and practical skills that can be utilized across time and settings.

This chapter will identify key constructs around inquiry-based teaching and learning, raise unresolved issues in the field, float ideas for resolving those issues, and introduce an effective interdisciplinary model of online inquiry-based learning for college students. Inquiry-based learning rests on a broad platform constructed of early theorists from several schools of thought. These include the seminal work done by Dewey (1913), who believed that students require interaction with ideas in order to learn, and Bloom (1956) who posited that learning must involve accessing information, recalling it and repeating it. These theories combined with the early proponents of social learning theory (Bandura, 1977; Knowles, 1980; Vygotsky, 1978), which demonstrated that learning occurs within a social context, gave birth to inquiry-based learning. From this medley of theories it can be assumed that some receipt of the following constructs are involved, that is: (1) knowledge is constructed from experience; (2) learning results from a personal interpretation of knowledge and occurs in a personal context; (3) learning is active and develops over time and with experience; and (4) learning is collaborative. Therefore, “learning” results from the clash between the student’s old and established ideas being intruded upon by new ideas that do not fit well in the learner’s previously constructed worldview.

As illustrated earlier, we are never teaching a subject, we are teaching a student. One issue in teaching is that the students are not alike. They have

differing backgrounds and academic strengths, differing reasons for enrolling in courses, and varying levels of interest in the subject matter. In designing a course, the teacher must anticipate and plan for these differences because, in education, one size definitely does not fit all. Given that some students will come from academically enriched backgrounds with high performing schools and nurturing faculty and parents, the remaining may come from average backgrounds or underprivileged backgrounds. They sit in the same class, with the same resources, but their backgrounds have set them on divergent learning paths. Sometimes students remind faculty that the course is not the center of the universe, the topic is not the only thing on everyone's mind, and at least some of the students are overcoming enormous difficulties when they simply arrive at the classroom. Given the difficulties some students must overcome in order to attend school, we must next consider the issue of motivation, which has been posited to come from at least two sources (Sansone, Fraughton, Zachary, Butner, & Heiner, 2011). Viewed through the lens of motivation, one student may be hoping to pick up a passing grade as they skim through. Conversely, the next student could be on the edge of their seat with excitement to learn more. The former is just enough "goal-defined" to get through to the prize, while the latter student is "interest-directed," burning with an internal motivation and desire to learn more. Sansone et al. (2011) found that the level and type of student interest in the topic affected student use of course materials and even their ability to learn. Students with low interest in the material were demonstrated to lose even the little interest they had at the beginning when they were told that they needed to know the material for their future careers (Sansone & Thoman, 2005).

If we think of the teacher as either driving the students to learn with a stick or enticing them to learn with a carrot, it is clear from Sansone's findings that the stick does not work all that well on anyone. This may indicate that faculty will want to try to assist all students in building a connection to the material, using as a carrot whatever portion of the material is already of interest to the student. Students were demonstrated in recent research to be more likely to exert extra effort when given a reason that they valued to persist (Sansone et al., 2011). When it was possible to interest students in the topic, higher engagement levels continued to be related to persistence and to grade outcomes, regardless of initial interest in the subject (Sansone et al., 2011). Some of the ways that this can be done will be presented in this chapter.

The secondary issue, after student outcomes, is based upon seminal work done by Dewey (1913) that suggests a clear relationship between

active engagement and the process of learning. Engagement creates an environment in which learning can be sustained. The problem is that the same positive environmental options that create a warm learning environment, such as self-paced or asynchronous engagement, could also allow an unmotivated student to drift through the course without processing and learning the material (Sansone et al., 2011), unless feedback from students is somehow required. This type of surface learning may be an issue in any classroom (Oliver, 2008). While the more acute of the bored students may be able to perform well enough on the three lower order processes (Bloom, 1956) and are able to access information, recall it, and repeat it; the three higher order learning processes of organizing information, analyzing it, and applying it in new settings takes engagement. Deep learning is characterized by learners seeking to understand and comprehend content in ways that apply to their real lives outside the classroom. An education designed around a passive classroom in which students sit and listen limits opportunity for students to reach the higher order learning processes that require engagement in creative problem solving, reasoning, decision-making, and self-evaluation (Oliver, 2007).

Given the need we have just reviewed for a learning environment in which even reluctant students can be enticed into active, deep learning, what does the inquiry-based classroom need to offer? This theoretical mixture of design features proposed by the social learning theorists (Bandura, 1977; Knowles, 1980; Vygotsky, 1978) and built upon the unique characteristics of the student is recommended by Sansone et al. (2011) and Boud and Posser (2002). Specifically, these characteristics are a classroom context that (1) acknowledge the learners' context and needs, (2) create a challenge for the learner, (3) in a cognitively engaging system, with (4) the opportunity to engage in practice.

Another complexity of inquiry-based learning was the introduction of digital technology and the way that technologies have forced institutions of learning to reinterpret how an education can be achieved (Macdonald & Campbell, 2012). An understanding of teaching and learning, both historical and current, is necessary to help the instructor step lightly over the administrative eggshells in this early period of online learning. No matter why online learning was brought into an institution (Saljo, 2010) or what institutional priorities may be at work (Selwyn, 2011), educators will have to function in an environment structured by technologies now endemic in the population from which learners arrive. It is clear, the effective course will maintain the social nature of the learning environment, facilitate content-related interactions, provide situations in which critical thinking

skills can be honed, and ensure active engagement of learners (Mayne & Wu, 2001).

While the groundswell of action makes a blind leap toward online learning (Major, 2010), it might be tempting to ignore the quiet voices calling for caution about establishing online regularities without a philosophical foundation as a guide. For example, Ross (2011) raises concerns about importing classroom practices into online venues “wholesale” without an acknowledgment of the differences between posting online and speaking in a closed classroom. For example, as faculty, we require self-reflection, peer assessment, and grade student expression. We devised self-reflection exercises to increase learning. Yet these very activities may not be in the best interests of students in an online environment. Ross (2011) warns that in an online venue, self-reflection serves to “normalize the surveillance of students’ emotional and developmental expression” (p. 113). The learning process, in this view, turns self-expression for personal growth into an unequal contest between the student and the system for the “rights of identity, authenticity, ownership, and privacy” (p. 123). Grading is a gatekeeper of a degree. In this view, the student’s desire for a college degree forces the student to act against their best interest in a high-stakes game. When a grade is based upon reflections and self-assessment, the student often will reveal personal information to earn the grade. Yet, since the learner is in an institutional-centered venue, all materials posted by the student leave their control forever, when they hit the enter key. Ross (2011) posits that in a situation with a high-stakes, gate-keeping summative assessment, the wise individual wears a mask. Beneath the mask, someone may actively determine which aspects of self to reveal enough transformation to earn the grade. The challenge is to do so while protecting oneself from a sophomore error that will be archived for years (Ross, 2011). In an online education venue, then student-centered faculty might replace much of the high-stakes summative evaluation with relatively low-stakes formative evaluations. In this surveillance-laden new world, the proper use of reflections on material would be not to identify change and growth within the student, but to encourage peer interactions and group activities that promote deep learning. We accept the mask, and structure the course in a way that students learn how to reflect intellectually rather than emotionally, and find ways to lead discussions in which perspectives can be shared, even passionately, without revealing personal information. While designing coursework built upon the time-honored pedagogy of the past, to be delivered in the new environment for which the dangers have yet to be fully imagined, students will be best served by thoughtful systems that support active learning

experiences, promote self-reflection in a low-stakes environment, and exude respect for the privacy of vulnerable populations, such as students.

GETTING STARTED IN THE ONLINE INQUIRY-BASED CLASSROOM

Fortunately, we are all endowed with years of experience in various types of classrooms, from which a shared/internal dialogue may arise. These memories should be tapped when we lift the reins of a new course, as it will affect our students as much as teachers affected us. Perhaps the best place to begin is with a self-reflection. Let us start by thinking through the values, beliefs, paradigms, and theories that we depend upon when we, ourselves, build knowledge (Korthagen & Vasalos, 2005). These constructs held by the teacher drive methodology and set the tone and processes of learning for the class. If the faculty believes in social learning, facilitation of learning, and developmental-staged learning, then the course will allow for individually determined, interest-based exploration in a socially rewarding venue. If the faculty believes in a top-down, authoritarian, high-stakes assessment model, then the course will funnel students into short-term memorization designed to result in high outcomes assessment. The first set of beliefs is those upon which inquiry-based learning rests.

A person designing a course has a broad range of options and tools, but nothing a person does in the classroom is able to hide, mitigate, or compensate for the underlying features of value, belief, paradigm, or theory. Many people, upon reflection, realize that they ascribe to conflicting values and theories. If these hazy constructs remain unexplored, the unreliable stance might lead faculty into behaving in ways that confuse others. The first step in planning an inquiry-based course is a movement toward self-knowledge and resulting decision upon which foundations of the course will be built. The next stage of course development concerns setting the outcome we want our students to achieve. Perhaps Gilardi and Lozza (2009) said it best when she proposed that the goal of inquiry-based learning might be a way to connect field-based learning, development of a professional identity, and awareness of one's impact on others both as a professional and as a person. Of course, it would be quite nice if every student entered the course with an inquiring attitude, an awareness of their own values, beliefs and theories, an interest in the material, and a strong ability to discuss and negotiate with others. However, even if the students do not meet that criterion, the professor certainly should.

A Multidisciplinary Inquiry-based Course

The course presented in this chapter was originally a social science offering that has been nudged into providing for the needs of a multidisciplinary set of students from arts and sciences, nursing, and medicine. It is a four credit-hour course running for sixteen weeks, originally offered in face-to-face classrooms and now offered online. The course components form a logical progression, enabling students to gain exposure to multi-cultural perspectives in specific areas selected by each student. In the true scaffolding model, as the semester progresses students advance from a structured learning environment in which all students are actively exploring the same topics to a more independent one in which students create their own thematic exploration.

For example, this multidisciplinary course is built around an independently selected theme, such as chronic illness or disability, healthcare regularities, culture and human development, multidisciplinary treatment teams, or immigrant issues in healthcare. The selected theme is independently explored within the context of a healthcare system responsible for serving a multi-cultural population, and tied to using illustrations of the concepts from a specific report of healthcare regularities for immigrants. The independent study portion of the course trains students to learn independently and prepares them to develop a line of inquiry into any aspect of the topic that is of particular interest to them. Classroom material includes reading six assigned articles and two books. Students must independently listen to audio-lectures created for the class, undertake individual project theme selection and refinement, conduct independent library research, and engage in graded twice-weekly asynchronous class discussion. I also post links to three assigned films provided through the Intranet at the university library.

In this course, all assignments for the first three units may be revised once, so that any interested student might potentially earn a better grade, after reading and reflecting on posted peer and faculty comments on their essay. The fourth unit cannot be revised. The final term paper may be handed in three weeks early in draft form, so that the student may take advantage of early feedback during the formative stage of their paper. I want each student to have the opportunity to “take chances” and “make a leap of faith” in the assignment, and then to have the opportunity to correct assignments once they receive my feedback and feedback from the class. These methods keep grading at low stakes, since the student may redo assignments at will.

The way that students interact online is important to a successful learning community. At entry to the course, students are directed to an online site in which core etiquette rules for online behavior may be found. We discuss online, how a student might post in the voice of the professional the student will become, and how to communicate in context and without emotion. As the facilitator, I am active, have daily presence on the site, with daily posts, comments, and occasional new handouts to assist the class in their endeavor. If a student post leaves the student open to censure or embarrassment, I delete it and send an email to the student with instructions on revisions. I do not count a revised assignment as being handed in late. There is a threaded discussion called “best papers” upon which I request authors of selected papers with the most comprehensive or best-organized essays re-post their paper for each unit. I explain to the class exactly which characteristics of each paper are exemplary. The papers selected always differ a great deal from each other, as each paper has different areas of excellence. Students are self-motivated and learn by example how to use exemplary techniques in the next assignment. We must be doing something right. With online instruction increasing at a faster rate than face-to-face coursework (Crawford-Ferre & Wiest, 2012), it is clear that many value online learning. What, exactly, is it that students and faculty like about an inquiry-based online course? Some popular techniques instructors may use in online multidisciplinary coursework will be addressed in the next section of this chapter.

THE VALUE OF AN ONLINE INQUIRY-BASED COURSE TO STUDENTS AND FACULTY

Students often report that they enroll in an online course because they are busy, want to avoid a commute, or need to schedule their coursework around their work schedule (Horspool & Lange, 2012). However, it has been noted by others that not all students are good candidates for independent learning (Calloway, 2012). For example, it has been observed that students need to demonstrate self-directed learning, have a readiness to follow an online protocol, demonstrate willingness to collaborate with other students, and be competent in the use of a computer (Joshi, 2012). If the thinking among experts is that only specific students might succeed in online learning, then in what ways might these characteristics of successful students be better defined? The skill-set includes several types of

competencies. For example, students have to be able to find, collect, organize, integrate, and, eventually, report information from many sources (ChanLin, 2012; Levy, 2009; Proctor, Prevatt, Adams, Hurst, & Petscher, 2006; Slotte & Tynjala, 2005).

That said, even the best-skilled and motivated student is entitled to a well-designed course with an instructor capable of delivering content and instructions in a cogent manner. Further refining the discussion, Spronken-Smith and Walker (2010) identified three modes of inquiry-based learning, organized by the level of scaffolding provided by the course structure. These are, (1) *structured inquiry*, in which the instructor assigns the topic, as well as provides an outline for addressing it; (2) *guided inquiry* in which the instructor provides questions to stimulate inquiry, leaving the students to self-direct in terms of exploring those questions; and, finally, (3) *open inquiry* in which even the questions to be addressed are formulated by the student who moves independently through the entire process of inquiry. While the focus of responsibility for learning remains centered upon the student, the instructor must maintain substantial involvement in the process. Faculty provide an orientation, give a clear assignment with straightforward descriptions of deliverables, a clear explanation of grading policies and due dates, and a place in which both structured and informal discussions can occur. Instructors may use multiple methods of conveying this information, including use of handouts, lectures, video lectures, email, webcam conversations, or electronic office hours, and may provide video links.

Research into education and its various regularities include findings that student motivation is likely to be driven, in part, by assessment outcomes, presumably with an eye toward achieving a grade that will contribute toward a healthy GPA and an eventual graduation (Matheson, Wilkinson, & Gilhooly, 2012). Students are often focused on only those activities that will be graded. Therefore, assessment measures must cast a wide enough net to include each of the various course components that the instructor believes are necessary, yet be flexible enough to account for varying percentages of the total grade earned based upon the relative value of the activity with regard to the whole. In the course example we are covering in this chapter, the decision has been made to award points for three basic areas of participation. The three key areas are (1) meaningful discussion and self-evaluation, (2) production of synergistic essays from assigned resource material, and (3) the production of an independently produced term paper. With a nod to the concerns of student privacy, students do not post their self-evaluation answers. Students were instructed to comment only upon the value they felt they received from doing the assignment, rather than

giving the class the answers they privately made to each of the questions on the assignment. This component was worth 20% of the course grade. The essays produced by each student are assigned about once a month. While not every resource is assigned for every unit, in general, students are expected to listen to lectures, watch assigned films, read assigned websites, and read specific books and articles. Students then write an essay covering a set of thought-questions that are designed to help students identify specific themes. This component is valued at 40% of the total grade. Finally, students are to create a course term paper on a self-selected theme. They are to use course assigned readings, discussion, and handouts to support their thesis, as well as outside resources identified from peer-reviewed journals. This component of the course is valued at 40% of the total grade.

The system only works if there is thorough student preparation, effective faculty involvement as a sounding board, and a well-organized learning context (Verbaan, 2008). The instructor will have to spend ample time supporting the class discussion in the early stages, though the instructor may reduce their role to making collective responses to clusters of students when the discussion comes to life and students begin to delve into key topics. In the early stages, many instructors find inquiry-based learning extraordinarily time consuming. Faculty sometimes complains that they must work one-on-one with students much more than is usual. However, for those who give inquiry-based learning a trial, many faculty find that discussion opens doors to learning in a way that changes students' lives and sets them on a new course. It is not uncommon to receive emails from students saying that they will take with them, and share with as many people as they can, both the content and skills they learned in class.

When first exploring inquiry-based learning online, faculty question how students will know if they are on the right track; how faculty are able to grade ideas rather than a set of memorized facts; and whether grading independently produced papers takes more time than it is worth. It is an interesting feature of this style of learning that in the initial weeks of the course students tend to ask the same questions. Certainly, the instructors' daily presence is a key to a successful class, in the early stages. Many instructors feel that they are overwhelmed with the effort of supporting student learning on a daily basis in the early weeks of each semester (Verbaan, 2008), yet as students gain self-confidence in the process of inquiry-based learning, the instructor will be able to reduce participation to lower levels.

There is a typical learning cycle in an inquiry-based course. It consists first of collaborative inquiry among the class and initiated by the instructor, followed by plenary discussions among all stakeholders, and finally

by summative evaluation and formal assessment of learning outcomes (Verbaan, 2008). It is true that student questions and discussion are time-consuming, however, most faculty find them to be very rewarding, as well. The students rapidly move from asking anxious questions about grading to asking thoughtful questions about the content, once they are reassured that the assignment and the grading rubric are clear and manageable. The upstream issue is that the instructor must prepare a final and reliable syllabus, measureable outcomes of deliverables with clearly stated due-dates, and a valid and reliable grading rubric for written assignments, well prior to the first day of the course. Once these guidelines are handed out and any clarifications made, then everyone concerned can relax and focus on the content material, that is, really, at the center of what brought everyone together in the first place. For faculty who already have expectations of high workload in teaching and strong expectations that students will live up to what is expected of them, inquiry-based teaching can bring the deep satisfaction of shared intellectual discussion on topics that really matter and the joy of helping others develop to their ultimate potential.

ENHANCING THE ONLINE INQUIRY-BASED CLASSROOM

The central tenant of inquiry-based learning is an independently produced final product and the process in which students were engaged to that end. Learning how to engage in inquiry-based learning may require entering a new world for both teachers and students who are accustomed to a course designed with a true/false examination at semesters' end. The inquiry-based process begins on the first day of class and leads students, a step at a time, on a personal journey. Students must pass through a staged progression of deep, semester-long, independent research on a theme or topic that relates in some way to the material presented by the instructor. Students have reported challenges in shifting to this style of learning in five key areas (Levy & Petrulis, 2012). Specifically, these are (1) developing information literacy, learning how to locate the appropriate resources. (2) Having one's personal beliefs about learning and knowledge challenged, it can be unsettling not to be told what to do next. (3) Facing a lack of self-confidence as a learner, fearing that the knowledge gains the student made were not enough. (4) Figuring out how to set a personal direction and frame the

inquiry, needing reassurance. (5) Having difficulty in sustaining peer collaboration, needing faculty intervention to help set limits and boundaries in the early stages. These issues will be explored later.

Inquiry-based learning is at heart, perhaps, a discovery-oriented model for integrating independent student research into a discipline, using the platform (or scaffold) of a college course. With the necessary preparation, a course can be designed so that it will be quite straightforward for students to access and use all materials needed to start them on their way toward identifying a theme, pursuing independent inquiry, identifying a reliable set of resources, and authoring a term paper that comprehensively addresses the topic. A high level of active engagement between the learning community and its members is the springboard for students' entry to inquiry-based learning (Cornelius, Gordon, & Ackland, 2011). Once the shared meanings, values, and practices spoken of by Cornelius et al. (2011) are obtained from the instructor, students are enticed to begin. The instructor shares the practices of the course in a simple, clear manner of outlining all assignments and their specific requirements.

Sharing values takes preparation on the part of the instructor. Values are a silent and often overlooked pilot of our actions. If we value student engagement, then we have to share that value with our students so that they know their participation is valued. There seems to be a sympathetic interface between people in that they often will reflect back to us the same emotion we project onto them. We want engagement from students. Therefore, to initiate that engagement, we reach out to them with interest, humor, support, and enthusiasm. After welcoming students to the semester with an email that I send out via the university enrollment system, I send another email with the syllabus describing the theory of the discipline, the content of the course, and all deliverables and due dates. This email has a link to the online course website. The website is where films, library resources, audiotaped lectures, and handouts are posted. I post daily messages to students. Students post their essays for Units 1–3 on this site and each student must write two posts per week in response to what others have posted. While two posts per week are required, students often post 10 or more comments, as they are swept into a meaningful conversation on the ideas in our reading assignments. In my first efforts to engage students I post a short bio about myself and explain why I chose to teach the course and what the topic means to me. I instruct students to reflect upon what they hope to gain from the course and set learning outcome goals. Then I set a supportive tone, trying to reach out to any student in trouble, and show students that while there are standards for course performance, I am

eager to assist them in reaching these standards and they will have the support they need to succeed.

Every communication from the instructor is designed to call forth a response from the student that increases their engagement in the learning process and helps them find themes that will be personally meaningful in relation to their real-life interests and activities. As spoken of by [Cornelius et al. \(2011\)](#), there can be a tension between individual learning goals and an active learning community if students are not allowed to veer off a group project and explore themes of personal interest within the general topic of the course. As students gain footing in the shared content, their independent interest becomes clear to them, and they learn to delve into their independent research while sharing their ideas with classmates through weekly comments and posts.

Students cannot go off on a tangent, of course. They are grounded by having a common set of standards and thought-questions to respond to, weekly assignments, and the feedback of the entire class on their posted essays. In addition, self-reflection plays an important role in helping students think through their stance, their process, and their performance. After each post, the instructor comments on the essays. All grades are posted privately on the web-based gradebook. Then students are encouraged to reflect upon the comments their work received and either make changes in their posts or support the original post with further explanation. A published self-reflection disciplinary-specific tool is utilized twice in the latter part of the semester to help students privately consider their stance, progress toward learning goals, and personal “next-steps.” It is important to note that students are specifically told not to post personal reflections, as we are striving as a learning community to step toward a professional communication style.

Creating a course that students find valid and meaningful in their everyday lives begins with instructors finding words to state their values and then building course components that clearly reflect those values. Daily comments and support given by the instructor further provide scaffolding on which students can base their own standards and performance.

CONCLUSIONS AND RECOMMENDATIONS

As spoken of by [Slotte and Tynjala \(2005\)](#), it is usual for students to report that the inquiry-based course has given them many learning tools. Students often say that they have learned how to express themselves in a new way.

Some students have commented that they used their new critical thinking skills to figure out things that have bothered them for a long time. We often hear that students wish they had known how to undertake self-directed learning a long time earlier. They report that they plan to use their newly developed communication skills and content knowledge gained in their inquiry-based in their future careers and relationships.

Inquiry-based learning coursework must be grounded in the real world and have real-world relevance to the students. An informal, formative, low-stakes peer, and self-assessment is an important component of the process of learning and helps to ensure that the knowledge that the student takes away is complemented by new skills in research, critical thinking, writing, and self-knowledge. To accomplish this goal, students have to be given a scaffolding to climb, complete with clear directions for deliverables and due dates, and instructions on how to get started. Students need an opportunity to have their work examined and commented upon by classmates, along with the opportunity to give feedback to others. It is meaningful to people when others read their work and support their ideas or demonstrate that their input is valued. As students start to produce their assigned work, they need examples to use as a target and frequent low-stakes feedback from the faculty and class. Active engagement in the course, first required and then arising out of enthusiasm, further develops the students' ability to collaborate, work with others, learn the opinions of others, and learn to value those opinions. This raises the students' perception of the value of others' perspectives and ideas, and helps students realize the value of their own contributions to the learning community.

By passing along an orderly, unhurried, and well-supported pathway through the four stages of inquiry-based learning, students find that they can identify and set meaningful goals, identify and find appropriate resources for learning, develop mature attitudes toward collective learning, and gain self-confidence in themselves as leaders and learning partners.

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INQUIRY IN THE COACHING EXPERIENCE: REFLECTIVE STRATEGIES FOR TRANSFORMATIVE CHANGE

Greg Latemore

ABSTRACT

The focus of this chapter is upon workplace coaching, one of the deepest forms of communication where true understanding is formed between two people in rich dialogue.

Two domains of personal learning are presented: the inner theatre, which includes multi-source feedback, and the outer theatre, which includes action-learning projects (Callan & Latemore, 2008).

Two transformative learning strategies are considered in detail: the therapeutic metaphor (Atkinson, 1995) and the intensive journal (Progoff, 1992). Four case studies are then examined where clients engage in transformative change.

The chapter concludes with cautions for the professional coach and insists that coaching needs to be deeply respectful. Authentic coaches facilitate change with their clients, not to do things to them.

Inquiry-Based Learning for Multidisciplinary Programs: A Conceptual and Practical Resource for Educators

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INTRODUCTION

This chapter examines strategies for extending inquiry-based learning and highlights successful reflective practices within the coaching context. What follows here can be applied – with the requisite skill – in a variety of coaching relationships such as in leadership, business, career, sport and life coaching.

We begin by examining the coaching relationship itself as a vehicle for personal learning. We then distinguish mentoring, coaching, sponsoring and counselling, and highlight two domains of personal learning, the inner theatre and the outer theatre (Callan & Latemore, 2008). Within the context of reflection, we then proceed to address two transformative learning strategies in detail: the therapeutic metaphor and the intensive journal. Echoing Marinoff (1999) who employs philosophical counselling, we have found that such integrative approaches also foster contemplation and equilibrium for clients whom we have coached. We conclude by highlighting the outcomes of these transformative approaches and we provide some cautions for the professional coach.

THE LEARNING CONTEXT

Teachers and management educators have long been aware of the importance of recognising the principles of adult learning, respecting learning styles and facilitating processes which lead to action-learning (Honey & Mumford, 2006; Knowles, 1975; Kolb, Rubin, & McIntyre, 1974, 1984; Revans, 1998). In similar vein, Marquardt, Leonard, Freedman, and Hill (2009) have found that learning results from an interactive combination of programming, questioning and reflection.

We recognise the limits of analytical thinking in management (Colby, Ehrlich, Sullivan, & Doole, 2011) and endorse a recent call for a more holistic approach to management education (Waddock & Lozano, 2013). We are keen to foster self-awareness through mindfulness and reflection among our clients, and to help them assess the congruency of their values, beliefs and actions with how these play out in their organisational settings (Iles, Morgeson, & Nahrgang, 2005). This is particularly important for leaders who are expected to be mindful, compassionate and hopeful (Boyatzis & McKee, 2005). Recent research demonstrates that various reflective and

mindfulness practices have even been found to foster a higher purpose and a social conscience (Crilly, Schneider, & Zollo, 2008). In the one-on-one situation between the coach and the coachee, such holistic learning is especially desirable and achievable.

To begin, we have learnt to distinguish between various roles as the mentor fosters deep learning for clients. These overlapping roles are now summarised in Fig. 1.

The mentor has a deep relationship with another person. Mentors are trusted confidants, counsellors and guides. In Greek mythology, Mentor was a valued family retainer to whom King Odysseus (Ulysses) entrusted his son, Telemachus, while Odysseus travelled the known world on his ten year odyssey, fighting in the Trojan wars (Latimore & Callan, 1999; Latimore, 2014a). In the Japanese martial arts, the *sensei* is the master, the teacher who encourages students to attain their full potential in the various disciplines. In the Indian tradition, the *guru* provides spiritual guidance and meditation techniques to devotees. True sensei and gurus are life-guides and philosophers, not just adept proponents of particular fighting or meditation disciplines.

Mentoring can take one of three forms: the counsellor, the coach and the sponsor (Latimore, 2014a). The counsellor provides character building and plays the role of a wise professional. This role is personally focussed and life-focussed. The counsellor helps the client to discover a new vision for the future, and is both a supporter and a challenger in that endeavour (Daloz, 1986). If the client is too comfortable with the counsellor, there is excellent reinforcement but little growth; if the client is too challenged by the counsellor, there is confrontational insight but little reinforcement. Experienced counsellors provide a balance between support and challenge for their clients.

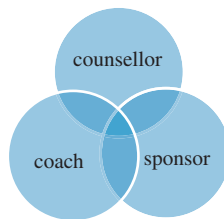


Fig. 1. Three Related Mentoring Roles (Latimore, 2014a).

The coach typically provides some skills transfer, rehearsal for behavioural change (Peltier, 2001; Skiffington & Zeus, 2003), or offers to broker and facilitate the coachee's learning. The focus of the coach is typically upon work-related skills. The coach also helps the coachee to acquire knowledge, skills and self-efficacy to perform more effectively in the workplace or in life itself.

The sponsor plays the role of a patron who opens doors and provides contacts from within their own network which gives the coachee exposure and visibility. Typically, the sponsor is a senior manager from within the coachee's own organisation, or a prominent industry or sector leader. Sponsors are therefore vital organisational assets who help employees with their career management and succession planning (Kramar et al., 2014).

Coaching is a deep learning process leading to positive change (Bentley & Cohen-Bentley, 2002, pp. 62–72). These authors proposed that coaching sessions are not aimless chats or casual exchanges. They are structured dialogues (Bentley & Cohen-Bentley, 2002), or conversations (in Latin – “to turn together”). It is worth noting, and again looking at the Latin derivations of the words, that in a *debate*, one “beats down” the opponent; in a *discussion*, two people “run against each other”; but in a *conversation*, two people “turn together”. A conversation is similar to a *dialogue* (in Greek – “meaning moving through”) (Fig. 2).

A coaching conversation is one of the richest forms of communication where true understanding is formed between two people in rich dialogue. After all, communication itself is “the act of joining together”.

These structured conversations in a coaching context are dynamic, iterative and respectful. They can be simple, complex and sometimes, life-changing (Flaherty, 2005). Using active listening, open-ended questions and convergent interviewing, the coach supports and challenges new ways of thinking and feeling in clients, and helps them to explore options for personal change.

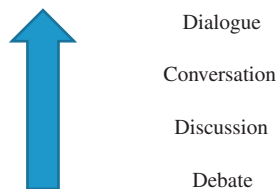


Fig. 2. A Hierarchy of Meaningful Communication (Latimore, 2014a).

REFLECTIVE PRACTICES IN MANAGEMENT EDUCATION

The image of the theatre is particularly useful in fostering reflective practice during leadership development programs (Callan & Latemore, 2008; Kets de Vries, 2001). We now overview what we have described as the outer and the inner theatre (Fig. 3).

Developing the Outer Theatre

In learning interventions, novel challenges can take people into the real world. Here, we invite participants to expand their work roles through action-learning (Baird, Deacon, & Holland, 2000, cited in Cross & Israelit, 2000). Learning needs to be practical and experiential, not just theoretical (Kolb, 1984, cited in Cross & Israelit, 2000). As a result of our coaching, one manager developed a new energy for leadership by doing weekend volunteer work with street people. Another manager learnt to listen more effectively by talking with and reading to older citizens and dementia patients in a retirement home. An older manager developed his creativity by engaging in unstructured play with his grandchildren, while a group of managers applied their considerable strategic and financial experience to assist several community not-for-profit organisations to write business plans and proposals to seek public funding. All of these examples occurred as challenging suggestions within individual or team coaching relationships. Such action-learning projects and behavioural experiments fostered improved behaviour in the outer theatre for these participants.

Developing the Inner Theatre

Dewey (1933) was an early pioneer on the nature and value of reflection. Donald Schon pursued the idea further in his book *The Reflective*



Fig. 3. Two Theatres of Holistic Learning (Callan & Latemore, 2008).

Practitioner in 1983. Reflection has long been shown to foster insight, spontaneity and mindfulness (Sadler-Smith & Shefy, 2004). How can one think successfully about what is salient as a leader (Martin, 2007) without personal reflection and self-insight? Critical reflection is a major learning element in management and executive education. In our development programs, it is one of the major devices used to construct and to explore the inner theatre. Although reflection is a natural and familiar process, many busy managers seem to lose touch with reflection as a tool for making sense out of their organisational and personal life experiences (Daudelin, 1996).

Reflective approaches help managers to free themselves of old mental models, and to question perspective-limiting assumptions. The process of self-disclosing and questioning helps managers to embrace opportunities to develop fresh perspectives about their leadership habits (Kaye, 1999). Some managers come to executive education programs expecting to be informed and even entertained by the programme faculty and their peers. Reflection helps them inform and entertain themselves, often at surprisingly deep cognitive and emotional levels of self-discovery. Reflective practices such as personal learning contracts foster self-awareness and encourage participants to take personal responsibility as adults for their own learning outcomes.

Facilitating such reflection is the powerful use of appropriate open-ended questions in pairs or small groups, as for example, “What did you do when you were at your best as a leader?”, “How did you feel in that situation?” or, after Goffee and Jones (2006), “Why would anyone want to be led by you?”

In our coaching role, to encourage reflection, we employ feedback from many of the diagnostics tools that are now available, including multi-source feedback (Hooijberg & Lane, 2009), especially when such feedback is introduced and managed around an appropriate set of guiding principles (Toegel & Conger, 2003). We also use live case studies drawn from participants’ own experiences, where they present the situations and then the participant group explores possible interventions in the light of the programme content. The participant then explains what did happen and what could have been done better or differently.

The psychoanalytic essays of Kets de Vries (2001) provide many examples of how successful leaders, like successful actors, must learn to respond to fame and ego inflation. Followers and fans can displace their hopes and fantasies onto leaders. Kotter (1985) describes the phenomena of counter-dependence and over-dependence by subordinates which tempts some managers to perceive themselves as perfect and infallible (see similar observations by Goleman, Boyatzis, & McKee, 2002; Latemore, 2001). For many

managers, the metaphor of the inner theatre serves to open up the concept of false personae. Interestingly, in Jungian psychology, individuation or wholeness is best achieved by being aware of, and ideally, removing such personae.

THE COACHING RELATIONSHIP

Effective coaching is a confidential, relational process in an environment in which the client is given the impetus to embrace change and provide a new direction through an empowering personal vision (Daloz, 1986). Expert coaches rightly highlight the need to challenge clients and not just to offer support (Bentley & Cohen-Bentley, 2002; Skiffington & Zeus, 2003). Of course, there is sometimes a need for fierce (Scott, 2002) and crucial (Patterson, Grenny, McMillan, & Switzler, 2002) conversations, typically addressing poor or diminished performance. At such times, the organisation's expectations also need to be addressed, not just the individual coachee's needs and desires (Blakey & Day, 2012).

It is increasingly evident that sustainable, transformative change at the individual level only occurs when there is trust (Latemore, 2012) and when clients engage in deep reflection. Reflection and deep conversation seem to produce deeper change than mere confrontation. Coaching offers deep support to clients to help them develop new skills and self-confidence; there are clear limits to merely challenging clients to change (Zuboff & Maxim, 2002).

Applying the respect shown in appreciative enquiry (Cooperider, Whitney, & Stavros, 2008), the coach invites the client to reflect positively upon the causes, nature and consequences of their current behaviour using the A-B-C model which refers to: antecedents, behaviour, consequences (Skiffington & Zeus, 2003, p. 85). In other words, the coach highlights the background, situation and possible factors (antecedents) causing certain actions (behaviour) by the client, and explains to the client the existing or likely outcomes of that behaviour (consequences). Where there is a psychological payoff for dysfunctional behaviour, we know that such behaviour will persist, even if the person is aware of any negative consequences upon others (Latemore, 2014b). Ideally, coaches provide support and challenge to help clients face their dysfunctional behaviour in the present and to realise their potential in the future (Blakey & Day, 2012). As Dovey (2005) has described, expert coaches create a safe climate, where respect and trust are evident, and where people can be supported and challenged to change. As we have so far described, there are many effective approaches to coaching (Flaherty, 2005; Wildflower, 2013), but what we are about to outline are

approaches that are not usually discussed much in the coaching literature or given enough priority.

These are approaches where the wisdom of ancient philosophers is applied by trained philosophical counsellors to resolve client dilemmas (Marinoff, 1999). Here, the philosophical counsellor helps clients find PEACE with themselves by employing a five-stage process. The counsellor progresses from helping the client to understand their problem (P), to recognise their emotions (E) and to explore their options through analysis (A). But the effectiveness of this approach is what follows these initial three steps: helping the client to contemplate (C) and then to establish equilibrium (E). Marinoff (1999) has found that “these steps are the surest path to lasting peace of mind” (p. 38).

In similar vein, we have discovered that the use of imagery and narrative, triggered via metaphors and journaling, fosters reflection and integration as the client accepts and moves on from the particular situation. The coaching relationship fosters such self-awareness and mindfulness and the impetus to move on. At times, deep personal and transformative change has occurred.

Two strategies in particular have worked well in this regard. Firstly, applying a therapeutic metaphor to clients’ own stories (Atkinson, 1995), and secondly, asking clients to write a journal (Progoff, 1992). The metaphor brings narrative strength in diagnosis and intervention; the journal empowers clients to let go and move forward. Let us examine these two reflective learning strategies more closely.

THERAPEUTIC METAPHORS

It is important to recognise here that while we are addressing coaching outside a psychoanalytic frame, it is helpful to remember that there are many therapeutic approaches to coaching such as cognitive behavioural therapy, client-centred therapy and ratio-emotive therapy. Nevertheless, coaching is not consulting, or training, or HR services (Skiffington & Zeus, 2003, p. 23), or even the same as mentoring, or friendship (Bentley & Cohen-Bentley, 2002, p. 29).

Fuller (2009) might well help us deal with pathological and tricky people in the workplace, and Kets de Vries might well coach toxic and neurotic leaders (2014), especially at the top of organisations (2001). However, these suggested coaching strategies assume normal situations and not a psychotherapeutic need. Still, the outcomes are sometimes quasi-therapeutic as

change can occur at the personal level when such techniques are authentically employed.

De Mello and Dych (1999, p. 8) said “the shortest distance between a human being and truth is a story”. This is our first reflective strategy: our suggesting, or asking the client to suggest a metaphor or a storyline which creatively describes their current situation, or which creatively presents their desired situation. It might be helpful to briefly review such terms as metaphor and story. Accordingly, we present [Table 1](#) with a summary of some key terms used in this context.

Table 1. A Glossary of Key Terms.

Key Concepts	Meaning	Examples
Archetype	A pattern in its original form, a major element of common human experience, an archetypal image (Jung, von Franz, Henderson, Jacobi, & Jaffe, 1964, p. 68).	Mother, Father, Child, Hero, Saviour.
Fable	A short tale to teach a moral lesson, often with animals or inanimate objects as characters.	Aesop’s Fable, The Tortoise and the Hare (Stade, 2005).
Icon	A representation of a sacred personage, or a physical object with special significance.	An image of the Buddha; a child’s first toy has iconic value to parents.
Image	A visual representation of something.	A picture of a road towards the horizon, to represent one’s life.
Metaphor	Connects two previously unconnected ideas and adds greater meaning.	John is a lion; Earth is woman.
Motif	A minor element or a smaller part of our common human experience.	Falling in love, gaining or losing a friend, overcoming hardships.
Narrative	Akin to a story. A sequence of connected events in written or spoken words.	Myths or epic poems.
Parable	A short allegorical story designed to convey some truth or moral lesson.	The Good Samaritan (Luke 10:25–37 KJV)
Pattern	A design, model or plan that is repeated. It is regular and predictable.	The four seasons: spring, summer, autumn, and winter.
Repetition	Using the same word or phrase to signal something important.	“I have a dream ... I have a dream today” (King, 1963).
Simile	A comparison between two ideas or objects.	She is like a whirlwind around the office.
Story	A literary device with a plot, a particular setting, key characters and a series of events or chapters.	The Lord of the Rings (Tolkein, 1954).
Symbol	A sign with hidden, even profound, meaning.	The dove as a symbol of peace.

Adapted from Atkinson (1995, pp. 23–28), Delbridge (1982).

Parables and stories have long been used by teachers and religious leaders to challenge cultures and to influence prophetic change (Campbell & Moyers, 1988; Jung et al., 1964; Jung, 1979; Latemore, 1996; Moore, 1991). Leaders, especially, now realise that to capture the minds and hearts of their followers, telling a story is far better than explaining a mere concept (Kaye, 1999; Strom, 2013). Metaphors are increasingly being used in teaching stories on cultural change, such as the mice who are puzzled why their cheese has been moved (Johnson, 1998), and in appreciating diversity, such as the loudest ducks who are selected because they are too obvious (Liswood, 2010).

Employing metaphors enriches the limited language often used by coaches and by clients themselves. Flaherty (2005) makes the colourful point that coaches might be tempted to bring about changes in others by treating them as “single-celled protozoa” (p. 6), where we “poke them or give them sugar” (p. 6)! Rather, using metaphors highlights the importance of the structure of language for people, who are much more complex than amoeba. As Flaherty (2005) again asserts, “language is what allows the client to be self-correcting and self-generating and it’s practice that makes it possible for the client to be a long-term excellent performer” (p. 9).

We now describe some examples of the power of such therapeutic metaphors that exist in the light of different coaching relationships (The first names of the following three clients have been altered to preserve their anonymity).

Andrew and Sand

Andrew voluntarily sought coaching as his work and his life were increasingly unbalanced. While he loved his public sector job and was well-regarded in his workplace, he was struggling to spend more time with his young family. He also used to surf at the Gold Coast, Queensland, but his work commitments meant he rarely went to the beach anymore.

After the first coaching session, the coach posted to Andrew’s home address a handful of sand in an unidentified envelope and rang him some days later, to ask him if he’d received an unusual gift in the mail. He laughed, and acknowledged that he had. When he was asked “Have you been to the beach lately with your daughters?” he replied, “As a matter of fact, I have”. When the coach saw Andrew at home some months later, he

pointed out the sand in a small glass jar on his desk, together with a photo of himself and his family at the beach.

Andrew commented that receiving the sand in the post was a significant reminder to him to start doing something about his unbalanced life. It also reminded him that, while going to the beach was messy, and that sand was gritty, the experience of being at the beach with his daughters was truly wonderful. One can read about a balanced life (Friedman, 2014) but actually doing something about it is quite another issue.

Leonie and the Waterfall

Leonie was the CEO of a resources company in the private sector. She sought coaching as she was having difficulty leading her executive team to make the necessary changes to their business. She was younger and better educated than all the members of her executive team – and she was the only female.

During the second session with her, the coach became aware of his own inner dialogue and the questions that arose, “When is she going to draw breath?” and “When is she going to stop complaining about them?” The coach took an informed risk and disclosed his disquiet to her. He used the metaphor of a waterfall to highlight the experience of being flooded by words under her constant complaints about her team. This image had a significant impact. The coach asked her to extend and reflect upon the image of water: it could be life-giving or life-taking. Leonie also admitted that all her managers probably saw her as a nagging, younger wife!

Clearly, while the team’s dysfunctionality was not all her own fault, Leonie became aware that she was indulging in a psychological racket, a habitual complaint about the team and that she was “repetitively displaying emotion with intimidating qualities which brings ... outward consent” (Ernst, 1973, p. 19).

Leonie began to see that her own language was contributing to their poor performance. In role plays with the coach, she practiced using fewer words and spoke more slowly. Subsequent interviews with individual team members and a follow-up meeting with the team revealed that Leonie was no longer flooding them with words, and that they were now improving their own team effectiveness. After all, senior teams should take more responsibility for themselves and be mutually accountable (Wageman, Nunes, Burruss, & Hackman, 2008).

Jenny and the Maze

Jenny felt she had lost direction when her husband of some thirty years suddenly passed away. As they did not have any children, Jenny felt her husband's legacy was lost forever and her purpose in life as a wife was ended as well. She volunteered that she could relate to Dante's (1307) famous quote, "In the middle of life's road ... in a dark wood – the straight way ahead lost?" (para. 1). Upon deeper reflection, and with supportive coaching, she found this image of lost-in-the-woods no longer life-giving. She also began to understand that being a wife did not (and never did) define her identity as a woman or limit her worth as a person.

When it was suggested she might think of a maze instead of a dark wood, Jenny immediately saw meaning in this metaphor. She immediately began to engage in what Progoff (1992) has been called image extension, where we allow an image to enlarge and to extend within our consciousness. Jenny realised that one can still get lost for a while in a maze, but it is an enjoyable puzzle with many twists and turns until you do find the way out. The maze needs nourishing as the walls are often living hedges which need to be nurtured and trimmed. It also takes time to grow a maze and to navigate through one. She saw the metaphor of the maze as being appropriate to help her understand her feeling of being momentarily lost, but that there was a way out and that she needed to give herself time to stay emotionally where she was at present.

As the coaching relationship was coming to an end, Jenny confided she had visited a maze on the weekend to make this metaphor more physical. She reported that she had actually enjoyed sitting in the middle of the maze for a long time, trusting she could find her own way out. In the final coaching session, her demeanour and mannerisms were calmer, and she reported she was less worried about being lonely in her future.

Commentary on Therapeutic Metaphors

Such metaphors helped the clients to learn deeply by using images which assumed an iconic power that was therapeutic, even salvific. These images were akin to what Brennan (2013) calls "saving stories [that] in many ways save us from ourselves in times of despair or doubt" (p. 17). The actions taken by these clients after experiencing such therapeutic metaphors were indeed significant – putting beach sand in a glass bottle on one's desk as a

Table 2. Integrative Applications of Selective Metaphors for Three Clients.

Metaphors	Positive Aspects	Negative Aspects	Integrative Lessons
Sand	A beach holiday	Sand is gritty and abrasive, and plants won't grow in sand	Time at the beach with family is messy, time-consuming, and sometimes uncomfortable but mostly, very enjoyable.
Waterfall	Water slakes thirst, cleans and refreshes	Floods can damage and drown	Water like words can be life-giving or not. Let's limit the volume of words used, and increase their quality.
Maze	A living puzzle, a physical thing of beauty	Isolated, lost, lonely	Take the time to experience new challenges. Being lost is not necessarily forever.

permanent reminder to go to the beach more often with the family; taking a holiday to the Northern Territory, and sitting under and experiencing Australia's tallest waterfall; visiting a garden maze outside Melbourne in Victoria to sit awhile, and, in a safe environment, to feel what it is like to be alone but not lonely after a life partner had passed away. The ontological richness of these metaphors, and their integrative meaning for coachees were clearly evident. By employing such therapeutic metaphors, the coach had assisted these clients to integrate their personal insight and be more committed to change. We now summarise these clients' personal learnings in [Table 2](#).

THE JOURNAL

Journaling is a literary process of writing about one's life-story. Of course, as we are still living our personal stories, the journal can focus on the future as well as the past or the present. A more formal and structured approach is the intensive journal ([Progoff, 1992](#)) where there are particular exercises and sections to complete over some years. Some of these sections include: a dream log where we describe the images in recurring dreams; a daily log of our thoughts and feelings; a dialogue with a significant event which might have recently occurred; a stepping stone activity where we record the meaningful events or critical incidents ([Haan, Bertie, Day, & Sills, 2010](#)) in our

lives, or even a testament, where we testify to who we are and what we have contributed so far or learnt in life.

As Atkinson (1995) reminds us, stories “connect us with the psychological, social, mystical and cosmological realms” (p. 6), while storytelling itself has been regarded as being “fundamental to the human search for meaning” (Bateson, 1990, p. 34). Artists have found that keeping a journal on their own life-story fosters artistic creativity (Cameron, 1992). Further, we are encouraged to retain our humanity in an increasingly robotic world:

The more helpful our phones get, the harder it is to be ourselves. For everyone out there fighting to write idiosyncratic, high-entropy, unpredictable, unruly text, swimming upstream of spell-check and predictive auto-completion: Don't let them banalize you. Keep fighting. (Christian, 2011, para. 1)

Similarly, we suggest that writing with a special pen rather than using a keyboard, better connects us with human experience and is more likely to elicit a narrative approach towards self-awareness. While not discouraging tweeting or blogging, the hand-written journal is a richer approach to structured reflection. Jung (2009) even discovered that writing by hand – *manuscripto* – helped to evoke ancient images and to connect with racial memory.

In the last analysis, the journal is not an exercise in navel-gazing, narcissism, excuse-making or rationalisation. It is simply a structured, literary device which is intended to help us make honest sense of who we are and what we are doing at work or in life itself.

William and His Heroic Journey

William volunteered for career coaching as he reported he was dissatisfied with his job and wanted a new role. He was highly motivated to change. He actually came with a well-formulated solution which was to obtain yet another qualification and then apply for a similar job in another organisation in the same industry. He saw coaching as seeking confirmation for that decision.

Writing about his life-story, and understanding that he had always chosen jobs which did not reflect his own deeper purpose, helped him see that he was simply jumping from role to role, and merely responding to job vacancies. In time, he admitted that this inauthenticity was exhausting and unsustainable. He needed to find and tell his own story. Perhaps William

would agree with [Angelou \(1969\)](#) who claimed that there is no greater agony than bearing an untold story inside you.

William began to see that he needed to understand the true nature of his disquiet, and to discern the pattern within his own story so far. As he dialogued with his career, and explored the intersections, taken and not taken ([Progoff, 1992](#)), he realised that he needed to find or create a new role, one more congruent with his deepest values and skills. His keeping a journal during the coaching relationship and after the relationship was concluded, helped him to become deeply aware of his own heroic journey ([Latemore & Callan, 1999](#)). At the coach's suggestion, he purchased and enjoyed reading [Campbell and Moyers' \(1988\) *The Power of Myth*](#).

William admitted that he was refusing his own call, facing the same dragons over and over, and that he needed a mentor. The outcome of the journaling process and the deep conversations which the journal prompted in our coaching relationship was that William started his own business, as he had always wanted to do.

Commentary on Journaling

Helping people to write their own life-story without literary embellishment helps them to examine their lives, which is surely a worthy enterprise. As Socrates put it long ago, the unexamined life is not worth living ([Plato & Tredennick, 1954](#)). Journaling helps in owning our past, but letting it go, and in embracing our future with hope and confidence.

Journaling also helps emotional healing ([Borkin, 2014; Pennebaker, 2004](#)). As [Progoff \(1992\)](#) reminded us, "in the writing is the learning; in the writing is the healing" (p. 31). Writing about one's life-story generates emotions, helps us discover deeper meaning in the pattern, and to find integration, or what [Marinoff \(1999\)](#) calls equilibrium.

We encourage clients, both in management education programs and in coaching, to explore their inner theatre by writing about their thoughts, experiences, feelings, dreams and decisions. At first, even introverts, who might have a natural tendency for reflection ([Myers, 1998](#)) find journaling uncomfortable. Nevertheless, this process is akin to what actors and opera singers do when they learn a new script for a movie or a new role for an opera. They are expected not only to learn the words of a movie script or the words and music for a *libretto*, but also to explore the character of the role, and to develop insight about the thoughts and feelings of these

characters to be credible performers (Callan & Latemore, 2008). Deep acting leads to authenticity.

THE OUTCOMES OF THESE APPROACHES TO LEARNING

Ideally, when the coaching relationship concludes, an evaluation is conducted (Bentley & Cohen-Bentley, 2002). In such evaluations, notwithstanding that coaches often overstate their own value and their impact (Haan et al., 2010), clients typically report that such strategies, as outlined above, are helpful and deeply respectful of them as adult learners and as human beings.

As Flaherty (2005) highlighted the outcomes, or the products of effective coaching, to be long-term excellent performance, self-correction and self-generation (pp. 3–5) and Segers, Vloeberghs, Henderickx, and Inceoglu (2011) described the agenda, the what of coaching, as producing positive change in “skills, performance and development/life” (p. 217), so we have noticed similar, powerful outcomes.

Such strategies, as outlined above, help clients to own their new behaviours and then evoke (Flaherty, 2005) sustainable outcomes in work and in life. Recent research has also shown that coaching with compassion is even likely to produce sustainable leaders (Boyatzis, Smith, & Blaize, 2006). Dare we suggest that such rich, human and respectful approaches even help to develop character (Crossan, Mazutis, Seijts, & Gandz, 2013) and to foster practical wisdom (Rooney, McKenna, & Liesch, 2010)?

Such strategies, as rich as they are, do not automatically or instrumentally produce outcomes without the coachee’s agreement and their active involvement. Even allowing for some initial resistance and discomfort, the coachee must be an active participant who willingly engages with such reflective strategies to elicit transformative change. These strategies invite and evoke; they do not automatically produce client outcomes without the client’s prior agreement and engagement.

In fact, the word strategy is inadequate here. The word approach is perhaps more suitable. The coach needs to do more than simply apply a technique: the coach must have a respectful disposition towards the client, and trust that the approach possesses its own integrity and efficacy. These deep approaches reflect a philosophy of respectful engagement. Flaherty (2005) agrees – “techniques don’t work [as they] manipulate, undermine the

dignity of people and foster resistance and resentment” (p. 10). This is reminiscent of what [Bolton \(2009\)](#) reminded us, that in communication, skills alone are insufficient. Instead, we need genuineness, non-possessive love and empathy.

What was most interesting and perhaps unexpected were the positive outcomes for the coach in adopting such approaches. The coach learnt to trust the process, and to allow the metaphors and the journal to do their own work. The coach did not know what the exact outcomes would be when these approaches were employed, or even if they would work! The coach must trust the process as much as the coachee.

The intensity and frequency of coachees’ mentioning these experiences during the coaching conversations, told the coach that these therapeutic metaphors and the journal had a lasting and a transformative impact upon them. It was also suitably humbling in that the metaphors and the journal went beyond the coach’s presence and the coach’s competencies.

It has been said that when the disciple is ready, the master is ready also ([Collins, 1886](#)). In the light of these reflective approaches, this lesson could be adapted as, when the coachee is ready, metaphor and story are ready also.

CAUTIONS IN THE USE OF SUCH APPROACHES

Of course, in the hands of an unscrupulous practitioner, certain outcomes can be produced from techniques which lack client consent or approval. Authentic coaches help to produce change with clients, not to do things to them. Clients should be willing and active adult learners. Gaining cooperation and dealing with resistance are common issues for coaches and change agents alike ([Callan, Gregory, & Paulsen, 2004](#); [Kotter & Schlesinger, 1975](#)). However, we must do so respectfully and with client agreement and engagement. It is wise to remember that person-centeredness and unconditional positive regard ([Rogers, 1951, 1961](#)) should characterise the coach–client relationship, even, at times, when coaches must challenge their clients to change their dysfunctional behaviour ([Wildflower, 2013](#)). Good coaches and practitioners should always employ respectful engagement ([Grinder & Bandler, 1979](#)).

One cannot force outcomes against clients; ethically, the coach must obtain psychological permission before working towards outcomes.

Therefore, coaches need to employ a Needs Assessment and Agreement contract or covenant with their clients in which expectations and desired outcomes are clarified, negotiated and agreed.

CONCLUSION

It has been said that where there is no vision, the people perish (Prov. 29:18 KJV). In our context, this saying could be adapted as where there are no metaphors and no stories, the people perish.

In this chapter, we have highlighted the power of therapeutic metaphors and journaling. We have discovered that such approaches can produce deep and lasting change. As coaches, we also recognised the need to be respectful and not manipulative as we work in adult partnership with our clients.

It has been and continues to be a privilege to work with clients and their inner theatres within coaching relationships which help them evoke and engage in deep, personal change. Therapeutic metaphors, personal stories, and journaling are proven approaches which aid clients' awareness, insight, integration, behavioural and attitudinal change. While clients might well be captured by such processes, change cannot happen without their willing participation in trusting and respectful client-coach relationships. After all, learning, like loving, is a purely voluntary activity and the outcomes can be just as marvellous. We conclude by adding a story which highlights the wonder and the power of stories.

Epilogue: The Storytelling Stone

There once was a Seneca boy who hunted every day in the forest. One day, he sat down next to a large stone to fix his bow and arrows. He heard a voice saying, "Would you like to hear a story?" The boy was a little afraid because there was no one around. He decided the voice could only be from the stone. He asked, "What did you want to tell me?" The stone replied, "They are called stories. But first you must give me a present for telling it." The boy offered up the partridge he had just caught. "Come back later tonight," said the stone, "and I will tell you a story about the world that was."

The boy came back that evening, and the voice told him the story of the first people who lived in the sky above. Then the voice said, "Come back

tomorrow evening, and I will tell you more. Remember to bring my present.” The next evening, the boy came back to the stone and offered it some more birds. He returned the next night, and the one after, for he longed to hear the stories.

One day, his friend asked him where he disappeared at night. “I go to hear stories from the Stone”, he replied. “What are they?” asked his friend. The boy said, “Come with me tonight and you will hear for yourself.” So they went together and heard more stories. Soon, the whole tribe came and listened, bearing gifts. They marvelled over the stories that came from the Stone. It took four years for the Stone to tell all its tales, but the nights passed quickly.

One evening, the Stone said to the boy, “One day you will become old and unable to hunt. These stories will help you in your old age. Tell these stories but make sure the people give you something in return.” The boy grew old and told them stories to anyone who came to his lodge and gave him gifts. There were few nights when he did not have a crowd of listeners enthralled by the stories he told (Atkinson, 1995, pp. 19–20 – adapted).

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CLASSROOM WITHOUT WALLS: INQUIRY-BASED PEDAGOGIES AND INTERCULTURAL COMPETENCE DEVELOPMENT VIA SERVICE-LEARNING

Christine E. Poteau

ABSTRACT

This chapter begins with an overview of the concept of intercultural competence and its fundamental role in our global society. Using examples of inquiry-based learning (IBL) methods as a means to provide interdisciplinary pedagogies that foster learners' intercultural competence development, this chapter examines innovative approaches to respond to this global community need in the academic context. With a review of interdisciplinary IBL methods, the chapter centers on the following three principal areas: (1) role of IBL and service-learning (SL) in the development of intercultural competence within an interdisciplinary framework, (2) practical examples of how the author implements IBL using cooperative learning strategies and SL into humanities courses that consist of students from various disciplines ranging from health to political

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sciences for intercultural competence development, and (3) challenges and benefits of SL programs as forms of IBL.

INTRODUCTION

At the center of all human interaction lies communication. The effectiveness of communicative exchanges is determined, in part, by cross-cultural understanding. As societies across the globe continue to experience increased contact with diverse languages and cultures, communities are becoming culturally and linguistically rich. Thus, our expanding global economy necessitates innovative curricula that incorporate development of *intercultural competence* via language and cultural awareness. Broadly defined, *intercultural competence* refers to effective communication “in intercultural situations based on one’s intercultural knowledge, skills and attitudes” (Deardorff, 2006, p. 247). Since language and culture are inextricably linked, effective communication entails utilization of linguistic and cultural knowledge and skills, as well as self-awareness and awareness of an individual’s cultural and linguistic background.

Lack of these skills, knowledge, and awareness can lead to a communication breakdown. As an example from the medical field, *medical ethnocentrism* represents a barrier in health care due to a practitioner’s lack of understanding of a patient’s beliefs (Anand & Lahiri, 2009). Hence, an individual’s attitudes are critical in utilizing and developing intercultural competence.

INTERCULTURAL COMPETENCE

From increasing linguistic and cultural changes at the micro level to expanding international commerce exchanges at the macro level, the reshaping of diverse communities and professions has not necessarily been an uncomplicated experience for each individual. This is due to numerous factors, including a lack of linguistic and cultural skills needed to effectively interact with all members of society. For instance, at the micro level, this chapter focuses on Reading, Pennsylvania (PA), to illustrate one U.S. community’s case of demographic shifts that evidence the need for intercultural competence development in higher education. Since Reading is the primary context of my SL and IBL curricula, I draw

upon data from the city to illustrate how the surrounding community can be utilized in intercultural competence skill development via IBL in higher education programs.

Reading, PA, is located approximately 60 miles from Philadelphia, PA. Similar to many communities across the globe, Reading exhibits consistent population growth and demographic change. With approximately 80,000 people (Kugel, 2006) in 2006, the city is now comprised of about 90,000 (U.S. Census Bureau, 2014). A city of English and German ancestral roots, Reading continuously experiences not only an increase in population, but also demographic shifts.

An influx of Mexicans, Puerto Ricans, and consistent secondary migration of Dominican immigrants moving from New York City to the area have contributed to demographic changes (Kugel, 2006). In addition to this population spike and change, Reading has been named the poorest city in the United States (Fessler, 2012) and only 8% of residents hold bachelor's degrees (Tavernise, 2011). The U.S. Census Bureau (2014) reports 49.7% of residents speak a language other than English at home and 58.2% identify themselves under the "Hispanic or Latino" label. Though not within the scope of the current research, it is, nevertheless, imperative to note that these survey labels do not accurately exemplify an individual's identity nor do these data include all residents.

Nevertheless, as Reading clearly shows, linguistic and cultural minorities remain plagued by poverty and inequitable access to essential resources. Communities such as this one are global experiences with concerns that cannot be easily remedied, but, as educators, it is possible to implement innovative methods to promote research and community inquiries to discover new knowledge that can improve intercultural communication and trigger life-long learning.

As previously noted, Reading is not alone in this population shift. Though currently a linguistic minority in the United States, the Spanish-speaking population is among the fastest growing groups, which indicates a critical need to integrate intercultural competency skill development in academia, but the deficiency in intercultural competence development remains static in many higher education programs. As a global concern that affects all, a lack of intercultural competence has resulted in numerous consequences. For example, research studies (Eades, 2008; Grandinetti, 2008) on linguistic minorities in legal situations evidence several challenges that include impeding individuals from equitable rights access. Also, in the medical sector, previous research (Fernandez et al., 2004; Gregg & Saha, 2007; Perry & Southwell, 2011) indicates a critical need to develop intercultural

competence skills among prospective health professionals and administrators for effective and equitable treatment practices.

For example, [Back et al. \(2009\)](#) explain that communication between oncologists and patients can affect treatment options and critical decisions (p. 1137), manifesting an additional impasse that many linguistic minorities encounter. The authors explain that oncology fellows cannot learn communicative skills via mere observation, but must be actively engaged in this critical skill development. Thus, the authors emphasize the need to provide oncology fellows with practical and reflective tasks, which lies at the heart of SL and IBL.

The growing global concern does not solely lie within legal matters and medical contexts, but extends into every societal sector in each community. Educators from pre-kindergarten to post-graduate school, for instance, are increasingly seeking innovative approaches to provide equitable pedagogical practices to linguistically and culturally diverse learners who enter their classroom doors. Additionally, previous research ([Chetwynd, 2010](#); [Molinsky, 2009](#)) in business further demonstrates the critical roles of intercultural competence and effective language use in global markets. Though no simple solution exists, development of intercultural competence can help prospective lawyers, medical professionals, educators, business executives, and all society members to effectively interact in multiple contexts.

As expansion in the global market continues, learning another language and developing cross-cultural knowledge are of utmost importance. Hence, how we use language, how individuals interact, and the type of language we use can affect communication and, consequently, professional relations and operations. No matter the discipline or profession, learners must be equipped with the necessary language skills and cultural knowledge to adapt to changing social conditions within communities and professional contexts.

In the same vein, [Barrett, Byram, Lázár, Mompoin-Gaillard, and Philippou \(2013\)](#) note that all educators are critical figures in learners' intercultural competence development. In their report, [Barrett et al. \(2013\)](#) explain that the Council of Europe notes intercultural competence is "not acquired automatically, but instead needs to be learned, practised, and maintained throughout life" (p. 3). Thus, constructing interdisciplinary IBL pedagogies that incorporate authentic interactions in culturally and linguistically diverse settings can equip learners with these intercultural tools as they engage in unique problem-solving tasks. The subsequent section provides a brief overview of interdisciplinary IBL methods.

INTERDISCIPLINARY IBL METHODS

Interdisciplinary approaches can be applied to any discipline, since each field is naturally connected to other areas. Therefore, educators can seek to build stronger bridges between disciplines to enhance learning experiences by providing learners with appropriate IBL guidance. While there are numerous interpretations of the concept of IBL, it can be classified as a constructivist model, since the IBL process is not a direct transmission of information from one source to another, but, rather, is actively constructed by the learner.

Since an individual's internal processing and environment can affect the learning process, constructivist approaches can be examined at both the cognitive level (internal processes) and sociocultural level (social context or learning community). Furthermore, as an inductive pedagogical and learning practice, IBL offers a learner-centered approach that enables learners to examine real-world problems and seek solutions using research and data (Spronken-Smith, 2008). When IBL is situated within a particular context (e.g., the community), learners are able to actively and meaningfully apply content to the immediate environment using a self-generated research inquiry and procedure (Scott, 2012). Inquiry is a concept that can easily be employed into all pedagogical domains.

In FL courses, for example, students have limited interaction with the target language outside of the classroom. Thus, a preliminary IBL step in FL contexts is to incorporate one film or song that can allow students to begin creative cultural inquiries of film or musical elements within that one selected piece, while also promoting learner inquiry about the historical perspectives that feed into modern day societal stereotypes and/or misrepresentations of a target language culture. From one FL course, the learner can draw upon culture, history, music or film, and modern society using the instructor's carefully selected film or song to support students in an IBL approach to examine a particular historical period, film elements or musical genre, and develop new intercultural knowledge and skills. Following this preliminary activity, and with instructor guidance, learners can pursue additional inquiries that require them independently to identify stereotypes and misrepresentations of target language identity in another media form that each learner discovers via research inquiry. In a collaborative classroom environment, learners can share their research inquiries and findings with the class to increase learner awareness via peer contributions.

Also, educators in the life sciences can integrate interdisciplinary forms of intercultural inquiry that enables learners to examine multiple perspectives of the natural world (Barrett et al., 2013). Diverse perspectives of the natural world provide students with meaningful learning experiences that lead to critical thinking skill development and global cognizance at the scientific and cultural levels. In the same vein, IBL can provide learners with intercultural tools and problem-solving practices while also facilitating creative and autonomous forms of learning (Sabourin, Mott, & Lester, 2011), development of critical thinking skills (Anderson, 2002), and *metacognitive* skill development (Seraphin, Philippoff, Kaupp, & Vallin, 2012). *Metacognition* refers to “‘thinking about your thinking’ and involves both awareness and control of one’s cognitive processes” (Seraphin et al., 2012, p. 368). As metacognitive forms, self-regulation and motivation are two factors that can affect learning outcomes (Seraphin et al., 2012). Promoting learner-generated research inquiry that connects course content to a community problem sparks learner curiosity, which, in turn, positively affects learner motivation and learning.

For example, in the National Science Education Standards (NSES), inquiry is referred to as students’ activities that enable development in the sciences. IBL implementation has been explored in a multitude of higher education academic disciplines including psychology (Muukkonen, Lakkala, & Hakkarainen, 2005), physiology (Rivers, 2002), molecular biology (Cunningham, McNear, Pearlman, & Kern, 2006), ecology (Maldonado & Pea, 2010), pre-service science teacher courses (Hakverdi-Can & Sönmez, 2012), and German (Scott, 2012). Similar to the previously described music and film example in language courses, Scott’s (2012) German-language course includes interdisciplinary forms of IBL that present excerpts from the *Sound of Music*, representations and stereotypes of Germans, Austrians, and Swiss, and historical contexts, requiring learners to analyze and reflect on each of these areas.

Nevertheless, critical research (Alfieri, Brooks, Aldrich, & Tenenbaum, 2011; Kirschner, Sweller, & Clark, 2006) on IBL suggests that its open-ended nature, which, oftentimes, includes minimal guidance, can negatively impact learning outcomes. However, proper implementation is key to providing an active learning environment. Also, teacher-to-learner and learner-to-learner support via scaffolding can assist learners establish self-regulated learning strategies that provide the necessary guidance to establish objectives, tasks, and meaningful ways to self-monitor progress and behaviors (Sabourin et al., 2011).

INTERCULTURAL COMPETENCE DEVELOPMENT WITHIN AN INTERDISCIPLINARY IBL AND SL FRAMEWORK

Employing the aforementioned self-regulated learning strategies in IBL and SL can allow students to explore their major area of study in a deeper and more meaningful manner, which can also influence learner motivation. [Bringle and Hatcher \(1995\)](#) define SL as, “a course-based, credit-bearing educational experience in which students (a) participate in an organized service activity that meets identified community needs and (b) reflect on the service activity in such a way as to gain further understanding of course content, a broader appreciation of the discipline, ...” (p. 112). SL helps learners and the community via bridging the gap between content and real-world experiences shared by all. Learning is not simply a task based on rote memorization, but, instead, involves complex procedures affected by internal processing and social environment.

From designing curricula on testing water quality and its effects on cultures in society in an ecology course to examining bilingual education policies in a political science course, IBL and SL allows educators to construct a “classroom without walls” that supports intercultural skill development no matter the course. In developing an interdisciplinary framework for intercultural competence development, IBL and SL are two forms that can provide learners with the necessary supportive learning strategies to cooperatively and autonomously build this competency. Intercultural competence involves development of critical thinking skills, which is also a key goal of both IBL and SL. Nevertheless, a common challenge that educators across disciplines encounter is fostering a learning environment that helps students develop critical thinking skills ([Millis, 2002](#)).

Integrating IBL strategies in cooperative SL contexts is one pedagogical example that can lead to critical thinking skill development. The principal purposes of cooperative learning are to encourage students to interact as a team and apply theory to practice ([Millis, 2002](#)). While collaborative learning environments can also build upon shared learning experiences, cooperative language learning contexts are highly structured in that learners occupy specific roles and are held responsible for learning outcomes. Similarly, while IBL methods vary, primary objectives are to encourage students in a knowledge-building process through active participation, collaboration, and organizational tasks that include extensive research and inquiry.

Higher education classrooms that include various forms of IBL, such as cooperative SL strategies, allow students to support and learn from one another and build new knowledge as a team while also contributing to and interacting with the surrounding community. Additionally, this team-building strategy is necessary for intercultural competence development when implemented within authentic contexts, whereby learners have real-world opportunities to become active participants, a key constructivist approach of IBL (Zion & Mendelovici, 2012).

As Barron and Darling-Hammond (2008) note, students are more equipped to solve complex problems when presented with opportunities to practically apply theoretical knowledge in authentic contexts (or real-world settings). Providing students with ample opportunities to explore and connect disciplines beyond the classroom in meaningful ways also leads to positive learning results.

In spite of this, Brown and Adler (2008) note that a Cartesian educational perspective remains common in that academic curricula tend to include a particular focus on a specific discipline (e.g., major concentration and/or minor studies) that, eventually, feeds into practice (e.g., career) after explicit knowledge development over a period of time. Brown and Adler (2008) assert that reversing the Cartesian educational perspective by implementing a “community of practice” (p. 20) provides an optimal form of learning that can allow learners to continuously build upon their area of study via extensive inquiry. Building upon a learner’s primary concentration or major discipline through an IBL experience that includes SL can provide students with effective learning strategies needed to connect disciplines to practice. SL can offer learners unique and authentic cooperative learning environments that are conducive to the development of critical thinking skills and IBL forms. A common goal shared by educators is to provide supportive learning systems that spawn ethical and competent community members. This goal can be achieved via SL and IBL.

IBL IMPLEMENTATION FOR INTERCULTURAL COMPETENCE DEVELOPMENT

This section will review interdisciplinary approaches to implement IBL using cooperative learning strategies and SL into higher education humanities courses that consist of students from various disciplines ranging from health to political sciences for intercultural competence development. My

SL courses each include 15 hours of community work in Reading, PA, during one semester. Specifically, learners work at a U.S. Homeland Security facility detaining undocumented families. The number of unaccompanied children detained at the U.S. border has nearly doubled in less than one year due to numerous factors including soaring poverty levels in Guatemala and increasing drug and gang violence in El Salvador and Honduras (Gonzalez-Barrera, Krogstad, & Lopez, 2014). It is important to add that undocumented families come to the United States from various nations including (but not limited to) Brazil, Canada, China, France, Ghana, Israel, Nigeria, Pakistan, Philippines, and Taiwan (Chan, 2010, p. 29). Though this SL offers students unique cultural and language contact experiences in a higher education curriculum, these interactions do not necessarily represent unique experiences for those in various professions including (but not limited to) health care, law, psychology, and education. Thus, their service at the facility provides an opportunity to begin early phases of intercultural competence development.

In the honors bilingual communities course and the intermediate Spanish course, students' roles are transformed to extend beyond the classroom walls as community members, leaders, problem-solvers, inquirers, and autonomous life-long learners via meaningful and cooperative SL activities that take into consideration their interests and prospective professional fields.

Though the primary focus of the honors bilingual communities course lies within linguistics, several subfields are integrated into the course to allow students to pursue research inquiries in their areas of interest. Throughout the linguistics course, students in the class initiate research inquiries on several concepts, including the following (each concept includes related disciplines in parentheses): what it means to be bilingual (psychology), what it means to be bicultural and multilingual (psychology, sociology, history, education), identity construction of a bilingual (psychology, sociology, history), language and identity connections (psychology, sociology), formation of language policies and language planning practices and effects (psychology, sociology, history, education, law, health care sciences), power and language (history, law, education, health care sciences), learner variables in second language acquisition versus foreign language learning (psychology, biology, education), and languages in contact both nationally and internationally (psychology, history, law).

Through SL and IBL, students begin by identifying their roles in the community initially to develop self-awareness. Next, learners examine the roles of the aforementioned sample concepts in linguistically diverse

communities and professional contexts via SL experiences and research inquiry on current community problems within the bilingualism realm to discover new knowledge and skills in their area of interest and seek solutions at the cooperative level. Students' active participation in self-directed inquiries within and outside of the classroom context and their interactions with undocumented immigrants from multiple nations facilitate increased self-awareness, knowledge, growth, and intercultural competence development of the cultural and linguistic diversities of the human experience.

During the course, students keep a reflective journal to recount their SL experiences. Learners also participate in two bilingual chats online with classmates. Each chat allows students to share virtually their SL experiences, personal perspectives, and use research inquiry to demonstrate connections to their prospective career on a specified topic. In groups, students also collaborate in a *group talk*. The *group talk* enables learners to connect their SL experiences and conduct a research inquiry on a community problem that connects any course topic to their future professions. Each group presents their research findings to the class in debate format (requiring each student to take an opposite stance and utilize research to support each position).

Students majoring in political science, for example, conducted research inquiries on administering bilingual health care policies in U.S. hospitals and clinics. Drawing upon their research inquiries, each group member assumed specific roles to provide research-based claims in a debate presentation. After the students' debate, the group involves the class in a discussion on their selected problem. Following specific guidelines, the final assignment (Linguistic Ethnographic Research Paper), allows learners to select and critically examine a course topic that connects their linguistic ethnographic study to theoretical issues in bilingualism and multilingualism in the professions in national and international communities.

In the intermediate Spanish language course cooperative SL and IBL tasks open a new door to a "zone of proximal development" (Vygotsky, 1978, p. 86) or ZPD. ZPD refers to "the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (Vygotsky, 1978, p. 86). Thus, SL tasks in language courses enable learners to work with native language speakers in the community while also working with peers from class, who each exhibit diverse proficiency levels. As a result, all members benefit in this type of social context that stimulates active learning strategies in the target language. Additionally, "language as socially

constructed rather than internally intrinsic” (Thorne, 2000, p. 225) is a key element of sociocultural theory in which the language learning process is not entirely internal, but, rather, is also mediated by social, historical, and cultural contexts.

While it may seem that sociocultural theory and the ZPD concept can exclusively be applied to language learning contexts, educators from all disciplines can implement these pedagogical approaches into their curricula. This can be achieved by providing learners with increased collaborative activities that encourage learners of diverse competencies in a particular field to actively participate and collaborate in a scaffolding process. For instance, Driver, Asoko, Leach, Mortimer, and Scott (1994) note that science learning involves personal (cognitive) and social aspects (sociocultural), promoting learner collaboration and knowledge building. Thus, SL and IBL can provide learners with dynamic and diverse social contexts that depend on active learning strategies.

Students’ roles and responsibilities include task development that consists of the following key components: title of task, objective(s), relevant course topic(s), task procedure, and related age group. These key components are distributed to students in chart form to guide students in their individual task development. Their completed charts are submitted to the instructor to foster autonomous learning while also providing learner guidance and feedback. In order for students to develop a SL task, they must first define a prevalent problem that connects their discipline to the community via research inquiry. After their research inquiry and defining the problem, students develop a problem-solving strategy, a hypothesis based on their proposed strategy to remedy the problem or issue, and apply their strategy in an authentic context. Prior to beginning these inquiry-based and SL phases, the instructor provides learners with a sample activity to help pave the way to their initial task development stage. Though Zion and Mendelovici (2012) note that this form of *structured inquiry* does not allow students to “acquire the ability to think autonomously” (p. 384), this approach serves as a preliminary phase to guide and lead students into the *open inquiry* process in which students autonomously generate “inquiry questions and approaches” (p. 384). While activities vary by course objectives, a sample activity designed by the instructor is, “SL: Health and wellness, public safety, and literacy development for a better community.” As noted in the title, this activity consists of three disciplines: health professions, criminal justice, and education.

Focusing on one particular discipline, the health professions sample task includes health and wellbeing as the primary topic. This particular sample

task is designed for students whose concentration lies in health care studies. The principal objectives of this task are for students to connect course content to service, educate community members on maintaining healthy lifestyles, and to develop intercultural competence skills and students' awareness of the prevalence of low health literacy among linguistic and cultural minorities.

This sample activity is designed for community members of all age groups and its key procedures include the following: reading the American Academy of Pediatrics' document on raising a happy and healthy child (provided to students in Spanish or English, depending on the course), preparing an informative lesson on healthy foods and lifestyles for the community members, constructing a group activity for the community members on healthy versus unhealthy foods and lifestyles, presenting the lesson and implementing the group activity to the community members, and constructing a collaborative environment where all community members share their activity results.

Students are encouraged to begin their SL following one of the instructor's tasks as a preliminary step toward their own SL task development to gain experience and practical knowledge via firsthand problem-solving strategies upon task implementation with the community. Also, by providing students with a model, students can begin their own research inquiry that connects their discipline to community needs to construct useful and meaningful problem-solving tasks in authentic contexts.

In addition to task development, students are responsible for the following three SL projects: (1) "Serving to learn" charts, (2) "Diary: Experiences of my service," and (3) "Reflections: After my service." In their "Serving to learn" charts, students record items in three categories: (1) new vocabulary concepts learned, (2) new cultural aspects learned, and (3) other important or learned items. Students record new concepts in their charts throughout their task development and implementation with community members.

The "Diary: Experiences of my service" project begins prior to the SL experience and terminates on their final SL day. In this project, the instructor provides guiding questions to help students maintain and generate a daily diary (in Spanish for students enrolled in the intermediate language course) of their experiences working with and for community members.

The "Reflection: After my service" project is based on students' overall SL experiences, which allows students to synthesize main ideas presented in their diaries and how their inquiry and service impacted their learning, evidencing metacognitive phases that enable learners to express affect as well as critically reflect on their knowledge-building process from the classroom

to the community. As McKinney (2010) notes, “the ability to synthesize information and create new knowledge are competencies that lie at the heart of IBL, where students ideally are given the space to generate genuinely new knowledge through the process of research” (p. 5). Thus, these SL tasks provide an IBL framework that allows learners to uniquely apply their research in their major concentration to further their intercultural competence development while also serving the community.

SL CHALLENGES AND BENEFITS

As with any pedagogical method, educators and learners alike experience challenges and benefits of SL programs as forms of IBL. Each learner enters the classroom doors with diverse learning styles. While it is not possible to isolate one particular approach to learning, implementing IBL and SL provides unique opportunities for learners to meaningfully interact in a knowledge-building process. As an IBL form, SL projects promote active learning strategies via community interaction, problem inquiry, and provide learners with real-world experiences. Hence, SL enables learners to become directly involved in their unique learning experience by connecting content and context to solve problems at hand. As in scientific experiments, problems arise “to the experimenter, [and] they provide opportunities that require active thinking to overcome” (Cunningham et al., 2006, p. 281), so, too, do communication breakdowns in authentic SL settings, which force learners to activate critical thinking skills in spontaneous interactions. These spontaneous interactions cannot be duplicated in teacher-to-student classroom experiences.

Nevertheless, there are also several challenges in SL projects. Establishing partnerships with interested community organizations can be challenging for educators without adequate support. Of critical importance is selecting suitable community organizations that enable learners to serve the community and apply course content to the SL experience. To bring learning to life, learners must be able to activate content. Equally important is to select community organizations that are in close proximity to the home institution. Also, if the home institution does not provide transportation for students to the community organization, it can be a challenging experience. To resolve this issue (should it arise), students can be advised to carpool to the organization. Since most SL tasks involve or encourage students to work collaboratively with the community, this arrangement is

beneficial to all. Learners may also encounter scheduling conflicts with school, work, and the SL community partnership, which further emphasizes the need to establish core SL coursework that holds learners accountable for all course components.

Without appropriate SL background knowledge on the part of both educator and student, SL implementation and partnership can be difficult experiences. For example, educators must establish clear SL objectives that directly tie into learners' coursework, as well as evaluative and assessment tools to provide learners with effective feedback and learning strategies throughout the SL experience. SL research scales can help educators analyze the validity and overall effectiveness of their SL program (Bingle, Phillips, & Hudson, 2004).

Research (Carr, 2002; Pak, 2010) consistently reveals several positive outcomes of SL projects. Among these positive outcomes are students' abilities to gain language and cultural exposure within the community. In their report on positive SL results, Bingle et al. (2004) note that SL supports learning and promotes development of "socially responsive knowledge" (p. 4). As is the case with my SL courses, students gain intercultural knowledge and cross-cultural perspectives from peers and the community. Thus, SL offers learners an opportunity to discover new knowledge from multiple perspectives within the community. For example, in Bass' (2012) reference to the 2008 National Survey of Student Engagement (NSSE), he lists various college experiences that positively affected students' overall learning, success, retention rates, and graduation. Some of these college experiences that students reported as having a positive effect on their learning included learning communities, collaborative assignments, diversity/global learning, SL, internships and various other learning experiences.

CONCLUSION

As educators, it is our responsibility to support a meaningful learning experience that empowers students to reflect, research, and discover. From the formative years to post-graduate studies, IBL and SL can be implemented into programs to help young and established learners meaningfully apply course content to diverse community contexts. Though institutions may not establish IBL and/or SL as core components within courses, we can, nevertheless, integrate these critical methods into our curricula.

As in my courses, learners gain meaningful linguistic and cultural learning via IBL and SL experiences by applying theory to practice in the community. In line with these courses, there are various organizations and institutions that build programs with IBL as its core. Alberta, Canada, for example, developed a teacher's resource guide to implement IBL from the kindergarten level to grade 12. In this guide, IBL is specifically examined as part of the curriculum and not as an add-on option.

At the higher educational level, numerous institutions incorporate an IBL curriculum to encourage active learning strategies. Some integrate volunteer programs with nonprofit organizations to help learners initiate research inquiries and connect coursework to real experiences (Bolton, Brennan, & Terry, 2009; Spronken-Smith, 2008).

On the intercultural competence front, new programs that include intercultural competence skill development are increasingly attracting students into these unique learning opportunities. For example, Spanish language instruction in health care professions is becoming prevalent in pharmaceutical colleges (VanTyle, Kennedy, Vance, & Hancock, 2011), medical schools (Mann, 2011), and undergraduate studies (Bonilla López, 2011), evidencing modern initiatives to help solve a global problem.

In the business sector, Chetwynd (2010) notes that the CBI and EDI indicate that many employers have expressed concern with students' lack of FL skills and cultural awareness. Four years later, the American Council on the Teaching of Foreign Languages (ACTFL, 2014) reports that the CBI disclosed survey results from 300 firms in the United Kingdom, revealing that the majority seeks employees with FL skills and that languages will increasingly become critical. In line with this recognition, Jack (2004) indicates the need to identify differences between cultures and he explains, "'Foreignness' becomes a liability that not only *needs* to be 'managed', but *can* be managed" (p. 124). Linguistic and cultural cognizance cannot simply evolve from lectures nor can they directly derive from a text.

Thus, prospective professionals of all fields need opportunities for research inquiry to problem solve via firsthand global experiences. These examples illustrate educators' drive from kindergarten to higher education to continue to enhance the learning experience. Implementing interdisciplinary IBL starting at the kindergarten level offers young learners opportunities to begin exploration and discovery of new knowledge as life-long learners. In higher education programs, learners can expand upon their IBL in SL forms that can forever alter their perceptions on cultures and languages and transform them into ethical and competent community servants.

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ABOUT THE AUTHORS

Anders Siig Andersen is Head of the Department of Psychology and Educational Studies, Roskilde University, Denmark (since 2008), and member of the Executive University Management. His main research interests are educational planning, higher education, problem-oriented project work social intervention, learning in working life, adult and vocational education, higher education, learning theories, qualitative methodology, and participatory research. He is the author and editor of a number of books and articles in these areas. He has had experience in conducting large research and development projects in Denmark and Greenland. In 2010 and 2011 he was in charge of the development of a new bachelor model structure at Roskilde University. Recently, he has co-edited the anthology: ‘The Roskilde Model: Problem-oriented Learning and Project Work’ (Springer International Publishing). For publications and contact information, see: <http://forskning.ruc.dk/site/person/siig>.

Neil Anderson holds the prestigious Pearl Logan Chair in Rural Education at James Cook University. He currently leads a national pilot study “Design thinking frameworks as transformative cross-disciplinary pedagogy” which has investigated the use of design thinking across different discipline areas in higher education. He is author of the influential book “Equity and Information Communication Technology (ICT) in Education” published by Peter Lang, New York. He has led Australian Research Council funded studies and served on an ARC National Committee to choose Australia’s Future Fellows. Professor Anderson has published widely in the areas of rural education, equity and ICT, design thinking and e-Learning – attracting awards from the Australian Computer Society, Australian Council for Computers in Education, and the Emerald Literati Network.

Tom Barrett leads education and creative projects for the Australian branch of NoTosh, a team of world-leading educators and creatives, helping to pioneer some of the most exciting, impactful learning in schools, companies, and governments. Tom is based in Melbourne and works across the globe. Previously, Tom worked in the United Kingdom as a primary classroom teacher and school leader for over 12 years before starting with

NoTosh in 2011, and is now known for his highly innovative approaches with schools and organizations around the world. As a classroom teacher Tom firmly established himself as a key pioneer in the use of web based technology to support learning. He regularly shares ideas and thinking through his blog and Twitter and heavily influenced the early days of teacher's online professional networks and the potential they have for learning. Tom works on leadership, developing learning, and improving teacher capacity with NoTosh in schools across Australia and other organizations like hospitals and libraries, and provides regular input on other projects globally. He inspires audiences with fresh ideas for engaging young people in learning at conferences and workshops.

Michelle Bata is Associate Dean and Director of the LEEP Center at Clark University. She is broadly interested in the factors that shape student outcomes. Her current research interests include the effects of high-impact practices on student post-graduation destinations, and how mentoring structures affect student outcomes. Michelle received her Ph.D. and M.A. – both in sociology – from the University of Arizona, and her A.B. in sociology and Hispanic studies from Boston College.

Patrick Blessinger is the Founder, Executive Director, and Publisher of the International Higher Education Teaching and Learning Association. Patrick is a Fulbright Scholar and Governor's Teaching Fellow and he is a researcher and authority in the areas of leadership, innovation, student engagement, faculty development, and international education. Patrick is an academic researcher who has co-authored and co-edited numerous articles and books across a wide range of educational topics including seven textbooks on learning-centered teaching using innovative technologies and one textbook on meaningful learning. Patrick is the editor of two academic journals, the series editor of a book series on innovations in teaching and learning, and the series editor of an anthology series on contemporary teaching and learning. Patrick has taught over 100 college and university courses in management, leadership, economics, and technology and he has managed academic programs at several colleges and universities in the United States and Europe. Patrick consults with institutions on learner engagement, instructional leadership, institutional development, and international education. Patrick convenes an annual international conference on teaching and learning and he presents at international conferences on a regular basis. Patrick earned his doctorate in education from St. John's University in New York City.

Becky Boesch is an Assistant Professor in the Educational Leadership and Policy Department at Portland State University. She received her doctorate in Educational Leadership from Portland State University in 2008 and her masters in TESOL in 1988. Becky helped reform general education at Portland State University in the early 1990s. This program has received national recognition for its student centered learning and inquiry based programs. She continues to work in general education to develop classes that are inclusive of all learners particularly language minority students and/or immigrants which has been a major foci of her scholarship.

Vic Boyd is a member of the Learning Resources Team at The Glasgow School of Art in Scotland, UK. Her research and practice interests lie in the potential for pedagogical application of emerging technologies, with a particular focus on access and inclusion. She has a specific interest in challenging normative assumptions about academic and digital literacies in the interests of facilitating accessible and inclusive pedagogies. Her research experience includes work on projects that consider the pedagogical accessibility of virtual learning environments (VLEs), focus on educational transition experiences of disabled students, and she has also contributed to Scottish Government-funded research into independent learning initiatives. Her doctoral work considered the impact of competing discourses of ambiguity on learner identity construction (virtual and real world) among students with fluctuating or recurring impairments.

Tina Calandrino is an Instructional Designer in the Center for Distributive Learning at the University of Central Florida. She has researched and widely presented workshops on a variety of topics on faculty development and learning strategies for adult learners. After receiving her Master of Arts in Curriculum and Instructional Design, Ms. Calandrino began to focus her interests on instituting and expanding online learning for corporate and collegiate environments. Currently, she is working on several projects related to guided inquiry-based learning, mobile education and gender/cultural differences in higher education online learning. Ms. Calandrino presents locally and internationally on instituting sustainable faculty development and online teaching strategies.

John M. Carfora is Associate Vice Provost for Research Advancement and Compliance at Loyola Marymount University in Los Angeles. John holds graduate degrees from a number of universities, including The London School of Economics, Harvard University, and a doctorate from Teachers College, Columbia University. A recipient of several international awards,

John received the Distinguished Service Award from the National Council of University Research Administrators, and was an IREX Fellow to Russia and a Fulbright Scholar to Ireland. Dr. Carfora is a member of “I-Group” – a National Academy of Sciences and Government-University-Industry Research Roundtable committee on international research – which published the book *Examining core elements of international research collaboration* (National Academies Press, 2011). John co-authored *The Art of funding and implementing ideas: A guide to proposal development and project management* (Sage, 2011), and wrote the Foreword to *Universitas: The social restructuring of higher education in America*. (Praeger, 1998). He co-authored a popular article on the New Deal economist Stuart Chase (*Harvard Magazine*, 2004), and wrote *Navigating between teaching, learning and inquiry* (HETL, 2011). John regularly consults with colleges and universities in the United States and abroad on: academic, interdisciplinary and international research collaborations; comparative education; adult and continuing education; curriculum and instructional development; and leadership and governance in higher education.

Barbara Cozza, Ph.D., is an Associate Professor, Assistant Chairperson, and Program Director for the Ed.D. in Instructional Leadership, in the Department of Administration and Instructional Leadership. Dr. Cozza’s research targets school reform issues in the areas of curriculum, instruction, assessment, and leadership. Current research investigates how to improve and transform school systems into vital programs looking closely at the instructional core for regular education students and English Language Learners. The investigations integrate strategies such as Professional Learning Communities, Leadership Coaching, Teacher Leader, Instructional Rounds, Lesson Study and multi-age teaching and learning. Currently, Dr. Cozza offers collaborative partnerships and professional development to districts as a summer academy and an outreach program. Her forthcoming publications include co-editing a book on *University Partnerships in Higher Education (Emerald)*, authoring *The Best School: Multi-age Learning Communities* and an upcoming article co-authored on *Principles of Effective Faculty Learning Communities in Higher Education: A Qualitative Analysis of Faculty Participation*.

April D. Cunningham is the Instruction and Information Literacy Librarian at Palomar College in San Marcos, CA. She works directly with students to develop their skills as independent learners and novice researchers. In order to promote instructional techniques that encourage students’ inquiry, she also provides training to faculty and staff in topics including active

learning, meta-cognitive scaffolding, and learning transfer. April is a curriculum designer and facilitator for Assessment in Action, a professional development program sponsored by the Association of College and Research Libraries and the Institute of Museum & Library Services. The national program builds librarians' capacities to investigate the influence that libraries have on students' success. April publishes and presents on the value of incorporating critical reading skills into students' research process and on using assessment to improve teaching and learning. April earned her Ed.D. in Educational Leadership from California State University, Fullerton.

Kathy-ann Daniel-Gittens, Ph.D. is an Instructional Designer with the Center for Distributed Learning at the University of Central Florida. She facilitates faculty development of online teaching skills and works with faculty to develop their proficiency with a variety of online instructional models and tools. Consistent with her interest in constructivism, Dr. Daniel-Gittens has been involved in international research which focused on the design of online social learning spaces. Prior to coming into higher education she worked in the K-12 sector for over 15 years. She has consulted with UNESCO on ICT integration in the education sector and currently consults with the Organization of American States in their online professional development program.

David Dickinson is currently Director of Student Experience at the University of Roehampton. David Dickinson has been involved in Student Services senior leadership since 2002. His current responsibilities include oversight of student support and development services, and an institutional role supporting the improvement of services and enriching the experience of students. Prior to working at Roehampton, David held posts at the University of Surrey. He holds a first class Bachelors Degree in Sociology (Surrey) and a Masters Degree in Education Management (Open). He is also an accredited practitioner of the FIRO suite of psychometric instruments.

Mary Dickinson has worked in educational development since first qualifying in adult education from the University of Surrey in 1994. In recent years she has specialized in the academic, professional and personal skills development of high attaining students in UK Higher Education. A regular contributor and reviewer for a number of highly regarded journals, Mary's research interests include: differentiated learning and development, inquiry-based learning, student perfectionism and maximizing learner motivation.

Kathleen B. Duncan is an Associate Professor of Management and Program Director for the University of La Verne's Master's in Leadership and Management program. Dr. Duncan is also the inaugural director of the Terrence E. Deal Leadership Institute. Before joining academia, Kathy had over 20 years of experience in healthcare including clinical, management, and educator positions. Her research interests are in diversity, spirituality in the workplace, and pedagogy. Dr. Duncan has facilitated team building, strategic planning, and conflict resolution with groups of staff and managers in healthcare and nonprofit organizations. She has presented at the Academy of Management, Organizational Behavior Teaching Conference, Western Academy of Management Conference, and the International Leadership Association Annual Global Conference.

Debra L. Gilchrist is Vice President for Learning and Student Success at Pierce College, a community college in Lakewood, Washington where she leads academic and student affairs as well as regional accreditation and institutional effectiveness. She publishes and presents on outcomes assessment as a tool for change, process-based pedagogies, faculty collaboration, and demonstrating the contributions of academic libraries through assessment of both learning and program impact. She teaches in several national programs focused on improving teaching and learning. Debra has held faculty positions at both state and liberal arts universities, and has taught several courses using problem based pedagogies. She was honored with the Association of College and Research Libraries Miriam Dudley Instruction Award in 2007 and Innovation in Instruction award in 1998. Debra has a Ph.D. in Higher Education from Oregon State University, MA in Library Science from University of Denver, and MS in Geography from South Dakota State University.

Mercedes González-Sanmamed, Ph.D., is Full Professor and Researcher at the Faculty of Educational Sciences, University of A Coruña (UDC), Spain. Her research interests are focused on teacher training, integration of ICT into Education, and innovation and educational improvement. In these fields she has conducted 9 national and international research projects, and has participated in 29. She leads the EIRA research group. She has also been director of the Center for Teacher Training and Educational Innovation (CUFIE) at UDC (2000-2004). She has published 22 books, 23 book chapters, and 67 articles in indexed journals, among which highlight the last ones: *"Pedagogical roles and competencies of university teaching practicing in the e-learning environment"* (2013), and *"Level of proficiency and professional development needs in peripheral online teaching roles"*

(2014). She is evaluator of the Spanish National Agency for Universities Quality and Accreditation (ANECA). She got the Extraordinary Award in her Ph.D.

Montse Guitert, Ph.D., is Professor and Researcher at the Department of Computer Science, Multimedia and Telecommunications at the Universitat Oberta de Catalunya (UOC). She is currently the director of the Digital Literacy Program and teaches in the Master's and Ph.D. Program in Education and ICT. Her research focuses on educational technology and e-learning; and more specifically, in online cooperative and collaborative work, online teacher training and development of multimedia materials. She has coordinated some national and international research projects in all these areas. She is leads the Edulab research group at UOC. Her latest publications are: "*Which social elements are visible in virtual groups? Addressing the categorization of social expressions*" (2012), co-authored with M. Pérez-Mateo, and "*Online teacher development: collaborating in a virtual learning environment*" (2013).

Simon B. Heilesen is an Associate Professor of Net Media and ICT in Education at the Department of Psychology and Educational Studies, Roskilde University, Denmark. Currently, he is managing the Academic IT Unit, which carries out research, development, and training in effective uses of new media for teaching, researching, and communicating professionally. His main research focus is on the intersection of human-computer interaction, communication studies, and educational studies. He is the author and editor of a dozen books and numerous articles on the uses of new media for communicating, collaborating and learning. Current research projects include (a) developing real-time platforms and online open platforms both for teaching in higher education, and for professional communication targeted at general audiences, (b) planning and implementing ICT-based welfare technologies for senior citizens, and (c) evaluating how awareness and use of welfare technologies are being integrated in professional training programs. For publications and contact information, see: <http://forskning.ruc.dk/site/person/simonhei>.

William E. Herman earned his doctorate in educational psychology at the University of Michigan in 1987. His expertise lies in translating the knowledge base in teacher education into professional practice, learning theory, motivation, values development, and test anxiety. He has accumulated over 40 documents (research articles, reviews, conference papers, etc.) in data bases such as PsychINFO and ERIC over his 36 years of service as a

college professor. There has been a distinctive international focus to his work as a teacher, researcher, and scholar as is evident in earning two Fulbright Awards (Russia in 1993 and Thailand in 2011), teaching graduate courses in Taiwan (1989–1993) and Germany (2009), and presenting at international conferences in the United Kingdom (2005) and Romania (2006). In 2005, he attended the Sixteenth Annual Conference of the Alliance of Universities for Democracy (AUDEM) in Yalta, Crimean Republic to promote world democracy and encourage future faculty/student exchanges.

Charles W. Jarrett is a tenured Professor of Sociology at Ohio University Southern in Ironton, OH. Charles has spent the last decade studying Gullah/Geechee culture and language in the *Lowcountry* of South Carolina. Charles published a book of short stories on Gullah/Geechee culture entitled *Journey to Wholeness* that won the 2008 IPPY Award for “best fiction” in the category of literature from among 2,000 titles submitted in the national competition. Charles signed an exclusive publishing contract to write a novel based on his experiences in the *Lowcountry* for Juggling Board Press, Inc. of Charleston, South Carolina. The manuscript entitled *Passage of Faith* chronicles the life of a man affected by the spirituality and rich cultural heritage of the Gullahs.

Darryl E. Jones holds a Bachelor of Science Degree in Psychology from North Carolina State University (Raleigh, NC), a Masters of Education in Counseling from Howard University (Washington, DC), and a Doctor of Philosophy with an emphasis on higher administration leadership from Union Institute (Cincinnati, OH). Dr. Jones currently serves as the Dean of the School of New Resources – The College of New Rochelle. Dr. Jones has been awarded many distinguished honors, recognitions, and memberships. They include serving as a Peabody Fellow (Vanderbilt University), CORO New York Leadership Fellow, memberships in Alpha Phi Alpha Fraternity, Inc., Youth Mentor with Year Up New York, and The United States Marine Corps; having served with Distinction. Dr. Jones was recently named as a board member to Giving to Ghana an organization that serves “the less fortunate and underprivileged people it ministers to in rural Ghana.”

Greg Latemore is Director of Latemore Consulting based in Brisbane specializing in executive coaching and team building. He is an Industry Fellow, with The University of Queensland [UQ] Business School and Course Coordinator with UQ School of Health. He is also a sessional

lecturer at Queensland University of Technology and Australian Catholic University. He has taught at post-graduate level in strategic management, organizational behavior and strategic human resource management, and published in philosophy, leadership development and trust restoration. He holds a Bachelor of Arts (1978) and the inaugural Master of Management (1988) both from UQ. He has clients throughout Australia and New Zealand in the private, public, and not-for-profit sectors. He was previously a Senior Consultant with Price Waterhouse Coopers, and the Australian Institute of Management. He began his professional career as a Catholic priest in the Archdioceses of Brisbane and Melbourne (1975–1978) and left the ministry to marry.

David M. Lucas teaches communication studies at Ohio University. He identified the qualitative research method known as *folkography*. Dr. Lucas has led hundreds of undergraduate students in field study research projects in Costa Rica, Mexico, Spain, Australia, Vietnam, Thailand, and the United States. Additionally, Dr. Lucas has taught internationally in Hong Kong, Japan, Mexico and Spain. His numerous research projects have led to several discoveries and publications. For example, under his guidance, students found an uncharted African American burial site where victims of the American pandemic known as the Spanish Flu were interned. This project made international news with CNN. Additionally, Dr. Lucas discovered a sanctuary in Southern Ohio for refugees of American slave trade traveling the Underground Railroad during the early 1800s now known as Window Rock. Dr. Lucas travels throughout the United States and the world as a motivational speaker, guest lecturer, special speaker, and corporate trainer.

Beth Marquis is an Assistant Professor in the Arts & Science Program and the School of the Arts at McMaster University. She is also affiliated with the McMaster Institute for Innovation and Excellence in Teaching and Learning, where she conducts research focusing on film studies pedagogy, the accessibility of higher education for students with disabilities, and the teaching and learning of creativity across disciplines. Her teaching and learning research has been published in journals such as *The International Journal for the Scholarship of Teaching and Learning*, *Teaching and Learning Inquiry*, and *The Canadian Journal for the Scholarship of Teaching and Learning*.

Teresa Martinelli-Lee is a Senior Adjunct Professor at the University of La Verne teaching on-the-ground and online courses in the fields of

leadership, management, and public management. Teresa is a process improvement specialist having designed and developed a wide range of training development programs while working in the aerospace, healthcare, K-12, and higher education fields building both service and workforce systems. Teresa has worked in online education/blended learning delivery platforms and has developed a variety of online courses. Dr. Martinelli-Lee is a frequent guest speaker and workshop facilitator and has presented internationally on topics of instructional design, APA cite source workshops, quality blended learning teaching for adult learners, environmental sustainability, CSR, public and nonprofit management. Her current areas of research include articulation of techniques and methods of organizational behavior.

Gavin Melles joined Swinburne University of Technology in 2006 from the Faculty of Medicine, Dentistry and Health Sciences (Education Unit) at Melbourne University. He is currently Senior Lecturer in the School of Design and Academic Director of International and Pathways, and holds a Ph.D. (Education – Deakin University), Master of Linguistics (University of Costa Rica), Bachelor of Arts and PG diploma of Teaching (Auckland University, NZ), and is currently completing an MSc in Sustainable Development at SOAS (London University). Dr. Melles has editor responsibilities on several journals, including HETL Review, Arts & Humanities in Higher Education, and the International Journal of Design Creativity and Innovation. He has been principal and associate supervisor of completed PhDs in Design & Engineering in Australia and Germany (TU Dresden). Dr. Melles is an assessor for the ARC (Australian Research Council) and for the Swiss National Research Foundation (SNF). He has been a visiting teaching and research fellow at IIT Madras (Centre for Social Innovation and Entrepreneurship), the HCI Centre, RWTH Aachen (Germany), TU Dresden (DAAD Fellow), University of the Applied Sciences (Basel, Switzerland) – SNF Research Fellow), and STINT Grant Fellow at Linköping University, Sweden. In addition to smaller grants and consultancy in human-centered design, he was project leader on a multi-institutional three year EU-ICP Grant (\$935000). He is currently a Ph.D. supervisor or principal investigator for doctoral candidates in the CRC for Advanced Automotive Technology (Swinburne University), and the CRC for Low Carbon Living (two projects under the community and education program- Swinburne University), providing expertise in research methods and human-centered design methods.

Michele R. Pinard attributes her interest in inquiry and place-based learning to being raised in the geographically isolated, but culturally rich, Adirondack region of New York State. Experiential studies grounded her elementary, high school and undergraduate years, building a foundation for current international and comparative educational pedagogies. She holds a: Ph.D. in Educational Leadership from the Department of Integrated Studies at McGill University in Montreal, Quebec, Canada; Masters of Intercultural Service, Leadership, and Management from the School for International Training and World Learning at Brattleboro, Vermont; and, Masters of Science in Teaching from SUNY Potsdam, where she now serves teacher candidates in childhood/early childhood. Dr. Pinard has taught, studied and conducted professional development in Korea, South Africa, Kenya, Greece, France, and England, and worked with ESL international students from numerous other countries. Core research interests center around how critical incidences in intercultural contexts inform teachers' personal and professional identity development.

Christine E. Poteau received her Ph.D. in Spanish Applied Linguistics from Temple University. Her experience includes teaching and developing undergraduate and graduate courses in linguistics and second language studies (e.g., English as a second language and Spanish). Currently, she is Assistant Professor and Coordinator of the Languages Program at Alvernia University. She also serves as U.S. liaison to linguistics of the International Higher Education Teaching and Learning (HETL) Association. As an applied linguist and second language acquisition (SLA) professional, her research interests include practical applications of SLA theories to pedagogy, language and identity, development of intercultural competence, and health literacy disparities among linguistic minorities. Professor Poteau has made numerous contributions to the teaching and learning paradigm by presenting at several conferences and publishing on topics ranging from interdisciplinary pedagogies to refining curricula.

Nicholas Rademacher, Ph.D. is Associate Professor of Religious Studies and Coordinator of the Social Justice Minor at Cabrini College. Community collaboration and interfaith dialogue are central to his teaching and scholarship. Rademacher has long been involved in the practice and scholarship of teaching and learning. He is co-founder and faculty fellow in the Voices of Justice Living and Learning Community and has published collaboratively and individually in the area of community based learning. His scholarship focuses on the intersection of faith and

justice with special attention on the lived tradition of Catholic social thought and practice across the twentieth-century.

Albert Sangrà, Ph.D., is Professor and Researcher at the Universitat Oberta de Catalunya (UOC). He is the Academic Director for the UNESCO Chair in Education & Technology for Social Change at UOC. His research interests are related to online education leadership, management and design, as well as its quality issues. He is a member of Edulab research group at UOC. He has participated in more than 35 international research projects, and has been consultant in several online education projects in Europe, Asia and America. VP of the European Foundation for Quality in E-Learning (EFQUEL) (2011-2014) and member of the Executive Committee of the European Distance and E-learning Network (EDEN). He has an extensive number of publications, among which the book *“Managing Technology in Higher Education. Strategies for Transforming Teaching and Learning”*, co-authored with Tony Bates, and the article *“Building and inclusive definition of e-learning: an approach to the conceptual framework”*.

Alia Sheety, Ph.D. is Associate Professor of Education and Coordinator of the Curriculum Instruction and Assessment Master Program at Cabrini College. Her primary areas of teaching are critical analysis of research, learning theories, instruction and assessment. Dr. Sheety scholarly work includes research on metacognition strategies in higher education, exploration of adult learner preferences and the transition to online learning as cognition, behavior, and emotions integrate to support the learning process. She is a member of the American Educational Research Association (AERA) and the American Association of Colleges for Teacher Education (AACTE). Dr. Sheety is passionate about making the world a better place. Her work in this area includes projects on peace education between Palestinian and Jewish Israeli young adults, recent study on “Honor Killing” and her involvement with the International Institute for Restorative Practices.

Nicholas J. Shudak earned his Ph.D. from the University of North Carolina at Chapel Hill. He is an Associate Professor and Division Chair of Curriculum and Instruction at the University of South Dakota. His scholarly interests in schools and schooling, action research in teacher education, and the philosophy for children (p4c) movement keep him in touch with teachers at all levels and subject areas. Recent book accomplishments include the edited volume titled *Philosophy in Schools: An Introduction for Philosophers and Teachers; Diversity’s Double Helix*; and, was the

co-recipient of an Enduring Questions grant awarded by the National Endowment for the Humanities.

Vivian Tam is an MD candidate at McMaster University's Michael G. Degroote School of Medicine. She has a strong interest in global issues, and believes that student-engaged learning is the ideal way to foster global citizenship. In designing a new inquiry-based course on global justice, she hopes to create a dynamic forum in which students and faculty are able to learn from one another with the intent of jointly mitigating global inequalities. In crediting her passionate curiosity to the role of constructive student-faculty relationships, she hopes to further extend the benefits of inquiry-based learning to her peers at McMaster and beyond.

Scott Thompson-Whiteside is the Dean for the School of Design at Swinburne University of Technology in Melbourne, Australia. Since 2005 Scott has been an Associate Dean, Deputy Dean and been responsible for the leadership and management of international partnerships, courses, and staff. Scott has extensive experience in teaching and managing courses, departments and schools in the United Kingdom, Malaysia, and Australia. He currently teaches design management within the School and in 2006 won the Vice-Chancellor's award for teaching excellence. Scott's Research intersects the disciplines of education, higher education policy, design, and innovation. His Ph.D. is from The University of Melbourne at the Centre for the Study of Higher Education.

Tanya D. Whitehead has extensive experience in developing, teaching, and evaluating face-to-face classroom and online college coursework. She has an Interdisciplinary doctorate degree in the fields of Education and Psychology, and certification in two areas: (1) as a Specialist in Disability (1993) from the School of Medicine, University of Kansas; and (2) Certificate in Online Teaching in Higher Education (2010) from the University of Missouri. Her background includes 9 years in clinical practice of psychology, 18 years in higher education teaching, and 25 years in research. She is a Research Associate Professor at the University of Missouri – Kansas City, a former Fulbright Senior Scholar awardee (China, 2009), a former Commissioner on Accreditation for the American Nurses Association, ANCC, and a current Peer Reviewer for the Higher Learning Commission, North Central Association of Colleges and Schools. She has numerous publications of peer-reviewed journal articles and three published books.

Amy Whitney is the Director of the Innovation and Entrepreneurship Program at Clark University. Her academic interests include cultures of innovation, inquiry-based learning, and transformational leadership. Amy holds a MBA and a BA from Clark University. She is currently pursuing an Ed.D. at Northeastern University with a concentration in Organizational Leadership.

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