Collected Essays on Learning and Teaching

Transforming our Learning Experiences

VOLUME VIII

Editorial: Education as Transformative Experience
Neil Haave

I. Transforming Learning - Invited Papers

Curricular and Co-curricular Leadership Learning for Engineering Students
Doug Reeve, Greg Evans, Annie Simpson, Robin Sacks, Estelle Oliva-Fisher, Cindy Rottmann, & Patricia Sheridan

Initiating Innovation in Post-secondary Institutions – Customizing Teaching and Learning Environments: Collective Reflections from the 2014 Cohort of 3M National Student Fellows
Heather Carroll, Shwetha Chandrashekhar, Danny Huang, David Kim, & Peter Liu

II. Transforming Through Metacognition

The Interplay of Space, Place and Identity: Transforming Our Learning Experiences in an Outdoor Setting
Alice Cassidy, Alan Wright, William B. Strean, & Gavan Watson

Mindfulness in the Academy – Transforming Our Work and Ourselves ‘One Moment at a Time’
Paula Gardner & Jill Grose
The Road Less Travelled? Pathways from Passivity to Agency in Student Learning
Gail Frost & Maureen Connolly

Transforming Passive Receptivity of Knowledge into Deep Learning Experiences at the Undergraduate Level: An Example from Music Theory
Anna Ferenc

III. Writing as Transformative Experience

Performance, Feedback, and Revision: Metacognitive Approaches to Undergraduate Essay Writing
Jessica Riddell

Toward Accuracy, Depth and Insight: How Reflective Writing Assignments Can Be Used to Address Multiple Learning Objectives in Small and Large Courses
Kristie R. Dukewich & Deborah P. Vossen

“What Do You Mean I Wrote a C Paper?” Writing, Revision, and Self-Regulation
Mark Feltham & Colleen Sharen

“He just told me to get on with it”: Insights into Transforming Doctoral Writing Development
E. Marcia Johnson

IV. Supporting Our Transformative Experiences

Fostering Student Engagement: Creative Problem-Solving in Small Group Facilitations
Patricia L. Samson

Learner Characteristics and Motivation: How to Achieve Efficient and Effective Learning
Catherine Marie Fraser Bates

“There is No Single Right Answer”: The Potential for Active Learning Classrooms to Facilitate Actively Open-minded Thinking
Victoria Chen

MySci Advisors: Establishing a Peer-Mentoring Program for First Year Science Student Support
Kirsten Poling
Realizing Partnership Potential: A Report on a Formal Collaboration Between a Teaching and Learning Centre and Libraries at the University of Toronto
John Bolan, Patricia Bellamy, Carol Rolheiser, Joanna Szurma, & Rita Vine

V. Transforming Our Teaching

Integrated Testlets: A New Form of Expert-Student Collaborative Testing
Ralph Shiell & Aaron Slepkov

Peer Review of Teaching: Sharing Best Practices
Shaya Golparian, Judy Chan, & Alice Cassidy

Teaching Assistant Competencies in Canada: Building a Framework for Practice Together
Cynthia Korpan, Suzanne Le-May Sheffield, & Roselynn Verwoord

Teaching Culture Perception: Documenting and Transforming Institutional Teaching Cultures
Erika Kustra, Florida Doci, Kaitlyn Gillard, Catharine Dishke Hondzel, Lori Goff, Danielle Gabay, Ken Meadows, Paola Borin, Peter Wolf, Donna Ellis, Hoda Eiliat, Jill Grose, Debra Dawson, & Sandy Hughes
Editorial: Education as Transformative Experience

Neil Haave
University of Alberta

This eighth volume of CELT considers the transformation of our learning experiences, which was the theme of the 2014 STLHE conference in Kingston. The university or college is a place where students can re-create themselves, becoming the kind of person they wish to be, preparing themselves for a vision of where they are headed after their post-secondary education. Yet, many students do not approach their education in this manner; rather, they choose to go through their learning experiences simply as hoops to be jumped, courses to be checked off their list, with little cumulative learning (Smith, 1998) and no intention of attending to how they hope to transform themselves as people.

Today’s student is typically characterized as a digital native having been raised in the digital environment of computers, tablets and smartphones, though this characterization is being challenged (Smith, 2012). Regardless, it is often assumed that current students are able to seamlessly navigate between their physical and digital lives with the internet as the constant interface between the two. The Internet, however, has been described as a distracting technology (Carr, 2010); students fool themselves into thinking that they can be efficient and effective by multi-tasking, yet it has been shown that time on task without the distraction of social media is what leads to deep learning (Weimer, 2012). Using the Internet as an educational technology raises an important issue: How does a distracting technology impact educators’ desire to transform students’ learning experiences? Is providing online texts with hyperlinks enabling the connection of different sources of knowledge leading to deep learning or is it distracting students from learning?

However, having access to the vast wealth of information available through Google Scholar, Wikipedia, or the myriad of online databases is of great value; we are able to research faster and more completely than if we had to flip through paper of individual articles and indices. In addition, there is value in integrating knowledge: finding and investigating the connections that exist among the academic disciplines. To some extent it might be argued that the Internet is breaking down the academic silos that have existed in academia for so very long (Brooks, 2012).

However, is connectivity worth it if in exchange we give up deep reflective analysis? We, as instructors, still need to design learning environments/experiences for our students that enable their deep consideration of our contemporary perspective of the world (Newstock, 2013). Perhaps this seeming dichotomy between connectivity and reflection is simply the tension that exists between breadth and depth of knowledge and understanding. Deep understanding requires considered focus on a very narrow topic. Yet breadth allows one to scan the horizon for connections to that knowledge.

What instructors and administrators must do is continually assess the educational value of a particular teaching strategy and how that will achieve a transformative learning experience. Technology for its own sake or for the sake of being efficient is the wrong frame of reference. Instead, instructors must consider what will produce a transformative experience that is an ontological condition for deep learning (Bramming, 2007). For example, at the Augustana Faculty of the University of Alberta, we have implemented a program in which we annually
assess how well we, as instructors, are inculcating our students with the skills we assert are embedded in our curriculum. Our Committee for Academic Skills Assessment facilitates the ability of faculty teaching in the individual degree programs to gather the data (student grades, assignments, exams) and consider whether it demonstrates our students' success at mastering thinking, research, and communication. This data enables us to make informed changes to the educational experiences of our students. Bramming (2007) argues that the nature of the educational experience must not be determined solely by students' satisfaction, because for transformation to occur, frustration, anger, and loss may be part of the learning process as students experience a deconstruction/reconstruction of their knowledge structure which forms the filter through which they view their world. Thus, real learning—transformative learning—alters the way we see the world.

At the 2014 STLHE conference in Kingston, ON, we gathered to consider how to transform our educational experiences. What teaching strategies and learning activities will provide the most fertile ground for our students to transform themselves into who they wish to be and provide them with the skills to flourish where and how they envision living their lives? How can we best provide for students a deep learning experience that will aid them throughout their life? How do we best give students the skills to connect and make sense of the growing tsunami of information that floods our lives? The scholarship of teaching and learning aims to answer these questions through reflection on our teaching and learning experiences and also by gathering data to provide evidence of what does produce the best educational environment; evidence we need to use to ground metacognition of our own teaching (Tanner, 2012). In the articles that comprise this eighth volume of CELT, authors have reworked their conference presentations into essays which examine these questions of educational transformation from different vantage points. The editors have collected this volume’s articles into five sections: (1) Transforming Learning – Invited Papers, (2) Transforming through Metacognition, (3) Writing as Transformative Experience, (4) Supporting Students’ Transformative Experiences, and (5) Transforming Our Teaching.

The two invited papers are authored by the winners of the 2014 Alan Blizzard award and 3M National Student Teaching Fellows. In *Curricular and Co-curricular Leadership Learning for Engineering Students*, Doug Reeve and his colleagues describe their unique program at the University of Toronto which is designed to transform their students into leaders in engineering. Five of the 3M Student Fellows explain in *Initiating Innovation in Post-secondary Institutions* their visions to transform higher education in Canada. Both essays, in their own way, call for a transformation in education which involves teaching theory linked to practice with learning deepened through reflection on the experience. They thus advocate for higher education to make use of active learning strategies connected to metacognition of the experience.

Metacognition of learning enables students to become self-regulated learners (Ambrose, Bridges, DiPietro, Lovett, & Norman, 2010b) such that they no longer fool themselves into thinking they know something when they don’t. Developing our metacognitive ability is what leads to expertise (Brown, Roediger, & McDaniel, 2014), but can only be developed in the context of learning something else (Girash, 2014): A course on metacognition will not promote metacognition. The four metacognitive articles discuss different approaches to becoming engaged in learning through heightened awareness of our thinking. In *The Interplay of Space, Place & Identity*, Alice Cassidy and her colleagues consider the role of place in our learning experiences by reflecting on the canoe trip in the St. Lawrence Islands National Park that occurred as a preconference workshop at STLHE 2014. They suggest that bringing students into the outdoors, or bringing the outdoors into the classroom, is an effective strategy to engage students in learning in the moment.

Mindfulness may not be metacognition but they seem to be related to each other (Jankowski & Holas, 2014) such that mindfulness possibly improves metacognition (Was, 2014). In *Mindfulness in the Academy*, Paula Gardner and Jill Grose discuss their use of mindfulness in class and with the greater
campus community as a strategy to develop focus in one’s life. It has the potential to develop students’ metacognition of what needs their attention in the moment while studying rather than multitasking with the elements that distract from learning. Relatively, Gail Frost and Maureen Connelly in *The Road Less Traveled?* describe their use of reflective writing to focus students’ orientation on mastery of skills and theory instead of on grades. Students with a mastery, as opposed to a performance orientation, are more likely to have better learning outcomes (Coutinho, 2007). *Transforming Passive Receptivity of Knowledge into Deep Learning Experiences at the Undergraduate Level* by Anna Ferenc describes a collaborative writing project in music theory in which students pair up as author-editor teams. Her analysis of students’ reflections suggests that metacognition of their learning was enhanced and that students’ meta-learning may transfer to their other courses.

Cognition is thinking whereas metacognition is thinking about our thinking (Girash, 2014). For many years, Richard Paul has been a proponent of writing as a means to cultivate critical thinking (Paul & Elder, 2000) and it was by attending one of his critical thinking workshops that started my weekly writing requirement in the capstone course I teach. Menary (2007) argues that writing is thinking and that the act of writing transforms our thinking by integrating our thoughts through the manual and neural processes of manipulating pen or keyboard. Four of this volume’s papers focus on writing as a transformative experience. The first two articles on writing present assignments designed to stimulate students’ thinking: either about their own writing (*Performance, Feedback, and Revision* by Jessica Riddell, a 2015 3M National Teaching Fellow) or about the particular course subject matter (*Toward Accuracy, Depth and Insight* by Kristi Dukewich & Deborah Vossen). Both essays consider the structure of the writing assignment such that marking does not overburden instructors of large classes. Some students, however, have a fixed mindset that assumes that writing ability is innate and therefore revision is pointless because improvement is not possible. Mark Feltham and Colleen Sharen write in “What Do You Mean I Wrote a C Paper?” an initial assessment of a term-long series of assignments and workshops designed to transform students to have a growth mindset and thus willing to partake in feedback and revision of their writing. “He Just Told Me to Get on With It” by Marcia Johnson discusses a program of doctoral writing conversation developed in New Zealand to shape graduate students’ thinking while writing their dissertation through a structured conversation with their peers.

For students to experience a transformative education, there must be the support to produce an engaged learning environment: Students need to be supported to overcome their own fears and self-doubts (Cox, 2009; Bledsoe & Baskin, 2014). In addition, for deep learning to occur course objectives and instructor goals must be aligned with students’ motivations (Ambrose, Bridges, DiPietro, Lovett, & Norman, 2010a). This volume’s fourth section on supporting students’ learning opens with *Fostering Student Engagement* by Patricia Samson in which she explains how Creative Problem-Solving is a transformative pedagogy that motivates students’ learning. In a similar vein, Catherine Bates’ article *Learner Characteristics and Motivation* explains the ARCS model of instructional design and how it can be used to align instructional with student goals thereby enhancing learner motivation. Both papers by Samson and Bates incorporate active learning into the instructional strategy which has been shown to improve student learning outcomes relative to a traditional didactic lecture (Weimer, 2013, 2015). “There is no Single Right Answer” by Victoria Chen explains her experience at Queen’s University in facilitating the transition of instructors to an active learning classroom and how the physical educational environment can impact the choice of learning activities and open-mindedness of students. Kirstin Poling describes in *MySci Advisors* a program at the University of Windsor that partners senior and first year undergraduate science students to support the first year students’ transformation from high school to university student. *Realizing Partnership Potential* by John Bolan and colleagues, describes a collaborative program between the University of Toronto’s libraries and Centre for Teaching Support
& Innovation designed to develop librarians’ instructional excellence.

The last section of this volume of CELT consists of four papers that discuss different approaches to transforming our teaching. In the first, *Integrated Testlets*, Ralph Shiell and Aaron Slepkov explain a system of developing multiple choice questions which tiers questions within a concept such that students’ understanding of the material may be probed higher up Bloom’s taxonomy of learning than is typically possible while providing students immediate formative feedback. This system is in the spirit of Eric Mazur’s (2014) appeal in his STLHE conference plenary to make assessments an authentic learning experience. *Peer Review of Teaching* by Shaya Golparian, Judy Chan, and Alice Cassidy considers how peer review can be a rewarding and renewing process for both the reviewer and reviewee with the goal of improving teaching. Cynthia Korpan and her colleagues present a framework for *Teaching Assistant Competencies in Canada* produced by the Teaching Assistant and Graduate Student Advancement (TAGSA) Special Interest Group (SIG) of STLHE designed to support the development of TAs teaching ability. The last article in volume VIII by Erika Kustra et al, *Teaching Culture Perception*, considers the perception of campus teaching cultures of select Ontario universities and how that may be used to transform our learning experiences.

Finally, CELT has undergone its own transformation this past year. The editorial board has undergone a complete turnover. The success of such transition is only as good as the support provided to the new recruits. The editorial board of CELT wishes to express its gratitude to past managing editors Catherine Chiappetta Swanson and Jessica Raffoul for orienting us to the Open Journal System that runs CELT. In addition, the support of the STLHE board, in particular Robert Lapp, Dianne Bateman, and Diane Salter Menzo in securing funding and becoming indexed in ERIC and EBSCO has been invaluable. Institutional support has also been instrumental in ensuring that CELT remains on sure footing. The University of Windsor continues to freely host our journal on their servers and the Augustana Faculty of the University of Alberta donated the time of Lois Larson, Administrative Assistant to the Science Department, to act as CELT’s Editorial Assistant. Finally, a grant from the University of Alberta supported our ability to edit this year’s volume of CELT. Thank you all.

References


Curricular and Co-curricular Leadership Learning for Engineering Students

Doug Reeve¹, Greg Evans¹, Annie Simpson, Robin Sacks¹, Estelle Oliva-Fisher, Cindy Rottmann, and Patricia Sheridan¹
The Institute for Leadership Education in Engineering, ¹Also Department of Chemical Engineering and Applied Chemistry
Faculty of Applied Science and Engineering, University of Toronto

In recent years engineering educators have been encouraged to blend technical and professional learning in their curricular and co-curricular programing (Engineers Canada, 2009; National Academy of Engineering [NAE], 2004). Our paper describes a multifaceted leadership learning program developed to achieve this goal by infusing reflective, experiential learning into an otherwise technically oriented discipline. The program was designed by a collaborative team of educators and researchers with backgrounds in engineering, education, psychology, and industry and offers a range of learning experiences using diverse pedagogical strategies. The content covers four realms of leadership corresponding to four levels of analysis: self, team, organization, and society. Learning experiences include elective academic courses, co-curricular workshop programs, guest lectures in core courses, seminars, department based leadership groups, and panel discussions. In this paper, we describe the program goals, curricular and co-curricular initiatives and early research findings in order to scaffold an emerging discussion about engineering leadership education in Canada. Informal feedback from students who have participated in our program provide us with preliminary evidence that students are learning, that they value the learning opportunities afforded by our program and that our initiative is enabling significant personal growth.

Introduction

Engineers are uniquely positioned to create innovative solutions to many local and global challenges (Downey et al., 2006; Engineers Canada, 2009; Katchi, 2005; Khattak, 2011; Reeve, 2010; Vest, 2005), yet few North American faculties of engineering provide students with the leadership learning opportunities required to do this work. Fortunately, recent calls for change by the National Academy of Engineering and Engineers Canada (Engineers Canada, 2009; NAE, 2004) have led a small, but growing number of engineering educators—mostly in the United States—to infuse leadership learning opportunities into engineering education (Bayless, 2013; Cox, Osman, & Adams, 2010; Croft, Winkelman, Boisvert, & Patten, 2013; Evans, Reeve, & Simpson, 2010; Graham, Crawley, & Mendelsohn, 2009; Ha, 2013; Hsiao, 2013b; Kerns, Miller, & Kerns, 2005; Khattak, 2011; Osagiede, Farmer Cox, & Ahn, 2013; Pitts,
Klosterman & McGonagle, 2013; Polito & Martinich, 2008; Schuhmann, 2010; Simpson, Evans, & Reeve, 2012). The three most prominent foci of these programs are entrepreneurship and innovation (Hsiao, 2013a; Soundarajan, Ramnath, & Weide, 2013), personal and professional growth (Colcleugh & Reeve, 2013; McCuen, 1999; Reeve, Simpson, & Evans, 2010; Simpson, Evans, & Reeve, 2010), and global citizenship (Athreya et al., 2010; Ellis & Petersen, 2011; McMartin, 2013). The first two typically involve skill building and industry partnerships while the third concentrates on international mobility and service learning projects in the global south. The initiative we discuss in this paper—The Institute for Leadership Education in Engineering at the University of Toronto (ILead)—addresses all three areas but focuses primarily on personal and professional growth. In this paper, we describe ILead’s program goals, curricular and co-curricular initiatives and early research findings in order to scaffold an emerging discussion about engineering leadership education in Canada.

A Multidisciplinary Approach to Program Development

In 2002, when we began to develop leadership programming at the University of Toronto’s Faculty of Applied Science and Engineering, leadership capability was acquired implicitly, if at all by engineering students. Over time the “Leaders of Tomorrow” program gained popularity among the student body and incrementally expanded to meet the growing need. In 2006, the University of Toronto Provost awarded $1 million in funding over five years to create leadership programming across the engineering faculty that: “…strengthens the experience of engineering students by providing coherent, structured and intentional learning opportunities to enhance their leadership development.” In 2009-2010, a decanal task force assessed progress in leadership education in the faculty. This institutional review led to the establishment of the Institute for Leadership Education in Engineering (ILead) dedicated to helping engineers lead change to build a better world. The institute was the first of its kind in the Canadian engineering landscape offering curricular, co-curricular and extra-curricular leadership education and empowering engineering students to succeed as leaders in their profession and beyond.

At the core of our institute is a multidisciplinary team of engineers, education specialists, and social scientists dedicated to bringing leadership learning opportunities to engineering students. This collaboration is rooted in a shared passion for student development, leadership learning, innovative teaching methods, and a commitment to creating positive impact in the world. Design and implementation of this program brought together a diverse team with a wide range of complementary professional experiences including leadership in academic and corporate settings. See Figure 1 for an illustration of the multidisciplinary framework that shaped our program development process up to and including the 2013-2014 academic year.

![Figure 1](multidisciplinary.png)

**Multidisciplinary approach to program development**

Each of the disciplines identified in this framework—engineering, social science and education—allowed us to foreground and develop a different aspect of our program. For example, the engineering perspective brought a focus on systems
thinking and efficiency that helped us scale up instruction to enable leadership education in large classrooms. The social science perspective allowed us to examine the conceptual and disciplinary underpinnings of the emerging field of engineering leadership, and the educational perspective helped us implement these ideas in ways that were accessible, instructive and engaging to students. Beyond these three disciplinary perspectives, our team’s experience in post-secondary academic administration and industry-based professional leadership allowed us to connect our program objectives to the academic and professional contexts in which engineers study and work. Finally, team members’ expertise in counseling, psychology, experiential learning, design, and arts-based pedagogy contributed to a focus on personal growth that helped shape the program.

Program Goals

The overall goal of ILead programing was to create a range of complementary educational initiatives to enhance the accessibility and effectiveness of leadership learning within engineering so that students would be better positioned to lead positive change in teams, organizations, and society. Three bodies of literature have informed our work: leadership identity development theory (Komives, Lucas, & McMahon, 1998; Kouzes & Posner, 1987), organizational learning theory (Scharmer, 2008, Senge, 1990, Colcleugh, 2013), and experiential learning theory (Kolb, 1981, 1984). The first of these theories foregrounds the iterative, intrapersonal nature of skill building and identity development; the second reminds us that leadership learning is always contextually mediated; and the third informs our curriculum development process, encouraging us to blend concrete experiences, reflection, conceptualization, analysis and application into our coursework and co-curricular initiatives. Leadership learning is not simply about internalizing received knowledge. Our curriculum is collaboratively designed by members of the team with an educational background to include a range of experiential activities, active skill development, reflection, analysis and iterative project design. We aim to make these experiences as accessible as possible to a wide range of student learners by engaging them mentally, emotionally and kinesthetically in their learning. For example, at a workshop on facilitation skills students would be introduced to the topic, discuss the role of a facilitator, and brainstorm some responses to common interpersonal challenges that occur in groups. They may then observe a scenario or engage with a case study. Next, students practice a new skill-set in the context of a simulation or group discussion and are provided with feedback on their facilitation skills. Finally, they are guided to reflect on their learning and experience as a way of enhancing the prospects that their new knowledge will be transferable to future situations. Underlying our attraction to these three theoretical perspectives is our view that:

Leadership is a process that begins with self and inspires and empowers others, teams and organizations to effect positive change.

Our strategic planning team expanded this statement into five core beliefs about leadership:

1. Leadership starts with the self: Self-awareness is a necessary foundation for effective leadership. Students must be aware of their strengths, their communication style, their personal values and work to develop greater congruence between values and actions.

2. Leadership is a relational process, not just a position: Leadership happens in the context of teams, groups, and organizations; it is a relational process. People work together to achieve a common goal. Therefore, leaders need to learn how to engage with people.

3. Everyone has the potential to be a leader: We recognize and value many different leadership styles and work to empower the natural abilities of each student.
4. **Leadership is a shared responsibility**: Leadership is not the responsibility of one individual. We all have a responsibility to offer our best and to engage in the work of leadership.

5. **Leadership empowers engineers**: Engineers are involved in generating solutions to the world’s most pressing problems (e.g., climate change, clean energy, clean water, and sustainable development). Leadership skills complement engineers’ technical education and better position them to create positive change.

These core beliefs, in turn, shaped the institution’s actionable mission statement:

*To develop curricular, co-curricular, and extra-curricular programming for leadership education for undergraduate and graduate students in engineering; to conduct research on the pedagogy of leadership education in engineering; to conduct research on leadership practice in engineering-intensive enterprises; and to reach out to others to develop a community of practice dedicated to advancing engineering leadership.*

In order to facilitate the implementation of this mission statement, the strategic planning team identified four leadership domains corresponding to four levels of analysis: self-leadership, leading teams, leading organizations, and leading society. The leadership instruction framework includes the underlying beliefs and overarching goals related to each domain (See Table 1).

After the strategic planning team identified these domains, beliefs, and goals, course instructors and student service professionals translated them into specific learning objectives and pedagogical strategies most suitable for their students.

### Table 1

**Leadership Instruction Framework**

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<th>Leadership Domains</th>
<th>Beliefs</th>
<th>Overarching Goals</th>
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<tr>
<td>Society</td>
<td>Grand challenges demand leadership from great engineers</td>
<td>Be an agent of change; leverage your engineering expertise to create positive impact.</td>
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<tr>
<td>Organization</td>
<td>Leadership is a process, not just a position</td>
<td>Optimize your value to an organization by reading and shaping its currents and culture; focus your talents and passions, and those of others to contribute to its success.</td>
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<tr>
<td>Team</td>
<td>The whole can be greater than the sum of its parts</td>
<td>Use your strengths and catalyze the strengths of others to maximize creativity and impact.</td>
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<tr>
<td>Self</td>
<td>Leadership begins with self</td>
<td>Dream, learn, do and be daring; bring your best self to all that you do.</td>
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Student Engagement Levels: Balancing Breadth with Depth

Our program delivery model was designed with three levels of engagement in mind: basic exposure of leadership learning to all undergraduate engineering students; short-term certificates and retreats for a smaller group of students who elect to participate; and high intensity leadership learning opportunities for students who show interest and promise in engineering leadership education. These three levels of engagement allow us to achieve the following program objectives:

- All engineering students will be able to describe the basic elements of leadership.
- Many engineering students will be able to apply leadership skills, tools, and understanding to enhance their effectiveness.
- A few students will embark upon a sustained path of personal leadership growth.

As shown in Table 2, basic-level programming provides all students with an appreciation of the nature and value of leadership, mid-level programming offers students opportunities to learn and exercise newfound skills, while highly engaged students may pursue their leadership education at an enhanced level.

Curricular and Co-curricular Program Components

For the past decade, Leaders of Tomorrow and ILead have provided engineering students at the University of Toronto with intentional, structured, and meaningful leadership development opportunities that help them integrate leadership theory and practice. The institute is distinctive in that it integrates curricular, co-curricular, and extra-curricular programming. In addition to the instructional and experiential elements, we use certificates, awards, and scholarships to increase the value placed on leadership, and to promote leadership involvement throughout the Faculty. The sections that follow describe the instructional components included in our current leadership programming.

The curriculum infusion initiative

In 2008, we launched a curriculum-infusion initiative with two objectives: (1) to provide all engineering students with a basic understanding and awareness of the nature of leadership, and (2) to motivate students to pursue a higher level of engagement through participation in other components of the program. Six “infusion” lectures are presented as one-hour guest-lectures within existing engineering courses. The goal is that every undergraduate student attends.

Table 2

<table>
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<th>Program components addressing different levels of student engagement</th>
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<td><strong>Basic Level</strong></td>
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<td>• Curriculum infusion lectures</td>
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<td>• Individual lectures, seminars or workshops</td>
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all six lectures before graduating. The lecture presentations are combined with personal, in-class learning activities. Thinking frameworks simplifying abstract concepts such as values or vision are a common element. The frameworks are presented as figures since engineering students tend to have a preference for visual learning (Felder & Brent, 2005). These learning frameworks provide the students with a foundation for thinking about the different aspects of leadership that can be used for structured reflection so as to promote continued leadership learning. The use of assessment inventories and tools allows active personalized learning even in large classrooms. Since 2008, over 100 lectures have been delivered, reaching thousands of students in class sizes ranging from 15 to 700. Anonymous feedback solicited from the students after each lecture indicate that in general the lectures achieve the overall objectives of increasing awareness of the value of leadership and interest in pursuing further leadership development. The growth in our basic level programming to over 8000 attendees per year at leadership lectures and individual events, indicated that we were successfully engaging students and contributing to a greater level of interest in leadership education.

Departmental leadership learning groups

To create a culture of leadership and a sense of community for students, student leadership groups were formed in all departments and divisions across the Faculty. The intention of the groups is to give students opportunities to practice their leadership. With guidance from appointed faculty and staff members, students generate ideas for events and together turn those ideas into reality. Students build community, engage with alumni, and gain hands-on leadership experience by brainstorming professional development ideas for their peers and implementing them with the support of ILead staff. The range of programming includes panel discussions with industry leaders, personal development workshops, political debates, professional development sessions, and alumni networking. Approximately 100 students participate as core or “executive” working group members each year. The events they organize attract thousands of student attendees each year.

Summer Program

A fourteen-week summer program on leadership learning for undergraduate engineering students began in 2002 and has attracted more than 400 students to date. Sessions are held on Friday afternoons from May through August. Students who attend 80% of the workshops receive a non-credit certificate. This program currently has three segments: (1) ‘Personal Development’ - emphasizing the importance of self-awareness in effective leadership, (2) ‘Group Leadership’ - the skills that are needed to contribute to and lead teams, and (3) ‘Leadership in Society,’ promoting the idea of engineers as active citizens and change agents in the world. In addition to seminars, speakers and workshops, students participate in design/research project teams, attend tours of industry facilities, and engage in community service activities (Simpson et al., 2012).

Certificate programs and one-day intensive workshops

Co-curricular certificate programs are offered during the fall and winter terms in two formats to accommodate students’ tightly scheduled timetables: two-hour workshops, over four or five weeks, and one-day “intensive” workshops. We have offered the following programs:

- **Learning to Lead: Emerging Leaders** – For students interested in getting more involved on campus in a learning community and/or applying for peer mentorship or leadership positions on campus.
• **Team Skills** – For students interested in knowing how to build strong teams for group projects and industry experience.

• **Leading from the Inside Out** – For students who want to discover the power of self-leadership.

• **Organizational Leadership** - For students who hold or aspire to hold leadership positions in student clubs or organizations.

Students who complete one of these programs receive a printed certificate and a notation in their Co-curricular Record in recognition of their participation. Since the inception of the certificate programs in 2008, there have been 20 offerings and a total enrolment of 731 students. Annual participation has increased continuously from 40 in 2008-09 to 216 in 2013-14.

**Leadership in elective courses and in the core curriculum**

The first for-credit course on leadership—Leadership and Leading for Groups and Organizations—was offered in the fall of 2007 to a mixed class of undergraduate and graduate students. Similar to other ILead initiatives, the introduction and instruction of this course was a collaborative, interdisciplinary endeavour. The principal instructor was a former CEO of Dupont Asia Pacific and then of Dupont Canada, who had ample expertise in engineering and corporate leadership, but had limited experience teaching undergraduate courses to engineering students. After developing and delivering lecture material based on the principles of leadership developed at Dupont Canada over a 20 year period, an ILead staff member with complementary expertise in education facilitated experiential learning exercises to help students engage with and apply the course material. One of many positive outcomes of this course is a recently published textbook merging educational practices with industry-based engineering leadership principles (Colcleugh, 2013).

Several other courses have been developed, each one emerging from our shared vision and values and playing a key role in achieving the overarching goals of the program. These courses are:

• Engineering Leadership

• Cognitive and Psychological Foundations of Effective Leadership

• Positive Psychology for Engineers

• Concepts and Applications of Authentic Leadership

• Engineering Presentations

• The Power of Story: Discovering your Leadership Narrative

The leadership courses are offered at either or both the undergraduate and graduate level and are becoming an integral part of Faculty programming. The graduate courses are part of a special certificate program for the course-based Master of Engineering (MEng) students. The undergraduate courses are approved electives for the Faculty’s extremely popular Business Minor and as electives for a Certificate in Engineering Leadership established in 2014. By the end of the 2013-14 academic year, 1115 engineering students at the University of Toronto had enrolled in leadership courses.

**Engineering leadership research projects**

As ILead’s curricular and co-curricular programmatic offerings began to grow, the Institute’s strategic planning team was encouraged by the Dean of Engineering to demonstrate that our initiatives were grounded in evidence. Thus, in 2011, we expanded the ILead mission to include research to support the development of engineering leadership curriculum and pedagogy. Two of these projects are summarized below, the first addressing team skills effectiveness learning and the second investigating how professional engineers conceptualize and enact leadership.
Project #1: Team skills effectiveness learning

ILEad’s first doctoral student, supervised by the institute’s co-directors and a professor from the Faculty of Education, is investigating team skills learning opportunities for undergraduates, especially in large classes, to support the development of an online tool for self- and peer-evaluation of individual effectiveness in a team. This instrument provides engineering students with feedback on their team skills and remedial online learning to facilitate improvement of performance. This work is partially funded by The Higher Education Quality Council of Ontario (HEQCO), and more recently, the Social Sciences and Humanities Research Council of Canada (SSHRC). The tool is being used and tested in a core environmental chemistry course, a leadership course, and several large first-year design courses. Recent investigations suggest that this instrument and the associated “team effectiveness framework” enhance leadership learning in technical, design, and elective courses that enroll 100 to 900 students (Sheridan, El Gammal, Phillips, Evans, & Reeve, 2013; Sheridan, Evans, & Reeve, 2012, 2014; Sheridan, Reeve, & Evans, 2012, 2013, 2014).

Project #2: Theorizing engineering leadership

In addition to the pedagogically driven research project outlined above, we have undertaken a foundational study to examine how engineers understand leadership; how they lead in the workplace; what skills and behaviours are important to successful engineering leaders, and where engineers learned those skills and behaviors. Our findings, recently published, include a theory of engineering leadership grounded in the day-to-day experiences of professional engineers (Reeve, Sacks, & Rottmann, 2014; Reeve, Sacks, Rottmann, Daniels, & Wray, 2013; Rottmann, Sacks, & Reeve, 2014), and a survey of engineering skills and traits modeled by engineers who have been identified by their peers as exemplary leaders (Reeve, Rottmann, & Sacks, 2015). While this work is already informing our courses, our ultimate objective is to use our findings to generate professionally relevant, evidenced-based curriculum.

Beyond these two research projects, we have recently received funding to design two evidence-based engineering instructional innovation projects—one on team learning and the other on engineering ethics and equity. Finally, we have returned to our experiential education roots by designing a mixed methods research project to evaluate the impact of undergraduate engineering students’ co-curricular experiences on their leadership identity development and leadership learning.

Impact on Student Learning

While we have not yet conducted a formal program evaluation, we regularly use both qualitative and quantitative measures to assess student learning. For example, we use feedback forms to assess the impact and learning outcomes of our infusion lectures, pre- and post- surveys to evaluate leadership learning in our co-curricular certificates, institutionally generated course evaluations to assess the efficacy of our instructors, and testimonials—both solicited and unsolicited—to provide us with information about the long-term impact of our programming on alumni. We have used this data to iteratively improve content, program elements, and pedagogy.

Feedback forms following our infusion lectures suggest that, on average, these lectures increase students’ interest in learning about leadership, that students see leadership as something you learn after graduation, and that the delivery and content of the lectures is not the main hurdle preventing students from learning about leadership. Qualitative comments on the back of these forms have helped instructors adapt future lectures by learning which components have the greatest impact on student learning. Pre-post surveys which bookend the month-long certificate programs suggest that students perceive themselves as more knowledgeable, self-aware, socially-skilled communicators by the end
of the course. Institutionally managed course evaluations suggest that students value these learning experiences and recognize the learning as being important to their professional development. Finally, testimonials – including personalized emails, letters written to the Dean and thank you notes from our students and alumni – demonstrate a lasting positive impact on student learning:

The ILead program has been a great complement to my engineering education. The program provides an important opportunity to develop a set of softer skills that otherwise are not emphasized in the engineering curriculum such as teamwork, communication, awareness of self, and awareness of others. The skills and tools taught by ILead have enabled me to execute and lead projects much more effectively than I otherwise would have. Thanks to the ILead program, I now feel confident about my ability to become a strong leader in industry and society.

Indirectly linked to the growing impact our curricular and co-curricular programing is having on student learning, is our institution’s early success in the realms of research and outreach. Our publications, conference presentations, and successful grant applications suggest that audiences of engineering educators, engineering education researchers and leadership researchers are increasingly receptive to our efforts. In terms of outreach, our corporate partnerships enable us to help students make the school to work transition while our status as the only Canadian member of COMPLETE—a working group of engineering schools established in 2010 to support the institutionalization of leadership education in engineering—allows us to maximize our educational impact by learning from and sharing strategies with leadership educators doing similar work in the United States.

Discussion

As we indicated in the introduction of this paper, the literature on engineering leadership education is still in its infancy. The great majority of articles in this area constitute calls for leadership in engineering education (Downey et al., 2006; Engineers Canada, 2009; Katehi, 2005; Khattak, 2011; Reeve, 2010; Vest, 2005) and under-theorized program descriptions written by insiders (Bayless, 2013; Cox et al., 2010; Croft et al., 2013; Evans et al., 2010; Graham et al., 2009; Ha, 2013; Hsiao, 2013b; Kerns et al., 2005; Khattak, 2011; Osagiede et al., 2013; Pitts et al., 2013; Polito & Martinich, 2008; Schuhmann, 2010; Simpson et al., 2012). Very few program evaluations have been done on the efficacy of this work and even fewer research studies have been conducted on the conceptual basis of engineering leadership or the implementation of engineering leadership education across institutional, provincial, or national contexts.

One notable exception is Ruth Graham’s evaluation of engineering leadership (Graham, 2012a, 2012b; Graham et al., 2009). Graham’s central finding was that leadership education in engineering faculties was prevalent, but insufficiently systemic—piecemeal, isolated innovations lacking resources and institutional support. Most reforms quickly reverted back to the “status quo” after seed funding expired. Relevant to the Canadian context, Graham and her colleagues also found a distinction between US-based programs and programs located in other countries. The American programs were more explicitly focused on leadership, had been established more recently, and tended to be better resourced while those located elsewhere had an implicit focus on leadership, had longer institutional histories, and were typically less well resourced. Only two engineering leadership programs were identified in Canada—ILead/Leaders of Tomorrow, and a graduate program blending engineering with public policy and design at McMaster University. Graham’s evaluation of educational reform in engineering leadership education provides us with useful feedback about how to proceed, but it also misses the nuanced
Our paper presents one such case study, told by organizational insiders committed to improving leadership learning and student experience in engineering education. Graham’s snapshot of our program in 2009 cast doubt on our potential sustainability, but as a learning organization (Senge, 1990) informed by leadership identity development theory (Komives et al., 1998) and experiential education (Kolb, 1984), we have learned from and have begun to implement her recommendations. In particular, we have reflected on her findings that successful initiatives can be sustained through cross-faculty delivery of reformed courses, well-designed impact evaluations and ongoing focus on innovation (Graham, 2012a, 2012b; Graham et al., 2009). Finally, feedback from University of Toronto engineering students, colleagues, and senior administrators help shape our needs-based program into a vehicle for leadership identity development and professional growth for engineering students seeking to complement their technically oriented education. This paper, along with our program is a work in progress.

Significance, Limitations, and Next Steps

Engineers are well positioned to create innovative solutions to many local and global challenges, yet few Canadian faculties of engineering prepare them to do this work. One way to improve engineers’ capacity to bring about socially meaningful change is to provide them with intentional leadership learning opportunities and the intrapersonal, interpersonal, team, and organizational skills necessary to translate technical capabilities into work that benefits society. In this paper, we have presented the 12 year evolution of one such program—the Institute for Leadership Education in Engineering (ILead)—from its infancy in 2002 to its current state as a multi-faceted, multidisciplinary program.

The primary significance of this work is programmatic rather than theoretical in nature. We have introduced leadership learning to undergraduate engineering students through large-scale infusion lectures, provided scaffolding to student leaders interested in shaping and delivering professional development opportunities to their peers, and challenged students in our courses and certificate programs to supplement their technical competencies with social, self and organizational awareness. In the end, our greatest strength has stemmed from our programmatic diversity. The faculty and staff who envisioned and implemented leadership programming for engineering students at the University of Toronto have used their distinct disciplinary backgrounds, values and motivations to build a program from the ground up in response to a wide range of student needs. After twelve years, our innovative start-up—Leaders of Tomorrow—has grown into a Faculty of Engineering institution—The Institute for Leadership Education in Engineering. Similar to other start-ups, the creative energy driving our initial growth has changed the educational landscape for our students, thereby necessitating a new strategic response. As Larry Greiner theorized in his classic article on growing organizations, periods of evolutionary growth tend to be followed by periods of revolutionary crisis (Greiner, 1972). If and when each crisis is resolved, the organization moves through another period of growth, which in turn leads to another crisis. This process continues as organizations grow and mature.

At ILead, we have grown through many challenges, in each case progressing and maturing into a more durable organization. Perhaps our greatest struggle to date has followed from our programmatic goals to meet expectations embedded in temporary funding opportunities. This has led to somewhat piecemeal offerings. This external limiting factor—common to many organizations—has inhibited our willingness to take stock of our program as a whole. Fortunately, however, we have recently engaged in a successful program review process that may lead to increased sustainability. In response to this excellent opportunity, it is incumbent upon us to look internally and ask ourselves some difficult questions.
What is ILead’s central contribution to the Faculty of engineering? How can we sustain our programming in a way that balances student needs, institutional structures, and available resources? How can we infuse engineering-specific competencies into our personal development-based leadership program? How can we engage students and faculty members who resist the idea that engineering is a leadership profession? How can we more tightly connect our emerging research program with our curricular and co-curricular practices? What kind of impact does our program have on alumni success in the workplace? What are we doing well and in what ways are we falling behind?

As our program grows and matures, we must challenge ourselves to respond to these questions and reach out to new audiences. The iterative learning that has informed our process to date will enable us to address each of these issues as we balance programmatic diversity with programmatic coherence. If we do so while continuing to draw on the expertise and passions of the co-directors, teaching staff, research staff, administrative staff, and students we will not only help our students lead change to build a better world, but also change ourselves in ways that demonstrate organizational learning, leadership development, and experientially informed growth.

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**Biographies**

Doug Reeve, Director, is the founding Director of the Institute for Leadership Education in Engineering (ILead) at the University of Toronto. For over twenty-five years, he has worked to provide leadership learning opportunities to engineering students. In addition to his service in academia, Prof. Reeve has worked with industry as a consultant and president of a small consulting firm for fourteen years, frequently on international assignments. He has created and led professional development short courses on over 50 occasions reaching over 5000 attendees. Numerous awards have recognized his contributions to the profession and to research. He is Professor in the University of Toronto’s Department of Chemical Engineering & Applied Chemistry and served as Department Chair from 2001–2011.

Greg Evans, Associate Director, is a Professor of Chemical Engineering & Applied Chemistry and a former Vice-Dean Undergraduate and Chair First Year in the Faculty of Applied Science & Engineering at the University of Toronto. He is also the founding Director of the Southern Ontario Centre for Atmospheric Aerosol Research (SOCAAR), an interdisciplinary research centre studying the environmental and health impacts of air pollutants. Prof. Evans’s interest in creating a structured leadership development program for engineering students grew from his desire to see engineers take a more proactive role in the many technologically related issues that face society.
Annie Simpson, Assistant Director, has a Master degree in Adult Education and Counselling Psychology and has completed the course work portion of a PhD in Education. She has been with ILead since it became a Faculty-wide initiative in 2007 and has overseen the co-curricular elements of the program. Annie has taught in the community college system and has also worked as a counselor, conflict mediator, and restorative justice facilitator and trainer. Annie is committed to transformative education that engages the whole person. She is inspired to offer engineering students opportunities to cultivate their leadership through self-discovery, team experiences, and community engagement.

Robin Sacks, Director of Research, joined ILead to develop curricular and co-curricular leadership education for the Faculty and now serves as its Director of Research. She received a Master degree in Applied Cognitive Science and a Ph.D. in Human Development and Applied Psychology from U of T's Ontario Institute for Studies in Education. Robin's interest in leadership education grew from her own experiences as a young student leader on campus. She is the founder of Peace by PEACE Canada—a student-run not-for-profit organization that teaches conflict resolution, self-esteem, and community building skills to primary school students.

Estelle Oliva-Fisher, Leadership Education Specialist, brings tremendous Student Life experience to ILead. She has worked as a Residence Life Coordinator at the University of Toronto Mississauga, a Student Life Coordinator for the Office of Student Life, and most recently was the Assistant Director, Student Life and Leadership at New College. Her career has been committed to helping students engage in campus life and leadership opportunities. Estelle recently finished her Master of Education at OISE-UT in the Adult Education and Community Development Graduate Program. Estelle has particular interest in workplace learning and social change, as well as transformative leadership education.

Cindy Rottmann, Research Associate, joined ILead on the Engineering Leadership Project in October 2012. She has an M.A. and Ph.D. in Theory and Policy Studies in Education, with a focus on Educational Administration. Cindy brings extensive research, teaching, and curriculum development experience to the team. She has worked on eight federally funded studies resulting in 22 publications and 32 conference presentations. She has taught mathematics & science to secondary school students, and educational leadership & policy to school administrators. Prior to joining ILead she was an Assistant Professor of Educational Administration at the University of Manitoba. Cindy’s research interests include engineering leadership, engineering ethics and equity, teacher leadership, and social justice teacher unionism.

Patricia Sheridan, PhD Candidate, received her B.A.Sc. (2009) and M.A.Sc. (2011) in Mechanical Engineering from the University of Toronto. Throughout her studies Patricia pursued numerous leadership roles, initiating the UTFIRST Robotics Mentorship program, and coordinating the University of Toronto Engineering Kompetitions. Having taught and engaged in research in engineering design education during her Master program, Patricia decided to turn her interest in developing engaging engineering curricula into a career. She is now pursuing doctoral studies at the Institute for Leadership Education in Engineering under the supervision of Profs. Evans and Reeve. Her research involves developing web-based applications to teach team-effectiveness through team-based projects and integrating team-effectiveness education into the engineering curricula.
Initiating Innovation in Post-secondary Institutions—Customizing Teaching and Learning Environments for the Twenty-First Century: Collective Reflections from the 2014 Cohort of 3M National Student Fellows

Heather Carroll  
Memorial University

Shwetha Chandrashekhar  
University of Guelph

Danny Huang  
University of Alberta

In light of the enormous changes presently unfolding in the higher education landscape, we do not have to look too far to recognize evidence of the transformation and redefinition of the construct of both teaching and learning in the information age. With a growing focus on teaching and learning at all levels of post-secondary institutions, innovation is reflective in the introduction of new learning spaces, state-of-the-art technology-enhanced education, and prominence given to discussions about adapting teaching and learning to the twenty-first century. Likewise, in this article we examine the reflections, ideas, conversations and exchanges inspired by the cohort’s plenary planning discussions and the current innovations reshaping Canadian higher education.

Overview

The five of us represent the 2014 cohort of 3M National Student Fellows, the third cohort to be recognized since the 2012 establishment of this national award recognizing leadership in undergraduate students. It has been an honour, a privilege and an incredibly enriching opportunity to begin our roles as National Student Fellows as a part of STLHE’s 34th annual conference Transforming Our Learning Experiences, in June 2014 in Kingston, Ontario. This article is a collective collaboration of the diverse perspectives and experiences we discussed during our plenary.
Introduction

Canadian post-secondary education has witnessed and continues to survive through sweeping shifts in circumstances in the past few decades. The demand for advanced education to complement the complexities of the current economy has soared as the skill requirements for employment have escalated (Crocker & Usher, 2006). This shift in innovating in higher education is supported by emerging initiatives such as the 3M Student Fellowship, which provides young voices with the opportunity to expand their participation in reshaping higher education. The following explores the 2014 3M National Student Fellows’ perspective on innovating and customizing the post-secondary experience.

Students as “Thinkers” and “Doers”: Are We Encouraged to Innovate “Outside the Box?”
Heather Carroll

Innovation is a uniting concept amongst the 2014 cohort of 3M National Student Fellows, and our work is primarily focused on the context of post-secondary environments. Creating productive change in institutionalized practices is at the forefront of this discussion. Through my experience in post-secondary education, I challenge administrators to consider whether initiating innovation in a post-secondary institution must come from the top down. It would be innovation in its truest form if students could innovate outside of their institution’s prescribed boundaries.

Memorial University, and its department of Career Development and Experiential Learning, allows students to create their own jobs as part of the Memorial Undergraduate Career Experience Program (MUCEP). These are called Bootstrap MUCEPs, and they are available to students across all disciplines and years of study. The possibilities of created jobs are as virtually limitless as the students’ imaginations. This program provides students with the opportunity and encouragement to innovate as both “thinkers” and “doers.” As someone who created a job within this program, I relished the opportunity to both think of and act on an idea and watch it transform into something concrete.

As a student in Memorial University’s Bachelor of Primary/Elementary Education program, I have noticed many areas of improvement within my program, mainly in relation to the internship structure and delivery, which are going seemingly unnoticed and unaddressed. In December 2012, I began to challenge the administration of my faculty to be accountable for the program structure, and be able to offer explanations for the areas that are doing a disservice to the students, namely, the students in the Integrated Stream of the Bachelor of Primary/Elementary Education. My classmates and I take four years (eight semesters) of coursework related to our field, before finally being allowed to do an internship, in the last year of our five-year program, for an entire 13-week semester.

I believe the present and future students enrolled would benefit from a re-structuring of the program that allows us to engage in experiential learning opportunities earlier than the current model does. The structure disregards key research done on experiential learning and its maximization of retention, of impact, and of the contextualization of material. Chapman, McPhee, and Proudman (1995) suggest that a balanced mixture of content and process is “required no matter what activity the student is engaged in or where the learning takes place.” By only allowing one mega-internship, students are also denied the ability to diversify their experience; they are being exposed to only one cooperating teacher, at one school. This troubled me, so I independently sought a 13-week teaching internship in Cambodia, over a year before my program-sanctioned internship, and tried to prove its validity.
by integrating it with my degree in some way. I tried to count it as first an (extra) internship, then as an elective course, then as an independent study, and finally as research based special topics course. I was unable to do any of those things, at the sole discretion of the Faculty of Education’s administrators.

Regardless of the Faculty’s reasons for not updating their program structure to align with current research, they are sending a message to students that they are unable to independently seek field work, and that no teaching is really considered teaching unless it has their approval. I tried to innovate, but not in a way that was expressly acceptable, and was denied permission to consider it academic. The program structure is not allowing students to maximize their university experience and is falling short in both experiential learning initiatives and in space for innovation. I learned a lot through my work in Cambodia, and I believe that the faculty could be doing more to allow students to merge independently sought work with the program in an innovative manner, and to ensure that their graduates are developed to the best of their ability and potential, especially when the program structure is in its current state. This development can be done by facilitating and providing diverse opportunities throughout the program.

Innovative endeavours are full of success stories, and I hope to see more university created innovation opportunities, such as the Bootstrap MUCEP. However, students should be encouraged and supported when they try to innovate “outside the box.” For the future of 21st century post-secondary education to embrace innovation more fully, students need a platform, resources, and support to innovate in a more daring manner. Beyond the post-secondary environment, innovation rarely comes with a program plan, and it often involves challenging entrenched norms. Innovating in a sphere that is regulated from the top-down is limited, but innovating from the roots up, from students into institutionalized practice and beyond, there is nowhere to go but up.

Meta-Learning: The Need to Teach “Why to Learn” and “How to Learn”
Shwetha Chandrashekhar

Over the span of the six years I have spent as an undergraduate student, the moment I began to succeed and excel in my program was the very moment I sought to actively understand why to learn and how to learn. My journey allowed me to recognize that the fashion in which higher education is structured has the power to craft societal tapestry and initiate needed change. I further realized that the very substructure of higher education holds blueprints for innovation and new systems of thought that await execution. Yet, it dawned on me that none of this is common student knowledge, and neither is it a teaching priority. This consequently creates an infrastructural issue, because actualizing the potential of formalized education ultimately rests on the conscious initiation of innovation within higher education environments.

In the last decade, Canada has generated a wave of innovation across several university and college campuses through its adaptations of modern-day teaching and learning (Crocker & Usher, 2006). However, to remain at the forefront of the best and most sustainable education practices globally, the very basic and elemental tenets of post-secondary education, understanding the “why” and the “how,” must be addressed. One of the primary issues with post-secondary education in today’s world is twofold: 1) a lack of understanding why to learn, as there is an obscured perspective of the tangible value of a post-secondary education, and 2) a stagnation in how to effectively learn, as there is a desensitization to the process of learning itself. This is mostly attributed to a lack of innovation in teaching styles within post-secondary environments, which possibly results from the human habit of doing things the way they have always been done before. Both of these issues are by-products of weak communication between institutions and their students, and a result of a
challenge universities face presently: defining exactly what their purpose is in the post-modern world.

Students and learners alike must first be proactively and consistently educated about the importance of self-management during their undergraduate studies. This begins by introducing them to the importance of education and to the need for their personal commitment to learning, which is key to keeping them engaged, motivated and actively connected to their academic pursuits. Twenty-first century learners must understand that the modern day post-secondary curriculum can be customizable to their requirements. It is vital that they know that it is in their hands to complement their in-class learning with co-curricular activities and real-world experience. What this does is encourage and foster a learning culture in higher education that initiates and leads innovation in teaching and learning from a multitude of directions. Opportunities such as completing a semester abroad, actively seeking relevant internships, getting involved on campus with initiatives that further academic efforts, and taking the time outside of the classroom must be seen as critical complements to formal education.

However, this requires as mentioned above, a greater effort in communication and interaction between faculty and students. What is required now is institutional transparency. This would ensure that a clear picture is presented to students, conveying that attending classes and completing degree requirements satisfies only part of what is needed to extract the most out of the financial investment made in their post-secondary education. That being said, students must be taught about the power and relevance of education for survival in society. Doing so would begin the reconditioning of old systems of thought, which position formal education as a means to an end rather than a catalyst to personal and professional development. This is evident in current student perceptions, which falsely accept that merely completing the basics of a degree will land them a related job in their field of study, and further allow them to create a career with purpose. One potential solution is weekly seminars mandated with required attendance and required for degrees, throughout all years of studies, which aggressively prompt and encourage the dialogue about how to make the most out of what is being taught within the classroom. Doing so will demarcate an effort in nurturing the growth of our future professionals. Although this type of effort may meet with student apathy initially, it will at the very same time, birth a culture which promotes a love for self-reflection and learning, two necessities for extracting concrete value from formalized education.

This type of initiative goes hand in hand with something I am passionate about incorporating into classrooms: talks by real-world professionals. I remember attending a class during my first semester of undergraduate studies, which was not graded but required attendance as a degree requirement, in which top executives from the business world, entrepreneurs and the like, would come into class and speak to students about their undergraduate journey and how they ultimately defined a meaningful path for themselves. Doing so heightened the connection between what my peers and I were learning on a small scale and the larger picture at hand. It allowed us to understand the various opportunities that lay ahead us post-graduation. It kept education current and in touch with the reality we are distanced from as students immersed in theoretical and abstract material.

These forms of institutional initiatives are key in expanding students’ horizons and elevating their personal ambitions by providing them with industry exposure. Successfully offering and incorporating these learning opportunities would require universities to refresh their professional networks and initiate an interdependent community effort in redefining and revitalizing exactly how formalized post-secondary education can add value to society at large. In all, a thorough reconditioning of student and faculty mentality is required in establishing a novel approach to post-secondary education. “How to learn” and “why to learn” are key elements in creating and sustaining a value-based approach to interactive educational systems which initiate student engagement and set new trails for a new world ahead.
Transition from Memorizing to Solving: Tackling Hard Issues in Society
Danny Huang

When I think about what provides the most satisfaction during my undergraduate career, I conclude that it is being able to solve practical problems. During my time at the University of Alberta, I have had numerous opportunities to tackle difficult problems both in academia and in my community. These opportunities provided the framework for me to build a critical set of skills—leadership, collaboration, public speaking—that I would not otherwise have gained by attending my regular science classes.

The solutions to some of the most challenging issues in the twenty-first century cannot be found in textbooks nor can they be generated by simply regurgitating information. From global poverty to institutional discrimination to disease outbreaks, these examples require us to be flexible, resourceful, innovative, and most importantly, to be collaborative. I believe that the post-secondary environment can be an ideal incubator for these traits, however only when there is sufficient emphasis on problem solving. Most current classrooms retain the traditional lecture approach that mainly focuses on memorization and test-taking abilities. A shift to a model where students are more actively engaged in solving problems would be instrumental for preparing us to meet global challenges.

One way of incorporating a problem-based approach to learning is through student-led research projects. Specialized programs at many post-secondary institutions already offer courses that supplement content with researched-based inquiry and allow students to tackle questions through unique means. I have had the opportunity to conduct biomedical research since Grade 11, and I have enjoyed every moment of it. From performing experiments in pediatric oncology to performing statistical analysis in epidemiology, I have learned, re-learned, and refined important skills, which include troubleshooting, critical-thinking and perseverance.

In a similar manner, the active promotion of student-driven projects in the community serves to foster the problem solving process. When I had learned certain science programs are not readily accessible to rural students, I co-founded a non-profit organization to install university-level science programs that emphasize participation from under-resourced communities. The results have been promising: we have engaged more than a hundred students and have secured over $28,000 in funding. The idea behind a problem-based approach is that students can take ownership of their learning.

Additionally, the underlying mechanism of assessing students should be re-evaluated to reflect the problem-based strategy to learning. Most traditional exams rewards us based on the amount of information we can memorize in relation to a particular topic, but by no means do they indicate if we can meaningfully use that information. As a result, the memorized material becomes meaningless shortly thereafter. Instead, I believe a better method of assessment would be to focus on how well students, using key skills, solve practical problems. By focussing course content around identifiable problems, students can gain the requisite skills for tackling difficult questions in their own community. For instance, implementation of problem-based learning in medical education is associated with a more enjoyable student experience and enhanced interpersonal skills and psychosocial knowledge (Chan et al., 2000). Further, problem-based learning is flexible. It can be supplemented with additional instructional material such as podcasts and worksheets to ensure the same breadth of knowledge is provided as in conventional lectures (Johnson, Herd, Andrewartha, Jones, & Malcolm, 2002).

The tendency of equating learning to simply obtaining new information is problematic and should be clarified in order to enhance student education at the post-secondary level. I believe that post-secondary learning should be primarily focused on active problem solving. The amount of the detailed, dense materials memorized should not be the sole metric in defining a student’s progress in the classroom. Only by filtering class material through a lens of societal applicability can we achieve an education that aligns
with the needs of communities and industries. I believe that we, as students, have to take ownership of our learning, because when we do, we learn not out of necessity of learning, but out of our genuine interest and passion.

A Focus on Improvement and Exploration in the Twenty-First Century Post-Secondary Educational Setting
David Kim

Through my post-secondary educational experience, I have learned much about the way we educate today’s students. By reflecting on my experiences and what I have learned, I question if traditional teaching methods are the most effective in preparing today’s students to face real world challenges. In the twenty-first century, we have seen exponential growth in the depth of knowledge that humans possess. Yet, we are facing some of the toughest challenges that society has ever had to face. From the growing dangers of climate change to youth unemployment to political instability across the globe, we as a generation face countless issues that we will one day inherit. Our education should prepare us to face those challenges. The struggles and the triumphs of the twenty-first century provide a challenging yet exciting opportunity to really employ educational methods that can make a difference on a larger scale. Thus, it is paramount that we apply dynamic pedagogical approaches that not only challenge traditional methods but also ensure that we are teaching our current generation of students in a way that is relevant, effective and pragmatic.

The first step is ensuring that the basic foundation of education is based on improvement and life-skill learning instead of achievement, which seems to be the current focus. Achievement-oriented teaching can be a barrier to fostering creativity and self-exploration, both of which I believe are important in being able to apply learned knowledge beyond the walls of the classroom. From personal experience, I know that individual students within an academic culture of achievement sometimes have difficulty acknowledging imperfection and instead focus on attaining the typical image of perfection that they are supposed to achieve that is set out by academic institutions. The current social norm in various areas of higher academia is that students need to succeed and always strive for that “A+” without acknowledging the importance of deep learning. This focus on grades perpetuates the culture of achievement. In addition to a grades-based approach, an improvement-based model can supplement the current grading modalities with a focus on individualized metrics of ability with specific identifiers for areas of improvement. Both educators and learners can follow a learner’s progress through time with this individualized metric and decrease the over reliance on grades, thus focusing on self-improvement across a time span. This ensures that the focus is on the growth and progress of that student’s knowledge and competence over time.

As a medical student, this focus is of particular importance to me. Medicine is known for its culture of achievement and results, which can be harmful in the educational and real-world setting. As future physicians, it is important that we learn the importance of learning from our mistakes. A culture of improvement, particularly in the context of medical education is very important. What we learn in the classroom will be applied to our future patients. In order to improve care and optimize patient outcomes, a culture of improvement that starts in the classroom will translate into better clinical practice and better interdisciplinary cohesion. Secondly, exploration and experiential based learning needs to have a bigger role in post-secondary education. Ultimately, we have to educate the students of today to apply what they learn in the classroom to real world scenarios. I think a large piece comes from active teaching strategies. We have to connect things that are taught inside the classroom to real world problems. Context needs to be given to establish relevance of the material being taught.

From personal experience, I have to admit that a significant portion of my learning during my post-secondary years has come from extra-curricular
activities. If these can be integrated into current teaching strategies as parts of the curriculum, I think we can begin to make small strides towards exploratory and experiential based teaching strategies. This can involve creating course requirements to actively participate in community programs that are relevant to the material being taught or encouraging students to volunteer with organizations to teach life-skills relevant to the topic being taught. These methods will really encourage prospective and retrospective learning by having students engaged in learning outside of the classroom.

These two things are important in how we teach twenty-first century learners. I believe that when there is more focus on improvement, achievement will naturally follow. If there is a shift towards an improvement model, we can focus on ensuring that students acknowledge gaps in their learning, which will allow further pursuit of knowledge. An environment that values improvement over achievement will also create a safer and healthier classroom for both students and educators. A culture based on improvement is a culture that can cultivate growth and development both inside and outside the classroom setting. Additionally, experiential and exploration based teaching methods can help translate what we learn in classrooms to action outside of the classroom. Encouraging a student to utilize what they learn to solve real issues while contributing to the community is an ideal model to teach problem solving. These two strategies can be a small step in ensuring that we are employing the right strategies to teach the students of today to be the leaders of tomorrow.

The Twenty-First Century Network
Peter Liu

We are most receptive to changes, new adventures, and diverse perspectives in our early twenties. Post-secondary education is an ideal complement for exploration as young adults thrive in a diverse community. At no other time are we going to be simultaneously exposed to peers from the arts, science, and business on such a massive scale, providing an ideal opportunity to weave a collaborative network using a trans-disciplinary approach. This is especially important in the twenty-first century, where collective knowledge is rapidly expanding and individual expertise is becoming increasingly more specific. The need for collaboration is further reinforced by our interconnected international community, which in many areas of the world is facing complex problems.

As a result, being able to effectively communicate and collaborate across disciplines is indispensable to achieving unified goals and implementing solutions to the complex issues that challenge our generation. Twenty-first century post-secondary education has a role in instilling collaboration skills in students on an institutional, national, and international scale. Here, I will present tangible strategies that can be implemented to allow students to learn from a multi-disciplinary network within and beyond our post-secondary institutions.

In recent years, there has been a drastic increase in tailored academic, extracurricular, and career development programs based on students’ personal interests in institutions across Canada. We can take faculty and department level programs one step further by establishing inter-faculty community service projects to unite students with diverse backgrounds. For example, the University of Calgary offers a leadership development program called the Emerging Leaders Program (ELP) for first-year students. With a series of personal development, team building, and community service projects, ELP brings together students who share similar passions from various faculties to make positive contributions in their communities. At a personal level, ELP inspired me to combine education with leadership, put my academic knowledge to the test in real-world situations, and learn from peers from diverse fields. Through their interactions with others, students are exposed to the full spectrum of knowledge, not just what is taught within their majors, allowing them to get the most out of their education. As a result,
encouraging inter-faculty immersion learning and collaboration is pivotal to enabling students to contribute to the twenty-first century network.

The same multidisciplinary network can also be applied to link post-secondary institutions across Canada. Our current framework manages post-secondary institutes under multiple jurisdictions, allowing programs to be tailored to specific needs. However, lacking a consistent framework for post-secondary education also hinders inter-institutional interaction. This is especially true at the undergraduate level, which lacks regular conferences and communication to connect students. Thus, communication within and between institutions is the key to expanding students' learning spectrum. By establishing regular national conferences bringing together post-secondary students across Canada, we can provide a platform for students to learn from each other. Because each jurisdiction has unique advantages to their post-secondary systems, this also allows students and faculty to exchange ideas, be inspired, share novel concepts, and implement innovations.

The increase in the popularity of international opportunities in higher education further expands the importance of interaction from a national to a global scale. Because our world is becoming evermore interconnected, it is crucial that we understand our global community. Service and community learning is the best way to achieve this goal. Personally, I was able to benefit from a number of international opportunities during my undergraduate program, which focused on hands-on learning. With the Global Health Program in the Cumming School of Medicine, I had the opportunity to help organize and teach a course on molecular and microbiology for research capacity building in Nicaragua. I was the youngest person on the team, even younger than my students who were professors, physicians, and researchers.

This was an incredible learning experience as each person in the program, from students to organizers, was a leader in their field. As a result, the traditionally defined lines between educators and students were blurred. Instead, a bilateral pedagogy strategy emerged. As a student and an educator, I learned about the needs and backgrounds of each of my students and tailored my teaching to capacity building that can be applied to identify solutions for the most pressing healthcare problems in Nicaragua. Through a train-the-trainer paradigm, students in the course can in turn spread these capacities to their existing national networks to achieve sustainable development.

This international experience further broadened my horizons by allowing me to experience a field that seemed familiar to me in a foreign setting. The underlying techniques of science and medicine might be the same but their applications can be drastically different depending on geography, society, and culture. This is also true for the arts, engineering, business, and education. Thus, international opportunities as a supplement to teaching in the classroom will help students take the first step towards applying their knowledge as global citizens.

Post-secondary institutes should focus on developing comprehensive volunteer and exchange programs for their students. Because financial and resource limitations might hinder students from integrating international experiences into their post-secondary education, institutions should provide a myriad of internal and external funding dedicated for students who can further unleash their potential through experiences abroad. Furthermore, classroom learning should also emphasize the importance and application of knowledge taught both for the local and international communities to contextualize students' education. In addition, establishing connections with international post-secondary institutes allow Canadian universities to foster a strong global network. This intensive network of global citizens and post-secondary institutions will align higher education with the ambitions of the twenty-first century.
Conclusion

As can be seen, from coast to coast, the challenges and rewards associated with innovating in higher education are as diverse as the communities fostering them. The variety of institutions and disciplines involved in the movement towards a more creative, collaborative, and progressive teaching and learning environment will undoubtedly usher students into the innovative twenty-first century social and intellectual climate. To yield maximum results, networks, exploration, commitment to improvement, authenticity and problem solving must be integrated into post-secondary mandates, and therefore support innovative endeavours at large.

References


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Biographies

Heather Carroll is completing a Bachelor of Education at Memorial University who is passionate about teaching and learning in a local and global setting. Through her time as a volunteer teacher at a school in Fiji and an orphanage and school in Cambodia, she experienced firsthand that education is a pillar of sustainable poverty reduction. She is challenging her faculty to include an international component, believing that they can create a
movement that will liaise and encourage education students to work in the developing world.

Shwetha Chandrashekhar is enrolled in a Bachelor of Commerce degree with a Major in Human Resource Management at the University of Guelph. She raised almost $6,000 for sustainable education projects in Latin America with her team of volunteers by running several exam review sessions while Chapter President of Students Offering Support Guelph, one of several charitable sustainable social ventures across North America. She also conceptualized and initiated Redefining Success: How to Win at University & Life. She has co-founded Guelph Commerce Women in Business to encourage female students to embrace the reigns of leadership.

Danny Huang is an Honours Biochemistry student at the University of Alberta. He has been extensively involved in research and community leadership. Danny’s investigation into prostate cancer has received the Gold Medal, Platinum, and Best-in-Fair accolades at the Canada Wide Science Fair 2011 and was one of the four regional projects to represent Canada at the International Google Science Fair 2012. Danny is continuing his work in cancer biology, epidemiology, and structure biology, while co-authoring various scientific publications.

David Kim is completing a medical degree at the University of British Columbia. He founded UBC Students Offering Support with fellow students. David was the Chief Operating Officer of the World Model United Nations Conference in 2012. David serves as one of the directors of the UBC Alma Mater Society, volunteers as a piano instructor for marginalized youth, does research at the UBC Department of Urologic Sciences, and teaches taekwondo in the community with proceeds going towards charities.

Peter Liu is a Bachelor of Health Sciences student at the University of Calgary, majoring in Biomedical Sciences. Peter’s optimism for life stems from his transformation from a disease burdened child to an international gold medalist in martial arts. He is the Ambassador for the Class of 2015. As an Executive in five student organizations, he is a dedicated advocate for social justice, healthy living, and global health. In addition, as an Orientation Leader, peer helper, and leadership workshop facilitator, he has an indispensable role in cultivating future leaders.
The Interplay of Space, Place and Identity: Transforming Our Learning Experiences in an Outdoor Setting

Alice L.E.V. Cassidy  
University of British Columbia

W. Alan Wright  
University of Windsor

William B. Strean  
University of Alberta

Gavan P.L. Watson  
Western University

In this paper, we use a day-long professional development workshop for higher education faculty conducted in an outdoor setting as the starting point for an examination of the value of such activities. We explore the potential benefits, in terms of learning and holistic well-being, of educational activities designed to provide participants with sessions either in the natural environment or the built (urban) environment beyond the four walls of the traditional classroom. Drawing on the literature of ‘place-based learning’, the well-established traditions of some conference organizations, the emerging trend to mount such pre-conference workshops in the Society for Teaching and Learning in Higher Education (STLHE: Canada) and the feedback of past participants, we explore the nature of these experiences and the various outcomes, grappling with the challenge of identifying tangible ‘takeaways’ at the individual and community levels. We conclude with directions for further analysis of the role of this type of session in terms of conference pedagogy and means of measuring impact on the well-being, outlook, and practices of instructors in higher education.

Orientation

Much has been written about major transformations underway in higher education (Barr & Tagg, 1995; Brookfield, 2000; Cranton, 1994). Articles and books are replete with studies, analysis, and commentaries concerning the failure of higher education, the crisis of financing universities, the crippling burden of student debt, and educational technologies transforming the learning experience to the point that the very existence of traditional face-to-face classroom learning is said to be under threat. Some examples describe a movement from someone in front of a large computer-generated image in a traditional lecture hall to that of an asynchronous learning experience whereby a lone student is face-to-face with a computer screen. Yet, despite the transformations higher education is undergoing, common to both these experiences is a certain sense of place: the Internet or the lecture hall all have a feeling of ‘somewhere’ for those participating.
Although educational developers are among the first to acknowledge that experiential learning à la Kolb (1984) and practical internships help provide invaluable learning experiences for post-secondary students, conference pedagogy tends to be largely stuck in the age of historic presentation followed by question and answer, coupled in some instances with interactive conversation and small group activities. But even the more adventurous of conference sessions are, on the whole a homogeneous experience: conducted in traditional campus classroom settings, with the insistence on the provision of movable seating often the most ‘radical’ departure from the rows and rows of eager learners which is the traditional norm. Leaving a conference with any sense of the place often happens in spite of the formal learning.

For several years a number of university professors and educational developers have conducted day-long workshops in outdoor settings on the pre-conference day of the Society for Teaching and Learning in Higher Education (STLHE; see Table 1).

<table>
<thead>
<tr>
<th>Year</th>
<th>Host city</th>
<th>Paddling location</th>
<th>Conference theme</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>Charlottetown, Prince Edward Island</td>
<td>North Rustico</td>
<td>A Fine Balance: The Student Experience of Learning</td>
</tr>
<tr>
<td>2006</td>
<td>Toronto, Ontario</td>
<td>Harbourfront and Toronto Island</td>
<td>Knowledge and Its Communities</td>
</tr>
<tr>
<td>2007</td>
<td>Edmonton, Alberta</td>
<td>Fort Edmonton Park</td>
<td>Evolving Scholarship</td>
</tr>
<tr>
<td>2008</td>
<td>Fredericton, New Brunswick</td>
<td>St. John River</td>
<td>A World of Learning</td>
</tr>
<tr>
<td>2013</td>
<td>Cape Breton Island, Nova Scotia</td>
<td>Louisburg Bay and Fortress</td>
<td>Learning to Live; Learning for Life</td>
</tr>
<tr>
<td>2014</td>
<td>Kingston, Ontario</td>
<td>St. Lawrence River and Cedar Island</td>
<td>Transforming our Learning Experiences</td>
</tr>
</tbody>
</table>

Participants come from across Canada (Wright, Cassidy, & Monette, 2013) and occasionally further afield. For some, “it is one of the reasons I decided to attend STLHE”, noted by a participant.

In one past workshop, the facilitators focused on paddling and navigating a canoe as a metaphor for teaching, allowing instructors “the opportunity to explore the multiple meanings of metaphors in situ and with colleagues in a cross-disciplinary setting” (Wright, Monette, & Hamilton, 2010, p. 75). All of the outdoor workshops mentioned here may be seen as a reminder to participants of the essentially contextual nature of our teaching practice. In every case the facilitators collected written feedback from participants, and in every case the ‘satisfaction index’, our data source for this paper, was very high.

28
The Interplay of Place, Space and Identity

Comments such as:

“This place fosters a way of knowing
Unlike the (typical) conference space
It is new, yet feels like home.”

“Water is good for the soul.”

from participants of the Transforming our Learning Experiences: Paradigms and Paddling Pedagogies all-day pre-conference workshop in Kingston, Ontario (June 17th, 2014) tell us, as the facilitators, that this kind of conference session is valuable in a variety of ways and for a variety of reasons.

In this paper, we set participant responses to the workshop experience in the tradition of ‘place-based’, experiential, holistic, and community learning experiences with a view to going beyond the ‘satisfaction index’ and defining more a more tangible rationale for making such sessions an integral part of progressive conference pedagogy.

Our most recent pre-conference workshop allowed us to explore Cedar Island in the St. Lawrence Islands National Park near Kingston, Ontario. The framework of place and place-based learning informed, in part, the design of the workshop. Place, as a concept, is distinctly interdisciplinary with biophysical, sociocultural, economic, political and psychological aspects. The field of place-based learning considers, in part, “how people connect with places and how those connections influence…[our] engagement with the environment” (Ardoin, Schuh, & Gould, 2012, p. 584). As we believe that education, regardless of setting, ought to have "some direct bearing on the well-being of the social and ecological places people actually inhabit" (Gruenewald, 2003, p. 3) it was our goal, in part, to foreground the land as pedagogical partner.

As facilitators, we acknowledged the importance of an experience that fostered building connections between ourselves and others, including the land and water surrounding Kingston. Participants agreed, with comments such as “interconnectedness with each other, the water, the land” and “an opportunity to make friends and feel welcome.” While we were only travelers on and upon the lake and landscape, reflecting on the meaning we took from Cedar Island was meant to be a metaphor for us to consider our engagement with our own environments of learning in higher education. In turn, we asked participants to reflect on the conference theme of transformation, considering the role, if any, of an environment, such as the one travelled through, as a catalyst for their own transformative learning (Walter, 2011). We acknowledge that experiencing something new or novel could be a factor in the favourable responses from the participants, but the importance of the role of first-hand experience outdoors cannot be discounted in fostering personal change (see, for example Revell, Duncan, & Cooper, 2014, for details of participants’ perspectives towards the impact of nature in fostering therapeutic change).

Meeting in the morning, participants, organized by skill level, departed in canoes and kayaks to Cedar Island. Upon arrival, we broke into smaller groups and based on learner interests, explored various facets of the natural St. Lawrence environment and prepared a communal lunch. We aimed to make the most of the outdoor environment, creating conditions designed to offer memorable individual, small group, and whole group experiences for twenty-five STLHE Conference participants. In the words of Baldwin et al. (2013): “the common thread running through all of our teaching is that place matters because it encourages new ways of questioning and being in the world.” (p. 2) It was a moderately challenging day involving physical activity and experiential learning (Kolb, 1984) consisting of active experimentation in place, reflective observation, recording impressions and drawing on personal experiences to conceptualize a sense of these activities in the context of our own personal pedagogies.

The Value of Nature-based and Whole-Body Learning

“Our goal should be to live life in radical amazement, to look at the world in a way that takes nothing for granted. Everything is phenomenal; everything is incredible; to be spiritual is to be constantly amazed.”
We (as academics) and our students are facing chronic cognitive overload in proportions never before contemplated. Although the notion of cognitive fatigue was explored in early psychology by the likes of William James and Edward Thorndike, it is unlikely that they could have imagined the volume of stimuli that would be hitting us all on a nearly constant basis. They did understand, however, that as distractions increase, the amount of effort needed to stay on task increases, along with the rate of mental fatigue (Selhub & Logan, 2012).

Part of our goal in creating a paddling workshop was to provide experiential learning that would raise awareness about our ‘new normal’ operating states in higher education. In addition to our sense of overload, there is another element in the brain fitness discourse that is quite important and yet overlooked. Only infrequently do considerations of brain function consider what it really costs to have (cognitive) inhibition fatigue. Inhibition is an essential brain regulator, with executive function keeping brain energy away from distractions and focusing attention where needed. Given all the distractions we live with, our filters are burdened, trying to save us from information overload. Think about yourself surfing the Internet and the effort it takes to stay diverted from all the little bells and whistles dancing around the text you want to read.

Nature provides stress relief and ways to heal our brains from the bombardment to which we subject them so regularly. Kaplan (1977) suggested that natural environments are fascinating so they keep involuntary attention without needing to expend the brain’s energy that would otherwise create cognitive fatigue. Nature experiences can encourage a sense of cognitive clarity and remove confusion. This kind of mental focus has done our species well for millions of years in the natural environment. As Kaplan (1977) posited, being mentally fatigued and distracted would have been deadly on the African savanna. The fascination provided by natural environments safeguarded our survival by fostering mental clarity without requiring lots of energy. All of the ‘infotoxins’ (information of dubious quality) entice us disguised as interest, but because they are not important or fascinating, they tend to suck away our energy.

The original work on the benefits of nature on cognition address the idea of attention restoration therapy and later Kaplan (1995) proposed four major components: a mental break or ‘being away’; fascination with the natural world; the vastness of nature’s expanse; and the ease with which natural environments are compatible with a mental respite.

Recent findings have broadly supported Kaplan’s hypothesis. Shin and colleagues (2011) in Seoul, South Korea, a city privileged enough to have a huge urban national park system, evaluated the cognitive effects of a walk through a pine forest versus downtown streets. Participants, before and after 50-minute walks, completed pre- and post-cognitive and mood assessments. On another day, the groups were switched: the urban walkers ventured into the forest and vice versa. Results revealed the expected increases in mood among the forest walkers compared with the urban walkers, and they also showed that only after the forest walks did participants’ cognition improve. Nisbet and Zelenski (2011) echo similar findings in their work, describing how outdoor walks in ‘nearby nature’ facilitated a sense of connection with the natural world and increased happiness. Participants in another study reported that immersion in natural environments increased their value of intrinsic aspirations, or goals that satisfy basic psychological needs (Weinstein, Przybylski, & Ryan, 2009).

Mental fatigue can also impair physical performance in healthy adults. Participants were placed in two conditions prior to jumping on stationary bikes (Marcora, Staiano, & Manning, 2009). In one they faced cognitively demanding computer tests, the controls just watched an emotionally neutral documentary on the Orient Express or Ferrari (the nature content of these videos was not reported). The differences between the groups on the cycle-to-exhaustion test were remarkable: the mentally fatigued group gave up quickly, having...
reached a maximal level of perceived exertion much faster. In short, a mentally fatigued mind causes a tired body. This helps to explain why it is so hard for many overworked people to get out and exercise.

Adult memory performance can be disrupted by a short period of increased levels of the stress hormone cortisol (e.g., Lupien et al., 2005), and just low-level elevation of pro-inflammatory immune chemicals (cytokines) weakens verbal and nonverbal memory (Selhub & Logan, 2012). Nature can decrease stress hormones and stabilize inflammation. Accordingly, nature can be of great value to cognitive health. It seems that nature can enhance cognition by mechanisms that involve mood and stress, and also particularly through reducing demands on voluntary attention and inhibition. Notwithstanding this desirable, low-cost intervention, in a world packed with cognitive demands, many are missing the restorative power of nature and reaching instead for another Red Bull®.

Other studies (e.g., Matsuoka, 2010) show that exposure to nature views enhance academic performance. Activities conducted in green space can reduce the symptoms of ADHD (e.g., Taylor & Kuo, 2009). Godbey (2009) presents a wonderful literature review with many more examples. Time in nature is clearly a means of enhancing mental outlook, reducing stress, increasing well-being, and life satisfaction. We found no evidence to the contrary in the literature. We note that some beginner paddlers may have experienced some stress as they started out, but, upon successful completion of the day’s adventure, espoused feelings of satisfaction.

Participants’ comments show the transformative nature they experienced: “all our senses are made aware of our environment”... “the creation of a context in which this kind of reflection becomes possible”... “I was part of a learning community today”... “Time just to be”... “a clear sense of the natural context in which the Conference is taking place”... “A day of contemplation and metacognition”... “overcoming obstacles and challenges”... “a great day of reflection and paddling”... “I know a new place today only because I paddled there”... “the interplay of space, place, and identity”... “loved matching a topic area with a physical activity.”

### Practical examples

A volume by Watchow & Brown (2011) is dedicated to the Pedagogy of Place, with a special focus on outdoor education. Nesbit & Mayer (2010) pointed to the affective learning gains, especially student beliefs about the course topic, as a result of field trips. In your course or program, you may or may not be able to take students on an actual field trip. But there are many ways to bring the inside out and the outside in.

#### Table 2

<table>
<thead>
<tr>
<th>I. Outside</th>
<th>II. Inside</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Take students on a field trip during regular class</td>
<td>a) Show something of the outside world during your indoor class</td>
</tr>
<tr>
<td>b) Take students just outside the front door for 15 minutes of regular class</td>
<td>b) Bring an object from outside into class</td>
</tr>
<tr>
<td>c) Give an assignment that must be completed outside</td>
<td>c) Encourage connections between outside and inside</td>
</tr>
</tbody>
</table>

In the Outside column of Table 2, if the field trip (Ia) is done during regular class time, of course the longer your class runs, the better. One of us (Cassidy), who taught a 3rd interdisciplinary science course taking place once a week for 3 hours, took students by bus to a local bog, and lined up a volunteer expert to explain its relevance. This of course was a special situation. Is your class 50 minutes long? How about, as in Ib, taking your students outside, even for a few minutes, can go a long way. Whatever your discipline, think of what you can show students or ask them to make note of. In Ic, the assignment Cassidy gave her students was a photo assignment (take a picture and be prepared to show it in next class and explain its relevance to the course topic, which in this case was human connections to ecology.) What about having students conduct a short inventory or make a list, in
their assignment, of all the ways things they note outside connect to the topic of your course?

Turning to the *Inside* column of Table 2, there is always a way to show students something in class that is based on the ‘outside’, be it the natural world, or more broadly, outside the classroom (such as showing a video or website or assigning a reading).

In the interdisciplinary science course, with its focus on making good field notes and thinking critically, Cassidy ‘brought in’ a unique item to start each class, such as a Douglas Fir cone, imitating an owl vocalization, or showing an image where it was hard to tell the scale. Students posed questions that might help them determine what the item was, thus honing their scientific method skills. If you asked your students to make a list of things they see during the weekend, or on their way to school, that connected to the topic of your course, what do you think they might come up with? Would each student have the same list? Might this be a good way to elicit class discussion and hear all student voices?

Additional ideas and handout templates can be found at https://cassidyinview.wordpress.com/in-class-activities/bring-the-outside-world-into-your-class-and-vice-versa/

**Directions for Future Exploration**

As educational developers who conducted the day-long professional development workshops prior to the more traditional conference sessions, we have strong convictions about the unique value of these experiences, and these convictions are re-infomed by very positive participant response as well as literature on ‘place-based’ learning, experiential learning, and the benefits of the outdoor setting for personal well-being and the development of a sense of community. As one participant notes, “I wish the whole Conference was like this.” We have attempted to root our observations and resulting convictions further in the literature as well as the observations of others. While we will pursue our empirical experiences by organizing additional sessions of this kind, it is also important to ‘drill down’ further with regard to the actual impacts of these workshops in an attempt to observe and measure intended and unintended learning outcomes on the practicing instructor in higher education.

What is more, the emerging Scholarship of Teaching and Learning (SoTL) practices in higher education require us to make every attempt to give scholarly attention to our pedagogical practices and to disseminate findings broadly in the higher education community. Future sessions of this nature may involve replication studies, pre- and post-session participant surveys, post-session follow up surveys and interviews after six months, and identification of transfer of professional development learning to actual pedagogical practice in the undergraduate or graduate studies setting. Similar to many of our practices in academic development, the period of intuitive and participant satisfaction-based motivation must give way to a more scholarly approach…without creating a negative climate of experimentation which overrides the fabulous individual and community ‘joie de vivre’ as participants ‘paddle their own canoe’.

**References**


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Biographies

Alice L.E.V. Cassidy, Ph.D. is an Educational Developer, facilitator and science educator currently organizing first year courses in the Faculties of Science and Land and Food Systems (LFS) at the University of British Columbia. Having conducted field work for three degrees and as a wildlife consultant, she very much enjoys and has years of experience connecting students and teachers to the value of natural world connections to teaching and learning.

W. Alan Wright is Vice-Provost, Teaching and Learning, at the University of Windsor where he oversees the work of the Centre for Teaching and Learning and the Office of Open Learning. Dr. Wright has been a member of the STLHE for many years, and was one of the founding editors of the Green Guide publication series. He was the 2013 recipient of the Christopher Knapper Lifetime Achievement Award.

William B. Strean, Ph.D. is Professor, 3M National Teaching Fellow, and Education Director for the Integrative Health Institute at the University of Alberta. He incorporates nature, mindfulness, and somatics into his teaching and scholarship.

Gavan P.L. Watson is the Associate Director, eLearning at Western University’s Teaching Support Centre. With a PhD in environmental education, Gavan has a professional background in educational development and has published widely on topics such as: the role of technology in non-formal environmental learning; teaching critical reflection to graduate students; and using social media in the university classroom.
Mindfulness in the Academy – Transforming our Work and Ourselves ‘One Moment at a Time’

Paula Gardner & Jill Grose
Brock University

In this paper we (a faculty member and an educational developer) discuss our attempts to be more mindful in the academy with attention to mindfulness practices within the classroom and the development of a community of practice at our institution as ways to foster community and deepen learning. Included within the paper is an introduction to mindfulness and the benefits of mindfulness and mediation practices - generally and within education. In addition to providing current resources we include details of our own experiences as examples through which others may be able to incorporate these practices into their own classrooms and institutions.

Introduction

A career as an academic was never a 9-to-5 Monday to Friday endeavour. Today, however, as the pace of our world moves increasingly faster and greater responsibilities are assigned to members of the academy, the need to pay attention to personal health and wellness, and to be mindful of how we engage with others has become more pressing. Faculty members, instructors and administrators often report feeling stressed and overwhelmed as they struggle to balance the many demands of academic life (Kinman & Wray, 2013) while students are increasingly seeking services related to mental health issues (University of Toronto, 2014).

One way to address the struggle for balance in our academic life may be the practice of mindfulness. Mindfulness is an ancient practice founded in many Eastern philosophies including Buddhism, Taoism, and Yoga. Fundamentally, mindfulness is about consciously bringing our awareness to the present moment – to the here-and-now experience. Jon Kabat-Zinn (2003), a world authority on mindfulness, defines it as: “Paying attention in a particular way: on purpose, in the present moment, and non-judgmentally” (p.144).

Mindful activities, particularly those involving various forms of meditation, have the potential to assist faculty, staff, and students become more resilient in responding to the day-to-day pressures of academia. Research suggests that practicing mindfulness can improve academic performance in terms of increasing attention, memory, and concentration as well as one’s ability to manage stress (Shapiro, Brown, & Astin, 2011). On a broader level, mindfulness activities can help support the development of the “whole person”, allowing us to consider the broader purpose of education and its transformational role in human development (Palmer & Zajonc, 2010; Shapiro, Brown, & Astin, 2011). In transforming our learning experiences, whether our own or those of
our students, we need to focus first on transforming ourselves. Mindfulness offers opportunities to do so.

In this paper, we (a faculty member and an educational developer) discuss our own attempts to be more mindful in the academy with attention to mindfulness practices in the classroom as a way to foster community and deepen learning. We also share our experiences creating a community of practice (Cox & Richlin, 2004; Kimble, Hildreth, & Bourdon, 2008) focused on mindfulness - a new initiative at our institution for faculty and staff.

The Need for Mindfulness in the Academy

Paula’s story – Stumbling into mindfulness

My experience using mindfulness in the classroom began…very unexpectedly. It is a shock to me now to realize how much I didn’t know about what I was doing, and I am quite sure that had I actually thought it all through before starting, there is no way I would have begun.

It was the first day of my first semester teaching at the City University of New York and as usual negotiating a city of 8 million took its toll. I entered the classroom - after 3 subway transfers, a sprint across 4 lanes of traffic, and a narrow miss with a bicycle courier riding the wrong way up 2nd Avenue – with my heart racing, mind spinning and sweat dripping down my back. As 60 undergraduate students turned their attention to me I thought, “I need a minute”, which, I quickly realized, would require us all to take a minute. While frantically trying to think about how to make this minute happen, I found myself ‘channeling’ teachers in my very new yoga practice – “Ok everyone, please close your computers and turn your cell phones off… as we will start our class today by stopping… by bringing ourselves and our awareness into this space, this classroom, this moment… find a comfortable seat, close your eyes gently from top to bottom, lower your shoulders, relax your jaw… and bring your attention to your breath”… and so began my practice of beginning all of my classes with meditation.

Jill’s story – Searching for ways to quiet the mind.

Mindfulness has always been a fascination for me. I took meditation classes in the early 80’s but always felt I wasn’t “good” at it so never kept up any regular commitment (I know now that judging one’s ability to meditate is not very mindful!). I also started yoga about 15 years ago and have come to appreciate the ways in which my mind quiets when I need to focus on the pose. As an educational developer and university administrator for 16 years, I have also witnessed and participated in a number of conversations about academic stress, feelings of impostership, alienation from the academic community, and the search for work life balance. So, when Paula approached me at our new faculty gathering and asked if I knew anyone interested in mindfulness, I felt there might be many people who would welcome the opportunity to explore this further. And, I definitely wanted to be part of it!

What is Mindfulness and How Does it ‘Work’?

Mindfulness is “the awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment by moment” (Kabat-Zinn, 2003, p.144).

Juliet Adams, Founder of Mindfulnet.org provides a simple description of mindfulness in The ABC’s of Mindfulness (http://mindfulnet.org/page2.htm#Intro):

- **A** is for awareness - Becoming more aware of what you are thinking and doing – what’s going on in your mind and body.
- **B** is for “just Being” with your experience. Avoiding the tendency to respond on auto-pilot and feed problems by creating your own story.
Mindfulness in the Academy

- *C is for seeing things* and responding more wisely. By creating a gap between the experience and our reaction to it, we can make wiser choices.

One of the most basic mindfulness practices is meditation. Meditation usually begins with physically ‘settling’ into a comfortable sitting position and then directing one’s attention to the breath. We use the breath as an anchor in meditation; as thoughts drift in and we find ourselves getting immersed in the ‘story in our heads’, re-finding the breath helps us bring our attention back, without judgment, to the present moment. The intention in meditation, despite what many believe, is not to clear our minds, but rather to cultivate an awareness of the present moment with acceptance, non-judgment, curiosity and compassion for ourselves. Noticing whatever arises with a growing degree of acceptance and non-judgment leads to increased clarity and stability of attention and reduced reactivity in the body’s physiological stress responses (Meiklejohn et al., 2012).

The benefits of mindfulness

Studies have shown that practicing mindfulness, even for just a few weeks, can bring a variety of physical, psychological, and social benefits.

Physical benefits include:

- *Boosting our immune system* - in one comprehensive study, researchers maintain that just eight weeks of mindfulness training helps the immune system fight off illness (Davidson et al., 2003).
- *Inducing positive changes in the brain* - as neuroscientist Sara Lazar (2011) explains, the practice of sitting quietly and bringing one’s awareness to the present moment can literally change our brains. Neuro-imaging studies suggest that 30 minutes of meditation a day for eight weeks can increase the density of gray matter in brain regions associated with memory, stress, and empathy. While other studies have relied on self-reported data, these researchers used magnetic imaging to demonstrate physical changes to the brain (Hölze et al., 2011).

Psychological benefits include:

- *Improving memory and attention* - studies show that meditation improves the ability to focus, to concentrate, and to remember information (Marsh & Wong, 2011; Shapiro, Brown, & Astin, 2011).
- *Reducing negative emotions and stress* - a review of empirical studies on mindfulness meditation showed that meditators demonstrated significantly higher levels of mindfulness, self-compassion and overall sense of well-being and significantly lower levels of negative psychological behaviours such as rumination, thought suppression, fear of emotion, or difficulty with emotional regulation (Keng, Smoski, & Robins, 2011).
- *Alleviating depression* - some studies suggest that mindfulness is at least as good as antidepressants in combating depression and anxiety (John-Henderson, 2011; Shapiro, Brown, & Astin, 2011).

Social benefits include:

- *Fostering compassion and altruism* - people who meditate are more likely to practice self-care (Keng, Smoski, & Robins, 2011) as well as demonstrate compassion, care and empathy for others (Shapiro, 2013; Shapiro, Brown, & Astin, 2011; Simon-Thomas, 2013).
- *Enhancing relationships* - mindfulness training can help couples feel more optimistic and relaxed, closer to one another and ultimately, more satisfied with their relationship (Carson, Carson, Gil, & Baucom, 2004).
Mindfulness in Education

In addition to the numerous physical, psychological and social benefits, mindfulness activities in education create benefits specific to teaching, learning and classroom behaviour. Mindfulness and meditative practices can result in greater psychological well-being for students, a greater degree of concentration, reduced class disruptions, and improved academic performance (Bush, 2011; Shapiro, Brown, & Astin, 2011). Bush (2011) stated that,

Educators are interested in the calming, quieting, focusing qualities of mindfulness that help students reduce stress and become more patient and present in the classroom, but they are also interested in how that calm stability can positively affect cognitive functions like attention, working memory, and long-term memory, and lead eventually toward understanding and wisdom. (p. 184)

As research in this area grows, we are learning that teaching mindfulness in the classroom is beneficial not only for students, but for teachers and schools.

- **Mindfulness helps students:** Mindfulness training has been shown to improve test scores and working memory capacity (Mrazek, Franklin, Phillips, Baird, & Schooler, 2013) and also reduces psychological distress stress (Oman, Shapiro, Thoresen, Plante, & Flinders, 2003) among students.
- **Mindfulness helps schools:** There’s scientific evidence that teaching mindfulness in the classroom reduces behavior problems and aggression among students, and improves their happiness levels and ability to pay attention (Jennings, 2010; Suttie, 2007).
- **Mindfulness has also been shown to benefit educators,** both personally and professionally: Mindfulness-based teacher training initiatives have shown increases in teachers’ sense of well-being and teaching self-efficacy, as well as their ability to manage classroom behavior and establish and maintain supportive relationships with students (Meiklejohn, J., et al., 2012). Teachers trained in mindfulness show lower blood pressure, less negative emotion and symptoms of depression, and greater compassion and empathy (Jansen, 2012).

Mindfulness in Higher Education

Historically, much of the research and practice in mindfulness and education has been focused on K-12 teachers and students. However, interest in the higher education sector has been increasing nationally as well as internationally over the past decade. A recent issue of University of Toronto’s Alumni Magazine, for example, highlights numerous mindfulness research projects undertaken at the University of Toronto with mounting evidence pointing to the beneficial effects of meditation on depression, stress, binge eating, and addiction (MacDonald, 2014).

The Center for Contemplative Mind in Society, incorporated in 1997, has been organizing educational retreats and summer institutes for its members for over 20 years. Since 2010, it has hosted an annual conference focused specifically on contemplative practices in higher education. The Center formed the Association for Contemplative Mind in Higher Education, which brings together academics and educators, staff, and students from a multitude of disciplines “committed to the transformation of higher education through the recovery and development of the contemplative dimensions of teaching, learning and knowing”. The organization has just published its first journal (2014) dedicated to promoting “the understanding, development, and application of contemplative and
introspective methods” (http://www.contemplative
mind.org/).

The Mindfulness in Education Network, also based in the United States, was established in 2001 to promote “mindfulness as an antidote to the growing stress, conflict and confusion in educational settings as well as an invaluable gift to give students” (http://www.mindfuled.org/).

In Canada, Simon Fraser University recently launched its Master of Education program in Contemplative Inquiry and Approaches in Education, stating it is the first university in North America to offer a graduate degree in this area (http://www.sfu.ca/sfunews/stories/2013/new-masters-marries-education-with-mindfulness.html).

Many universities offer courses in contemplative practices, including Columbia, Penn State, Harvard, and Yale. The University of Toronto has the Centre for Mindfulness Studies, led by faculty members who teach mindfulness practices, meditation, and cognitive behaviour strategies to health care practitioners as well as individuals (Macdonald, 2014).

In addition to active research in mindfulness, many universities have established workshops in mindfulness practices as part of their support programs for students. Focused on helping students cope with stress and anxiety and improving learning, these initiatives have demonstrated positive results. A literature review conducted by the University of Toronto’s provost found that interventions such as mindfulness strategies were helpful in reducing university student stress, anxiety, and depression and made the recommendation that universities should make such programs widely available to students (University of Toronto, 2014).

Integrating Mindfulness into the Academy

The growing interest in mindfulness training at institutions of higher education provides a variety of opportunities to expand beyond workshops and short courses offered by student support units to explore possibilities for integrating mindfulness strategies into the classroom, the curriculum, and communities of practice. It was this interest in the integrative capacity of this work that brought the two of us (Paula and Jill) into discussion about ways to share best practices. In this next section, we outline our efforts to introduce mindfulness activities within both the classroom and among colleagues within the institution.

Introducing mindfulness to the classroom (Paula)

Observing, and experiencing, the ways in which group meditation fostered a positive classroom environment, I continued to build mindfulness practices into my teaching practice in my new position as Assistant Professor at Brock University.

The process I developed for integrating mindfulness meditation into my courses consists of three steps:

1. In the second class of the semester I introduce the concepts of mindfulness and meditation, explain how I came to use this in my teaching, and that other students have found it to be useful to them. I tell them that we will be beginning each class with a short meditation and ask that they keep an open mind and participate. I also give them the option to opt out of the meditation by arriving to class at 10 past the hour and explain clearly that this will in no way affect their grade in the course.

2. In weeks 2 through 12 (11 weeks total) we begin each class with a brief (2-3 minute) discussion of one of three topics related to mindfulness: What is it? Why do it? Benefits? And How to do it? (Strategies). This is followed by a short guided meditation which, at the beginning of the semester, is 1-2 minutes and then as students develop their skills and feel more comfortable with
the practice, gradually becomes longer. I begin the meditation the same way each week as I talk them ‘into’ their practice and help them to prepare physically and settle into the room. This includes asking them to turn off all their technology, getting comfortable in their seats with feet flat on the floor and hands on their laps, and closing their eyes (recognizing some students may not feel comfortable doing this, I suggest that those who do want to close their eyes can simply ‘soften’ their gaze and lower their eyelids). Then I use a variety of breathing and other present awareness techniques (e.g., body scan) to help them focus their attention and begin their meditation. After this, I leave them for a period of time (approximately 2 to 5 minutes) to practice on their own. I end the meditation by asking them to open their eyes.

3. During the final class students are asked to complete an anonymous evaluation of the practice. The evaluation is completed at the same time as the departmental course evaluations and is administered by the TA.

I was completely overwhelmed when I began reviewing these evaluations and also the course evaluations where many students made direct reference to the meditation practice. The responses were incredibly positive (indeed, I did not receive any critical or negative comments about the practice), and they highlighted many aspects and impacts of the practice that I had previously not considered. For example, students connected the practice with a positive sense of self and feeling cared for:

“I think that this mindfulness was an awesome experience. It allowed me to feel better about myself and it felt good to know that a professor actually cared about my mental wellbeing.”

The care and trusting relationship between students and instructor was mentioned frequently in the evaluations, as was the way in which the meditation seemed to help students feel less anxious and supported their learning:

“After doing mindfulness at the beginning of each class, it made me feel more relaxed and calm and it was easier for me to focus in class. I wish each professor did this for their class.”

I, too, felt the practice enhanced my relationship with my students while also fostering personal and professional growth; I felt a real sense of community and a strong connection to my students through this practice. Personally, I experienced an inner sense of calm and focus and a greater awareness of the joy I feel when teaching. As an educator, I was aware how the practice also promoted an improved sense of preparedness (readiness) and teaching-efficacy, and boosted my energy for teaching.

At the end of my first year I was convinced of the transformative power of in-class meditation. It was impossible not to notice the calm and the readiness we all felt after taking those few minutes to pause in our day, to take time for ourselves, to breathe and bring ourselves into the present moment. Time and again, I witnessed this transformation as I asked them to open their eyes and found all of them staring straight back at me with a focused, alert presence that none of us were feeling when we entered the classroom. This meditative and, I would argue, pedagogical practice provides an opportunity to co-create a new, more positive space for teaching and learning.

Inspired by all of this I am in the process of launching The Mindfulness Experiment – a new program of research aimed at: a) understanding the ways in which mindfulness practices can be integrated into post-secondary classrooms and curriculum, and b) the impact of doing so (on the students, the teacher and the classroom learning environment).
Mindfulness in the Academy

Mindfulness practices for faculty and staff (Jill)

When Paula asked me if I knew others interested in mindfulness, I was confident that this topic would resonate with both faculty and staff, largely because of a growing sense that people are often overwhelmed and searching for better work life balance. My work in the teaching centre routinely affords me the opportunity to talk with faculty members and graduate students about their efforts to balance teaching, research, and family commitments. With every passing year, this challenge appears to become increasingly difficult.

In 2013 at the STLHE conference at Cape Breton University, Professors Barbara Seeber (Brock University) and Maggie Berg (Queen’s University) presented a well-attended session entitled Colleigliity in the Corporate University, in which they argued for the need to adopt principles from the Slow Movement, particularly “slow conviviality, as a model of congeniality… in order to resist the fragmentation of our professional lives”. Other initiatives in higher education have pointed to the need for reconnecting to a sense of purpose in the work that faculty members do. Parker Palmer for example, has written numerous books on the challenges of alienation within the academy, particularly within the teaching learning relationship. His seminal work The Courage to Teach (2007) points to how losing one’s sense of authenticity and identity can result in a teaching life of anxiety and stress.

Indeed, the story I most often hear from faculty (and other Professionals) is that the institutions in which they work are the heart’s worst enemy. In this story, institutions continually try to diminish the human heart in order to consolidate their own power, and the individual is left with a discouraging choice: to distance one’s self from the institution and its mission and sink into deepening cynicism (an occupational hazard of academic life), or to maintain eternal vigilance against institutional invasion and fight for one’s life when it comes (p. 119).

His recommendation is to connect with ‘the teacher within’ through strategies that are contemplative:

…solitude and silence, meditative reading and walking in the woods, keeping a journal, finding a friend who will simply listen. I merely propose that we need to learn as many ways as we can of “talking to ourselves” (p. 116).

Palmer asserts that it is through conversation with colleagues that teachers can come to an understanding of ways to move beyond tips and techniques to find their inner teacher. Through exchanging ideas, best practices, and stories of trial and triumph, we can reconnect with the motivation that had inspired us to enter this vocation in the first place. Bringing people together in community to share who they are as teachers was certainly one of our motivations for starting a mindfulness community of practice.

Forming a community of practice

Creating a community of practice (Cox & Richlin, 2004; Kimble, Hildreth, & Bourdon, 2008; Wenger, McDermott, & Snyder, 2002) specifically focused on mindfulness is a new initiative at our institution. While the literature in this area originally identified a community of practice or CoP as individuals coming together to discuss shared interests in an informal and organic way, recent work suggests that many groups form as a result of a focused, organizational initiative that brings people together and provides structure, giving the group momentum.
the emerging picture of a CoP is a group of individuals immersed in a domain of practice, who share their knowledge and experience of the domain in a variety of ways, very often informally. This sharing serves a variety of purposes: it enables good practice to be spread; it enables novices to become more knowledgeable and experienced; and it enables the community to develop new knowledge (Kimble, Hildreth, & Bourdon, 2008, p. 66).

This was certainly our experience in establishing the first and subsequent gatherings (we purposefully elected not to call these ‘meetings’) of the mindfulness group. There was considerable variation in the reasons stated by members about why they chose to participate, ranging from research opportunities between faculty to seeking out a shared, restful space with like-minded individuals. It was, in fact, this latter reason that seemed to predominate our first gathering, as members narrated their personal experiences with mindfulness in both the teaching and learning setting, and in personal practice.

Although we began our first few gatherings with a structured agenda, we quickly abandoned it in favour of a looser format that involved a period of meditation at the outset, a discussion of a reading or topic, and a closing meditative activity. An experienced practitioner of mindfulness had introduced us to a Tibetan singing bowl at our first gathering, so we purchased one and chimed the bowl to begin and end our time together.

As a community of practice, our group membership waxed and waned throughout the year, with some participants lamenting the lack of time to attend while new folks joined as they heard about our gatherings from others. While attendance decreased as the term became busier, each gathering saw a core group who were keen to devote some time to contemplative practices. Interestingly, many people verbalized how much they felt comforted by the idea of a mindfulness group, as if its very existence afforded a potential for well-being, should they have time to attend.

At the end of our first year, we (Paula and Jill) met to reflect on what we had learned, and decided to share our experience at the STLHE conference in Kingston. We viewed this as an opportunity to summarize and organize what we were doing, as a way to assess if, and how, this resonated with others, and as a way for us to learn what others were doing and thinking. We expected that there would be interest in a session on strategies that supported student learning at a national teaching conference. We did not, however, anticipate that so many attendees were themselves looking for a moment of mindfulness in an otherwise busy conference agenda. The session was attended by close to 50 people and we had to move in extra chairs, eventually turning people away at the door.

We began our session with a meditation, which created a focused, energized, engaged audience and an open learning environment. We then shared our vision and outcomes of the work we had completed with both students and colleagues in our community of practice. The invitation for others to contribute to a growing list of resources for educators created a lively discussion and we closed our session with a centering exercise involving reading the poem *Lost* by David Wagoner (1999).

We heard many positive responses from attendees and we left the session with a strong sense that the need for, and interest in, mindfulness as a way of being (not just a way of doing) within the academy is strong.

**Challenges to integrating mindfulness into the academy**

While there are clearly many benefits to practicing mindfulness in higher education, there are also significant challenges in introducing these practices in a meaningful way. First and foremost, while many people respond positively to the idea of engaging in mindfulness activities, both in terms of
their integration within the classroom and as part of a community of practice, we are socialized to put work first and maintain our busy-ness. This tendency to put our own well-being at the bottom of our priority list means contemplative practices are routinely taken off the to-do list.

Introducing mindfulness meditation in the university setting is also challenging given that we work in an academic culture rooted in scientific inquiry and where it is commonplace to question any practice appearing devotional, emotional, or spiritual in nature. A community of practice that engages in meditation and conducts research into mindfulness activities is operating outside of traditional forms of scholarship. As Zajonc (n.d.) suggests however, we should view these practices as complementing, rather than in competition with, conventional methods of inquiry:

The reflective, contemplative and experiential methods developed within the contemplative traditions offer a complimentary set of research methods for exploring the mind and the world. When taken together with conventional methods, an enriched research methodology and pedagogy are available for opening up new pathways for deepening and enlarging perspectives which can lead to real and lasting solutions to the problems we confront (http://www.contemplativemind.org/programs/acmhe).

Additionally, there are challenges that arise from the power dynamics within the classroom and how mindfulness practices such as meditation are introduced to students and for what purpose. In summarizing ways in which fellows of the Centre for Contemplative Mind in Society introduce mindfulness practices to students, Bush (2011) raises important questions about the difficulties this work involves:

How do you naturally and gracefully lead students in contemplative practices in an academic setting? How do you negotiate the different ‘presence’ you manifest in class, at least during certain moments? How do you move back and forth, wearing ‘different hats’? What exactly is the boundary between doing something that feels appropriate experientially, and doing something that feels devotional? How do you invite students to bring their whole selves to the course, and yet judge them by way of evaluation and grading? (p.191)

These are just some of the challenges that educators working with these practices will encounter. Of course, challenges will come not only from ‘others’ but also from within ourselves as mindfulness is a reflective activity that will surface questions of authenticity, identity, power, and relationship within the teaching learning context. All of these demand exploring.

Conclusion

Engaging in mindfulness as colleagues and as educators both reinforces what we know and understand about supporting ourselves and our students, while pushing us to continue to investigate ways to deepen this understanding. Although we have just begun our explorations of this work, we recognize its potential as being impactful for students, for the institution, and for us personally and professionally. Mindfulness practices offer us opportunities to transform ourselves “one moment at a time” and in doing so, we are better able to assist students with their journeys into learning, and to find balance within ourselves, and within our teaching practices.

Moving forward, we will continue to offer students the opportunity to engage with mindfulness strategies and to co-investigate their effect. We will also continue to host gatherings of our community of practice, as a place to “do”
mindfulness activities as well as share best practices. We know that such gatherings have a ripple effect and an unseen impact, as participants take newly introduced practices into their own contexts of research, teaching and institutional support.

Since facilitating our session at STLHE, we have directly heard from two institutions offering or starting communities of practice on mindfulness. At our own institution, we have broadened our practice to include other contemplative activities such as yoga, pedagogical walk and talks, and sessions on creativity in the classroom and reflective learning. Such activities bring individuals together to discuss academic work in ways that move beyond disciplinary content and closer to our essential needs as humans. As Zajonc (n.d.) points out:

A contemplatively oriented college or university can be a community where we learn to practice an ethics of genuine compassion, and learn to extend generosity to others beyond those closest to us. This development can be supported by contemplative practices, service-learning, and a genuine engagement within our surrounding community and its needs (http://www.contemplativemind.org/).

Lastly, we hope that our own investigations into mindfulness and its impacts can contribute to a larger conversation about the nature and purpose of our work in higher education while fostering a caring, collegial, and genuine environment within which to have this discussion.

References


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**Biographies**

Paula Gardner is Assistant Professor (Public Health) in the Department of Health Sciences at Brock University where she incorporates mindfulness and meditation practices into all of her courses.

Jill Grose is the Director of the Centre for Pedagogical Innovation at Brock University where she supports and promotes inquiry into teaching and learning, with a particular interest in contemplative practices in higher education. She also teaches graduate courses in pedagogy and writing.
The Road Less Travelled? Pathways from Passivity to Agency in Student Learning

Gail Frost and Maureen Connolly
Brock University

This qualitative study examined fourth-year undergraduate students’ responses to reflective writing prompts and journal entries related to their practical experiences in two capstone courses, both based in SBL/PBL pedagogies. We examined their ‘strategic’ approaches to learning that make engagement with subject matter and learning processes more instrumental than meaningfully grasped and applied. Three levels of analysis were used in a recursive process of description, reduction, and interpretation, and the results were added to our previous work examining student responses to reflective activities that foster deep learning. Our provisional conclusions are that strategic learners are invested in a mastery relationship with subject matter that makes grade procurement the evidence of this mastery and this shifts their focus to product over process as an obvious consequence. This disconnect from process leads students to an unhelpful relationship with formative assessment and feedback. They tend to wrestle with the formative elements and see them as mini summative assessments or quasi final products, rather than the necessarily perplexing engagement that leads to the imaginative generation of possibilities and recursive building and refining of ideas and processes. Our future research will focus on environments that encourage more comfort with mistakes and contingencies as learning opportunities.

Introduction

This article reports on a qualitative study examining fourth-year undergraduate students’ responses to reflective writing prompts related to their practical experiences in two capstone courses. Our findings were derived from three levels of analysis utilizing a recursive process of description, reduction, and interpretation (Lanigan, 1988) and build on our previous work examining student responses to reflective activities that foster deep learning (Frost, Connolly, & Lappano, 2014). While we have seen evidence of deep learning in a percentage of students, it is the superficial and strategic learners who compelled our interventions for the present project. Specifically, we wanted to address the strategic approaches that make engagement with subject matter and learning processes more instrumental than meaningfully grasped and applied. This disconnection from subject matter and actual engagement in professional practice is troubling given the fields in which our students will be employed.
Service-based learning courses give physical education and kinesiology students a chance to apply the theory they are learning in their degree programs in practical contexts before they graduate. Our students work with actual clients, either designing and implementing physical activity programs with adults or engaging with children and youth with various disabilities. Our goal is that they learn not only the appropriate professional and ethical behaviour necessary for their future careers but, more importantly, how to think creatively and respond to changing circumstances. Mezirow (2000) has suggested that this type of learning should include an understanding of context, critical reflection on assumptions, and validation of meaning by assessing reasons.

Our theoretical premises for this paper reside in the work of Paulo Freire (1987) and Lev Vygotsky (1962), as well as the more recent work of Noel Entwistle and Paul Ramsden (1983). Freire claimed that learners alienated from their own forms of expression also experience alienation from the larger culture and from their sense of themselves as cultural agents. This alienation is painfully evident when students attempt to use their previously assessed knowledge in an applied context and experience a profound disconnect between material they assumed they had grasped and the practical knowledge that the situation demands. In effect, they are without a form of expression even though they have the assessment grade that supposedly attests to some level of expertise. Their grasp of the subject matter is, in Freire’s terms, naïve - literal to the extent that it is practically useless. They cannot move beyond a single formulation of the problem before them nor create possible solutions or responses to it.

Vygotsky (1962) is equally cogent in his emphasis on the move from maximally compacted inner speech to maximally elaborated outer speech, that is, communicating knowledge in ways that people other than oneself can engage with in meaningful ways. This is not to suggest that moving beyond literal learning or maximally compact inner speech is in any sense a taken for granted or easily achieved learning objective. Indeed, these moves are transformative and are usually the result of deep learning, and often involve threshold concepts. Freire also insists on learners engaging knowledge at the level of culture and Vygotsky complements this with his compelling work on proximal learning, the power of learning from peers and other community members in both constructed and natural settings.

Entwistle and his colleagues (1983, 2000) link deep learning to meaningful engagement with subject matter, and further connect this meaningfulness to how learners build associations between experiences and understanding. That is, learning will likely be anchored in memory in meaningful ways through associations with contexts and experiences within those contexts. Entwistle claims that how curriculum is organized influences how meaningfully it is engaged and retained by learners. He advocates organizing and sequencing around threshold concepts over linear or additive arrangement of subject matter and experiences. Entwistle, Freire, and Vygotsky resonate with John Dewey’s early work in experiential education and reflective awareness of the processes involved in problem solving (Dewey, 1910, 1938).

Some commentary is called for here on deep learning and threshold concepts. Deep learning is distinguished from surface or “additive” learning by virtue of the quality and sophistication of the thinking, discernment, and analysis and the integration and consolidation of perspectives, theory, and related sources. In far too many instances, more content, more source material, and more pages substitute in a horizontally additive fashion for engagement with an idea or topic that forces interrogation of premises, recursive comparison of perspectives, deconstruction and analysis of taken for granted assumptions, and deliberate attention to the expressive repertoire. Deep learning compels a connection at the conceptual level, thereby requiring curricular planning around threshold concepts. Threshold concepts are those ideas, premises, or constructions that next learning relies upon. In effect, if a particular threshold is not grasped or learned, then
other learning in the course would be adversely affected. Threshold concepts have domino effects, hence teachers need ways of assessing them in an efficient and timely fashion so that the remainder of the course material can be engaged in meaningful ways and refinements can be made when necessary. Curricular alignment depends on this kind of proactive planning and subsequent follow-up analysis of the impact on learning. Aligning learning objectives, instructional strategies, and assessment allows instructors to be more systematic in their analysis of the complex and intertwining influences on learning. Our project examines reflection on action as one of these complex influences on learning and its relationship to deep learning in the particular contexts of problem-based learning and service learning. Our project enlists Freire and Vygotsky and also relies on the scholarship of Entwistle especially in terms of the connectedness across meaningful practical scenarios and deep learning.

The Study

Since the inception of this research project, almost 400 students have taken one or both of the fourth-year service learning courses that are the setting for our observations. Almost 100 have completed the Approaches and Study Skills Inventory for Students (ASSIST) questionnaire (Entwistle, Tait, & McCune, 2000). Analysis of the ASSIST suggests that the majority of our students are “strategic” learners: they are motivated to achieve the highest grade possible and are very alert to the assessment process. This is in contrast to the “deep” learner, who seeks meaning, relates and associates ideas, examines the evidence, and engages with material with authentic curiosity and interest. In our courses we apply the principles of assessed reflective journaling as well as anchored associations in meaningful experiences. From the beginning, our students have written a journal entry after each interaction with their client and have used their collection of journal entries to complete reflective writing assignments during the term. The journal entries are structured in a format that resembles the case notes they will be required to keep as practitioners, and are explained and presented as such at the beginning of the course. The reflective writing prompts require the students to think about, and respond to, issues they are likely to encounter in their future practice. Dyment and O’Connell (2010) have identified a clear understanding of the purpose for the journal, how it fits into the program of study, specific requirements for the entries, and training as factors that encourage highly reflective writing. They have also reviewed the research on the quality of reflection in students’ journals and found a relationship between the quality of reflection and the strength of the associations and linkages students made to learning within events and encounters that they had written about (Dyment & O’Connell, 2011). We believe that reflective writing is an integral part of authentic transformative learning and have been working for the past several years to find the most effective way to encourage the qualities of the deep learner in our students. Our efforts thus far have led us to refining our approaches to journal writing and reflective writing, and to analyzing the students’ responses to these approaches (Frost et al., 2014). In this paper we will share what happened in this, our latest intervention, especially in terms of student passivity and agency.

In our first iteration of working with reflection in a structured way we combined the description of working with the client with reflection on the encounter itself. Students achieved some success with description and reporting but seemed to have difficulty reflecting on their own actions. As a result, we separated the journal from the reflection, allowing more protocol-driven and literal journaling based in professional case-note standards, but still using our original format: What? (What happened?), So what? (Why is it important?), Now what? (What does it mean and what is my response?). Ongoing formative feedback on the quality of this journaling was provided.

Students were asked to include responses to the following elements in each of their journal entries:

- Participants listed
- Interaction information: date, time, place
• A clearly-stated purpose or goal for the session
• A summary of actions
• Notations of required/integrated changes to the group’s plan
• Reasons why changes were needed and made
• Notations regarding the degree to which purpose or goal of the session was achieved
• Explanation of how they knew whether the goal of the session was achieved
• Explanation of what would be done differently next session
• Reasons these things would be done differently

Material from the journal entries was used to help the students complete short reflective writing assignments during the term. The reflections were responses to prompts (see below) that were already based in situations of critical distance so that the students did not have to make that shift from their own writing.

1) Describe your least preferred client, the type of client with whom you would not want to work, and why (relate your “why” to your characteristics, specialty, training, background, interests, etc.).

2) Describe the type of practitioner whom you think this least preferred client needs (i.e., the practitioner’s characteristics, background, training, specialties, facility, etc.).

3) Reflect on and describe what is preventing you from becoming that type of practitioner.

4) Create your mission statement for your future practice. This statement should demonstrate why you belong in your profession, what you can offer your clients, and what makes you distinct.

Once the term was over and grades had been submitted, we re-read the journals of students in both our classes who had provided informed consent, and performed the same semiotic phenomenological analysis (Lanigan, 1988) that was used in the previous stages of this research (Frost et al., 2014). This analysis includes description (reading for the whole, identifying literal elements, key words and idioms, summarizing patterns and salience, and attending to within-case details); reduction (examining revelatory phrases and connections across the within-case and cross-case details); and interpretation (critically comparing the essential features to existing research and contextualizing the features within the research question). Each of us performed this qualitative analysis on our own students’ work. When questions arose, we discussed the problematic data and reached a joint conclusion. These three processes of analyses were undertaken in an ongoing, recursive, and constantly comparative fashion. We then distilled our results into literal, interpretive, and critical lenses for presentation and discussion. The results of our analyses on the two data sets (journals and responses to the reflective prompts) are offered below.

Results

Our second iteration was more successful in terms of producing thoughtful and detailed descriptions of client encounters and practitioner behaviours and the reflective components improved for more than 50% of students in both of our classes. However, new challenges emerged in both the journaling and the reflection component for some of the students.

Journals

At a literal level of description

For prompts that asked for a description of the students’ actions, some students described what the client did, that is, they reported on the enacted product of their planning, but not on their role in facilitating the session. For prompts that asked for an
Passivity to Agency in Student Learning

At an interpretive level of reduction and description

Students tended to report on their client’s responses to the session plan, but did not report on what effect their own (i.e., the students’) actions might have had both on how the session unfolded and how the client responded to the session. The sessions seemed to be protocol-driven, focused on the lesson/workout focused, but lacking a client-focused approach. There was an emphasis on session outcomes and much less attention paid to processes that were enacted in the session or to students’ processes of learning.

At a critical level

We noted tendencies in the students to avoid examining their own role in the interactions that necessarily must happen in a lesson/workout. Their intense focus on protocol placed an undue emphasis on precision over discernment, which led to an inability to adapt to changing conditions in the workout or in the client. This, in turn, led to students assuming that the need to change or adapt constituted a failure of some sort, and thus the possibility, much less the value, of process-based insight was lost. As well, their secondary, but no less intense, focus on planning ironically did not yield effective plans. Indeed, there was a disconnection between planning and implementation, and many plans did not account for contingencies, or were too difficult, irrelevant, or inappropriate. Students also seemed surprised that “winging it” (that is, having to come up with solutions on the spot, without any investment in forethought or anticipation) did not always lead to enjoyable or effective lesson/workout experiences for their clients. We suspect that these sessions were also equally unenjoyable for the students, especially given their tendencies to avoid examining process and their roles, responsibilities, and possible learning within that process.

Reflection

At a literal level of description

Students described their least-preferred clients as those who would not be sufficiently motivated, those who might pose challenges based in ability or capacity, or those who might present with physical or emotional characteristics that some students reported were unsettling or frightening (for example, a physically large client with a volatile temperament). Other least-preferred characteristics included age, appearance, and the need for lots of planning. In their responses to the type of practitioner that this least-preferred client needed, students frequently deferred to other experts, or declined to place themselves in situations where they might be or feel stressed, incompetent, or embarrassed. In response to what is preventing them from becoming this type of practitioner, students again noted qualifications and further stated that the pursuit of such qualifications was not in their career plans. In their responses to the mission statement prompt, students produced menus of services, and they often reproduced dominant industry clichés, such as “individualized, cutting-edge programs, guaranteed success, motivating environment” (Participant avatars: Daisy, Rose, Oak, Pine).

At an interpretive level of reduction and description

The least-preferred client descriptions might have led the students to realize that the client they described was a person who they saw as being radically different from themselves and their peer group, for example,
“not like me” (Participant avatar: Maple). Some students approached this insight, but did not quite arrive at it, that is, they recognized their aversion for working with people they deemed as different from themselves, but did not see their implicit preference for working with people like themselves.

For prompts that were designed to ask them to project themselves into a practitioner role that required a shift away from their own familiar skill set, some students responded by handing off the client to an already qualified expert, while other students realized they needed more experience, practice, and learning. By discussing a practitioner’s qualifications, it became easier for the students to avoid looking at characteristics, and thus easier to avoid examining and confronting their own characteristics.

At a critical level

We expected that discussions of characteristics might lead students to realize that personal change is possible, and that qualifications alone do not make one a competent, discerning practitioner. However, their foreclosure of a future self (“not in my career plans”, Participant avatar: Oak) was also reflected in their limited and somewhat naïve mission statements. We are concerned that the strategic students’ obsession with grade procurement is interfering with both their ability to engage with an actual client, affecting their capacity to see value in investing in that process, and also, their sense of agency in their own learning and skill development. We wonder how we might turn their strategic tendencies to the development of reflection and agency.

Discussion

We continue to engage with theoretical frameworks premised on experiential learning, reflective practice, and cultural agency. Kolb’s (1984) cycle of experiential learning functions as a guide for our problem-based and service-learning approaches. We wanted the students to work through a series of questions that form the structure for their unfolding learning experience: what they know; what they do not know; and what they need to find out. With each discovery, the process continues in a recursive way that ideally involves group members taking responsibility for each of these steps and moving the process of problem solving along at a pace conducive to working out the problem or challenge in a timely and transparent fashion, especially if the experience involves working with an actual person, as opposed to the concocted client in a paper-based case study. Descriptions by Entwistle et al. (2000) of deep, strategic, and superficial learning allow us to make sense of the type and degree of engagement that students have with their subject matter and their experiential project. While we have seen evidence of deep learning in a percentage of students in previous iterations of our research (Frost et al., 2014), it is the superficial and strategic learners who compelled our interventions for the present project. Specifically, we wanted to address the strategic approaches that make engagement with subject matter and learning processes more instrumental than meaningfully grasped and applied. This disconnection from subject matter and actual engagement in professional practice is troubling given the fields in which our students will be employed (e.g., health care and human services delivery, teaching, coaching, therapeutic applications, clinical kinesiology).

We hoped to address this disconnection with a revised design for the reflective activities in our courses. We explicitly designed the reflective activities and the ongoing processes of participation in the problem-based and service-learning experiences to align with Dewey’s (1910, 1938) idea of reflective thinking as a four-stage process. First, there is presence to experience, where the habitual ways of dealing with the world break down and there is a move to positive perplexity and engaging with the situation at hand (this positive perplexity is almost impossible to avoid if one is working with a client, who brings a whole set of contingencies to the experiential learning situation).

Second, there is description of experience, which involves achieving critical distance from the existential situation rather than rushing to solve it. Here, group members can attempt to figure out what
they know, what they do not know, and what they need to find out. This recursive process is not one that is discouraging. Rather, it offers up pivotal moments that permit a slackening of the strings of habit and a concomitant acceptance of attentiveness to possibilities and trying out new or different strategies.

Third, there is analysis of experience, a series of dry runs through the problem/challenge and its various conclusions, which is the trying out of possibilities mentioned in Step Two.

Fourth, there is intelligent action, where the informed choice made through the dry run process is moved into a chosen course of action, and then monitored for how it works or does not work.

The overall process we wanted for our students was an application of these steps: noticing and describing perplexing experiences, imagining other ways of handling the situation, and testing the outcomes obtained from the analytical phase in actual practice. In addition, we hoped for the development of their metacognitive awareness that when they reflect, they reflect on a specific object, with certain conceptual tools, from given interests and values within a specific context. As well, we hoped that they would realize that taking these steps into consideration would make a difference in terms of how they might work in the world of professional practice. This shift would then lead students to a sense of their cultural agency. No longer disconnected from their subject matter and professional practice — in Freire’s (1987) and Vygotsky’s (1962) terms, no longer alienated from their forms of expression — they have the potential to move into cultural agency, and be an agent within their disciplinary culture, and within the larger culture, with the ability and capacity to analyze, respond to, and transform it.

Our analyses have led us to some provisional conclusions. Our strategic students are invested in a mastery relationship with subject matter that makes grade procurement the evidence of this mastery, a strange and internally reproductive tautology. Their focus on product, over process, is an obvious consequence of their allegiance to the mastery model, as is the product-role tension in their client sessions. This separation from the process in learning also leads to an unhelpful relationship with formative assessment and feedback, two elements that figure strongly in our courses. As a result of our analysis of the most recent data sets, we have realized that the students who are strategic in their orientation tend to wrestle with the formative elements and see them as mini summative assessments. Furthermore, they see the formative elements as quasi final products rather than the necessarily perplexing engagement that leads to the imaginative generation of possibilities and recursive building and refining of ideas and processes. For our strategic students, the summative score or grade has weight and value, and the formative feedback remains something to be re-categorized into terms that are more familiar: a mirror of the least-preferred client, who is not like “me.”

However, we remain committed to the processes of reflection and deep learning and want to continue to refine our approaches so that we engage as many of our students as possible. Our learning from this iteration of our ongoing project leads us on to our next refinements. We plan on using more online tools for field notes and intend to encourage transparency of process and problem solving. We will experiment with flipped classroom strategies, such as less focus on lecture and more focus on practical problem solving. We hope this will create environments that encourage more comfort with mistakes as sites for learning and contingencies as learning opportunities. While we are realistic about our strategic learners, we are also learning more about them and what they value, and we are committed to using this information to build their capacity for risk taking and re-conceptualizing. We have also learned that we need to continue to use formative feedback that addresses the areas that are strong as well as those needing improvement. We need to facilitate students through Dewey’s four steps and support our students’ metacognitive awareness of these steps as they unfold. Finally, for now, at least, we need to facilitate our students as they learn how to do problem solving and applied work in class with us as teachers, and we need to recognize and promote it as legitimate learning. We remain hopeful that our commitment to process and reflection in student learning will nurture the shift from reflection on action to reflection in action.
References


Acknowledgements

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Biography

Dr. Gail Frost is an associate professor in the Department of Kinesiology at Brock University. She teaches courses in functional anatomy, sports injury prevention and care, and therapeutic exercise and is committed to finding effective ways to help students learn, and prepare for real life.

Dr. Maureen Connolly is a Professor of Physical Education and Kinesiology in the Faculty of Applied Health Sciences, Brock University. Maureen’s teaching and research interests include curriculum, stressed embodiment, dance & movement education, and Freirian approaches to teaching and learning. Her theoretical dispositions are semiotic, phenomenological, post/anti-colonial, irreverent and quixotic.
Transforming Passive Receptivity of Knowledge into Deep Learning Experiences at the Undergraduate Level: An Example from Music Theory

Anna Ferenc, Wilfrid Laurier University

This article discusses transformation of passive knowledge receptivity into experiences of deep learning in a lecture-based music theory course at the second-year undergraduate level through implementation of collaborative projects that evoke natural critical learning environments. It presents an example of such a project, addresses key features of its design to keep in mind for adaptation to other disciplines, and analyzes its effectiveness through a qualitative study of student reflections. The study yields compelling evidence of enhanced engagement with subject learning, meta-learning and transfer of learning.

Introduction

This article discusses transformation of passive knowledge receptivity into experiences of deep learning in a lecture-based music theory course at the second-year undergraduate level through implementation of collaborative projects that evoke “natural critical learning environments” (Bain, 2004). It presents an example of such a project, addresses key features of its design to keep in mind for adaptation to other disciplines, and analyzes its effectiveness through a qualitative study of student reflections.

In his influential book, What the Best College Teachers Do (2004), Ken Bain identifies creation of a “natural critical learning environment” as a fundamental component of effective instruction at the post-secondary level. In such an environment, people learn by confronting intriguing, beautiful, or important problems, authentic tasks that will challenge them to grapple with ideas, rethink their assumptions, and examine their mental models of reality. These are challenging yet supportive conditions in which learners feel a sense of control over their education; work collaboratively with others; believe that their work will be considered fairly and honestly; and try, fail, and receive feedback from expert learners in advance of and separate from any summative judgment of their effort. (p. 18)

Such an environment activates deep-level learning and metacognitive processing to achieve a “sustained influence on the way the learner subsequently thinks, acts, or feels” (p. 29). Bain acknowledges that this is often accomplished through a “highly authentic” collaborative project (p. 60).

At the core of collaborative projects lies the concept of peer learning, which has been promoted for high-order cognitive and metacognitive
development for several decades. As pointed out by King (2002), peer learning can enhance mastery of academic content and disciplinary skill as well as foster more complex, high-level cognitive processing. However, adopting this potentially valuable instructional tool comes with a caution that positive results are not automatic and that designing effective peer learning activities is a complex and challenging task (De Lisi, 2002; Palincsar & Herrenkohl, 2002). Moreover, while studies show that promoting metacognition is critical to learning (Bransford, Sherwood, Vye, & Rieser, 1986; Coutinho, 2007; Crowe, Dirks, & Wenderoth, 2008; D’Avanzo, 2003; Hartman, 1998; Pintrich, 2002; Schraw, 1998; Tanner, 2012), it has also been recognized that students may resist thinking metacognitively especially if their background has been limited to passive learning (Gourgey, 1998). Shedding more light on this last point is research indicating that college students typically adopt one of three approaches to their learning in any given course. Some approach their studies as deep learners who want to engage in analysis, synthesis, integration, and re-evaluation of course concepts. Consciously or not, others are either surface learners, who focus on memorizing facts to pass an exam, or strategic learners, who are adept at satisfying requirements only to achieve good grades (Bain, 2012). Such complications present challenges to the design of effective collaborative projects, which in turn begs the question: What are the criteria that contribute to effective project design and by extension to the creation of an effective natural critical learning environment?

Palincsar et al. (2002) imply that the answer to this question may be domain specific as collaborative contexts serve to develop domain-specific reasoning and problem solving. However, my own attempts at designing and implementing collaborative projects have yielded a design that fosters transformation of student learning from passive receptivity into deep-learning experiences, which may be adaptable to disciplines beyond my own. In this paper, I outline an example of such a project and present evidence based on student reflections of its transformational potential to achieve enhanced cognitive and metacognitive learning experiences. I conclude by reflecting on features of the project design that contribute to its effectiveness and offer recommendations for its adaptation as a pedagogical tool.

Contextualization

The context for my collaborative projects is a required introductory music theory course offered at the second-year level. The course is focused on chromatic harmony and is open only to music majors. It is the third in a sequence of four term courses that constitute a music theory core, which must be completed by all music majors regardless of disciplinary sub-specialization. The course is lecture-based, as are all courses in the theory core. It builds upon concepts introduced in two prerequisite courses that are completed in a student’s first year of study and is in turn prerequisite to the final course of the core. Students enrolled in the course are accustomed to passive receptivity of information, which they typically experience in the first two courses.

Method

Collaborative projects were implemented into the course to supplement lecture-style delivery of course concepts. Drawing on learning-centred and writing-focused approaches to teaching (e.g., Bean, 2011; Emig, 1977; Holt, 1992; Moon, 2000; Murray, 1982; Paton, 2002), the projects integrate writing-to-learn activities, peer learning and reflection while involving participants not as students, but as aspiring professionals in the field of music theory. Each project explores a particular course topic about which students received instruction in advance through class lectures, textbook readings, and routine problem-solving exercises. Projects simulate authentic experiences in the professional lives of music theorists and require students to work in self-formed groups of two, where one partner assumes the role of a writer
and the other the role of a reviewer. Partners are required to change roles from one project to the next so that they are exposed to both learning experiences. An example of a project (Project 1) is provided in appendix A. It is the source of student reflections upon which a subsequent study of its effectiveness as a learning tool is based and serves here as a reference for further explanation of project requirements.

The project involves a partnership of author and editor roles and is carefully scaffolded with detailed instructions for its completion and assessment. An opening statement of purpose contextualizes the simulated professional experience and alerts students to important features of the project that may be new to them. The partnership is instructed to produce an essay on a course topic, modulation to closely-related tonalities, for possible publication in a music theory handbook that could be used by music majors at the second-year university level for reference or review purposes. The final product is therefore something that participants would find useful for their own study. Both author and editor produce specific written documents. Given detailed instructions about content requirements, the author is responsible for writing a concise essay of approximately 500 words on the topic of modulation and illustrating it with specific music examples. The essay must be completed by a preset deadline and submitted to the partner editor for review. Upon reviewing and editing the essay, the editor writes a review report that assesses fulfillment of content requirements, presents and compares alternative music examples, and offers recommendations with supporting rationale regarding which examples to include in a final revised version of the essay. Thus, in addition to correcting grammar, the editor also engages with substantive issues in the article. The return of the corrected essay and report to the partner author completes the review by another specific deadline. Thereafter, author and editor consult with each other to reach consensus on a final revised version of their written work that is the best it can be. To complete the project, author and editor write individual statements of reflection on the project experience. Consistent with studies on using reflection as an effective learning strategy (e.g., Ertmer & Newby, 1996), guidance is provided in the form of questions encouraging participants to think about their learning.

All project work, including formative pieces and the final product, are submitted together for assessment. The project is evaluated according to a rubric accompanying the instructions to disclose the evaluation process as transparently as possible and to clarify quality expectations (Anson & Dannels, 2002). It is based on a four-point scale that is applied to nine different categories into which the project is segmented for assessment: the quality of project presentation, the quality (but not accuracy) of the author’s initial essay, the quality of the editor’s review report, the quality and accuracy of the revised essay and of two specific illustrative components that it must contain, the overall understanding of the course topic demonstrated by the project, and individual partner reflections. Students are not assessed in categories for which they have no responsibility. However, for categories into which both partners have input, each receives the same score.

When the course was completed and students were no longer under my supervision, they were invited to submit their project reflections for a secondary qualitative study, which was approved by my institution’s Research Ethics Board. The study analyzed the content of reflections for evidence of learning as a function of a participant’s project experience as writer or reviewer. Statements about learning were excerpted and organized into four main categories of investigation, each differentiating author and editor roles:

- Statements documenting enhanced engagement with subject learning,
- Statements documenting metacognition/meta-learning,
- Statements on transfer of learning,
- Statements on partnership experience.
Participants

The participants are music majors enrolled at the second-year level of a four-year Honours Bachelor of Music program. As music majors, students may be pursuing various disciplinary sub-specializations: performance, composition, music education, music therapy, music history, and/or music theory. From a total pool of 71 students in the second-year level theory course, of which 43 (61%) were female and 28 (39%) were male, 36 agreed to participate in the secondary study of reflections. The group of 36 participants is comprised of 27 females (75%) and 9 males (25%); 14 were project authors and 22 were project editors.

The project grades of these participants ranged from 62% to 96% and averaged 79%. Project grades for all students in the course ranged from 29% to 96% and averaged 75%. The project represented 15% of a student’s final grade for the course. Final grades for all students in the course ranged from 48% to 91% and averaged 74%. Final grades for participants in the secondary study ranged from 55% to 91% and averaged also 74%.

Results and discussion

The analytical segmentation of participant reflections is reproduced in tables below. Excerpts are organized and discussed according to the four categories of investigation. Each category presents author and editor contributions in separate tables.

Category 1: Statements documenting enhanced engagement with subject learning

<table>
<thead>
<tr>
<th>Table 1a: Author Statements on Enhanced Engagement with Subject Learning</th>
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<tr>
<td>1. Modulation last year was a source of difficulty for me. On paper, I understood the practice, and when it came to analysis I was passable, but writing them [sic] was quite the challenge. … Doing this assignment made me seriously look over modulation to closely related tonalities, and as a result I find them in analysis more proficiently. In addition, composing them has become much more effortless than before. However, it also shed some light on another aspect of my musicianship that needs help – my ability to hear what is actually on the page.</td>
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<td>2. Another surprising challenge I encountered was finding a suitable musical example from my own repertoire to illustrate modulation. It occurred to me just how simply modulation was being exposed to me in the classroom as I sifted through my post-classical period repertoire, attempting to find some semblance of a clearly modelled pivot modulation.</td>
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<tr>
<td>3. I found that I was very often struggling with the idea of where the pivot chord is found or where it should be placed … I spent time listening to my example and closing my eyes so that I could really hear the pivot into the new key, focus on where it pivots back into the home key and the difference between the modulation and the short tonicization I wrote at the beginning of the chorale. It really goes to show that the more you work on something and the more you practise your basic skills, the more you hear and remember.</td>
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<td>4. Finding a piece out of my repertoire that has the exact concept I am studying in theory class also brought the importance and prevalence of music theory to a more personal level. I was able to see in familiar terms why it is that we spend so much time trying to thoroughly understand these concepts.</td>
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<td>5. This project was valuable to me in two main ways: First, it clarified and cemented my understanding of modulation to closely related tonalities. … Second, composing the four-part chorale to demonstrate both tonicization and modulation helped greatly as a refresher not only about modulation but also about the part writing and voice leading process. My editor was particularly helpful in this respect as</td>
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58
she spent time to review what I had written and to make helpful suggestions for improvement. I asked her to do this while speaking aloud about her thought process and approach so that I could benefit from understanding her methodology.

6. The differences between tonicization and modulation also became clearer to me because I knew how to identify tonicization but I was never sure if I should identify a phrase as having modulated or just tonicizing a new key.

7. I have felt that this project has made a great impact on my understanding of the topics of modulation and tonicization. It has made me have a more thorough understanding of these topics, and writing an example also furthered my understanding. It was interesting approaching how to write the essay, as I am mainly used to writing essays for English or History classes, and I had to learn to be more to the point, and precise with my language … Even though the way I was explaining the topics may have made sense to me, I needed to constantly check if the explanation would make sense to others without the knowledge I have.

8. I think that the most valuable part of this assignment was the opportunity to explore the topic of modulation independently and in much more depth than usual for theory classes. Having to research and learn something independently fostered a completely different understanding of the material, as it was not just handed down to me by a professor. As uncomfortable as it can be to struggle through a process, I believe that it provides a greater benefit in the end. … Before this project I did not have a very good grasp of modulation, but after having written my own example of modulation and finding an example of it in my own repertoire, I feel that I am competent in the composition and analysis of modulation to closely related tonalities, and furthermore, I feel that I will actually remember what I learned!

9. The fact that I had to write about the topic with absolute clarity and no vagueness, made me sort out my own thinking about the topic first, and I therefore had a solid understanding of the subject.

10. I think that this project was a very interactive way to test our knowledge of modulation. By asking us to create a document that would be used to teach others required us to be familiar not just with the actual act of modulating within a piece, but also with the terminology and terms used for instruction. I feel that this greatly enhanced my understanding of the topic, because learning the material and then having to teach it are very different experiences.

11. Before doing this assignment, I did not know what a closely-related key was, nor did I know how to identify it. I was also having trouble understanding how a pivot chord worked and how to determine one. I did not know how to properly modulate. Now I am able to give a quick step by step run down of the basic process of modulation to a closely-related key. I am also able to do a proper analysis of a modulation after having been corrected by the editor.

12. This was the first essay of [sic] a music theory topic I had ever written… This in itself was a challenge. What kind of language should I use? Is this the correct terminology? How do I make my point clear? These questions kept circulating in my brain simply because this is very new to me. … The primary difficulty I came across was in the writing of the 8 bar phrase. This has never been my strong point, but it forced me to think about every chord I was writing and how I was going to analyze it. In the end, [my partner] and I decided that his work was more effective and we were to put that one in the final essay, but I was still proud of the work I, personally, had done. I think that I need to write all my compositions, from now on, with this kind of thought process; everything is an assignment and must be done to perfection.
<table>
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<tr>
<th>Editor Statements on Enhanced Engagement with Subject Learning</th>
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<tr>
<td>1. I found this project to be very helpful because it allowed me to work with a partner and exchange ideas about a topic we have discussed in class. This enabled me to see modulations from a different, more “real” perspective. It also helped me to crystallize my comprehension of the subject matter in my thoughts, making it more concrete and thus simpler to comprehend.</td>
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<td>2. I found writing the essay allowed me to really understand what I was writing about, and to put it in terms that will help me further understand for review. By writing about modulations, instead of reading an abstract overview, I really had to understand every detail in order to articulate and edit correctly.</td>
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<td>3. While editing the original essay, I was able to reinforce knowledge about the topic. Going over the author’s work and looking at every aspect in detail made me think about the concepts and how I would best describe them to another student. Put in the position of an expert or teacher, I had to be careful about describing and writing with clarity, which meant that I had to know the concept very well. … When I looked over the author’s example from the repertoire, I commented that I thought it would be confusing to a reader to see other accidentals in the music, other than the one added for the modulation. When I looked at it again, I realized that these accidentals were just part of the applied chords in the piece. This taught me to watch for applied chords more carefully and showed me to distinguish what I think might be the beginning of a modulation from applied chords with chromatic pitches. I also learned to more readily recognize a modulation.</td>
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<td>4. I found this [project] very helpful as an exercise in critical listening, analysis, and judgement. … It required me to develop a deeper understanding and knowledge of the subject of modulation than I had acquired through the homework assignments.</td>
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<td>5. Although I had paid attention in class and done all the work that was assigned based on modulation, editing an essay written on the subject in detail tested my knowledge on the next level.</td>
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<td>6. I thought I knew as much about the topic as the author as we are both in the same theory class. What I learned was a more solid feel for the concept of modulation by editing her explanation, by playing her created music example and going over her notation, and by creating my own chorale-style example. It's easy to criticize someone else’s efforts, but when you actually go through the same exercise, you realize the difficulty of the assignment. … Finding the exact descriptive words became an important joint objective, and a useful exercise for future writing of this sort … by going over the author’s explanation of modulation, it clarified my own idea of what the explanation should be. … Going through someone else’s explanation forced me to really analyze what I knew or thought I knew about the topic, and the process of creating an example, and writing an explanation that would teach someone else, greatly enhanced my own knowledge.</td>
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<td>7. I learned [that] there can be more than one right answer or one right way to write a paper. … While the information may not have been new, I did not know it well enough to recall everything without prompting. I am glad I have had this opportunity to relearn this material and display my knowledge.</td>
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<td>8. This project was the first time that I had to write about theory, instead of just doing theory exercises. It was a beneficial project for my learning because in order to write about and describe modulation and tonicization, I found that I really had to fully understand the ideas first.</td>
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<td>9. Looking at what my partner did and comparing it to mine was very eye opening in the sense that I never would have thought to do certain things that way. Thus expanding my horizons and thinking about theory differently [sic].</td>
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<tr>
<td>10. Although we briefly touched on these subjects in first-year theory, through this exercise the concepts have been solidified and I have learned how to easily recognize and compose modulations and...</td>
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Transforming Passive Receptivity of Knowledge

tonicizations, and I can clearly differentiate one from the other. I can now identify (visually and aurally) a true modulation … I also have a better understanding of extended tonicizations … I now know how to properly label single and extended tonicizations. … I felt that the author misunderstood and misinterpreted a lot of information regarding the subject of modulation and closely-related tonality, and as a result the essay didn’t make sense. To remedy this issue, I had to clearly communicate in my report and in person with my author to review and ensure that he understood the material and knew why his examples and/or explanations wouldn’t work in the context of this essay.

11. This project was a useful learning tool because in order for me to properly correct someone else’s work I had to fully understand modulation myself. I enjoyed reading the author’s essay because it explained modulation in a simpler manner than the … textbook, making it easier to understand. Through the editing process I had to use my critical thinking skills in order to make suggestions for how to make an already good essay better … I also liked having to find an example of modulation in repertoire relevant to us as performers. It made me realize how common this phenomenon is, yet how little I thought about it when playing pieces.

12. The experience of editing a theory essay has been an enlightening one. I realized that an editor has to be analytical, looking for inadequacies, and giving feedback to make the essay even better. It is interesting to give constructive feedback in this setting, because I usually never participate in giving feedback in other settings like master class or chamber music class. … I realized that I really had to know about the material beforehand so that I could accurately review the essay.

13. I found this assignment to be an interesting one. It made us think outside our comfort zones; usually one would not write an essay in theory class, and talking about this subject in such a way shed a kind of new light on the topic. For me, at least, this topic was always semi-hazy, but after working with a partner and actually thinking about what I was writing, it really helped me better my understanding of modulation vs. tonicization. … I had never fully understood these concepts fully [sic], probably because I never attempted to learn them to the best of my ability. I’d had an idea of what these terms “modulation” and “tonicization” meant, but I never did well on tests. Now that this project has been complete, I’m confident that I now know how to use these terms properly.

14. I feel that this project was valuable because it forced me to edit someone else’s work, which in turn made me reflect on how I understand modulation and tonicization. Also looking at [my partner’s] 8 bar chorale and example in his repertoire made me really look past the notes and look deeper into the music to find out if he analyzed it correctly and did proper voice leading. Overall…this project did deepen my understanding of modulation and tonicization, and working with a partner can often clear up any misunderstandings of the material and solidify what we are learning.

15. Despite my knowledge of modulation, I had very little experience picking it out within my repertoire at the pivotal point. But, through this project and study, it has become more obvious to me where pivotal moments and modulations occur.

16. I found this project to be very helpful. It made me more engaged with my work and helped me understand modulation to its fullest. I feel as if there is nothing about modulation that I don’t now know.

17. Being the editor was definitely much more difficult than being the author. While the author could write about what he already knew, I found that I needed to be more familiar on the topic than the author in order to be able to identify all the errors in the essay. In all, I had to spend a few hours reviewing modulating sequences and all the details about tonicization and modulation in general. Even so, the example which the author presented turned out to be quite controversial because it did not fall
into the definitions of tonicization and modulation as defined in class. What I learned is that there are very specific circumstances in music theory where an “educated guess” of sorts is necessary.

18. This project reinforced my understanding of modulation and closely related tonalities. I believe that making my own chorale example, which included modulation, and searching through my repertoire for a suitable example of modulation were most valuable to me in this project. This is because I have not composed a piece with modulation in it before and I have not analyzed any of my repertoires that closely before. After doing so, I now realize how many of the common idioms and progressions are in my pieces.

19. Declaring what needed to be changed was tough because sometimes it was hard to tell just what did not sit right about how an idea was presented. Once the flaw had been determined, it was up to me to decide what would be more suited to get the idea across. In writing an explanation of music theory, it is very important that words and definitions are clear. In deciding the most effective way to explain something, it ensured that I had to understand the concept and its definitions, in order to be deliberate with my words. … In going through this process, I discovered that in a specialized topic such as theory, the editor must be equally, if not more knowledgeable than the author. This is a collaborative process, and the editor can only recognize what is wrong and missing if he or she has a deep understanding of the subject … I think…the product we came up with was more successful than either of us could have achieved on our own.

Across both writer and reviewer roles, statements in this category include comments on applying or synthesizing knowledge, assessing adequacy of skill or knowledge to fulfill project requirements, creating compelling components of the project and evaluating the project’s final product, all of which reflect activation of higher-order cognitive skill. Participants express acquisition of greater clarity of subject matter or enhanced proficiency of required skills, recognize gaps in learning and misconceptions, report steps taken to remedy them, discover limitations of the project’s topic, and appreciate the relevance or value of studying it. They describe encountering difficulty with writing, editing, analyzing, creating project components, and working hard to overcome them. The statements show that students experienced an active participation in the process of learning that led to an “understanding” of subject matter described variously as “thorough,” “solid,” “cemented,” “enhanced,” “reinforced,” “on the next level,” and “deep.” Often, the writing-to-learn and peer learning components of the project are credited with fostering this result.

Tables 1a and 1b together show that comments of 86% of total participants (31/36) report such enhanced engagement with subject learning. More remarkable is the equally proportioned distribution of this result between writer and reviewer roles: 86% of authors (12/14) and 86% of editors (19/22) document a more thorough understanding of subject matter as a result of participation in the project. Since the author role in this project is initially responsible for producing an explanatory product, a high score in this category may be expected in that role as predicted by research on learning in peer groups. It indicates that “giving such explanations improves the comprehension for the individual doing the explaining” (King, 2002, p. 36). In this case, the equally high score in the reviewer category suggests that the explanatory responsibility built into the project’s editor role is equally and effectively balanced with that of the author.
### Category 2: Statements documenting metacognition/meta-learning

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<th>Table 2a: Author Statements Documenting Metacognition/Meta-Learning</th>
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<tr>
<td>1. As someone who is strongly considering music education as a career path, I found that attempting to teach such an essential aspect of music as modulation brought to light the difficulty of expressing my understanding of the topic into words that could easily be understood by my peers. I truly did find explaining modulation in writing challenging, not because of my own lack of understanding of the subject, but because of the difficulty in organizing my thoughts and making them easily accessible to others. I believe that this can be attributed to my apparent learning style consisting of simply adhering to the rules of any practice with no need of understanding them. Despite these issues, there is no doubt that overcoming them solidified my understanding of modulation.</td>
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<td>2. I have learned that the more work and time I put into something, the more prepared and relaxed I feel about it. Instead of leaving something to the last minute, like much of my past schooling, I did things ahead of time and prepared myself for the deadline. I learn well when I’m not crunched for time (go figure) and it was a nice thing to finally learn with this project.</td>
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<td>3. This has been an invaluable project because it has enabled me to understand what it takes to work with another person on a piece of work I created, and to be able to listen to the criticisms and suggestions with an open mind and an attitude to ameliorate my future work.</td>
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<td>4. What was reinforced to me during this project was the hands-on nature of my learning style. Reading texts or other sources is necessary but not sufficient for me to truly understand a topic...Without question, my learning was increased through my interactions with my editor.</td>
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<td>5. This assignment helped me realize that I benefit a lot from collaborative work. Once [the editor] had edited through my assignment all of her suggestions to create more clarity in my writing made a lot of sense. Collaborative learning helps me organize my thoughts and evaluate how I am articulating my thoughts because often, many things that seem clear to me are not as clear to a reader so the editing process was very beneficial.</td>
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<td>6. Some other notable thoughts gained from this process are that I learn better by explaining things to other people than by merely reading up information on my own. When I am teaching someone else...I feel the need to be more knowledgeable and accurate about that topic than if I were just reading up on it on my own.</td>
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<td>7. This project really taught me the impact that one’s attitude can have on the completion of a task. Theory has been a struggle for me over the past year (thus it is not my favourite subject), which made me anxious about this project. When I realized that as a piece of writing (which I enjoy), this assignment had real potential to help me understand the concepts and possibly even raise my mark in theory, it became easier to work on. Once I got my mind around the challenges I have faced in theory I even began to enjoy the assignment a little bit. … For me, this assignment really emphasized the learning process – how you learn is just as important as what you learn. The project enlightened me on much more than just modulation to close-related tonalities.</td>
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<td>8. Finally, I also learned that an assignment like this is an excellent way for me to study because it requires me to be so familiar with the material that I am dealing with that I could instruct someone else. This ensures that I have thoroughly grasped the material, and that I am well prepared for any assignments or testing of the material in class. After the completion of this project I felt very well prepared and well-equipped to complete any up-coming assignments.</td>
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9. I discovered that I learn a new topic best through the use of metaphor or simile. Being that this essay was to potentially teach the topic to students at my level, I thought including a metaphor in my essay would be a valuable tool. This also made it easier for me to write the essay, because I kept referring to the metaphor, which helped aid and solidify my learning.

10. Working on this [project] helped me learn many things about my own learning process. I learned that when I am given a task, until I begin engaging in the research topic, I will be flustered and overwhelmed by the task. This is mainly because I will not know where to begin. I have to remember to begin at square one. I must therefore focus on trying to answer the first question. In order to answer the first question, first I must read about the topic. Reading, however, is only half the battle. In order to actually comprehend what I am reading, I must thereafter ask myself questions such as: “What did I learn from this? Can this concept be defined in a different way? How can I apply what I learnt in my work?” In order to broaden my knowledge, once these general questions have been answered, I must also be able to construct intelligent questions related to the topic. This surely supports the statement that “learning requires one to ask questions”.

11. I allowed myself to think in a different way: explaining what I know to others clearly and effectively. The information I had was not for my benefit but for other “students.” Perhaps it is this kind of thinking I need to use for added clarification of my own knowledge, because I found it to be a very useful tool.

12. I learned working together makes the best results. I learned that having a different opinion on anything (not just writing) can truly make you see something you never would have before. I think the satisfaction I got here is something I rarely get when working on a paper by myself.

Table 2b: Editor Statements Documenting Metacognition/Meta-Learning

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<td>1.</td>
<td>Reflecting on this entire project has shown me how valuable it has been to my learning process … They say that you never learn anything as well as when you have to teach someone else, and it certainly held true in this assignment. It really was a “learning” experience!</td>
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<td>2.</td>
<td>Just like discussing a subject with a partner, writing is definitely a great tool in studying and clarifying your thoughts. It not only forces you to put down on paper a simple and explicit ideas [sic], it also allows you to clearly see where your partner is standing and where your points of view differ. Oral conversations often have a grey area which written documents don’t. … I found that my theoretical knowledge of a subject is often stronger then [sic] my ability to apply it well. This [is] not so much because of lack of knowledge, but more so because of lack of practice. This is perhaps one of the most important things learned from this project; theoretical knowledge must equally and evenly balance the ability to apply it. Those two go hand in hand, and both draw from each other.</td>
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<td>3.</td>
<td>I much preferred to do this theory assignment than multiple drills and tests as we did in first year theory classes. By doing projects, I’m able to use resources and work things out at my own pace, and figure out what I understand and don’t understand in detail. … I did not learn about my learning style, because I already know that researching and figuring out the “puzzle” at my own speed is the best way I learn, but this project reinforced my past experiences.</td>
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<td>4.</td>
<td>In completing the steps of the [project], I learned that I need multiple sessions of thinking and dissecting a topic to know it thoroughly. I cannot learn a complex topic in one large amount of time. I would much rather learn by giving myself smaller, but more amounts of time to look at a topic. This reinforces the learning for me and is much more effective than trying to understand it all at once. Through the editing process of this project, I have been able to learn about concepts in music as well as...</td>
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my preference for learning styles. It has been useful as a way to make sure I understand modulation and tonicization, while also learning about myself.

5. This was the first time that I had to write or edit an essay relating to theory. I learned a few things from the experience. First, explaining a concept in words confirms your knowledge of the subject. It is then easier to apply the concept to the practice exercises or in your repertoire. Also, I learned that editing someone else’s work was teaching me to be more critical of my own writing.

6. I now realize that I need to spend more time reviewing notes and textbooks before starting similar assignments, and spend more time planning overall.

7. I found it to be a valuable way to review or “study” for theory because I am able to put what I learned into practice and also apply it to my own repertoire. … I found that these project-type assignments help me better my understanding for concepts. Also, I find them more interesting than basically studying the topics straight from a textbook.

8. Through editing [my partner’s] essay, I found little things she could write to make the essay even better. This also got me more involved with how to understand and explain things to myself.

9. I learned that the act of writing and composing is a very effective vehicle for learning.

10. This [project] also showed me a lot about my own learning — that I learn through practice and review.

11. This project made me think in a new way and it was a great way to learn.

12. The hardest part of this assignment for me was writing the chorale because I find it difficult having to create something out of nothing. It feels very intimidating to start with just an empty page and no voices or figured bass to guide me, but I know every time that I write like this I not only improve my voice leading skills, but also my conceptual skills. … There are lots of different types of learners and I like that this project offers lots of different opportunities for students to cement their foundation of modulation in different ways; whether it be for those who prefer analysis (the example from the repertoire), composition (the chorale), or language and writing (the essay). I am glad I had the opportunity to do this project because now I feel far more comfortable with modulation.

13. The assignment did teach me that sometimes I don’t know material as well as I think I do.

14. What I learned about my own learning is that I cannot focus for a long period. So I would do this project in many sections and kept looking over what I was trying to fix/write.

15. I also enjoyed working with a partner because it was very intriguing to me to see how others perceive the material we are learning in class, and how they go about explaining it. It gave me a different perspective on how I thought about modulation, and I believe I will now be more open minded and think of all the different possibilities that can apply to a topic as I continue on in the course. … I have always been very hesitant about actually applying what I know to create something of my own, however I learned that it is actually very useful to do so and it ingrains the knowledge into your brain even more so. … I also discovered that I learn better when bouncing ideas off of a peer or hearing how they interpret a topic. It also gave me more confidence and was a very encouraging process for me. All in all I really enjoyed this project. … It showed me how much I have grown even over just this term when working on theory.

Tables 2a and 2b together show that reflections of 75% of total participants (27/36) document metacognitive development or meta-learning. This respectable score speaks to the promotion of high-level cognitive processing facilitated by the project. Writers and reviewers report discovering learning through writing and learning through teaching, learning about individual learning styles, learning about how to learn with and from others, learning how to take responsibility for learning, and discovering the role that attitude plays in learning. Consistent with findings in Mugny and Doise (1978)
and King (2002), participants describe learning through resolution of socio-cognitive conflict and they recognize value in negotiating a collaborative construction of knowledge.

Again 86% of authors (12/14), but only 68% of editors (15/22) contributed comments to this category. This discrepancy suggests that the project has the potential to illicit a stronger metacognitive response from participants as writers rather than reviewers. From an instructional point of view, it is therefore prudent to implement at least two such projects into a given course and to require partners to change roles from one to the next.

### Category 3: Statements on transfer of learning

**Table 3a: Author Statements on Transfer of Learning**

1. After completion of this project, I found there to be many valuable lessons learned from it. Firstly, time management was a crucial element because, not only was my work dependent on being handed in on time, but my partner was dependent on me. Working as a member of a team is a part of life that will always happen, thus applying this project to developing time management skills for the future [sic]. … Secondly, communication was a key factor for this project’s success. [My partner] and I were constantly in touch about when the other would be receiving work or which modulation examples should be used. This, too, made us an effective team when working together. This is a quality that can also be carried out into other aspects of life in the future. … Overall, I found the [project] to be a great learning experience. It opened me up to a new way of writing – both essay and musical composition. This will be extremely helpful to me throughout my university life and on.

2. I learned more about using musical terms in my writing to articulate exactly what I was referring to which is a helpful tool for future writing assignments as well as being able to communicate with fellow musicians about something within a piece of music.

3. …My editor brought up a good point, mainly that when writing formal essays I tend to use the word, “however,” far too often. That’s something I’ll have to keep in mind. I’m certainly happy that this has been pointed out to me now, before any other papers are due.

**Table 3b: Editor Statements on Transfer of Learning**

1. To me, gaining a thorough understanding of the concepts of modulation, tonicization and closely-related tonalities over the course of this project was incredibly valuable as a music student. I feel that this information has helped me to better comprehend the music that I am listening to, studying and performing.

2. This project also made me more aware of compositional techniques used in my own repertoire. When I was asked to find an example of modulation in my own repertory, I had to consciously listen to the pieces I was familiar with and understand what was occurring in the underlying harmonies. As a result, I am now able to find the places where modulation occurs in a piece and consider the appropriate musical interpretation.

3. I can see how these theories work in the pieces I sing and perform regularly. … Overall, I think this project was definitely valuable to my learning because it was such a different approach to learning and allowed me to apply what I was learning to other parts of my studies.

4. It has become very clear to me that I have to improve my writing skills. If I want to be a theorist – I’ll have to learn to communicate ideas with writing.
5. Because we were using three different ways to communicate our knowledge about the subject, through writing, composition, and analysis, we also became knowledgeable in three ways to teach the subject. This aspect of the subject was very valuable to me, as I am very interested in the different ways of teaching for different learning styles, known as differentiated instruction.

6. During the process of this project, I truly learned the complete myth behind the common, yet completely false phrase ‘those that can’t do, teach’. This phrase is spoken so many times, but is absolutely untrue. As a student of music education, I found this project helpful to think in terms of creating a lesson plan, or a handout sheet for students. When forced to write all you know about a certain topic, you start to become somewhat of an expert in that field, and more of an expert as you teach what you know to others.

21% of authors (3/14) and 27% of editors (6/22) together constitute 25% of participants (9/36) who recognize possibilities or opportunities to transfer learning from the project to other academic endeavours, to training in music performance or other areas, or to development of life skills. It is interesting to note that, although students were directed to derive information from their own music repertoires and include it in the project, only three participants (8%) in the editor role commented on the possibility to transfer learning out of the theory course into performance studies. Instead, most participants credit this activity with enhancement of subject learning; that is, with transferring knowledge of performance repertoire into the theory course. This result suggests that a targeted effort must be made to teach for a specific type of transfer in order to achieve it significantly.

The remaining comments in this category that speak to other opportunities for transfer of learning are nevertheless noteworthy. Their presence proves that the project’s design fosters an engaging learning environment in which cognitive, metacognitive, and affective learning components interact to stimulate the surfacing of such relevant and deep-learning outcomes (Gourgey, 1998).

Category 4: Statements on partnership experience

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<th>Table 4a: Author Statements on Partnership Experience</th>
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<tr>
<td>1. My editor was particularly helpful in this respect as she spent time to review what I had written and to make helpful suggestions for improvement. … The only significant difficulty I encountered was in getting enough of [my editor’s] time to focus on and to complete this assignment. It was a particularly busy period for her. My approach was to provide frequent reminders (in person and via email) and to maintain a patient and positive attitude. This approach yielded results and I feel we have worked together well to generate a good product. ... Without question, my learning was increased through my interactions with my editor.</td>
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<td>2. During the writing process I was reminded of how helpful it is to have someone you trust edit your work. My editor did not make a huge number of changes to my work, but her comments were very insightful, and those few changes made a big difference in the way the information fit together.</td>
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<td>3. [The partner] and I were constantly in touch about when the other would be receiving work or which modulation examples should be used. This, too, made us an effective team when working together. ... The remarks and suggestions that he [the editor] made on my first copy of the essay truly helped me.</td>
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<td>4. I learned to work with an editor, and to take criticisms my editor brought up into consideration for my final work. … I learned that some of the criticisms I received initially seemed arbitrary, but upon...</td>
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further consideration, they were valid and made the final edition more solid and left less room for dispute.

5. I also enjoyed the last stage of this project when we were allowed to meet with the editor and share our thoughts because it helped me realize where I can improve and how to make my thoughts clearer to a reader which is valuable in any writing assignment.

6. I also learned to take suggestions from a peer, something that I have not always been open to in the past. My editor definitely had some good suggestions in terms of clarity and wording.

7. I have also learned more about the process of working with a partner, and being able to coordinate with them. Learning to work with others is a necessary skill, and the ability to each [sic] communicate with each other is mandatory. My partner and I communicated excellently with each other, and from this, I realized how necessary it is to be able to trust and be open with your partner in assignments. Every group project continues to hone my skills at working on a team, and I felt this assignment only helped to strengthen my ability to work coherently in a group setting.

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Table 4b: Editor Statements on Partnership Experience

1. I found this project to be helpful because it allowed me to work with a partner and exchange ideas about a topic we have discussed in class. … Time management becomes more complex when working with a partner, and so scheduling and deadlines become much more important. The multiple due dates definitely helped avoid a rush close to the final deadline, and are a thing to keep in mind for future longer term projects.

2. Mostly, I valued having [the author] as a partner; because of her I now understand this topic fully. It’s interesting to note what a person can learn when paired with their peers. … Working in pairs has never been my favourite activity, but it was more enjoyable than experiences I’ve had in the past – I think because we each did our work separately, but then collaborated for the finished product. Because we worked individually on our portions of the assignment, both of our personalities and writing styles are incorporated which makes the final result much more rewarding.

3. I am a student who prefers to work on my own. This project was a good exercise in working together with a partner and respecting each other’s time and effort in order to obtain good results.

4. However, it is difficult to pick apart the work of one of your classmates. I found it personally difficult to word my editing and suggestions, on top of the thought that I’m judging the work of a peer. As someone who struggles with written communication, I also gave my author thoughts in person – having to explain the limited explanation in places.

5. During the process of completing this project, there were a couple of things that I deemed valuable to me, such as the essence of teamwork. I have found that getting your part done on time is crucial to the trust you and your partner share. Also, communication was a big aspect of what made us a good team. For example, even if I had finished my part on time I still had to communicate where and when I could give it to her thus making sure I’d get it to her at a certain time. As well, discovering what can be learned from your partner. By this I mean seeing work done by others on the same subject as you. … I definitely learned a lot by reading [the author’s] first draft of the essay. Not only did it impress me by writing style but by the flow and effectiveness of what modulation and tonicization was. I also learned that I know a lot more about this topic then [sic] I previously thought.

6. A challenge for me was trying to clarify the authors’ [sic] thoughts in her writing, without completely re-writing it in my own words. I did have to add a few sentences, but they were well received, and made our project better as a whole.
7. This project was of value to me through the editing process and consultation with my partner … Some difficulties we encountered as a group were getting together and discussing the project as we both had very different schedules and weekend plans. We overcame this by having a live video chat meeting online to discuss any problems or concerns before finishing the final copy of the essay. This worked very well and we were able to clearly communicate through the video.

8. As “editor”, it is natural to separate myself from the work being presented and associate it as the work of the “author”. However, I think in order to be most successful, it must be seen as a collaborative process, and that it is “our” work. I felt that this concept could have more effectively been achieved if we spent more time together discussing the process. However, I think the process we used was time efficient.

9. I felt that the author misunderstood and misinterpreted a lot of information regarding the subject of modulation and closely-related tonality, and as a result the essay didn’t make sense. To remedy this issue, I had to clearly communicate in my report and in person with my author to review and ensure that he understood the material and knew why his examples and/or explanations wouldn’t work in the context of this essay. We also used communication skills to determine how to appropriately re-write the assignment in a manner that was reader-friendly and factually accurate.

10. One of the difficulties I discovered in the engaging of this project was that my idea of how to explain closely-related tonalities was not exactly that of the author’s, although both were technically correct. It was an important exercise to go through the “give and take” that is a necessary part of a joint creative process – it can be hard to work with a partner. I felt my music example provided a clearer explanation of modulation as her example had some errors, and she was quick to agree with me. Of course, what really helped is that we are such solid friends and we both had the same goal: to create the best article on modulation for a music theory handbook possible! I have great respect both for her as a person, and for her intelligence, so the idea of compromise and collaboration was easy to come to for both of us.

11. What I found difficult about this project was editing my peer’s work. I am always very doubtful in myself so when it comes to editing it intimidates me to make corrections or write down my input. Although I was worried that my input would be irrelevant and incorrect I wrote it all down and then discussed it with the author. Having the author was actually very reassuring and helped me realize that I was able to apply my knowledge and be correct as well.

12. I also learned that working in a group can be very rewarding. My partner was eager to get together, open to my suggestions but not afraid to put forth her own ideas, and willing to compromise, and expressed a genuine interest in the topic. I was concerned about working with a partner as I have had problems with group projects in the past, but my experience this time has been very positive. I felt like I was able to communicate effectively with my partner and produce an acceptable product.

In their reflective statements, 50% of authors (7/14) and 55% of editors (12/22) comment on partnership experiences. The comments highlight helpful collaboration, effective teamwork, excellent communication, appreciation of internal project deadlines, forging trust, and mutual respect. Participants acknowledge difficulties or challenges with scheduling, time management, and learning to accept criticism, but at the same time express satisfaction with creative solutions or perseverance to overcome them. No mention is made of any negative partnership experiences.

The absence of any negative comments in this category may appear curious at first, but the overwhelmingly positive tone across both writer and reviewer roles is consistent with and supports statements in the previous three categories that credit partnership experiences for enhanced engagement with subject learning, meta-learning, and transfer of learning. There are several contextual and design
reasons that may account for this result. In the first place, music majors at my institution form a fairly cohesive group, especially during the first two years of core studies in the program. Many, though not all students, interact with each other in other common classes and ensembles. Therefore, it could be expected that partnerships formed by students themselves for purposes of this project would have a higher probability of being well-matched. In addition, there are features of the project’s design that intentionally support productive partnership, which are addressed in the conclusion below.

Conclusion

The reflections of participants in this study describe a rich tapestry of learning experiences at an introductory undergraduate level demonstrating that the project through which they are achieved is a robust pedagogical tool. The final product that is produced (the revised essay) is generally much improved in quality over its initial version as peer review and collaborative learning processes correct most errors without instructor input. In my experience of implementing various versions of the project described here, the effectiveness of this particular iteration is a function of its design. In its current form, the integration of carefully structured writing-to-learn activities, peer learning, and reflective practice produces an environment capable of transforming students into disciplinary practitioners who experience deep learning through collaborative engagement.

The project may be adapted to other domains in which similar disciplinary partnerships operate. When doing so, I recommend adhering to the following criteria that contribute to effective project design:

1. Provide as much project scaffolding as possible and do not take anything for granted. Especially at an introductory undergraduate level, students require very detailed technical instructions to fulfill an academically demanding assignment and produce a compelling final product. When instructions are sufficiently detailed, students can rise to the challenge of meeting high expectations.

2. To achieve productive peer learning, it is insufficient to limit the reviewer only to editing a writer’s work. If this is the case, the partnership of writer and reviewer risks breaking down because the workload is unbalanced. Reviewers must be equally engaged in research and writing processes.

3. Internal deadlines for formative writing-to-learn components of the project are crucial and assessment should take into consideration whether or not deadlines were met as reported by participants. The instructor may choose to recommend due dates as a guideline to be adjusted by partners in mutual agreement to better suit their schedules.

4. Formative writing-to-learn components (i.e. the author’s original essay and the editor’s review report) should be included in complete project assessment. Inclusion of these components builds individual accountability into the project design. The more attention partners give to their individual contributions, the more productive and potentially transformative their learning experiences will be.

5. Guided individual reflections are important project components. As discussed in literature on reflection (e.g., Ertmer & Newby, 1996), such statements are the vehicles through which students make sense of their learning, take responsibility for it and potentially connect it to other learning. Reflection statements also provide the instructor with valuable feedback on student learning experiences.

6. Rubrics are effective project assessment tools. It is beyond the scope of this paper to discuss rubric designs, but it is important to note that the accompanying rubric for assessment reproduced in appendix B allows for equitable individual scoring within the group...
Transforming Passive Receptivity of Knowledge

project, streamlines the marking process, and is a guide to agreement if more than one grader is involved. The rubric should not be withheld from students, but rather disclosed with project instructions to define quality expectations and facilitate transparency of the grading process.

As shown by the analysis of student reflections, the design of this collaborative project promotes enhanced engagement with subject learning and meta-learning and stimulates transfer of learning. It is a vehicle through which students at an introductory undergraduate level of study can engage genuinely in productive peer learning experiences that develop self-efficacy and enhance motivation for learning. The integration of the project into a lecture-based course can effectively transform passive receptivity of knowledge into deep learning experiences.

References


King, A. (2002). Structuring peer interaction to promote high-level cognitive processing.
Acknowledgements

I thank the students at the Faculty of Music of Wilfrid Laurier University who agreed to participate in this study.

Biography

Anna Ferenc is Associate Professor and Coordinator of music theory at Wilfrid Laurier University. Her contribution to the scholarship of teaching and learning is rooted in a passion for undergraduate-level instruction and a research interest in music theory pedagogy.
Appendix A

Project 1

Topic: Modulation to Closely-Related Tonalities

Purpose: Music theorists often write specialized essays for books devoted to a particular topic or meant for a particular purpose. In this assignment, you have an opportunity to experience this professional process as you demonstrate your learning about modulation. The assignment introduces you to disciplinary writing, peer review, and learning through reflection.

General Instructions: This assignment requires that you work in groups of two. Each group consists of an author and an editor. Between you and your partner, decide who will assume which role and then follow the instructions for that role. When completed and ready for submission, this assignment will consist of 7 items:

1. A title page “Project 1: Modulation to Closely-Related Tonalities” indicating the names of author and editor
2. A first version of an essay including a chorale example and a repertoire excerpt
3. A review of the first version of the essay including an alternative chorale example and an alternative repertoire excerpt
4. A revised version of the essay including revised chorale example and repertoire excerpt
5. Reflections of the author
6. Reflections of the editor
7. Rubric for Assessment of Project 1

All 7 items constitute Project 1. Bind them together in the above order when you submit Project 1 for assessment. It will be evaluated according to the accompanying rubric.

Note the following important deadlines:

Deadline for author to submit first version of essay to editor: ______________________

Deadline for editor to submit review report to author: ______________________

Deadline for submission of completed Project 1: ______________________

If you encounter difficulty at any point with this assignment, please contact the instructor.
Instructions for Partner 1: Author

1. Write an essay.

You have agreed to write an essay on the topic of modulation to closely-related tonalities for a music theory handbook. The handbook is to be used by 2nd-year music majors for reference or review purposes. The essay you submit must be double spaced, in 12-point font, and approximately 500 words in length. It must be written in your own words. If you use material from any text, you must provide reference in a footnote or endnote. This first version is not a rough draft: rather, it must represent your best possible independent work. You must write this first version of your essay without collaborating with anyone else, even your editor. You may consult with your editor after you receive her/his review report of your essay.

Your essay must include the following information:

1. The title “Modulation to Closely-Related Tonalities,” your name and date of submission to your editor.
2. What is modulation? How does it differ from tonicization? In what way is it similar?
3. What does it mean to modulate to closely-related tonalities? Identify closely-related tonalities in major and minor modes.
4. How is modulation to closely-related tonalities usually accomplished and how is it analyzed?
5. To supplement your essay, compose a chorale-style music example in 4/4 time and in a tonality of your choice. The example must be 8 measures long and must subdivide into two 4-measure phrases, each phrase ending with an appropriate cadence. In the first phrase, modulate to a closely-related tonality of your choice. In the second phrase, modulate back to the home key. In addition to the modulations, include at least 1 tonicization in your example. In your essay, refer to it to explain the difference between tonicization and modulation. Provide a 2-level harmonic analysis of your example. Mark pivot chords as required and identify cadences. In your essay, refer to your composed example to illustrate your explanations.
6. Include an example of a modulation within a musical composition. To do this, find an example of a modulation to a closely-related tonality in repertoire you are performing or have performed. In your essay, identify the composer, title of the composition, its home tonality, and the tonality to which it modulates in your chosen excerpt. On the score, identify the home key and analyze the modulation to the cadence in the new key. Identify the cadence. Note: This repertoire example should be no more than 1 page long. If the composition you have chosen is more than 1 page long, provide only an excerpt from your chosen piece that sets the musical context and includes the modulation. Add measure numbers to your excerpt to show its placement relative to the rest of the piece.

2. Submit your essay to your editor

Submit the completed first version of your essay to your editor and keep a copy for yourself.
3. Revise the essay

When your editor returns your essay to you, write at the top of the Editor’s Review Report: “Received by author on [fill in the date].” Do not alter your first reviewed version in any way as it forms part of the complete Project 1 submission. Consider your editor’s comments and consult further to reach consensus on differences of opinion. Revise your essay as needed to create a new second version that is the best it can be.

4. Reflection

Having completed revision of the essay, think about what you have learned from this project activity. On a separate sheet of paper under the heading “Reflections of Author,” compose your thoughts about this assignment in a few paragraphs in 12-point font. You may use the following questions to guide your reflection, but you need not limit your observations to them:

- What was valuable to me in this project?
- What did I learn about the topic while doing this project that I didn’t know before?
- What difficulties did I encounter while engaging in this project? How did I remedy them?
- What did I learn from or about writing?
- What did I learn about my own learning?

Instructions for Partner 2: Editor

1. Review the essay

You have asked the author to write an essay on the topic of modulation to closely-related tonalities for your music theory handbook. As editor, your job is to review and edit your author’s essay. This involves correcting mistakes, suggesting changes, and writing a review report. To review the essay, you must be sufficiently familiar with the topic. While your author is writing the essay, your responsibility is to search out a modulation excerpt in your own repertoire and to compose your own 8-measure chorale-style music example as described above in the instructions for partner 1. The review report must be written in essay form, double-spaced and in 12-point font.

Your review report must include the following information:

1. The title “Editor’s Review Report,” your name and date of submission to your author.
2. The date of your receipt of the essay. Was it submitted to you on time?
3. Does the presentation of the essay comply with expectations? This means:
   - Is the essay appropriately titled and does it include the author’s name?
   - Is it double-spaced and in 12-point font?
   - Is all work neatly presented?
   If not, point out inadequacies.
4. Is the essay an appropriate length? It must be approximately 500 words long.
6. Does the essay explain modulation clearly? If not, suggest clarifications.
7. Does it compare modulation with tonicization correctly? If not, suggest changes.
8. Does the essay include an 8-measure chorale-style music example that complies with requirements and illustrates modulation? Is the 2-level analysis done correctly? If not, make corrections.

9. Does the essay include an example of modulation in an excerpt from music repertoire? Is the context of the excerpt clear and is the modulation properly analyzed? If not, point out what is incorrect or unclear and suggest changes.

10. Present your own chorale-style music example and repertoire excerpt that comply with requirements and could serve as possible alternative suggestions. How do they compare with your author’s music example and repertoire excerpt? Which ones should be included in the final version of the essay? Explain why.

2. Submit your review to your author.

Return the corrected essay with your review report to your author. Keep a copy for yourself.

3. Consult with your author

Consult with your author as needed to create a revised second version of the essay that is the best it can be. If you and your author have different opinions on certain matters, discuss them until you reach a consensus.

4. Reflection

Having completed the revision of the essay, think about what you have learned from this project activity. On a separate sheet of paper under the heading “Reflections of Editor,” compose your thoughts about this assignment in a few paragraphs in 12-point font. You may use the following questions to guide your reflection, but you need not limit your observations to them:

- What was valuable to me in this project?
- What did I learn about the topic while doing this project that I didn’t know before?
- What difficulties did I encounter while engaging in this project? How did I remedy them?
- What did I learn from or about writing?
- What did I learn about my own learning?
### Appendix B

**Rubric for Assessment of Project 1**

<table>
<thead>
<tr>
<th>Assessment Categories</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Author Points Earned</th>
<th>Editor Points Earned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presentation of Project 1</td>
<td>N/A</td>
<td>· Not submitted for assessment.</td>
<td>· The project is disorganized. Items are missing or incomplete.</td>
<td>· The project is essentially complete, but some items are out of order.</td>
<td>· The project is complete and in order, but not all individual items comply with presentation requirements. Some parts may lack neatness.</td>
<td>· The project is complete, and in order, All items comply with presentation requirements. All work is neatly presented.</td>
<td>N/A</td>
</tr>
<tr>
<td>Author's first version of essay</td>
<td>N/A</td>
<td>· Submitted late to the editor. Or, submitted on time, but is disorganized, incomplete, and/or poorly written. It may lack proper paragraph or sentence structure, or contain many typos. Music example may be sloppy or inadequate. Repertoire excerpt may be inadequate or poorly analyzed.</td>
<td>· Essay is submitted on time and is somewhat organized, but does not comply with many requirements regarding content, length and presentation expectations. The work appears to be half-done.</td>
<td>· Essay is submitted on time and is well organized. Sentence and paragraph structure is good, but needs improvement. Content is complete, but presentation requirements or length does not meet expectations. Music example or repertoire excerpt may not comply with some requirements or may not meet presentation expectations.</td>
<td>· Essay is submitted on time, is well organized and clearly written. All content and presentation requirements meet expectations. It is obvious that the essay matters to the author.</td>
<td>· Report is submitted on time, is complete, well organized and clearly written. All or almost all errors in the essay, choral example and/or repertoire excerpt have been corrected. Overall, a helpful review that meets expectations. It is obvious that the review matters to the editor.</td>
<td>N/A</td>
</tr>
<tr>
<td>Editor's Review Report</td>
<td>N/A</td>
<td>· Submitted late to the author. Or, report is submitted on time, but is disorganized, incomplete, poorly written, and/or contains incorrect information. It may lack proper paragraph or sentence structure, or contain many typos. It may omit suggestion of alternative choral example or repertoire excerpt. It does not comply with several requirements and/or is not helpful.</td>
<td>· Report is submitted on time and is somewhat organized, but does not comply with many requirements regarding content and presentation expectations. Alternative choral example or repertoire excerpt are sloppy, contain errors, or are poorly explained. Review misses many errors in essay. The review work appears to be half-done.</td>
<td>· Report is submitted on time and is well organized. It makes several helpful suggestions. Sentence and paragraph structure is good, but some errors or improvements to the essay are overlooked. Alternative choral example or repertoire excerpt are almost error-free. Report content is mostly complete, but presentation requirements may not meet expectations.</td>
<td>· Report is submitted on time, is well organized and clearly written. Some problems still require attention.</td>
<td>· Report is submitted on time, is complete, well organized and clearly written. All or almost all errors in the essay, choral example and/or repertoire excerpt have been corrected. Overall, a helpful review that meets expectations. It is obvious that the review matters to the editor.</td>
<td>N/A</td>
</tr>
<tr>
<td>Final version of essay</td>
<td>N/A</td>
<td>· Essay explains modulation poorly or does not include required information. Sentence structure may be improved, but essay still contains most of the same content errors present in the first version or includes new errors. Shows little improvement.</td>
<td>· Errors in content still remain. Essay is not consistently clear. It may not comply with presentation requirements. Choral example and/or repertoire excerpt may not meet requirements.</td>
<td>· Essay is well organized and clearly written. Some problems still require attention.</td>
<td>· Essay is well organized, clearly written and contains no errors. All content and presentation requirements meet expectations. Essay is ready for publication.</td>
<td>· Report is submitted on time, is complete, well organized and clearly written. All or almost all errors in the essay, choral example and/or repertoire excerpt have been corrected. Overall, a helpful review that meets expectations. It is obvious that the review matters to the editor.</td>
<td>N/A</td>
</tr>
<tr>
<td>Chorale-style music example in final version of essay</td>
<td>N/A</td>
<td>· Example is inadequate, contains many errors and/or is not explained. It does not support the essay and/or does not comply with requirements.</td>
<td>· Example is appropriate, but contains errors or is poorly explained. Presentation may not meet requirements.</td>
<td>· Example is mostly well done, but may not be presented neatly or explanations may lack clarity.</td>
<td>· Example contains no errors, is explained clearly and complies with requirements.</td>
<td>· Example contains no errors, is explained clearly and complies with requirements.</td>
<td>N/A</td>
</tr>
<tr>
<td>Repertoire excerpt in final version of essay</td>
<td>N/A</td>
<td>· Does not feature a modulation to a closely-related tonality. Musical context is not explained. The excerpt does not support the essay.</td>
<td>· Features a modulation, but its musical context is misunderstood. Presentation is sloppy or messy.</td>
<td>· Is a good example from the repertoire that features a modulation to a closely-related tonality. Its musical context may not be explained well. Presentation is reasonable.</td>
<td>· Is an excellent example from the repertoire that supports the essay. Its context is clearly explained. Presentation is excellent.</td>
<td>· Example contains no errors, is explained clearly and complies with requirements.</td>
<td>N/A</td>
</tr>
<tr>
<td>Understanding of modulation to closely-related tonalities</td>
<td>N/A</td>
<td>· Project shows limited understanding of this topic.</td>
<td>· Project indicates that about half of the information regarding modulation has been understood. Errors in comprehension are apparent or much required information is missing.</td>
<td>· Project demonstrates that modulation is understood reasonably well. Some required information may be missing.</td>
<td>· Project shows a thorough understanding of modulation to closely-related tonalities. All required information is included.</td>
<td>· Example contains no errors, is explained clearly and complies with requirements.</td>
<td>N/A</td>
</tr>
<tr>
<td>Author's reflections</td>
<td>N/A</td>
<td>· Displays very little thought.</td>
<td>· Some critical thinking is apparent.</td>
<td>· Demonstrates a good effort to learn from the experience of creating Project 1.</td>
<td>· Very perceptive and illuminating comments.</td>
<td>· Very perceptive and illuminating comments.</td>
<td>N/A</td>
</tr>
<tr>
<td>Editor's reflections</td>
<td>N/A</td>
<td>· Displays very little thought.</td>
<td>· Some critical thinking is apparent.</td>
<td>· Demonstrates a good effort to learn from the experience of creating Project 1.</td>
<td>· Very perceptive and illuminating comments.</td>
<td>· Very perceptive and illuminating comments.</td>
<td>N/A</td>
</tr>
<tr>
<td>Total Score:</td>
<td>0</td>
<td>77</td>
<td>28</td>
<td>28</td>
<td>28</td>
<td>28</td>
<td>28</td>
</tr>
</tbody>
</table>
Performance, Feedback, and Revision: Metacognitive Approaches to Undergraduate Essay Writing

Dr. Jessica Riddell
Bishop’s University

This paper explores ways in which frequent feedback and clear assessment criteria can improve students’ essay writing performance in a first-year English literature course. Students (n = 68) completed a series of three scaffolded exercises over the course of a semester, where they evaluated undergraduate essays using a predetermined assessment process. They were then asked to write their own essays and evaluate them using the same assessment criteria. The efficacy of the project was evaluated based upon student feedback, both quantitative and qualitative, and an analysis of their marks. The essay-writing project was informed by fundamental principles supported by research in teaching and learning: namely, that early intervention in first-year courses helps students improve their essay-writing skills, clear and transparent expectations are crucial for positive student perceptions of learning, carefully scaffolded assignments help students develop their writing skills over time, and increasing the frequency of writing opportunities and feedback leads to higher learning outcomes. Findings suggest that a metacognitive approach to essay writing can provide significant opportunities for students to improve their essay-writing skills. The essay-writing project has implications for those who plan, support, and deliver first-year university courses, particularly those courses involving academic writing assignments.

Essay writing is a skill that the majority of university students are expected to cultivate at some point in their undergraduate careers, whatever the major. It is rare for a student to complete their studies in higher education without encountering a significant piece of writing as a component of their coursework (Hounsell, 2005; Nimmo, 1977). Although the type of essay varies between disciplines (e.g., expository, persuasive, analytical, argumentative), essay assignments are designed to develop common core competencies such as written communication, critical thinking skills, inquiry and analysis, and information literacy (e.g., Court, 2014; Henderson, 1980; Hounsell, 1997; McCune, 2004). Depending on the essay topic and the discipline, students may also be asked to develop a wide range of other competencies, including civic knowledge and engagement, intercultural knowledge, ethical reasoning and action, and creative and adaptive problem solving (Prosser & Webb, 1994). Ideally, an essay assignment enables the instructor to assess students’ development of these various competencies while at the same time providing important opportunities for learning, which in part explains the ubiquity of the essay as an assessment tool in higher education (Campbell, Smith, & Brooker, 1998; Henderson, 1980; Hounsell, 2005; McCune, 2004; Nightingale, 1988).
There have been significant contributions to research on essay writing in the last two decades (e.g., Angelova & Riatzantseva, 1999; Beaufort, 2004; Casanave, 2002; Harwood, Austin, & Macaulay, 2012; Knudson, 2014; Leki, 2007; Lillis, 2001; Mahalski, 1992; Pecorari, 2008; Sternglass, 1997). Scholars from various disciplines have investigated topics as diverse as the discrepancies between instructor and student expectations for assessment, the different stylistic conventions of writing across disciplinary and institutional boundaries, student perceptions of the value of essay writing, problem-oriented collaborative writing projects in the humanities, the prevalence of plagiarism, the ethics and efficacy of third-party proof-reading, and the relative value of study skill manuals for improving writing skills and competencies. Although the essay occupies a central place in university assessment, a number of scholars have commented on the lack of attention devoted to essay writing in the scholarship of teaching and learning (e.g., Campbell et al., 1998; Court, 2014; Hounsell, 2005; Knudson, 2014; McCune, 2004; Norton, 1990). Hounsell (2005) exclaims, “as a learning activity, essay-writing remains virtually uncharted territory” (p. 109). McCune (2004) points to the lack of research between essay writing, student perceptions, and learning outcomes. Knudson (2014) notes that few studies have investigated how students conceptualize the process of essay writing and how they develop competencies over time. Court, (2014) asserts that the link between assessment and writing skills has not been widely studied (p. 327). Furthermore, the relationship between the coursework essay and undergraduate learning outcomes is a field that remains largely unexamined: this article seeks to address, in particular, the critical lacunae around metacognitive approaches to first-year undergraduate essay writing.

In the following pages, I will discuss a project designed to improve students’ essay performance in a first-year English literature course. Through a series of interrelated and scaffolded exercises, students evaluated undergraduate essays using a predetermined assessment process. They were then asked to write their own essays and evaluate them using the same assessment criteria. The students were supported throughout the process with preparatory seminars, videos, and written resources delivered during class time or assigned for self-directed study outside of class hours. The impact and efficacy of the project was evaluated using student feedback, both quantitative and qualitative, and an analysis of their marks. In designing this project, I sought to create conditions to enhance learning outcomes based on evidence-based and capacity-building strategies drawn from the large body of research related to teaching and learning. Therefore, in the first section of this article, I will outline the scholarship that informed the fundamental principles of this project: namely, that early intervention in first-year courses around essay writing helps students transition into university and increases chances for student success, that clear and transparent expectations significantly influence student perceptions of learning, that carefully scaffolded assignments help students develop their writing skills over time, and that increasing the frequency of writing opportunities and feedback leads to higher learning outcomes. In the second section of this essay, I will outline the methodology of the essay-writing project and describe the scaffolded approach of a series of interrelated activities and assignments. Finally, in the third section, I will present the qualitative and quantitative results, analyze the impact of the project on student learning, and make recommendations for how the project can be adapted to different disciplinary contexts.

Section I: Links between Essay Writing and Student Learning

Managing expectations

Many students face tremendous challenges as they develop essay-writing competencies, especially when they encounter essays for the first time within a higher education context. The transition from high school or CEGEP to university is a difficult one socially, conceptually, intellectually, and affectively (e.g., Christie, 2009; McMillan, 2014; Nelson, Smith, &
Clarke, 2012; Scalon, Rowling, & Weber, 2007). Students must navigate the often fraught space between their personal expectations and the expectations of the new institutional and departmental cultures within which they find themselves. Despite their experience with writing essays in high school or CEGEP, many students struggle to adjust to new expectations in a university context (Norton, 1990; Voigt, 2007). When I surveyed 68 first-year undergraduate English students in order to measure their perceptions around university expectations, 74% of the class was unsure what university professors expected in university-level essays. Brooker and Smith (1996) have found significant discrepancies between lecturers’ and students’ perceptions concerning the clarity, accessibility, and transparency of assessment criteria (see also Branthwaite, Trueman, & Hartley, 1980; Campbell et al., 1998; Hounsell, 2005). While the reasons for these discrepancies are complex, research suggests that communicating clear expectations to first-year students enhances learning outcomes, develops academic literacies, increases academic and social engagement, and raises retention rates (Branthwaite, Trueman, & Hartley, 1980; Hounsell, 1997; Lea & Street, 1998; McCune, 2004; Nelson et al., 2012; Prosser & Webb, 1994).

In the light of these findings, it is imperative that we intervene early in the undergraduate writing process in order to support students in their earliest forays into academic essay writing. A clear, accessible, and transparent approach to essay writing in their first year, reinforced by a scaffolded program of writing development over the course of the three to four year program, significantly increases the conditions of student success (e.g., Knudson, 2014; Torrance, Thomas, & Robinson, 2000; Woodward-Kron, 2007).

Creating clear and accessible assessment criteria

When course expectations are clearly communicated from the outset, students have higher learning outcomes and increased gains in competencies such as critical thinking and writing skills (Arum & Roska, 2011; McKenzie & Schweitzer, 2001; Nelson et al., 2012). Furthermore, undergraduate writing improves when instructors provide clear assessment and frequent feedback (Campbell et al., 1998; Scouller, 1998; Torrance, Thomas, & Robinson, 1994). For the purposes of this study, I define feedback as an ongoing cycle with three discrete but interrelated stages: 1) performance (the entirety of the writing process ending with the submission of the essay for assessment), 2) feedback (formative and/or summative assessment from the instructor or through peer review, including qualitative comments and/or a quantitative mark), and 3) revision (the process in which the student has the opportunity to incorporate the received feedback and make adjustments in advance of the next performance). These three stages constitute a feedback loop: students can experience multiple feedback loops concurrently (in their many courses during one semester) as well as longitudinally (over the course of the term, year, and program). A growing body of research indicates that increasing the number of feedback loops raises students' metacognitive awareness, improves the quality of written work, encourages active learning, and develops capacities for life-long learning (Boud, 2000; Court, 2014; Dochy, Segers, & Sluijsmans, 1999; O'Donovan, Price, & Rust, 2008). However, an ongoing challenge in assessment is how to maximize the frequency of feedback loops without

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1 CEGEP (Collège d’enseignement général et professionnel) is a publicly funded college program in the province of Quebec, Canada. This pre-university program, usually 2 years in duration, is the equivalent in other Canadian provinces of Grade 12 and Grade 13, and is similar to the junior college experience in the American system where students fulfill 1-2 years in a junior college. Upon graduation, CEGEP students are awarded a Diploma of College Studies or DEC (Diplôme d’études collégiales): Canadian university entrance requirements stipulate all Quebec students must successfully complete the DEC.

2 The survey question asked, “Before the in-class essay exercises, I was never really sure what professors were looking for in university essays.” 14 strongly agreed; 32 agreed; 11 were neutral. The survey was administered on the last day of class in the fall semester, so students had at least one term of university experience.
overburdening instructors with unmanageable marking loads. Although the balance between feedback and marking loads is always being negotiated, the project I outline in section two attempts to increase the frequency of feedback loops while at the same time creating a manageable marking workload for the instructor.

Section II: The Essay-Writing Project

Institutional/departmental context

A number of scholars have advocated for the need to provide students with more help with their essay writing “that goes beyond standard written feedback and handouts” (McCune, 2004, p. 279; see also, Courr, 2014; Mowl & Pain, 1995; Oldfield & MacAlpine, 1995). Therefore, I introduced a rigorous approach to essay writing in a first-year, introductory English literature survey course. I designed the project in the context of a small, bilingual, primarily undergraduate, liberal-education focused Canadian institution that values exemplary teaching and research, small class sizes, and strong faculty-student interactions. Every incoming English major is automatically enrolled in the survey course. The class size is 65 – 75 students, and there is a mix of out-of-province students who have gone through the high school system and Quebec students who have graduated from the CEGEP system. The majority of students are in their first year; for approximately 30% of students, English is a second language and the majority of those are French first-language students. I have taught the class 9 times in 7 years at two institutions in Quebec.3

Objectives

The essay-writing project was designed as an early intervention in students’ development in order to improve the quality of essays. Specifically, my objectives were to increase the frequency of feedback loops without creating unmanageable marking expectations; provide students with clear, accessible, and transparent understanding of the assessment process for university-level essays; encourage students to take a metacognitive approach to essay writing; instill in students the perception that the revision process substantially improves the quality of writing; and, finally, promote an integrative approach where students feel confident applying these skills to other courses and writing projects within and outside the English department.

Assignments

Every three weeks, students completed an in-class assignment (1.5 hours in length) where they marked a student’s paper (anonymous, from a bank of essays from previous years) on the topic we spent the previous 2-3 weeks analyzing. For example, we covered Beowulf in the first two weeks of term, and in the third week students analyzed an undergraduate essay on “Controlled versus Uncontrolled Violence in Beowulf.” After 3 weeks of class time devoted to Chaucer’s The Canterbury Tales, students evaluated an in-class essay assignment on a topic related to Chaucer in Week 6, and repeated the exercise again in Week 9 with an essay on a Shakespearean text. Finally, students were asked to write an original essay for the course, due in the final week of term: as a component of their assignment, they had to evaluate their essay with the rubric they used to assess the three

3 First at a large, research-intensive, urban university with 45,000 students and then at a small, residential, primarily undergraduate, liberal education university with 2,500 students. Syllabus, course times, and class size for the introductory survey class remained constant across these two institutional contexts.
in-class essays. In all three in-class assignments, students were given the same essay and encountered it for the first time at the start of the class; these sessions were open-book and students were encouraged to consult any resources they found helpful, including primary texts, secondary sources, assessment paradigms, writing resources, dictionaries, and notes. Essays were chosen from a bank of essays submitted by students in the course from previous years. Former students granted permission to use their essays and I erased any identifying features from the essays. I scaffolded the quality of the essays given to students: the first assignment featured an essay that had clear problems in content, structure, and form, and the quality of the essays increased in each subsequent iteration. Therefore, as students became more experienced in evaluation, the essays required more nuanced analyses.

**Evaluation exercise**

During each of the three in-class assignments, students were asked to fill out a three-part evaluation of the assigned essay: in the first section (worth 10 points), students identified the structure of the thesis paragraph (exordium, narration, division, and proposition) and evaluated the clarity of the essay’s argument. The second section (worth 20 points) developed students’ qualitative analysis abilities: students were expected to provide a page of written feedback commenting on the strengths and weaknesses of the argument. In this section, students evaluated the content of the essay, including the use of evidence, logic and argumentation, and the quality of analysis. In addition to the page of comments, students were also encouraged to engage with the essay in the margins of the paper in order to create verisimilitude with the experience of marking an essay. In the third section (worth 15 points), students evaluated the mechanics of the essay and filled out a style checklist that identified strengths and weaknesses in punctuation, grammar, and syntax. In the final section (worth 5 points), students were asked to assign the essay a numerical grade. The evaluation exercise was designed to draw attention to the three fundamental ways essays are assessed (structure, content, and form) and provide both qualitative and quantitative feedback (comments and a numerical grade).

In an attempt to reduce the amount of cognitive dissonance students experience as they attempt to master a new concept, I tried to equip them with a number of resources to support them in their first forays into university-level writing and analysis. I used the class website (Moodle) as a repository for multi-media resources: I created videos and posted them on YouTube, developed documents about writing essays, designed a rubric for assessing essays, and provided them with essays I assessed (with qualitative comments in the margins, summative comments at the end of the paper, and a grade). These resources were available to the students – along with lecture notes, power point slides, essay topics, and exam rubrics – from the first day of class.

**Assessment**

After each assignment, students received feedback in many different forms. Each in-class assignment was completed by the instructor and the essay evaluation was posted on the course website immediately following each of the assignments. After every in-class assignment, the first 20 – 30 minutes of the following class were devoted to discussing the essay and...

---

4 The questions in the first section were: 1) Identify the topic of this paper; 2) What (if any) terms are defined in the thesis paragraph? What terms need to be defined more thoroughly?; 3) Does the author provide an outline of how s/he will prove the argument? If so, provide the outline here. If not, suggest an outline that should’ve appeared in the thesis paragraph; 4) What is the thesis statement? (replicate word for word from the essay); 5) Is the thesis statement clear, original, and persuasive? A simple yes or no is not sufficient. Do you agree with the argument? Why or why not?
collaboratively evaluating its strengths and weaknesses. Essay evaluations were promptly marked and returned to students, who had been given clear marking paradigms for each of the sections in advance of the in-class assignments. In section 1, they were marked according to their correct identification of the parts of the essay structure; in section 2, they were evaluated on the depth of their analysis. Students were urged to be collaborative and constructive in their feedback.

The marginalia and summative comments were treated as a whole, and students received higher marks for demonstrating their engagement with the logic and argumentation of the essay rather than only focusing on mechanics or style. In the final section, they were marked on how closely they came to the grade the instructor assigned the essay.

The assignments were weighted so the first performance was worth considerably less (5%) than subsequent performances (10% & 15%, respectively), an assessment strategy designed to reward their evolution and draw attention to the process of development as writers and assessors. Finally, the original essay they submitted at the end of term was worth 25% of their final grade and the evaluation of their own essay was worth 5%. 60% of the students' final grades were thus devoted to developing essay-writing skills; the other 40% was divided between a final examination (30%) and attendance and participation (10%).

Methodology

Sixty-eight undergraduate students, enrolled in the Introductory English literature survey class, participated on a volunteer basis in this project. Out of the 68 students, 60 were English majors, 62 were in their first year, and 31 had graduated from the CEGEP system. Participating students completed a survey at the end of the term that asked them to answer 12 questions measuring their perceptions of the learning experience as well as write a reflective qualitative assessment of the essay assignments (see appendix). The survey and qualitative responses were administered during class time on the final day of class once all the assignments were completed and submitted but before they received their final grades in the course. There was a 91% response rate. Students were asked to sign their responses in order to correlate their perceptions to their marks; however, the instructor did not review any of the results until after the final grades were submitted.

Section III: Results, Impact, and Recommendations

The results of this project indicate that students improved the quality of their essay-writing skills over the course of the term. As I mentioned above, I have taught the course 9 times in 7 years at 2 institutions for approximately 675 students. When I compared essay marks across the years, students' essay marks improved between 6-8% after the essay-writing project. Students' perceptions of the essay-writing project were very positive.

Despite the unusual approach to writing, the class embraced the essay experiment with enthusiasm, as evidenced by the qualitative and quantitative responses analyzed below. Both the qualitative and quantitative results indicate that students felt more confident and better equipped to tackle future writing projects.

In the following pages I will examine each of the objectives of the essay-writing project and measure them against the qualitative and quantitative data.

Feedback

As I mentioned in Section I, increasing the frequency of feedback loops helps improve the quality of assignments students submit. However, there are several factors that influence the value and efficacy of feedback (Vardi, 2009, 2012). Although students express a desire for high-quality feedback (Spinks, 1998), students often fail to incorporate constructive
criticism into subsequent writing performances (Beason, 1993; Court, 2014; Plum, 1998; Spinks, 1998; Vardi, 2012). However, when student perceptions of the feedback are high, they are more likely to integrate suggestions into their future performances. Vardi (2012) argues that students improve their writing when they are given an opportunity to respond to and engage with feedback, while a large body of research supports the idea that the more specific and detailed the feedback is, the more likely students are to improve their writing performance (Ashwell 2000; Beason 1993; Fathman & Whalley, 1990; Ferris 1997; Nicol & Macfarlane-Dick, 2006; Olson & Raffeld 1987; Sitko, 1993; Wingate 2010; Yorke, 2003). Ideally, students in this essay exercise internalize the assessment process in order to provide careful and specific feedback to an anonymous student author through their experiences during the essay-writing project. The participants in the study found that the repetition of the evaluative exercises over the course of the term helped improve their writing. One student commented, “I found that the more I read the essays, the better I understood the structure and how it should be assembled.” When asked whether providing feedback on someone else’s essay encouraged them to think about their own approach to writing, 29 strongly agreed, 28 agreed, and 5 were neutral. 95% of respondents strongly agreed or agreed that receiving feedback on how to assess essays helped them to prepare for writing and revising their own essays.

**Clear expectations & transparent assessment**

According to a number of studies on essay writing and deep approaches to learning, one of the best ways to enhance student learning outcomes is to provide students with clear, transparent, accessible modes of assessment (Campbell et al., 1998; Dart & Clarke 1991; Entwistle, 1995; Prosser & Webb, 1994). 100% of respondents agreed or strongly agreed that the in-class exercises gave them a better understanding of the assessment process for university-level essays and 98% of respondents believed that the in-class exercises made them better writers. One student commented, “Allowing students to see how you mark versus how they would mark is extremely important for maintaining high academic standards for your course. Good stuff. This type of assessment is a definite keeper.” Another student remarked that, “These class exercises really helped me because it was hard to make the transition from high school papers to university essays. The repetition of these essay assignments strongly made me a better writer. It will grandly help me for my future works!”

**Metacognitive approaches**

A metacognitive approach to essay writing encourages students to be aware of their own cognitive and affective processes, and develop the ability to monitor and regulate their strategic approaches to learning (Flavell, 1979; Hacker, Dunlosky, & Graesser, 1998). This approach urges students to be self-reflective and aware of the processes of writing and argumentation, and encourages students to be creative problem solvers as they systematically approach the task of developing, writing, and revising an essay. Research suggests that a metacognitive approach to learning can lead to higher rates of information retention, foster critical thinking and deeper understandings of content, and lead to higher gains in learning (Cannady & Gallo, 2014; Pintrich, 2002; Smith, Rook, & Smith, 2007; Vaidya, 1999).

This essay-writing project was designed to demystify the evaluative process and encourage students to imaginatively occupy an unfamiliar knowledge position in order to gain experience in assessing arguments. As students embarked on the writing process themselves, ideally they would reach a point where they thought about writing from the position of teacher and learner, knowledge creator and knowledge evaluator. One student commented, "I really find that these in-class assignments helped me to understand and know what a good essay would look like. I also realized that there were a lot of mistakes that I was doing that were..."
also present in some of the essays we practiced on. The feedback was also useful, because it always awares [sic] me about the things to avoid in my own final essay. And seriously, the marking our own essay step was the most useful part because it encouraged me to revise my essay before giving it [in].

By encouraging students to take a self-reflective approach to evaluating essays, many remarked that they became aware of mistakes they made as they read other students' papers. Another student exclaimed, “I think that this kind of in-class exam helps you to identify your weaknesses and own tendencies because in most of the cases we all do the same mistakes (not focusing on the argument, not proving your arguments, etcetera.) It also gives a good idea of what the teacher expects and wants. I really love this way of testing your students!” The process of analyzing an essay – typically encountered for the first time in graduate school – creates opportunities for first-year students to deploy a critical, evaluative lens usually reserved for the instructor.

Revision

The revision process can be valuable and improve the quality of essays under certain conditions. Mahalski (1992) suggests a direct link between the number of drafts in the revision process and enhanced learning outcomes, deeper learning approaches, and higher essay marks. However, Torrance et al. (1994) argue that the number of drafts is more an indication of students' writing strategies than the quality of the essays produced. Nevertheless, Knudson (2014) asserts that, “Students’ conceptions of learning, activity and writing seem to be highly influential in learning outcomes in higher education” (p. 1842; see also Otting, Zwaal, Tempelaar, & Gijselaers, 2010; Lizzio, Wilson, & Simons, 2002; Campbell et al., 1998.

The students who participated in this essay-writing project experienced an increase in their perceptions of value of the revision process, and particularly revision through careful and critical feedback. In their assessment of essays, students were encouraged to think about how the papers could be revised to strengthen various aspects of the essays under evaluation. Class discussions after each essay exercise focused on how the anonymous author could re-work the ideas or elements to build a clearer, more persuasive argument. One student said, “That careful combing through critique helped me as I reviewed my essay, but it also was extremely beneficial as I write papers. Now it is constantly on my mind, which really does cut my revision time in half.”

Connecting assessment and the revision process drew students’ attention to the evolutionary approach to essay writing. Not only were students provided the opportunity to evaluate essays before writing their own, they were also able to see how the instructor evaluated essays in advance of their writing performance. 95% of students strongly agreed or agreed, “the examples [the instructor] provided on [the course website] before each assignment were useful to practice how to assess undergraduate essays.” Furthermore, 90% of students surveyed agreed or strongly agreed that “marking and evaluating my own essay made me aware of the process of revising my essay.”

Metacognitive assessment

When students submitted evaluation sheets for their own essays at the end of the term, they were more critical – and gave themselves lower marks – than the instructor’s evaluation. With only a few exceptions, students gave themselves an average of 5-10% lower mark than the instructor assigned. This demonstrated a significant shift from the beginning of the term when students awarded inflated grades (upwards of 20% higher than the assigned grade) to the essay
during the first in-class assignment. More research is necessary to explore the shift in expectations students experienced over the course of one term; however, these initial findings suggest that students recalibrated their expectations about numerical evaluation and grades during their transition from high school or CEGEP into a university context during their first semester.

**Integrative approaches**

Integrative learning is an approach that encourages students to connect skills and knowledge from multiple sources and experiences and have the ability to apply a theoretical framework to various projects, settings, and disciplinary contexts (Palmer & Zajonc, 2011, p. 8). The aim of an integrative learning approach in higher education is to “produce students that are able to make connections across learning experiences and achieve learning at the highest cognitive level” (Durrant & Hartman, 2014, p. 1; see also Huber & Hutchings 2005; Huber, Hutchings, Gale, Miller, & Breen, 2007; Trowler, 2010). Ideally, students approach essay writing as an opportunity for integrative learning and have the knowledge and confidence to apply their essay-writing skills to their other courses and future writing projects.

One student remarked, “I loved the in-class essay assignments! They were a great way to learn how to properly write a University essay. I feel it will help me with the rest of my essays throughout my schooling. I am more aware of what I need to put in my essays and what to avoid. Great!” 94% of students strongly agreed or agreed that the in-class essay exercises help students internalize evaluative criteria, which improves their writing and has the potential to provide them with a more nuanced and richer understanding of essay writing as a process that develops over time and can be improved through high-quality feedback and attentive revisions.

When students master the fundamentals of essay writing and develop the corresponding competencies – which include critical thinking, creative and adaptive problem solving, and logical argumentation – they have the potential to become confident, creative, and effective writers, regardless of the disciplinary context or genre of the written performance.

**Conclusion**

If instructors and departments are investigating ways to develop their students’ academic essay-writing skills through frequent feedback and clear assessment at the first-year programmatic level, this essay-writing project provides a learning model that can be adapted to various disciplinary contexts. This research, although limited in both size and scope, has illustrated that a metacognitive approach to undergraduate assessment has the potential to heighten students’ awareness of the process of assessment and make it clear and accessible, which in turn improves learning outcomes. Furthermore, the results of the project suggest that the in-class exercises help students internalize evaluative criteria, which improves their writing and has the potential to provide them with a more nuanced and richer understanding of essay writing as a process that develops over time and can be improved through high-quality feedback and attentive revisions.

The project sought to address some of the challenges instructors face as they design their courses, which include limited class time, little or no marking support, and heavy marking loads. In this project, students received 5 feedback loops instead of the average 1-2, and the marking hours were estimated to be approximately 20% higher than the original survey course (that assigned 2 essays over the course of the term).

This model could be adapted to an upper-year English class in order to introduce students to research papers, and could also be adapted to other departmental and institutional cultures with a recalibration of assessment criteria for the specific discipline. There are also future research projects that could track student success longitudinally over several years, and examine rates of retention, student perceptions, and other factors that influence students’ learning outcomes.
References


Acknowledgements

Thanks to my colleagues at Bishop’s University, especially the members of the Teaching and Learning Centre Initiative, who inspired me to explore my teaching in a scholarly manner. Special thanks to Drs. Corinne Haigh and Laura Mitchell who gave me the confidence to develop a qualitative and quantitative methodology to study the efficacy of the essay exercise.

Biography

Dr. Jessica Riddell is an Associate Professor of Medieval and Early Modern Literature in the English Department at Bishop’s University. She is a 3M National Teaching Fellow (2015) and the Chair of the Teaching and Learning Centre at Bishop’s.
Appendix A
Student Survey of the Essay-Writing Project

NB. Students were asked to provide their answers on a 5 level Likert scale (1 = strongly disagrees, 5 = strongly agrees).

Question 1: The in-class essay exercises gave me a better understanding of the assessment process for university-level essays

Question 2: Before the in-class essay exercises, I was never really sure what professors were looking for in university essays

Question 3: Marking someone else’s essay gave me a better understanding of what is required for my own final essay

Question 4: Providing feedback on someone else’s essays was beneficial in helping me think about what was required for my own essay

Question 5: The process of receiving feedback on how to assess the three in-class essays helped me prepare for writing and revising my own essay

Question 6: I read the professor’s assessment of the three essays carefully and tried to understand how I might improve my essay-writing skills

Question 7: The examples Dr. Riddell provided on moodle before each assignment were useful to practice how to assess undergraduate essays

Question 8: I now have a clearer sense of expectations and assessment as I write and revise future essays

Question 9: The in-class essay exercises will help me write essays in my other courses

Question 10: I believe these in-class essay exercises have made me a better essay writer

Question 11: Marking and evaluating my own essay made me aware of the process of revising my essay

Question 12: I believe that marking and evaluating my own essay substantially improved the quality of my essay
Appendix B
Essay Evaluation Sheet

Name: ________________________________________________

Section I. Thesis (marked out of 10)
There are four major components to a thesis paragraph: announcing your topic (exordium), defining your terms (narratio), outlining what you will examine to prove your argument (division) and your thesis statement (proposition).

1) Identify the topic of this paper:

2) What (if any) terms are defined in the thesis paragraph? What terms need to be defined more thoroughly?

3) Does the author provide an outline of how s/he will prove the argument? If so, provide the outline here. If not, suggest an outline that should’ve appeared in the thesis paragraph.

4) What is the thesis statement? (replicate word for word from the essay)

5) Is the thesis statement clear, original, and persuasive? A simple yes or no is not sufficient. Do you agree with the argument? Why or why not?

Section II. Essay Comments (marked out of 20)
Please provide comments directed at the author of this paper providing an analysis of the strengths and weaknesses of the paper.

Section III. Style (marked out of 15)

<table>
<thead>
<tr>
<th>Agree = 10</th>
<th>Checklist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disagree = 0</td>
<td>Every sentence has a clear subject, verb, and object</td>
</tr>
<tr>
<td></td>
<td>All verbs are in the active voice and the present tense (i.e. there are no verbs ending with “ing” or uses of “being”)</td>
</tr>
<tr>
<td></td>
<td>There are no ambiguous uses of the word “it”</td>
</tr>
<tr>
<td></td>
<td>The paper has correct margins (1 inch/2.5cm), with 12pt Times New Roman font</td>
</tr>
<tr>
<td></td>
<td>There are no contractions (don’t, shouldn’t, couldn’t) in the paper</td>
</tr>
<tr>
<td></td>
<td>The language is in a formal, academic tone with no colloquial (slang) expressions</td>
</tr>
<tr>
<td></td>
<td>Punctuation is used correctly throughout the paper (i.e. no comma splices, no incorrect uses of the dash, proper use of the colon and the semi colon, etc.)</td>
</tr>
<tr>
<td>The writing is clear and concise with no wordiness or “fluff”</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>The introduction of quotations fits smoothly into the syntax of the essay and provides the appropriate context to understand the evidence presented</td>
<td></td>
</tr>
<tr>
<td>The essay follows MLA format with correct quotation format, bibliography, page numbers, etc.</td>
<td></td>
</tr>
<tr>
<td>There is no wasted space on plot summary or description; all sentences propel the argument forward</td>
<td></td>
</tr>
<tr>
<td>The author makes arguments that are logical and follow one another</td>
<td></td>
</tr>
<tr>
<td>The author avoids historical generalizations and does not make flawed assumptions</td>
<td></td>
</tr>
<tr>
<td>The conclusion restates the thesis and then move outwards to the wider implications</td>
<td></td>
</tr>
<tr>
<td>The reader understand the “big picture” of the argument, i.e. why this argument adds to our understanding of the text</td>
<td></td>
</tr>
</tbody>
</table>

**Section IV. Total Grade you Assign the Essay (marked out of 5)**

*note: the total grade should be out of 100.*
Toward Accuracy, Depth and Insight: How Reflective Writing Assignments Can Be Used to Address Multiple Learning Objectives in Small and Large Courses

Dr. Kristie R. Dukewich  
University of Toronto

Dr. Deborah P. Vossen  
St. Francis Xavier University

Writing-to-learn involves the use of low-stakes informal writing activities intended to help students reflect on concepts or ideas presented in a course. Writing-to-learn can be a flexible and effective tool to help students understand and engage with course concepts, and past research has shown that writing-to-learn activities can substantially improve performance on summative assessments. Not only is coherent writing helpful for learning, it is also a skill that students are expected to acquire during their degree. However, it can be a challenge to provide writing opportunities that are both interesting to students and easy for instructors to implement and grade, particularly in courses with a large number of students. Reflective journaling is one method that can address these learning objectives. The versatility of reflective writing means that it can be adapted to suit a number of different disciplines. In this essay, we will explore reflective writing as a subgenre of writing-to-learn activities, summarizing some of the benefits associated with these assignments that have been described in the pedagogical literature. We will then describe how to tailor the assignments to different kinds of disciplines, including STEM courses, professional programs, and the social sciences and humanities. We will provide some guidance on how to resolve tension around marking and feedback for such an assignment. Finally, we will describe our individual experiences with using this kind of assignment in two courses. As there were a number of contextual differences between the two courses, including size and discipline, our commentary is advanced within the specific context supplied by each.

Reflective writing: Situating the subgenre and its benefits

Writing across the curriculum is a pedagogical movement in higher education rooted in the strategy of engaging students in writing outside of composition-based courses (Bazerman et al., 2005). Numerous studies have shown that engaging students in writing can have a positive impact on their overall course performance (Cisero, 2006; Drabick, Weisberg, Paul, & Bubier, 2007; Soysa, Dunn, Dottolo, Burns-Glover, & Gurung, 2013).
suggesting that writing can help students integrate new content into existing knowledge structures (Emig, 1977). Not only is informal writing helpful for learning, but it is also a skill that students are expected to acquire during their degree. However, it can be a challenge to provide writing opportunities that are both interesting for students and practical for instructors to implement and grade, particularly in large courses.

While writing across the curriculum has often been framed as a way to train students in discipline-specific writing conventions (Bazerman et al., 2005), engaging students in formal writing activities that reflect the discipline’s literature, writing across the curriculum also includes writing-to-learn activities – low stakes, informal writing activities designed to help students clarify and engage with course concepts through their own writing (McLeod, 1992). There are a wide variety of activities that fall under the writing-to-learn rubric including specific prompts, annotations, reading summaries, 1-minute papers, and reflective writing assignments (Kiefer, n.d.) with the last of these establishing the foundation of this essay. Broadly defined, reflective writing is a form of low-stakes writing that involves adding personal reflection on the meaning of a concept, event, or situation. While reflective writing shares some important benefits with other writing-to-learn activities, it also has some benefits that are unique to this subgenre.

Because reflective writing is typically low-stakes, it permits instructors to provide students with more opportunities to practice their writing skills over the course of a single semester compared to using a higher-stakes single formal discipline-based writing assignment (Soysa et al., 2013). This kind of assignment structure has multiple benefits. First, it affords students the opportunity to fail and to thereby learn from their mistakes without the threat of failing the course. Second, repetition over a long period of time with feedback that provides knowledge of results is important for skill acquisition (Kellogg & Raulerson, 2007). Tracking students as they moved through their programs, Johnstone, Ashbaugh and Warfield (2002) found that those who took two writing intensive courses in their first and second years showed dramatic improvements in their writing abilities, while students without the opportunity to regularly engage in writing showed a decline in their writing abilities. Insofar as writing is a skill to be honed, multiple reflective writing assignments over the duration of a course can be an effective way for instructors to provide the kind of practice required to experience and demonstrate improvement.

Another benefit to reflective writing is that students feel more engaged with the course and with the overall learning process. Ruland and Ahern (2007) reported on a class of nursing students who completed a series of reflections during their first course in the program. Through a reflective writing package, including journaling to reflect critically on their practice, students engaged with material on a personal level, leading to increased confidence in their abilities and more effective integration of new content with their past professional experience. In particular, students reported gaining self-awareness and feeling more engaged with the learning process through reflection. In addition, course evaluations suggested that the reflections also contributed to high quality class discussion, with results overall indicating a positive effect on both in-class and out-of-class learning. These findings are consistent with research from the cognitive psychology literature demonstrating that memory is enhanced for information related back to the self (Rogers, Kuiper & Kirker, 1977). With research showing that the skills enhanced via reflective writing assignments function to improve performance on more substantive summative assessments (Drabick et al., 2007), it seems that the learning benefits associated with reflective writing are more than just a matter of perception.
Tailoring reflective writing for different disciplines: STEM, professional programs, and the social sciences and humanities

One of the strengths of reflective writing assignments is the flexibility of the prompts, which can be tailored to suit various disciplines. In science, technology, engineering, and mathematics (STEM) courses, for example, reflective writing can be used for students to explain difficult concepts to themselves. Often when students encounter difficulty understanding particular concepts, the biggest hurdle is recognizing the question rather than recognizing the answer. Thus, asking students to explain difficult concepts to themselves via reflection can help them identify the source of their confusion, which contributes to the development of metacognitive and critical thinking skills (Kalman, 2008; McLeod, 1987).

Kalman (2011) describes an intrinsic case study in which Physics students were required to engage in a free-writing form of reflective writing as a method of understanding concepts presented in course readings. Students were instructed to “Write about what [the passage] means. Try to find out exactly what you don’t know, and try to understand through your writing the material you don’t know” (p. 161). In response, students used the reflective writing process to engage in a cycle of extracting meaning from the text, examining and questioning assumptions, and integrating new concepts into existing knowledge structures. Because of the cyclic nature of the reading and reflecting processes, students demonstrated an expansion and reconstruction of their knowledge structures to accommodate new concepts and assumptions. This integrative process left students with not only a deeper understanding of the material, but also a metacognitive appreciation of reflective writing as an effective method to develop understanding, with one student stating, “In order to do reflective writing you really have to […] know what you do not understand about a particular question” (Kalman, 2011, p. 167).

Reflective writing is closely associated with professional programs, and with medical professional programs in particular. Educators in these areas have found reflective writing can be an effective tool for getting students to think more carefully about their practical experiences or simulations (McGuire, Lay, & Peters, 2009). Reflection had the distal goals of integrating the experience with academic concepts, evaluating the learning process to determine if it was successful, and exploring the possible ways in which the experience might have been improved (McGuire et al., 2009). As an example, Lonka et al. (2001) studied the practical reflections of medical students during their training in obstetrics and gynecology. Students were asked to keep a journal describing their practical training experiences with journal entries including a specific self-evaluation of their own skills to help them monitor skill development as well as an evaluation of the performance of the teacher overseeing each experience. Lonka et al. found that the amount of text written in the journals strongly correlated with final exam performance, with a substantial and statistically significant improvement for students who wrote a lot compared to students who wrote very little.

In the social sciences and humanities, reflective writing assignments usually take on an especially introspective quality where students are asked to consider how they might interpret different concepts presented in a course, and how they see elements of those concepts represented in their own lives. Nevid, Pastva, and McClelland (2013) introduced reflective writing into a psychology course, using the prompt, “An example of the concept of _____ in my life is …” (p. 273). The authors then coded exam questions as either matching the topics students wrote about or mismatching the topics they wrote about, and compared performance on those conditions, finding that students performed significantly better on the exam questions related to the topics they wrote about as compared to those they did not. These findings suggest that reflective writing was instrumental in getting students to think about the material more deeply with the depth of thinking resulting in enhanced overall learning.
Alignment of learning outcomes, student time-investment, assignment weight, and instructor feedback

The low-stakes nature of reflective writing activities means that they are often shorter in nature than formal writing activities. The brevity of these assignments makes them ideal for providing students with multiple opportunities to engage in the writing process. However, there is a tension between the number of assignments and the time-investment for marking. While low-stakes assignments imply that feedback will be minimal, students cannot be expected to engage in meaningful reflection when the assignments will not be evaluated at all. Moreover, knowledge of results is important for improvement (Kellogg & Raulerson, 2007).

There are several ways to address the time-consuming problem of providing feedback to students on their writing, but the approach depends on the learning outcomes targeted by the particular assignment. Table 1 outlines some suggestions for aligning different aspects of a reflective writing assignment with the broader pedagogical objectives, while at the same time acknowledging the practical considerations of the instructor in respect to time required for grading.

When the goal of the instructor is simply to have students engage in reflective writing, no feedback is required. For example, Kalman (2011) used reflective writing exclusively to facilitate students’ skills in identifying meaning in scientific text. Kalman did not assign marks to these reflections because he was not interested in improved writing, but he did require students to submit them along with their quantitative homework for a grade. This was sufficient for Kalman to meet his learning objective of engaging students in critical reflection during text interpretation.

If the goal of the reflective writing assignment involves holding students accountable for the performance in a broad sense, using a check-plus, check, check-minus approach can be effective. This grading scale allows instructors to increase the weight of the assignment while remaining low-stakes, but provides students with some motivation to put more effort into the writing process. The scale also provides very general feedback to students, which might correspond to “mastery,” “proficient,” and “needs work.”

Kellogg and Raulerson (2007) suggest that feedback that informs learners about the specific results of their effort is critical for skill acquisition. This means that if a learning outcome targeted by the assignments involves improved writing, feedback is critical. But evaluating the quality of the reflection can involve a much larger investment of time, thus rubrics can be invaluable for making the marking manageable. In particular, analytic marking rubrics can provide feedback to students in a time-efficient

<table>
<thead>
<tr>
<th>Learning outcome</th>
<th>Student time-investment</th>
<th>Assignment weight</th>
<th>Grading scale</th>
<th>Instructor feedback</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engagement, preparation</td>
<td>&lt; 30 minutes</td>
<td>0-1%</td>
<td>Credit/No-credit</td>
<td>Global, not individual</td>
</tr>
<tr>
<td>Introductory skill development</td>
<td>~1 hour</td>
<td>2-3%</td>
<td>Check+/Check/Check–</td>
<td>Individual rubric</td>
</tr>
<tr>
<td>Advanced skill development</td>
<td>Several hours</td>
<td>3-5%</td>
<td>5-10 point scale, Letter grade</td>
<td>Individual rubric + Comments</td>
</tr>
</tbody>
</table>

Table 1

Suggested guidelines for the alignment of different aspects of reflective writing assignments
manner for the marker, while simultaneously improving inter-rater reliability (Jonsson & Svingby, 2009).

**Collaboration between two university teachers**

Pedagogy is both the art and the science of teaching and learning (Grimmett & Mackinnon, 1992). In the preceding section we have made an effort to summarize the science of reflective writing by reviewing published data on its benefits, as well as providing some practical guidelines for implementing such an assignment. However, research can sometimes be a blunt tool that allows only for the direct comparison of a few conditions while attempting to control for all other variables. The art of pedagogy involves the varied context for each and every assignment a student completes, and reflection by the instructor on how that context impacts a pedagogical tool (Grimmett & Mackinnon, 1992). Pedagogy in practice, by definition, cannot control for variables such as the size of the classroom, the gender of the instructor, the time of day of the lecture, or any number of other conditions that might interact to have subtle effects on the success or failure of a pedagogical tool. From that perspective, we felt it was important to include our personal reflections on these assignments to help readers identify and consider the wide variety of variables that make up the context of introducing a similar assignment in their courses. The following sections represent our autobiographical, reflective narratives, outlining our individual experiences with the assignment.

We met at the Society for Teaching and Learning in Higher Education (STLHE) annual conference in 2013 held in Cape Breton, Nova Scotia. Attending a session about reflective writing, we both expressed some trepidation about how to mark such assignments. We were both struggling with the time-demanding process of grading and feedback, and we both sought more effective evaluation strategies. After discussing various grading scales, we decided to use the check-plus, check, check-minus scale in conjunction with a detailed marking rubric that one of us (Kristie) had developed.¹ We agreed to keep in touch and share our experiences with the assignment and marking scheme. In what follows, we report our individual experiences with the reflective writing strategy by describing the context of the respective courses (see Table 2 for a summary), the specific characteristics of the reflective assignments, and our own personal reflections on the process.

**Kristie’s experience with PSY372 – Human Memory**

With research-based background knowledge of reflective writing, I introduced a reflective writing component into a third-year psychology course at the University of Toronto with 65 students. PSY372 Human Memory involves an in-depth exploration of research on human memory, including theoretical debates about the different kinds of memory, different ways of using memory, and the memory problems that people experience. I thought a reflective writing component was appropriate in this course because students have an awareness of their own memory, but are not necessarily aware of how their memory works. There are some consistent but rather counterintuitive findings in the academic literature that students often struggle to understand, and I thought reflective writing might help them recognize evidence of these findings in their own lives. In addition, I was trying to find a way to respond to course evaluations in which students had indicated that they felt my current assignments were not an effective enough means of learning or demonstrating learning. Finally, I hoped that the reflective writing

¹ I (Kristie) would be remiss if I did not acknowledge Dr. Andrea Williams, a faculty member at the University of Toronto who teaches writing, for introducing me to this grading scale. I have found it to be a flexible and effective scale that I have incorporated into several writing-to-learn assignments, allowing me to include a greater number and variety of assignments for students in my large courses.
assignments would ease students into the writing process and so prepare them for the formal essay due at the end of the term.

Table 2 summarizes the context of the course and the reflective writing assignment. The reflective writing component included three entries submitted at different points in the semester. Each entry was based on any topic covered in the previous three weeks of lectures, with the specific topic chosen by the individual student. Students were asked to explain the concept by relating it to a novel idea, theory, paradigm, situation, or event. In this context, “novel” meant something not specifically discussed in the lecture in which the chosen content was presented, but may be something previously discussed in the course, something learned in another course, or some lived experience or imagined situation.

Table 2

Contextual information around the two courses and reflective writing assignments

<table>
<thead>
<tr>
<th>Course and assignment characteristics</th>
<th>Psy372 – Human Memory University of Toronto</th>
<th>HK455– Games, Life and Leadership St. Francis Xavier University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of students enrolled</td>
<td>65</td>
<td>13</td>
</tr>
<tr>
<td>Number of reflected entries</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Length of each entry</td>
<td>250-550 words</td>
<td>250-550 words</td>
</tr>
<tr>
<td>Learning outcomes</td>
<td>Introductory skill development:</td>
<td>Theory mastery and application:</td>
</tr>
<tr>
<td></td>
<td>● Practice writing</td>
<td>● Engage with content</td>
</tr>
<tr>
<td></td>
<td>● Engage with content</td>
<td>● Advancing applications</td>
</tr>
<tr>
<td></td>
<td>● Recognizing connections</td>
<td>● Recognizing existential connections</td>
</tr>
<tr>
<td></td>
<td></td>
<td>● Reflecting “out” on life</td>
</tr>
<tr>
<td></td>
<td></td>
<td>● Reflecting “in” on representations of the self</td>
</tr>
<tr>
<td>Weight of reflective entries</td>
<td>3% each</td>
<td>3% each</td>
</tr>
<tr>
<td>Grading scale</td>
<td>Analytic rubric + Check-plus, Check, Check-minus</td>
<td>Analytic rubric + Check-plus, Check, Check-minus</td>
</tr>
<tr>
<td>Feedback</td>
<td>Group, No individual comments</td>
<td>Group and Individual feedback offered</td>
</tr>
<tr>
<td>Other forms of assessment</td>
<td>● Formal argumentative essay</td>
<td>● Short essay</td>
</tr>
<tr>
<td></td>
<td>● 2 exams</td>
<td>● Oral presentation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>● Poster presentation</td>
</tr>
</tbody>
</table>
The teaching assistant (TA) experienced a tension between the specificity of feedback and the time required when marking these assignments. Yet, I believed that for students to show improvement in their reflective writing, it was essential for them to know the components of the composition used in assessing their work as well as to have an idea of the level of proficiency for each of those components. To that end, students were provided with a detailed itemized (analytic) marking rubric (see Appendix for an example) that described the components of the entry, as well as the criteria for Level 1 (“needs work”), Level 2 (“proficient”), or Level 3 (“mastery”). However, to prevent the marking task from becoming onerous, the TA was trained to apply the rubric holistically:

- 1/3 if most components fell into Level 1
- 2/3 if most components fell into Level 2 or were distributed across levels
- 3/3 if most components fell into Level 3

In the benchmarking session for the first entry the TA and I both felt that the check-plus, check, check-minus approach to applying the rubric holistically was restrictive. Several of the entries that we read early on were very good in that they indicated elements of proficiency, but few were excellent enough to show mastery, so we decided to use half-points when appropriate. However, we continued with the original notion of not providing individual comments to students regarding their entry. Instead, the TA held office hours after the graded entries were returned so that students who were keen to receive more feedback could speak with the TA directly. In general, this was an effective use of TA resources. Indeed, Crisp (2007) indicates that students spend very little time reading feedback comments and Chanock (2000) notes that they might misunderstand the intention behind the comments when they do. Allowing students to decide if they wanted to speak with the TA meant that the TA did not waste time providing comments to students who would not read them, and allowed for individual comments to be clearly and effectively communicated through direct face-to-face conversation.

The teaching evaluations for the course indicated that students liked the assignments. They stated it was an avenue for creativity and that they liked that they could earn marks toward their grade in a way that was not onerous, more flexible, and inherently interesting since they could pick their own topics. One student remarked, “The reflective assignments were especially helpful in developing a deeper understanding of the material and provided opportunities to hone my writing skills”; another wrote “I think the journal entries were a creative way for us to think about certain topics (I did not even have to study for the topics I wrote about because I was able to remember those concepts so well).” I also found the entries to be effective for giving students multiple opportunities to write over the semester, and they were interesting to read precisely because they were so personal – they provided real insight into the personalities of the students in the course. Finally, the TA appreciated that the entries could be marked in about three minutes per entry.

However, by the end of the semester I realized that I had to change the next iteration of the assignment in order to make it more effective. Primarily, I need to increase the difficulty of the prompt, and I need to emphasize both accuracy and depth. By the third entry, students’ were writing at a relatively proficient level, and it led to some concern that the 9% total allocated to reflective writing might end up inflating the grades. In the future, I intend to lower the weight of the assignments, or provide more specific prompts for students in order to increase the difficulty and variability in performance across students.

Grade inflation may have been less of an issue had I included a component in the rubric emphasizing accuracy. For the first entry, students focused on the informal aspect of the assignment with some entries including inaccurate descriptions of course concepts, reflecting the fact that some students did not consult their lecture notes or the textbook in summarizing content. Other entries attempted to connect course concepts to popular myths about cognition (e.g., “We only use 10% of our brain”). In response, I have since updated the rubric to help
emphasize that informal does not mean uninformed (see Appendix).

There was also an issue with the depth of the entries. Many students described an event from their lives, and then attempted to use every concept covered over the preceding three weeks to explain the event. Given the word limit, this prevented the students from exploring any one concept in a focused manner. In response, future iterations of the assignment will emphasize that students must limit their discussion of course content to one or two ideas.

Finally, future iterations will include an opportunity to share the best entries with other students in the course to serve as models or exemplars of how to complete the assignment. On the teaching evaluations, one student remarked “It would have been informative to receive comments on the reflective writing assignments” – a sentiment echoed by several students in the course. While I am still not prepared to invest more time in providing feedback to students on these assignments, providing a public platform for the best entries, like a course blog or website, can be an effective way of clarifying the rubric and our subjective (but not arbitrary) standards (Orsmond, Merry, & Reiling, 2002). Exemplars can also provide students with an anchor point for evaluating their own writing so as to improve metacognition around writing (Nicol & Macfarlane-Dick, 2006). Finally, exemplars are also something that students value more than detailed rubrics as a tool for improving their writing assignments (Lipnevich, McCallen, Miles, & Smith, 2014). Indeed, educators who specifically use reflective writing in their courses have suggested modeling as an effective way to improve the quality of student reflections (Spalding, Wilson, & Mewborn, 2002). Keeping in mind that undergraduate students often struggle with deep reflection (Dyment & O’Connell, 2011), providing exemplars to students on the next iteration of the course can clarify the goals and standards of these assignments, serving as a low-effort, high-impact method of formative feedback.

Deborah’s experience with HK455 – Games, Life, and Leadership

Exploring the concept of servant leadership from an existential perspective, HK455 Games, Life, and Leadership is an advanced Sport Philosophy course offered by the Department of Human Kinetics at St. Francis Xavier University. Aligned with the course content as fundamentally about self in service to others and the primary objective for students to advance a self-affirming philosophy of personal and professional practice, reflective writing has always been incorporated into the course in some form. However, despite my conviction that reflective practice is pedagogically essential to student success as well as my ongoing effort to formalize the reflective elements of the major course assignments — including a short essay, an oral presentation, and a poster project — I was routinely daunted by the often complex nature of my evaluation and the length of time required by it. Furthermore, I was concerned that students’ reflections frequently portrayed a lack of form or structure, while their comments also lacked the depth I sought to nurture.

In preparation for the course’s three major evaluative measures, students are asked to conceptualize the course subject matter visually in five arts-based submissions. In the past, I also encouraged students to submit a reflective writing excerpt to accompany each of the arts-based assignments with each written excerpt enabling the students to reflect further on the meaning portrayed in their visual artwork. However, insofar as each of these submissions was only ever intended as preparation for the major assignments, I never assigned a grade with the feedback I gave. Unfortunately, without an adequate evaluative structure for these preparatory reflective excerpts, I spent an excessive amount of time trying to provide feedback that could effectively guide students toward an existential outlook capable of enriching their major projects. This problem was further exacerbated by not assigning any grades, which meant the students were not motivated to submit their best work.
Following discussions with Kristie at the STLHE conference in 2013, I implemented her reflective writing assignment guidelines (with slight modifications) as well as her holistic check-plus, check, check-minus scoring rubric in my HK455 course in the 2013/2014 academic year. Specifically, maintaining the overall evaluative structure of five preparatory arts-based submissions and reflective writing excerpts, a short essay, an oral presentation, and a poster project, I was able to enhance the pedagogical efficacy of the preparatory reflective writing submissions by adjusting the course grade distribution to include a 3% score for each one.

To assist with the writing process, students were provided with reflective writing guidelines, which included a vocabulary aid as well as an overview of the scoring parameters and grading rubric. Within these guidelines, the five low-stakes reflective writing assignments were further clarified as opportunities for students to think more introspectively about the nature, meaning, significance, and interpretation of a concept, theory, or methodology as relevant to his/her development as a life-long learner in service to others. Specifically, to allow for deeper processing, students were encouraged to reflect both out, in the form of an interpretive consideration of a question, issue, story, experience, situation, or event acknowledged as influential in his/her own learning journey, and in, in the form of a personal commentary speaking to what he/she learned about his/her values, beliefs, and other representations of self.

Having introduced the scoring rubric, I was able to grade the reflective writing excerpts in a manageable amount of time. Also, since my class size was small (13), I was able to accommodate the students’ request for both individual and group feedback, with the latter outlining the topics raised, praising what was done well, sharing unique reflective writing strategies undertaken, and correcting common errors in the application of theory. As the instructor of the course, the reflective writing assignments helped me to gauge more fully whether or not the students understood and were able to successfully integrate the theory central to the course into their own existential outlook and/or practice. As a consequence, in addition to providing corrective feedback, I was able to modify course content in order to address common interpretive errors as well as challenge students to delve more deeply into the subject matter through their writing.

Scores on the five preparatory reflective writing assignments were proportionately lower than those on the major assignments. However, the grades for the essays, oral presentations, and poster projects increased in 2013/2014 over the previous years’ by almost 10% on average. This increase reflects what I deemed to be more in-depth and structured reflective commentary from the students within the three higher-stakes assignments. The most marked difference was demonstrated in the oral presentations in which the students reflected verbally on their experiences across the course. I believe that, as the only change made to the course, the more formalized reflective writing assignments enhanced student engagement in, and understandings of the subject matter. For this reason I intend to increase the value of each reflective writing excerpt in the future and, given the students’ earnest request for feedback, to modify the rubric to accommodate/address analyses of the more specific existential parameters informing course content.

**Conclusion**

Research has demonstrated that writing can help students learn how to learn (Cisero, 2006; Drabick et al., 2007; Emig, 1977; Soysa et al., 2013) and that, as a form of low-stakes informal writing, reflective journaling is an especially promising pedagogical strategy for student development through writing across the curriculum in higher education (McLeod, 1992). Reflective writing allows students to engage with course concepts in ways that compel them to integrate and derive meaning on their own terms (Emig, 1977), leading to improved content retention. When these assignments include structure and multiple opportunities to write across the term, reflective writing assignments can also contribute to greater comfort with and increased deployment of learned skills and concepts on subsequent, more
substantive writing assignments (Johnstone, Ashbaugh, & Warfield, 2002). Moreover, the flexibility of reflective writing makes it a viable tool for use within any discipline, and any course. Inspired by such outcomes, this essay explores our implementation of informal reflective writing strategy in our courses. As a result of our combined effort, we both enjoyed a stronger appreciation of reflective writing as a pedagogically effective activity capable of enriching our students’ educational experiences through increased engagement with the subject matter. Moreover, we found a way to evaluate and assign grades to the reflective writing excerpts (using a holistic check-plus, check, check-minus rubric) without necessitating an untenable amount of time. Given our positive experiences and our students’ positive experiences, we encourage our colleagues in higher education to consider the integration of reflective writing assignments into their courses and curricula.

References


Reflective Writing Assignments


107

**Biographies**

Kristie Dukewich is a lecturer at the University of Toronto in Psychology. She has been teaching perception and cognition courses in higher education for the last 8 years. Her primary objective in teaching is to give students the opportunity to practice transferrable skills, including evidence-based argumentation, critical thinking, and coherent written and oral communication. Her practice is strongly rooted in the pedagogical literature.

Deborah Vossen is an Associate Professor in the Department of Human Kinetics at St. Francis Xavier University where she has been teaching courses in Sport Philosophy since 1998. Using sport as a metaphor for life itself, her mission as a teacher of higher education is to empower reflective life-long questing via the cultivation of a self-affirming philosophy of personal and professional practice.
Appendix

Reflective writing marking rubric

A similar marking rubric was provided to students and was used to assess the reflective writing entries in both courses. This version of the rubric has incorporated changes to include accuracy, depth, and insight in order to emphasize to students that informal does not mean uninformed.

<table>
<thead>
<tr>
<th>Component</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Background information &amp; theme</td>
<td>• The theme, topic, or concept is ambiguous, content appears to be</td>
<td>• The theme, topic, or concept is described &amp; most content is related</td>
<td>• The theme, topic, or concept is clearly described &amp; all content in</td>
</tr>
<tr>
<td></td>
<td>related to several themes, topics or concepts</td>
<td>to the central theme, topic or concept</td>
<td>the entry is clearly related to a central theme, topic, or concept</td>
</tr>
<tr>
<td></td>
<td>• Several discipline-specific concepts are not defined, or relevant</td>
<td>• Most discipline-specific concepts are defined; some definitions lack</td>
<td>• All discipline-specific concepts are clearly defined, all relevant</td>
</tr>
<tr>
<td></td>
<td>background information is missing or not clearly described</td>
<td>clarity, or some piece of background information is missing</td>
<td>background information is clearly described</td>
</tr>
<tr>
<td>Reflection</td>
<td>• Personal interpretations/point of view are shallow and insincere,</td>
<td>• Entry includes personal interpretations/point of view</td>
<td>• The entry includes thoughtful personal interpretations and a personal</td>
</tr>
<tr>
<td></td>
<td>confusing, or missing altogether</td>
<td></td>
<td>point of view</td>
</tr>
<tr>
<td>Organization &amp; coherence</td>
<td>• It is unclear how all of the ideas are related</td>
<td>• It is somewhat clear how all of the ideas are related</td>
<td>• It is clear how all of the ideas are related</td>
</tr>
<tr>
<td></td>
<td>• Connections drawn are difficult to follow, claims are either supported</td>
<td>• The connections drawn are somewhat logical, claims are supported but</td>
<td>• The connections drawn are logical &amp; claims are supported by evidence</td>
</tr>
<tr>
<td></td>
<td>by weak evidence or unsupported</td>
<td>evidence is a bit weak</td>
<td>• Order of ideas is effective</td>
</tr>
<tr>
<td></td>
<td>• Order of ideas is ineffective</td>
<td>• Order of ideas is somewhat effective</td>
<td>• The entry is structured so that there are discrete sections with</td>
</tr>
<tr>
<td></td>
<td>• The entry lacks discrete sections, there is little structure</td>
<td>• There is some evidence of structure in the entry, but the sections</td>
<td>specific ideas discussed in each</td>
</tr>
<tr>
<td>Accuracy, depth, &amp; insight</td>
<td>• Content indicates a lack of comprehension of cognitive concepts or</td>
<td>• Content suggests some misconceptions about cognitive concepts or</td>
<td>• Content reflects comprehension &amp; insight of cognitive concepts or</td>
</tr>
<tr>
<td></td>
<td>experiments</td>
<td>experiments</td>
<td>experiments</td>
</tr>
<tr>
<td></td>
<td>• The entry is mostly devoid of meaningful content</td>
<td>• The entry includes analysis that focuses on somewhat superficial or</td>
<td>• The entry displays evidence of depth of thinking</td>
</tr>
<tr>
<td></td>
<td></td>
<td>obvious observations</td>
<td></td>
</tr>
<tr>
<td>Writing style</td>
<td>• The language and vocabulary used in the entry ineffective and unclear</td>
<td>• The language and vocabulary used in the entry is mostly clear</td>
<td>• The language and vocabulary used in the entry is effective &amp; clear</td>
</tr>
<tr>
<td></td>
<td>• The tone of the entry is too casual, relying on slang or popular</td>
<td>• The tone of the entry is informal but a bit too casual</td>
<td>• The tone of the entry is informal but not too casual (no use of</td>
</tr>
<tr>
<td></td>
<td>cultural references that aren’t explained; “you” is over-used</td>
<td></td>
<td>slang; personal pronoun “I” is allowed; there is a conservative use</td>
</tr>
<tr>
<td></td>
<td>• The entry is wordy, relying on clichés and stock phrases to fill in</td>
<td></td>
<td>of the pronoun “you”; use of contractions is allowed; complete</td>
</tr>
<tr>
<td></td>
<td>space</td>
<td></td>
<td>sentences are used; repetition is avoided)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• The entry employs an economy of words</td>
</tr>
</tbody>
</table>

Educators may use or adapt this rubric for their own educational purposes without the authors’ written consent and with appropriate citation of this publication.
“What do you mean I Wrote a C Paper?” Writing, Revision, and Self-Regulation

Mark Feltham
Fanshawe College

Colleen Sharen
Brescia University College

Students often express surprise at their grades on papers. This gap between expectation and achievement may stem in part from lack of facility with revision strategies. How, then, can teachers work with their students to foster more effective revisions? This question in teaching and learning has inspired an interdisciplinary collaboration: one of us is a management and leadership professor (Sharen), and the other is an English/communication professor (Feltham). In this essay, we describe a research study from winter 2013 in which we explored how a series of interventions improved students’ mindsets about the process of drafting and revising reports for a second-year-university course entitled “Women and Leadership.” After outlining key aspects of this study that we feel are of general interest, we then present a series of reflective suggestions about how to teach revision derived from both our experiences and a selective survey of the literature on both revision and self-regulation.

Introduction

Revision and its discontents

In May 2014, we conducted a workshop based on an early draft of this paper at the Society for Teaching and Learning in Higher Education (STLHE) conference. During this workshop, we asked participants whether their students’ inability to revise written work created gaps between student expectation and achievement. Most hands shot up. We then asked them whether they explicitly integrated revision into their teaching. Significantly fewer hands went up. These informal polls reflect a situation all too familiar to teachers: students do not always revise effectively, and teachers aren’t always sure how (or whether) to address the problem. These gaps in student knowledge and pedagogy can create additional gaps between what teachers expect from the students and the actual results and also between the grades students expect and the ones that they actually receive. Our awareness of these problems has inspired a small-scale study, the aforementioned conference session, and now, this essay.

We think of our study and our ongoing conversations about it as inner and outer frames for this essay. The inner frame includes what we did, why we did it, and what we learned. Initially, we asked these research questions: to what degree do students view their writing skills as fixed or subject to growth, and does this mindset itself change as a result of classroom interventions involving revision? Would experiencing a mandatory, revision-friendly scaffold show students the benefits of revision and thus begin to nudge them from a fixed mindset towards a growth
mindset? Is seeing believing? The outer frame involves more general questions surrounding revision and its integration into courses of all sorts. Specifically, our initial study involved action research to address whether students viewed writing and revision in terms of a fixed mindset or a growth mindset. This narrower set of questions, however, leads outwards into broader questions about revision, how to adapt what we’ve learned to assignment design and assessment, and what we might do better next time. In what follows, we invite readers to share in these ongoing reflections, and we hope, to be inspired to “try this at home” with their students.

Visions of Revision

Uncertainties and opportunities

In light of this essay’s reflective focus, we have not conducted the same level of literature review as we would have for a more conventional scholarly paper. Nevertheless, a brief overview of some important concepts in the literature will help establish a context for our reflections in the rest of this essay.

There are several patterns in the literature on revision that parallel the uncertainty about the subject that we experienced at the conference workshop that gave rise to this paper. Certainly there is a general scholarly consensus regarding the importance of revision in the writing process: as Barkaoui (2007) notes after citing numerous sources going back decades (Faigley & Witte, 1981; Sommers, 1980; Witte, 1985; Zamel, 1982), “good writers seem to revise at all stages of the writing process as they generate, reevaluate, reformulate, and refine their writing goals” (p. 81). Despite this widespread recognition of the importance of revision, considerable variation in (Whitney et al., 2008) and even ambiguity about (Witte, 2013) the teaching of revision remains.

Some of this variation and ambiguity likely stems from the complex nature of revision itself, which as Witte points out, is a “slow, arduous, laborious, and complex task in which one must reflect over time on a piece of writing and the changes that might be needed” and is thus “a difficult process to teach and model” (p. 34). Witte (2013), following Sommers (1980), offers this useful definition of revision: “a sequence of changes in a composition, in which ideas, words, and phrases are added, deleted, moved, or changed throughout the writing of the work” (p. 34). Why is such a seemingly straightforward process so fraught with problems?

Few processes work well when people dislike them, and students and non-students alike sometimes dislike revising. Witte (2013), discussing comments from a focus group of largely secondary-school teachers participating in her study of revision, goes so far as to refer to “revision aversion” (p. 42). She quotes one “high-school English teacher” who reported that when “I say ‘revision’ [. . .] they go ‘ugh’”; this same teacher also describes students as “squeamish” about revision (p. 42). This aversion may, in turn, relate back to the definition of revision itself. Although Witte’s working definition includes all features of a text, not just surface ones, some students and teachers conceive of revision exclusively in terms of form rather than content: “editing mechanics and grammar, as opposed to really rethinking a piece of writing or thinking about what that vision for that piece of writing is” (Witte, 2013, p. 42).

Self-regulation and feedback

Certainly we do not want to extrapolate from a single teacher’s comments in a focus group to general statements about all students: as Witte (2013) herself notes, her study is limited because of “self-reported data that cannot be independently verified” (p. 49). Nevertheless, having also experienced this “ugh” factor, we were intrigued by a possible connection between student unwillingness/inability to revise and the concept of self-regulation. More specifically, we wondered whether student problems with revision were an instance of Linda Nilson’s (2013) more general observation that “few of our students show signs of being intentional, independent, self-directed learners” (p. 1). This question led us to consider
revision in relation to the concept of self-regulation.

Self-regulation involves behaviours and processes that learners adopt to attain their learning objectives more effectively (Oxford, 2011). Although IQ appears to influence post-secondary success, self-regulation plays a significantly greater role (Duckworth, Peterson, Matthews, & Kelly, 2007): indeed, self-regulation increases students’ depth of thinking, focus, professionalism, self-reflection, and overall academic performance (Nilson, 2013). Except as otherwise cited, the following list presents traits that Zimmerman (2002) ascribes to self-regulating learners. Such learners:

- tend to set explicit personal goals, usually approach goals (“I want to learn about insects”) rather than avoidance goals (“I don’t want to look stupid”).
- tend to identify and use a variety of specific learning strategies to attain their goals and monitor their performance to ensure that they are attaining their goals: for instance, moving to the library because they know they become distracted in the cafeteria (Burnette, O’Boyle, VanEpps, Pollack, & Finkel, 2013).
- evaluate and reflect on the effectiveness of the methods and strategies adopted.
- adjust and experiment with methods and strategies to improve performance.

Like all processes involving self-regulation, composition/revision processes involve “forethought, performance, and self-reflection” (Zimmerman, 2002, p. 67). During each of these activities, an effective self-regulator sets goals, regulates attention, checks and corrects, activates reader awareness, monitors content, monitors organization, plans, and seeks help (Kaplan, Lichtinger, & Gorodetsky, 2009).

In light of these traits and behaviors, self-regulation would seem to be a prerequisite for effective revision. In theory, self-regulation would, one would reasonably expect, inspire students to seek feedback; such feedback would, one would also reasonably expect, inspire revision. Indeed, self-regulation and feedback would seem in theory to mutually reinforce each other: self-regulation can promote effective feedback and effective feedback can in turn promote more self-regulation. Feedback can also prompt learners to engage in self-evaluation and self-reflection and ultimately to adjust and experiment with strategies to improve performance (Butler & Winne, 1995). Formative, qualitative, and open-ended feedback tends to have a greater effect than does summative, closed-ended feedback (Topping, 1998). However, learners can experience discomfort with peer feedback, due to perceived unreliability or fear of social embarrassment (Topping, 2005).

Growth or Fixed Mindset

What’s the point of revising?

Self-regulation can be a necessary (but not sufficient) precondition for effective revision. The best feedback in the world won’t promote effective revision if learners are unwilling or unable to engage in the revision process. A learner’s ability to benefit from self-regulation and feedback, as Dweck (2006) has shown, may depend on whether he or she believes that intelligence is fixed or whether effort can improve intelligence and performance on academic tasks. Learners who have a fixed view of themselves as “smart,” as Dweck (2006) further notes, often see evaluation as a threat to their identity and spend a great deal of effort defending their mindset, trapping themselves in a vicious circle in which their skills don’t develop because they don’t try. This circle, Dweck (2006) adds, also entraps other learners who have a fixed view of themselves as inadequate. Both types of learners tend to avoid revision, either because they see it as a threat to their sense of intelligence or because they see it as futile because of unchangeable inadequacy; both types of learners are likely to quit when faced with a challenge and less likely to work harder to succeed. In contrast, Dweck (2006) also describes how learners with a growth mindset are more likely to work hard, to persevere in the face of failure, and to self-regulate. In other words, students
who see their writing skills as fixed, with no further potential for growth, will understandably think, why bother revising at all?

Self-Regulated Revision

What we did and what we learned

Although the literature on revision tends not to address self-regulation and related concepts, these concepts speak directly to the “revision aversion” that Witte’s study participants described. Our study and our subsequent discussion of it tentatively weave these diverse threads together.

Students’ perception of the nature of writing talent as either fixed or subject to growth appears to influence their willingness to revise. Students with a fixed mindset have been shown to be more likely to believe achievement setbacks reflect personal ability while those with a growth mindset are more likely to believe the same setbacks reflect lack of mastery of a skill or strategy (Spinath, Spinath, Riemann, & Angleitner, 2003). Because students who view writing as an innate talent that effort won’t improve would not see revision as a productive use of time, changing this mindset from a fixed to a growth perspective increases the likelihood that they will make productive efforts to revise.

Design

There were 17 participants in the study, all women taking a 13-week, second-year undergraduate course on “Women and Leadership” in winter 2013 at Brescia University College at Western University in Ontario. In this course, we developed an intervention designed to improve students’ experience with feedback and revision. In a 2500-word report, students identified a gap between men and women in leadership positions and made specific recommendations about how to close this gap. To make the scenario more authentic, we asked students to imagine that they were writing this report for a senior executive in an actual organization. One of the authors (Sharen) has extensive experience as a senior executive in the private sector. As a result, we designed the assignment to mimic the process that organizations take when considering change to their human resources protocols. This design decision proceeds from the idea that the scenario should be as authentic as possible (Bean, 2011; Witte, 2013), with a specific implied audience (Witte, 2013).

Students received detailed assignment instructions and a grading rubric covering writing, information gathering and presentation, and quality of ideas. We designed this rubric to emphasize both writing and information collection to signal the importance of evidence for the assignment, which required substantial support for all recommendations. In keeping with a general emphasis on scaffolding running through the pedagogical literature, Witte (2013) notes the importance of scaffolding in relation to revision. We provided scaffolding for the assignment throughout the semester: students received six hours of classroom instruction on library research, critical thinking, writing, giving and receiving feedback, and revision strategies (see Appendices for sample materials from the study).

This instruction included:

- a one-hour workshop on library research discussing the selection of a topic, finding useful material, and assessment of the credibility of the sources.
- a second library workshop focused on information literacy, including correct approaches to citation. Our instructional librarian co-delivered these workshops.
- a one-hour workshop focused on critical thinking. Students were provided with a critical thinking primer, and then completed a critical thinking exercise, using an opinion piece, to identify common errors in critical thinking. The class then debriefed and discussed how critical thinking skills applied to the assignment.
a workshop focused on the process of writing, discussing the ideas of purpose and audience and how these concepts influence the way in which a report is written. Students also discussed the concepts of coherence and cohesion.

• a classroom discussion about the nature of the writing process. Students were asked to develop a plan to approach this writing task and received feedback during a pair-and-share exercise.

• a one-hour feedback workshop, during which students
  o received a one-page guide to giving and receiving feedback.
  o practiced giving and receiving feedback by writing a brief one-paragraph summary of their report.
  o exchanged summaries and provided/received feedback.
  o discussed the exercise in class, focusing on appropriate and inappropriate ways to give and receive feedback.
  o received a feedback checklist to provide structure to their feedback. This checklist was reviewed in class.

• a workshop on revision strategies, including peer feedback, reading aloud, incubation, and self-questioning. We also discussed the nature of revision, placing emphasis on the idea that revision not only addresses grammar, punctuation and spelling errors, but also includes logical coherence and cohesiveness.

• information about sources of additional, one-on-one support, including the instructional librarian, the university Writing Centre, and the instructor.

Two weeks before the final due date, students exchanged drafts of their reports with two other students. Students also received a feedback checklist (see Appendices for sample checklist) to structure their suggestions. The next week, in class, students gave each other face-to-face formative feedback. Students then had one week to revise, edit, and proofread before submitting their final reports. The draft report, while not graded, was mandatory.

We chose to use a peer review rather than provide instructor formative feedback for three reasons. First, we wanted to expose students to the practice of giving and receiving feedback to build their repertoire of self-regulation strategies. Peer feedback, when supported with both in-class instruction with appropriate structure, can provide students with useful information about their work (Nilson, 2003). Second, given the length of these assignments (up to ten pages single spaced), the amount of time to provide a preliminary assessment by the instructor would have been prohibitive. Finally, we wanted to ensure that students felt safe submitting their first drafts for feedback. Although an initial formative assessment by an instructor could be valuable, we were concerned that many students would be likely to interpret a formative assessment as summative.

To determine whether students’ attitudes, beliefs or behaviours changed due to this exercise, we asked students to complete a pre/post self-regulation of writing measure adapted from three existing instruments. The instrument assessed students’ goals (mastery and approach goals), metacognitive strategy use, behavioural strategies, self-regulation strategies (Kaplan et al., 2009) and writing self-efficacy (Kaplan et al., 2009; Boekaerts & Rozendaal, 2007). In addition, we evaluated students’ implicit beliefs about whether writing is fixed or subject to growth (Spinath et al., 2003). We administered this pre-test in the second week of classes and the post-test in the final week of classes.

To determine whether students’ writing performance improved according to a more objective measure, two graders (Feltham and a graduate research assistant) graded each draft and final version using a standardized grading rubric. This rubric allocated 50 points to writing composition, 50 points to information gathering and presentation, and 70 points for the quality of ideas. Graders ensured consistency in coding by conducting training and using several papers as a pilot to ensure inter-coder reliability with the objective of attaining 90 percent grader agreement.
Where graders’ evaluations differed, we used the mean score.

Results and Discussion

Students’ implicit beliefs about whether writing is a fixed skill or one that can be improved with effort and practice (Spinath et al., 2003) changed significantly. Students indicated their agreement with the following statement, “How well you write depends mainly on your own effort” (1= strongly disagree and 5=strongly agree). In the pre-test students had a mean score of 2.69; in the post-test students had a mean score of 3.69, a statistically significant increase. Thus, the assignment does appear to have increased students’ belief in a growth mindset with respect to writing.

On average, the quality of the writing improved: the draft reports received an average score of 54.3 from the two external raters, while the final reports received an average score of 67.3, a statistically significant difference. This result suggests a substantial improvement in student performance, though how much can be attributed to the peer feedback and revision assignment is debatable. Because the draft version did not receive a grade, some students may have devoted less effort to it, possibly resulting in lower draft grades and, in turn, inflating the gains between the draft and final report.

No statistically significant change occurred from the pre-test to the post-test with regard to goal setting, metacognitive strategy use, behavioural strategies, self-regulation strategies (Kaplan et al., 2009) and writing self-efficacy (Kaplan et al., 2009; Boekaerts & Rozendaal, 2007). In retrospect, the assignment focused primarily on the development of feedback and revision skills. Goal setting and metacognitive strategy use received considerably less in-class instruction, and were not directly assessed, signaling low task significance to students. Because this was a single assignment over 13 weeks, it is not surprising that beliefs and behaviours, developed over thirteen-plus years of education, did not change.

Through qualitative survey questions and in-class debriefing of the assignment, we found that students experienced several benefits from this process. They reported less procrastination and stress because they were required to submit a first draft of the report two weeks prior to the final due date. The early draft requirement, combined with the in-class workshops, gave students a strong incentive to better plan their time, starting assignments early rather than the day before they were due. They felt less anxiety about the draft report because the instructor was not reviewing the draft—only their peers saw it. Additionally, the opportunity for formative (rather than summative) feedback appeared to encourage students to provide explicit and sometimes challenging feedback.

As peer reviewers and thus members of the reading audience, students also gained perspective on the importance of audience needs and increased their willingness to accept peer feedback. They also felt more confident about their final report because they had received feedback. Finally, they reported feeling an obligation to do a thorough analysis when providing feedback to their peers, in order to ensure reciprocity: one student stated that “I felt that I had to make a big effort to do a good job, if I was going to get helpful feedback from the other person” (anonymous, personal communication, March 2013).

Although our study results are interesting, because of methodological issues, including a very small sample size of all-female students in one course at one institution, we need to reproduce our results. This article, however, is less about our data and more about what we learned along the way. Indeed, we learned on several fronts: from dialogue between two teachers with very different academic backgrounds who had never worked together before, from seeing how our ideas relate to the literature, and from observing the actual revision behaviors of the

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1 (p<0.0239, t=2.5131, df=15, standard error of difference=0.0389).

2 (p<0.001, N= 17, t=6.4872, df=16, standard error of difference=2.000).
students in the study. Along the way, we learned to revise some of our beliefs and practices as well.

Please Try This at Home

Some strategies for improving student revision

This final section merges our experiences with references to the literature on both revision and self-regulation to provide suggestions for helping students revise more effectively, thus avoiding variations on the question in our title.

Suggestion #1: Talk your way out of your disciplinary circle

This entire project arose from a chance conversation in a coffee shop in downtown London, Ontario. We have both been regulars there for years, and, realizing we were both teachers, we began talking about pedagogy. Although one of us teaches management and leadership and is familiar with the literature on self-regulation (Sharen), the other (Feltham) teaches writing and is familiar with a separate—but-closely-connected thread: the literature on revision. Our different disciplinary backgrounds shaped our study, a conference presentation, and now this essay. Such dialogue—as Witte (2013) also emphasizes—illustrates the importance of seeking advice and ideas from others, especially those outside of your normal disciplinary circle. Yet another way to break out of this circle is to participate in the vibrant, cross-disciplinary world of the Scholarship of Teaching and Learning (SOTL), including participating in the annual STLHE conferences.

In this spirit, suggestions from our colleagues at the 2014 STLHE conference in Kingston, Ontario are worth sharing. Table 1 summarizes some of these suggestions, which participants wrote on Post-It notes and which we then discussed as a group. We have selected, lightly edited, and streamlined these suggestions to eliminate repetition. At the time, we asked workshop participants to provide suggestions for before, during, and after the writing process, and we have reproduced these categories in Table 1.

Suggestion #2: Build a better bookshelf

Closely following on our first suggestion, we suggest that all teachers support their own practice-derived ideas with an extensive knowledge of the relevant pedagogical literature.

For teaching writing in general, John Bean’s Engaging Ideas (2011) has been a powerful influence; one particular strength of this book is how it carefully supports its practical suggestions with extensive citations to the pedagogical literature. In addition, Linda Nilson’s Creating Self-regulated Learners: Strategies to Strengthen Students’ Self-Awareness and Learning Skills (2013) provides practical exercises to promote self-regulated learning. To Bean’s and Nilson’s own observations and references we have now added all the other sources in our reference list for this article. Whether a literal bookshelf, citation-management software like Zotero (https://www.zotero.org), or even a bundle of paper files, such a bookshelf provides an ongoing, expandable list of everyday inspirations for most problems in teaching and learning, including revision. Interestingly, we designed our study instruments in 2012, before we had read some of the sources cited here (such as Witte’s article). In building a better bookshelf (metaphorical or not) of useful resources from the scholarship on teaching and learning (SOTL) community, all teachers take steps towards a more robust pedagogy.
Table 1

Suggestions Regarding the Writing Process

<table>
<thead>
<tr>
<th>Before Writing</th>
<th>While Writing</th>
<th>After Writing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Essay proposal</td>
<td>Offer bonus marks for draft submission.</td>
<td>Quick feedback</td>
</tr>
<tr>
<td>Group writing: students write grant proposals as a group</td>
<td>Provide prompts in class: e.g., this week you should be thinking about your topic.</td>
<td>Peer feedback on drafts, done in pairs, in class, orally</td>
</tr>
<tr>
<td>In-class examples of revisions and samples of “A” papers</td>
<td>Gamified online writing course: badges and analytics - give students feedback about their progress.</td>
<td>e-portfolio: post completed assignment, write reflection on result, use to improve next writing assignment</td>
</tr>
<tr>
<td>In-class revision workshop</td>
<td>Offer to look over papers for APA if handed in 1 week early.</td>
<td>Explicitly tell me what you think the written feedback means or suggests.</td>
</tr>
<tr>
<td>Weekly writing (2 pages) students choose best and worst and submit with explanation why [they] think so.</td>
<td>[Be] available for 1-1 consultation at [the students’] initiative.</td>
<td>Demonstrate/show examples of before/after revision.</td>
</tr>
<tr>
<td>Students are required to submit proposal topic in advance to receive feedback before they start to write essays.</td>
<td>Peer reviews using Turnitin—give them examples of past “good” and “less good” papers.</td>
<td>Evaluate and grade their own piece, provide rationale for grade.</td>
</tr>
<tr>
<td>Class-time lecture on revision strategies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suggest students use the student resource center to get help with writing process.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provide a detailed rubric</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Writing portfolio mini-assignments (3) early in term</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

118
Suggestion #3:  When In doubt, read and revise your own instructions

Assignment design is critical to a successful intervention. Clear instructions and learning outcomes, as well as check-in points, feedback, scaffolding and very specific rubrics all contributed to an effective learning experience. In particular, the rubric clearly communicated task significance to the students, as it was focused on composition, information gathering, and presentation.

Suggestion #4:  Break the surface

Our approach to revision focused on the organization and presentation of information to a specific audience, rather than on spelling, grammar, and punctuation. This approach changed students’ level of engagement with the process. Rather than seeing the revision process as pedantic exercise in spelling, grammar, and punctuation, a danger that Witte (2013) discusses extensively, students were able to focus on effectively communicating their ideas to an audience. In so doing, we feel they became more likely to see the benefits of their efforts and thus, began to experience a change in mindset.

Suggestion #5:  Teach them how to teach each other and provide time to do it

Witte (2013) quotes one participant in her study who stated that “I revise very little, but if I do, it is from peer suggestion” (p. 41). Witte cites various specific techniques, including “incubation” and revision based on peer feedback. We devoted significant in-class time to each stage of the writing process and to an extensive debrief of the research showing that writing and revision processes improve the likelihood of student success. As Topping (2005) has suggested, the peer component provided social incentives to draft both early and deeply: the mere expectation by students of having to discuss their ideas in an in-class workshop increased the likelihood that students completed the work in advance. The structure of the assignment and accompanying scaffolding created a “forced” form of self-regulation. In fact, the in-class workshops modeled self-regulation strategies for students, pacing their work on the assignment throughout the semester. We addressed student concerns about the feedback process (Topping, 2005) by providing a workshop about giving and receiving feedback, providing a feedback rubric, and by ensuring that the feedback was formative.

Suggestion #6:  Design in (but don’t bake in) authenticity, flexible peer review, and incentives

This suggestion acknowledges the importance of the audience: “[w]hen teachers can build an authentic audience into an assignment, even if the audience is just other classmates, students begin to see themselves as writers with an audience rather than students with teachers” (Witte, 2013, p. 48). Students particularly related to the idea that the report reflected a “real world” work assignment focused on the attempt to change the current under-representation of women in leadership roles. By identifying a specific audience (senior executives from different sectors), the assignment instructions led students to perceive the scenario as more authentic. In addition, through the peer-review process, students had a second “authentic” audience: their peers. This peer review helped them integrate the feedback they received: as one student noted, “If my peer who has studied this stuff doesn’t get it, you can be sure that a senior executive, who may not be as engaged in the topic, wouldn’t understand what I was trying to say” (anonymous, personal communication, March 2013). We would add one cautionary note: don’t bake your design so deeply into your courses that approaches become inflexible and change becomes arduous.

Suggestion #7:  Look Back; Then Look Ahead

There usually will be something you missed. For example, when we were reviewing the final papers, we
observed students did not use headings, sub-headings, bolding, capitalization, or bullet points to provide direction to the audience. More specific instruction regarding these points and inclusion in the rubric (to signal their significance to students) is likely necessary. With respect to graphic presentation skills, we plan to include a short in-class workshop to address this gap.

Suggestion #8:
Keep your own drafts and use them as models in your classes

In the spirit of our penultimate suggestion, our final one is something we have not yet tried but plan to try in the future. It follows directly on the title of Witte’s essay, “Preaching What We Practice.” Because many teachers, especially in post-secondary education, are likely to write on the same subjects that they’re teaching, making their own composition and revision processes part of their courses provides an unmatched opportunity to simultaneously address relevant course content and integrate work on revision skills, thus, in Witte’s words, preaching what they practice.

Conclusion

Living in a world of revision

“We live”, as Witte (2013) puts it, “in a world of revision” (p. 33). Because it is a truth almost universally acknowledged that writing is a crucial skill, it stands to reason that revision, as a key component of writing, shares this importance: from architects to zoologists, virtually all professionals must write, and to write is to revise. Viewed against the larger backdrop of education itself, moreover, revision takes on even greater importance. As Dr. Eric Mazur states in the STLHE (2014) conference video, “the true hallmark of education is giving people the skills that are necessary to solve the unsolved problems, to answer the unanswered,” and revision is one of these skills. As such, we see this essay as part of the larger ongoing conversation about how, as educators, we can best foster these skills. Seeing, in this sense, is believing: if we help students see their underlying potential for skills growth, we also help them believe in their ability, as Mazur puts it, to solve the unsolved and answer the unanswered.

References


Writing, Revision and Self-Regulation


Biographies

Mark Feltham holds a PhD in English from The University of Western Ontario. He has taught at Fanshawe College in London, Ontario, Canada since 2005.

Colleen Sharen is an Associate Professor of Management and Organizational Studies at Brescia University College in London, Ontario, Canada. Her research interests include teaching and learning in a post-secondary context and women’s leadership.
Appendix A
Assignment Instructions

Closing the Gap Report

You will identify an issue that you believe causes a gap between women’s and men’s participation in leadership roles, preparing a report to the senior decision-makers in an organization, such as a CEO, Executive Director, or Cabinet Minister. Your report will recommend which approaches to closing the leadership gap are most effective.

You will

1. provide evidence that the gap exists.
2. discuss what approaches, if any, have been taken to close the gap by other people, communities or organizations.
3. assess the strengths and weaknesses of each approach.
4. draw conclusions with respect to the effectiveness of various approaches.
5. recommend the most effective approaches.

Objectives

Upon successful completion of this assignment students will be able to

1. identify a gap between men and women that reduces the likelihood that women will participate in leadership roles, using examples to illustrate the gap.
2. provide evidence that that gap exists.
3. explain why the gap exists.
4. identify and describe various approaches used to close this gap. If few approaches have been attempted, discuss the possible reasons for the absence of action.
5. evaluate the strengths and weaknesses of the identified approaches.
6. recommend the most effective methods to close the gap, using SMART recommendations (specific, measurable, achievable, related and timely).
7. use library information effectively to support your claims.
8. practice providing performance feedback to others.
9. practice receiving performance feedback.

Assessment

This assignment is worth 30% of your course grade.

Grading Rubric

In general the final report grading will consider the quality of

<table>
<thead>
<tr>
<th>Your ideas</th>
<th>70 marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Your information gathering &amp; presentation</td>
<td>50 marks</td>
</tr>
<tr>
<td>Your writing</td>
<td>50 marks</td>
</tr>
</tbody>
</table>
Your report should include a minimum of ten credible sources of information, at least three of which are peer-reviewed sources. You should use evidence and examples to support your claims. Your recommendations should be specific, measurable, achievable, related and timely (SMART).

A detailed explanation of the expectations for the report is available in the assignment rubric on OWL. I strongly recommend that you read the rubric carefully before you begin your assignment.

**Process**

Students will submit first drafts of their reports two week before the final due date. Students will exchange reports, reading them and providing suggestions for improvement the following week in class, and will provide the other students with a brief written summary of their feedback, along with feedback from your instructor. Students will then have one week to revise, edit and proofread their reports, prior to submitting their final report. The draft report, while not graded, is mandatory. Your final report will not be graded unless the draft report is submitted.

**Resources**

The Brescia Writing Centre  
Joan Ellsworth  
Phone: (519) 432-8353 ext 28044  
Email: jellswo3@uwo.ca  
Brescia Writing Centre  
Room 40, St. James Building  
(Take the down stairs beside McCann Student Life Centre)

The Brescia Library  
Heather Campbell  
Phone: (519) 432-8353 ext 28010  
Email: heather.campbell@uwo.ca


**Report Requirements**

Ensure that your report

- is between 3500 and 5000 words, excluding title page, table of contents, exhibits and references
- is single spaced
- has been submitted with two hard copies of both draft and final versions
- has been submitted to Turnitin (final version only)
- uses 12 point Times or Times New Roman font
- uses one inch margins
- has page numbers
Writing, Revision and Self-Regulation

- has a title page with your name, student number and project title
- is stapled, do not use plastic report covers
- uses APA 6th ed citation format (check BUC library for info sheet, or online)

All academic integrity policies of Brescia University College apply to this assignment.

### Deadlines

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Due Date</th>
<th>Submission Format</th>
<th>Grading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Draft Report</td>
<td>March 27/13 at the beginning of class</td>
<td>2 hard copies</td>
<td>Feedback only</td>
</tr>
<tr>
<td>Written Feedback Summary</td>
<td>April 3/13 at the beginning of class</td>
<td>2 hard copies</td>
<td>None; providing feedback to your peers using feedback checklist available on OWL</td>
</tr>
<tr>
<td>Final Report</td>
<td>April 10/13 at the beginning of class</td>
<td>2 hard copies; Turnitin</td>
<td>See Grading Rubric on OWL</td>
</tr>
</tbody>
</table>

Important information:

- You are required to submit an identical copy of the assignment to Turnitin.com before the beginning of class the day that the paper is due.

- Failure to submit to Turnitin before the beginning of class on the day the paper is due will result in a “0” for the assignment.

- No extensions will be granted, unless a student obtains an academic accommodation from their home faculty.

- Late submissions will not be accepted and will result in a “0” for the assignment, unless the student has an academic accommodation from their home faculty.
Appendix B
Giving and Receiving Feedback Handout for In-Class Exercise
Ground Rules for Giving and Receiving Feedback

- Read a draft all the way through before you begin to comment on it.
- Give yourself enough time to read and respond.
- If something on the feedback form is unclear, ask the instructor.
- Point out the strengths of the draft.
- When discussing areas that need improvement, be nice. Offer appropriate, constructive comments from a reader's point of view.
- Make comments text-specific, referring specifically to the writer's draft (NO "rubber stamps" such as "awkward" or "unclear" or "vague," which are too general to be helpful).
- Don't overwhelm the writer with too much commentary. Stick to the major issues on the feedback form that are problematic.
- Make sure your suggestions are reasonable (i.e., don't suggest that they totally rewrite the paper because you didn't agree with the author's point of view or didn't like the topic).
- If something appears too complicated to write in the commentary, just mention that you have something that you would like to talk to the writer about when you discuss the draft afterwards.
- Before giving your written comments to the author, reread your comments to make sure they are clear and make sense.

"As a peer reviewer, your job is not to provide answers. You raise questions; the writer makes the choices. You act as a mirror, showing the writer how the draft looks to you and pointing our areas which need attention." - Sharon Williams

APPROPRIATE, CONSTRUCTIVE COMMENTS

- Be respectful and considerate of the writer's feelings.
- Use "I" statements.
- Offer suggestions, not commands.
- Raise questions from a reader's point of view, points that may not have occurred to the writer.
- Phrase comments clearly and carefully so that the writer can easily understand what needs to be improved.
- Make sure comments are constructive and specific (not "This paper is confusing. It keeps saying the same things over and over again" but rather "It sounds like paragraph five makes the same point as paragraphs 2 and 3.").
- Avoid turning the writer's paper into YOUR paper.

Final tip: Although it might not be on the feedback form, you can always ask the writer if there is something he or she wants you to comment specifically on in the paper. (This is related to developing writing awareness and self-assessment - see Writing Matters #5 for more information on this topic).

Source: Manoa Writing Program, University of Hawaii at Manoa.
http://manoa.hawaii.edu/mwp/faculty/teaching-tips/syllabus-design/writing-activities/peer-review#facilitate (sourced on March 27, 2013)
Appendix C

Best Practices Pair and Share: Getting Feedback on Your Ideas

Best Practices Sharing Exercise: Writing Your Report

*Instructions:*

Get into pairs - preferably with someone that you do not know well.

Each of you will have 7 minutes to discuss your research project. Your partner will interview you about your project and you will interview her/him about their project. The interviewer’s job is to keep you on task, focused on your project. The questions below are for the interviewer to guide the conversation if you get stuck.

After you have been interviewed, you might ask for help, or for feedback on your idea.

Don’t look at your drafts or notes, just share in a conversation what topic and research question you are going to address.

*Questions:*

1. What gap is your paper going to address?

2. Why is this gap controversial or otherwise problematic? Why is it significant? Show me what makes this a good gap to address.

3. What is your solution to close this gap? (If the writer doesn’t have a good thesis statement yet, go on to the next question and then come back to this one. Perhaps you can help the writer figure out a thesis.)

4. Talk me through your whole argument or at least explain your ideas so far. (As you interview your writer, get her to do most of the talking; however, you can respond to the writer by offering suggestions, bringing up additional ideas, playing devil’s advocate, and so forth.)

Appendix D
Exercise: What is Critical Thinking?


Critical thinking is a process we use to evaluate beliefs, arguments and ideas. The process consists of five parts:

- Central Claims
- Quality of evidence
- Underlying assumptions and values
- Causal claims
- Persuasive techniques

Central claims

The main conclusion that an author is persuading you to accept. There are two types of claims.

Uncontested claims are those claims that we have actually experienced or that are based on clear and shared facts, agreement between experts, or technical or mathematical proofs.

Contestable claims are all other claims, which require tests of their validity using critical thinking.

Evidence

Evidence is a collection of facts that help us evaluate the validity of an argument. We need to evaluate the quality of evidence using the following factors:

1. Accuracy - use proxies for accuracy - e.g. grammar, spelling, precision, etc.
2. Precision - Over or under-precision detracts from credibility of evidence.
3. Sufficiency - is there enough data or a large enough sample to justify the claim?
4. Representativeness - is the information representative of the situation. How was the information gathered?
5. Authority - does the information come from experts?
6. Clarity of expression - is the significance of the data clearly stated? Is it misrepresented? How is the information interpreted?

Underlying assumptions

Found in the gap between claims and evidence. Usually these assumptions are implicit, that is, they are assumed and unconscious.

An example of an underlying assumption is that capitalism or for profit businesses are always more efficient than government. In other words, they are a set of beliefs about reality (often shared beliefs in a culture).

To identify an underlying assumption, ask, What might be true if this claim is to follow from the evidence? Could someone believe this evidence and still disagree with the claim?
e.g. Evidence: only 20% of members of parliament are female.
Claim: Therefore women are disadvantaged in electoral leadership.

You can believe the evidence, yet if you hold an underlying assumption that women don’t run for office because they don’t aspire to political leadership, you can refute the claim.

Reality assumptions: beliefs about what has taken place, what exists or how the world works. To challenge reality assumptions, need to present information showing the error in the assumption using evidence or facts.

Value assumptions are ideals about how things should be. To challenge these assumptions, need to challenge the authors belief that their values are universal.

**Causal Claims**

Causal claims argue that certain factors cause certain outcomes. (Cause and effect). They explain why something happens. However, causal explanations are often inferred when they aren’t merited. Just because two things happen at the same time, doesn’t mean that one causes the other. (e.g. more profitable firms do more training and development - does this mean that T&D make you more successful? Or does it mean that because you are more profitable, you have more money for T&D?

Explanations after the fact - assumes that after something is introduced, that the change must be because of the introduction, not some other intervening factor.

**Persuasion techniques**

1. Anticipate and counter argue readers’ objections
2. Anticipate suggestions of a rival cause to explain the outcomes
3. Present negative evidence
4. Provide evidence for your debatable assumptions
5. Limit your claims when you have no rebuttal

**Read the article “Are women better leaders for modern organizations” and answer the following questions:**

1. What is the central claim of the article?
2. Evaluate the quality of the claims made in the article.
3. Identify any underlying assumptions and the impact they have on the claims.
4. Identify any causal claims that are inappropriately applied.
5. Identify any persuasive techniques used
Appendix E

DOL 2233 Women In Leadership
Closing the Leadership Gap Assignment Fall 2013

<table>
<thead>
<tr>
<th>Writing</th>
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<td>Ideas are not in a logical order; sections are not consistent with the overall intent of the report</td>
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<td>Expression of Ideas</td>
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<td>Ideas are expressed simplistically and/or inappropriately for the audience, and/or with little variety, using wordy or awkward phrasing and sophisticated phrasing</td>
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<td>Ideas are summarized or paraphrased properly and effectively</td>
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<td>Direct quotes are used correctly and sparingly</td>
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<td>Ideas are correctly cited, using APA 6th ed format</td>
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<td>Use of credible sources</td>
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<tr>
<td>Use of evidence and examples</td>
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<tr>
<td>Identify a leadership gap, showing evidence that the gap exists</td>
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<td></td>
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<tr>
<td>Does not identify a gap and/or show evidence that the gap exists</td>
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<tr>
<td>Identifies a gap and provides some evidence that the gap exists</td>
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<tr>
<td>Identifies a gap and provides substantial high quality evidence that the gap exists</td>
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<td>Explain why the gap exists</td>
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<td>Provides an adequate explanation for the gap, with supporting evidence</td>
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<tr>
<td>Provides a thorough explanation for the gap with high quality supporting evidence</td>
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<td>Identify various approaches used to close this gap</td>
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<td>Identifies and describes 3 – 5 approaches used to close the gap and/or discusses why attempts have not been made</td>
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<tr>
<td>Evaluate the strengths and weaknesses of approaches used to close this gap</td>
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<tr>
<td>Adequate evaluates strengths and weaknesses of each approach.</td>
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<tr>
<td>Thoroughly evaluates strengths and weaknesses of each approach. Draws conclusions as to the most effective approaches</td>
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<td><strong>Concise, clear, correct</strong></td>
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<td>Wordy, confusing, poor writing, and/or contain errors</td>
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<td>1</td>
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<tr>
<td>Most recommendations are concise, clear, well written and contain no errors</td>
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<td>5</td>
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<tr>
<td>All recommendations are concise, clear, well written and contain no errors</td>
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<td><strong>Provides cost/benefit analysis</strong></td>
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<td>Cost/benefit analysis is incomplete and/or inaccurate</td>
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<tr>
<td>Cost benefit analysis is thorough and accurate</td>
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<td><strong>Analyzes opportunity cost</strong></td>
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<tr>
<td>Analysis is incomplete and/or inaccurate</td>
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<td>4</td>
</tr>
<tr>
<td>Analysis is thorough and accurate</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td><strong>Specific: States the method for implementing your recommendations</strong></td>
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<tr>
<td>Most or all recommendations are vague or incomplete</td>
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<td>Some recommendations are vague</td>
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<td>3</td>
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<tr>
<td>All recommendations are specific</td>
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<td>5</td>
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<tr>
<td><strong>Measurable: Provides quantifiable measurement</strong></td>
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<td>It is not possible to determine whether many or all recommendation has a</td>
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<tr>
<td>successful result because there are no measurable criteria</td>
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<td>3</td>
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<tr>
<td>It is possible to determine whether most recommendations have had a successful</td>
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<td>5</td>
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<tr>
<td>result, because there are measurable criteria</td>
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<tr>
<td>It is possible to determine whether all recommendations have had a successful</td>
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<td>9</td>
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<tr>
<td>result, because there are measurable criteria</td>
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<td>10</td>
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<tr>
<td><strong>Achievable: Realistically achievable with available resources</strong></td>
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<tr>
<td>Does not access resources required to deliver recommendations</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Assesses required resources for some recommendations; or a partial assessment</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Assesses required resources thoroughly for all recommendations</td>
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<tr>
<td><strong>Results Oriented: the potential outcomes solve the problem in question</strong></td>
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<td>No clear linkage between recommended actions and problem in all recommendations</td>
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<tr>
<td>Weak linkage or some recommendations are missing linkage</td>
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<td>3</td>
</tr>
<tr>
<td>All recos have strong linkage between recommended actions and problem</td>
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<td>5</td>
</tr>
<tr>
<td><strong>Timely: Specific, realistic deadlines for implementation of recommendations</strong></td>
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<tr>
<td>Deadlines not indicated</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Deadlines not specific or realistic or, some missing</td>
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<td>3</td>
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<tr>
<td>All recommendations have deadlines that are specific and realistic</td>
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Recommendations total: /100
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Comments/Feedback:
# Appendix F
## Reviewer Checklist

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<th>Paper Title:</th>
<th>Reviewer Name:</th>
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</thead>
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### Organization of Ideas

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<th>Has the writer...</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>checked to make sure that her ideas are logically organized?</td>
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<tr>
<td></td>
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<td></td>
<td>answered all questions in the instructions fully, in the required order?</td>
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<tr>
<td></td>
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<td></td>
<td>established the context for the paper in the introduction before moving on to the additional sections? (context includes the general issue, key terms and so on; considers the type of audience).</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>included a clear roadmap in the introduction that explains the overall structure of the paper to the reader at the beginning?</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>ensured that the order of topics corresponds to this roadmap?</td>
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<td></td>
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<td></td>
<td>ensured that each section is consistent with the overall intent of this report?</td>
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<td></td>
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<td></td>
<td>defined all terms as they are introduced?</td>
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</tbody>
</table>

### Expression of Ideas

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>Not Sure</th>
<th>Has the writer...</th>
</tr>
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<tbody>
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<td></td>
<td></td>
<td></td>
<td>used a variety of sentence structures?</td>
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<td>ensured that these sentence structures enhance what she is trying to say?</td>
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<td>avoided awkward sentences and expressions?</td>
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<td>used clear, action verbs when possible?</td>
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<td>avoided wordy expressions?</td>
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<td>avoided unclear expressions?</td>
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<td>avoided over-generalizations?</td>
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<td>considered the intended audience (language level, degree of expected formality, knowledge of the topic, current position on the issue)?</td>
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<td>Not Sure</td>
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</table>
Q1. What is the one thing you found most effective in this report? (Please be as specific as possible. Give concrete examples.)

Q2. What is the one thing you found most confusing in this report? (Please be as specific as possible. Give concrete examples.)

Q3. What is the one thing that you would recommend to the author that, in your opinion, would make the greatest improvement in this report? (Please be as specific as possible. Give concrete examples.)
Appendix G

Writing Survey

The objective of this study is to learn more about how students approach the task of writing, in order to improve writing instruction. Your honest answers to this survey will help us design better courses and help students learn to write more effectively. Writing is an important skill in the workplace. According to the American Association of Colleges and Universities (2010), 89% of employers want more emphasis placed on written and oral communication skills.

This survey is not a test. This survey will not be used to calculate your course grades. Your professor will not see the results of the survey until after final grades have been submitted. The surveys will be kept in a locked cabinet by a third party until grades are submitted. Your participation is entirely voluntary. Thank you for helping us with this important research.

<table>
<thead>
<tr>
<th>QID</th>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
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<tr>
<td>1 MAP1</td>
<td>It was important to me that I learn as much as I could from the writing assignment.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<tr>
<td>2 MAP2</td>
<td>In writing the assignment, it was important to me that I improve my skills and knowledge.</td>
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<td>2</td>
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<td>3 MAP3</td>
<td>One of my goals when I did the writing assignment was to learn as much as I could.</td>
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<td>2</td>
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<td>4 MAP4</td>
<td>It was important to me to really understand what there was to learn from the writing assignment.</td>
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<td>2</td>
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<td>4</td>
<td>5</td>
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<tr>
<td>5 MAP5</td>
<td>One of my goals when I did the writing assignment was to develop deep understanding of what we were learning.</td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>6 MAV1</td>
<td>I was worried that I won’t learn all there is to learn from the writing assignment.</td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>7 MAV2</td>
<td>I was afraid that I might not learn all that I could from the writing assignment.</td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8 MAV3</td>
<td>I was concerned that I might not learn as deeply as I could from the writing assignment.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9 PAP1</td>
<td>When I did the writing assignment, it was important to me to look smart in comparison to the other students in my class.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

1 Adopted from Kaplan et al., 2009; Boekaerts & Rozendaal, 2007; Spinath et al., 2003.
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</thead>
<tbody>
<tr>
<td>10</td>
<td>PAP2 When I did the writing assignment, one of my goals was to look smart compared to others in my class.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11</td>
<td>PAP3 One of my goals in writing was to show others that this assignment was easy for me.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>12</td>
<td>PAP4 When I was writing, it was important to me that other students in my class think I am good at it.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>13</td>
<td>PAP5 One of my goals in doing the writing assignment was to show others that I'm good at this work.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>14</td>
<td>PAV1 It was important to me that I didn't look stupid when I did the writing assignment.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>15</td>
<td>PAV2 When I did the writing assignment, it was important to me that my teacher didn’t think that I know less than others in class.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>16</td>
<td>PAV3 One of my goals in the writing assignment was to keep others from thinking I’m not smart.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>17</td>
<td>PAV4 One of my goals in the writing assignment was to avoid looking like I have trouble doing the work.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>18</td>
<td>e1 I was certain I could do well in the writing task.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>19</td>
<td>e2 I can do even the hardest writing assignments if I try.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>20</td>
<td>e3 If I had enough time, I could have done a good job on the writing assignment.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>21</td>
<td>e4 Even if the writing assignment was hard, I could have done it.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>22</td>
<td>e5 If I don't give up, I can do well on the most difficult writing assignments.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>23</td>
<td>AR1 While writing, I focused on the page so that I wouldn't be distracted by other things.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>24</td>
<td>AR2 During writing, I made sure to concentrate on the work and not to think about other things.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>25</td>
<td>AR3 During writing, I didn't really make sure to focus on the work and not think about other things.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>26</td>
<td>AR4 While writing, I told myself that I need to focus on the work and not to think about other things.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Think about a recent assignment that required a significant amount of writing. Indicate how strongly you agree or disagree with the following statements with respect to the process of writing that assignment, with 1 = strongly disagree and 5 = strongly agree.

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<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>27</td>
<td>PBW1 Before I wrote, I planned an outline of what I’d be writing about.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>28</td>
<td>PBW2 Before I wrote, I decided what would be the main idea I’d write about.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>29</td>
<td>PBW3 Before I wrote, I made a plan of what I’d do during the writing.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>30</td>
<td>CM1 While writing, I checked to see whether what I wrote was correct.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>31</td>
<td>CM2 During writing, I checked to see if what I was writing fit with what I wrote before.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>32</td>
<td>CM3 During writing, I went back to the instructions to see if what I wrote was related to the topic.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>33</td>
<td>ORG1 I wrote an ending that summarized the topics I wrote about.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>34</td>
<td>ORG2 I wrote the main idea and later I elaborated on it.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>35</td>
<td>ORG3 I wrote an introduction in which I presented the topic.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>36</td>
<td>CHK1 After I finished writing a section, I read to see whether what I had written was good.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>37</td>
<td>CHK2 At the end of writing, I didn’t really go back to see whether everything was OK.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>38</td>
<td>CHK3 After I finished writing a section, I didn’t really go back to fix what was not good.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>39</td>
<td>CHK4 At the end of writing a section, I went back and read the section to make sure it was OK.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>40</td>
<td>CHK5 After I finished writing a section, I went back to fix what I didn’t think was good.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>41</td>
<td>PDW1 During writing, I stopped to think how to phrase what I was going to write.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>42</td>
<td>PDW2 While writing, I thought about what I was going to write next.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>43</td>
<td>PDW3 During writing, I thought about how to connect one topic to the next.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>44</td>
<td>EVAL1 After I finished writing a section or part of it, I thought about whether what I had written was correct.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tbody>
<tr>
<td>45</td>
<td>EVAL2 After I finished writing a section or part of it, I thought about whether what I had written was good.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>46</td>
<td>SUCC1 While writing, I reminded myself that if I work correctly, I’ll succeed.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>47</td>
<td>SUCC2 During writing, I told myself that I could succeed in this task.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>48</td>
<td>VALU1 When I was writing, I was reminding myself that I have to do this task.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>49</td>
<td>VALU2 When I was writing, I was reminding myself that this task is important to me.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>50</td>
<td>VALU3 When I was writing, I told myself that I need to invest effort in this task.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>51</td>
<td>VALU4 When I was writing, I said to myself that it is important to me to get a good grade.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>52</td>
<td>PRAI1 When I felt that I succeeded, I said to myself that I was good.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>53</td>
<td>PRAI2 When I felt that I succeeded, I gave myself a reward.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>54</td>
<td>HELP1 When I was writing and didn't know enough about the subject, I asked for help from my friends.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>55</td>
<td>HELP2 When I didn't know how to write, I talked about it with my friends.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>56</td>
<td>HELP3 When I didn't know enough about the subject, I asked for help from my teacher.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>57</td>
<td>HELP4 When I was writing and didn't know how to write, I asked my teacher for help.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>58</td>
<td>RA1 When I was writing, I thought about who was going to read this, and it affected my writing.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>59</td>
<td>RA2 When I was writing, I imagined who was going to read this.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>60</td>
<td>RA3 When I was writing, I didn’t think about who was going to read this.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>61</td>
<td>RA4 When I was writing, I thought about where the text was going to be, and it affected my writing.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>62</td>
<td>RA5 When I was writing, I was trying to persuade my readers.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<th>Strongly Agree</th>
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<tbody>
<tr>
<td>63</td>
<td>SAY1 When I was writing, I told myself out loud the words I was going to write.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>64</td>
<td>SAY2 When I was writing, I read to myself out loud parts of the instructions or of the text I already wrote.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>65</td>
<td>CON1 When I was writing, I imagined pictures of what I was writing about.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Think about writing in general. What do you believe about writing?

<table>
<thead>
<tr>
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<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>66</td>
<td>e6 I am good at writing.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>67</td>
<td>e7 I can express my ideas so that others can understand me.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>68</td>
<td>e8 I can place my ideas in a logical sequence so that the text is coherent.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>69</td>
<td>e9 I can do this easily.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>70</td>
<td>e10 I can do it without spelling and grammatical errors.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>71</td>
<td>IT1 How well you write is hardly or not at all changeable by yourself.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>72</td>
<td>IT2 How well you write depends mainly on your own effort.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>73</td>
<td>IT3 How well you write cannot be influenced by yourself.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>74</td>
<td>IT4 If someone is not very good at writing as a child, her or she cannot be very good at writing as an adult either, even if he or she tries to.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
### 75. Over the past twelve months, how many writing assignments at least five pages (single spaced) or 10 pages (double spaced) have you completed for any academic course?

<table>
<thead>
<tr>
<th>Option</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td></td>
</tr>
<tr>
<td>1 - 2</td>
<td></td>
</tr>
<tr>
<td>3 - 5</td>
<td></td>
</tr>
<tr>
<td>6 or more</td>
<td></td>
</tr>
</tbody>
</table>

### 76. What type of academic writing instruction (such as essays and reports) have you received? (select all that apply)

<table>
<thead>
<tr>
<th>Instruction</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Senior high school English course (Ontario U or C level)</td>
<td></td>
</tr>
<tr>
<td>Senior high school English course (outside of Ontario)</td>
<td></td>
</tr>
<tr>
<td>Adult Basic Education course</td>
<td></td>
</tr>
<tr>
<td>Introductory University Writing Course, such as Writing 1000F/G or Writing 1020F/G</td>
<td></td>
</tr>
<tr>
<td>Upper-year University writing course, such as Writing 2101F/G</td>
<td></td>
</tr>
<tr>
<td>Other college or university academic writing course</td>
<td></td>
</tr>
<tr>
<td>Other college or university communication course</td>
<td></td>
</tr>
<tr>
<td>Writing instruction within a college or university non-writing course (e.g. writing instruction in introductory history)</td>
<td></td>
</tr>
<tr>
<td>Library instruction within a college or university non-writing course (e.g. using the library to research an essay)</td>
<td></td>
</tr>
<tr>
<td>Library instruction in a voluntary workshop outside of class time</td>
<td></td>
</tr>
<tr>
<td>Writing instruction in a voluntary workshop outside of class time</td>
<td></td>
</tr>
</tbody>
</table>
77. What year were you born in? __________________________

78. How many languages do you speak? ________________

79. Please list the languages you speak. In what order did you learn these languages?

<table>
<thead>
<tr>
<th>Please list the languages you speak</th>
<th>Please indicate the order you learned these languages</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

80. What year of university are you currently in? (Choose one)

<table>
<thead>
<tr>
<th>1st (completed less than 5.0 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd (completed 5.0 credits, but less than 10.0 credits)</td>
</tr>
<tr>
<td>3rd (completed 10.0 credits but less than 15.0 credits)</td>
</tr>
<tr>
<td>4th (completed 15.0 credits)</td>
</tr>
<tr>
<td>Graduate school</td>
</tr>
</tbody>
</table>
82. What program are you currently enrolled in?

<table>
<thead>
<tr>
<th>Program</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Sciences (including Food &amp; Nutrition)</td>
<td></td>
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Thinking about writing project that you will undertake for this course, what aspects of the writing assignment are you confident about? What aspects of the writing assignment are you worried about?

(Post Test only question)

Thinking about your experience with doing the assignment, will you do anything differently when completing future writing assignments? If so, please describe some of the things that you anticipate doing differently?

Is there anything else about your writing experience in this course that you would like to share?
“He just told me to get on with it”: Insights into Transforming Doctoral Writing Development

E. Marcia Johnson
The University of Waikato, Hamilton, New Zealand

*This paper reports on the results of a two-year study into threshold concepts (TCs) in doctoral writing. The findings informed the development of a thinking to write strategy (the 4x4) that has been implemented as part of a pan-university doctoral writing programme at a New Zealand university.*

**Background**

This paper describes findings from a New Zealand two-year, qualitative research project that explored threshold concepts (TCs) in tertiary education – the point(s) at which students can become “stuck”, unable to make intellectual progress. The four project case studies were all informed by threshold concept theory, which asserts that concepts that are troublesome to learn can also be transformative when mastered. Once grasped, they reconfigure students’ understanding of a discipline and what it means to be a disciplinary expert. Three of the cases focused on TCs in undergraduate disciplines (English, Engineering, and Management Leadership). The fourth case (mine) was devoted to identifying TCs in doctoral writing.

Through the cross-disciplinary case studies and collaborative teamwork, the project group endeavoured to answer a key research question about how lecturers’ awareness of threshold concepts could affect teacher-student discourse and pedagogical practice at the tertiary level. The team was also interested in whether there were threshold concepts that spanned disciplines. This paper focuses on two threshold concepts that were identified in the doctoral writing case study and describes how they enhanced an existing pan-university programme to support doctoral students as writers.

**Conceptual Framework**

**Threshold concepts and doctoral writing**

Meyer and Land (2003) introduced the notion of TCs that students must understand in order to think like a subject specialist and not be bothered by troublesome knowledge. According to TC theory, in each academic discipline there exist special concepts that can reveal new and previously inaccessible ways of thinking about a subject. TCs represent the intellectual places where students get stuck (Davies, 2006; Meyer & Land, 2005; Wisker & Savin-Baden, 2009) and are unable to make substantive progress in their academic work until the concepts are understood.
Meyer and Land (2003, 2005) state that there are five key characteristics of TCs: crossing them is transformative, irreversible, integrative, bounded, and troublesome. They also refer to the intellectual space in which students are unable to make intellectual progress as “liminal space” and believe that it is crucial to uncover why and how some students undergo a transformational, or even a creative, experience while in the liminal space of incomplete understanding.

In the area of doctoral writing, Kiley (2009) argues that students face a number of challenges as doctoral writers and that surmounting them both requires, and facilitates, personal transformation. The development of deep understanding of such concepts as theoretical or conceptual frameworks, knowledge of how to shape complex arguments and mastery of doctoral writing conventions all require candidates to cross intellectual thresholds. Until they do, students can feel that they are making no progress in their study, which can lead to a sense of failure, isolation, or hopelessness (p. 294). Writing is the tool that helps students bridge the conceptual space of learner or novice researcher to that of “independent academic scholar”, but paradoxically, being able to master doctoral writing TCs requires students to perform as though they are already academic disciplinary experts and writers.

The challenge for this case study then was to determine if there were knowable TCs in doctoral writing and if so, to develop flexible structures that could help students cross them.

Two threshold concepts in doctoral writing

Drawing on survey and interview data with doctoral students in New Zealand, Canada, and the United States, two threshold concepts (TCs) related to doctoral research writing were identified (see Johnson, 2013). The first, “talking to think”, encompasses the idea that academic writing includes more than the mechanical presentation of words on a page. Until one has clarified one’s thinking (and has something to say), meaningful writing is difficult and can contribute to feeling lost. The second TC, “developing self-efficacy”, is closely related. Writing includes the ability to understand research practices, extract meaning from data, clearly articulate ideas (talk), and then present, shape, and reshape text on the page. Self-efficacy as an academic researcher and writer also includes a belief that understanding will emerge as new ideas are discussed, clarified, written, and refined.

Both the talking to think and self-efficacy TCs reflect Meyer and Land’s five key characteristics (2003, 2005) – crossing them is transformative, irreversible, integrative, bounded, and troublesome as students become independent scholars through the process of being independent doctoral researchers and writers (scholars).

Transforming doctoral support

The changing face of doctoral education and supervision

In 2006 the New Zealand government introduced a policy of charging domestic enrolment fees to international doctoral students with the result that the cost for overseas students declined approximately five-fold. Predictably the numbers of doctoral students escalated sharply over the next several years (Gerritsen, 2010), which was not matched by an equivalent growth in staff numbers (Sampson & Comer, 2010). Moreover, this situation is not unique to New Zealand; worldwide the number of doctoral students has increased exponentially over the past 15 years (OECD, 2013).

In spite of increased student numbers, the pool of suitably qualified supervisors within most institutions has remained relatively static. One can argue that reliance on time-intense, individually-oriented supervisory practice has become a luxury, which is increasingly difficult for universities to sustain. Yet, as Halse and Bansel (2012, p. 378) note, “the default model of the doctorate remains an individualised relationship between student and
academic supervisor involving the preparation and supervision of a thesis/dissertation”. Colbeck (2007) remarks that even distinguished scholars often find it difficult to abandon traditional models of practice. What follows is a discussion of how one university has developed an effective writing support programme for its doctoral students.

The doctoral writing conversation (DWC)

Being involved in the research project and learning about threshold concepts was interesting, but transforming the findings into practical doctoral writing support has been another matter entirely. This has involved developing and implementing practical, straightforward, yet powerful ways of helping students achieve their writing goals while at the same time supporting (busy) supervisors. Certainly telling students to “just get on with it” is not only unhelpful, it indicates a lack of understanding that the concept of self-efficacy is complex, value-laden, and must be disaggregated in order to help students cross intellectual thresholds.

The DWC is a pan-university, cross-disciplinary forum for doctoral students that began in 2009. The university learning developers run the DWC for two hours every Friday morning from March to July and then from August to November. Finally, two, 2-day writing retreats are offered and provide quiet time for students to write, seek writing assistance from a learning developer in a break-out session, and network over morning teas and lunch.

The DWC has evolved from an initial “hit and miss” selection of topics to a predictable format. During the first week of each month, two or three invited academic staff from across university disciplines will participate in informal conversations with doctoral students around specific research or writing themes. In Weeks 2 and 3 the learning developers or other academic staff from across the university offer interactive workshops about specific themes relating to writing, digital literacy, or research methods. The focus in these sessions is on having students engage with ideas and tasks so as to better understand doctoral writing requirements. In Week 4, students bring small samples of their own writing, for which they would like feedback, and they then work with learning developers and peers to offer and receive advice on how to improve their writing. Again, these sessions are dialogic, small group in nature, and provide both social and intellectual opportunities to engage in writing. The DWC programme thus provides a total of twenty-four regular sessions and four days of intensive writing retreats across the year.

The 4x4 strategy

One of the strategies that is used in the DWC is the “4x4” (pronounced “four by four”). This strategy provides a flexible, but highly structured framework for students to identify topics, articulate ideas, converse about outcomes, and then plan what they need to do next to make progress. By so doing, students are involved in focused discussion, with an educated “other” outside of their subject discipline, so that they can clarify their thinking through conversation (“talking to think”).

In the first step, working in pairs or small groups, students focus on a chapter or section of their writing and identify four ideas that they wish to communicate to a reader. This activity functions as a limiting mechanism so that the ensuing group discussion can achieve depth, rather than be just a quick skate across the surface. Students might be working on parts of their proposal, conceptual framework, organisation of a literature review or findings section, and be unsure about how to connect the ideas or articulate them clearly and logically.

Step two requires students to articulate their ideas (in layman’s terms) with their partner or small group. The articulation activity is extremely powerful because it can expose students’ certainties and uncertainties. As students talk, they have to make connections between their written ideas, which can lead to a realization of where more explicit links are needed in order to gain coherence (for example).
In step three of the strategy, we ask students to converse – to engage in more general discussion with the wider group. They are encouraged to ask questions of one another, expand on their initial four points, or incorporate other ideas from other contexts. This is the stage that we find most valuable because the sharing of ideas within the wider group, with people from outside their own discipline, helps students to consider their topic or their writing in new ways.

In the final, fourth step of the strategy students then plan their next actions. This can include making decisions about which sections they should focus on first; which sections need rereading and revision; what additional sources need to be found and read; or what additional discussions (with supervisors or peers) need to be had. Although discussion is helpful and can lead students to make their implicit knowledge explicit, talking is not enough. At some point, students need to “just do it” – but now, they can do so from an enhanced sense of mental clarity, a deeper understanding of how ideas need to be structured and presented in their writing, and an improved feeling of confidence and independence.

Depending on the stage of their thesis at which students are working, they might need to think about focusing their topic; the particular processes or methods they need to use; which goals or outcomes should be a priority; or what human or physical resources are available to assist them. Thus, even within the limited time-frame of a 4x4 session, students perceive that they can make writing progress and that structured peer input is valuable.

Discussion and Conclusion

Engaging in critical conversation with small groups of their peers and then reporting back to a larger group has afforded students opportunities to clarify their ideas during 4x4 sessions. The DWC’s cross-disciplinary nature requires participants to be very clear when describing the complex chemical properties of concrete to an applied linguist, for example. Students report that they have gained new insights that have extended their thinking and as a result have been able to address conceptual gaps, improve planning processes, write more effectively, and use supervisory sessions more productively.

So I think some of the advantage of Doctoral Writing is that it breaks down the barriers and you can see what other people are doing and see the inter-connections, and think, “Ooh, I could write with that person!” The interconnections that you make in things like this are actually teaching these valuable skills. [Student A focus group]

The 4x4 also goes beyond what is described in other literature about doctoral writing where the focus has been on peer editing practice (Aitchison, 2009). Instead, our learning developers step back from the written page and through conversation help students develop their ideas orally and then plan with an “educated other” how to enact organizational writing structures to bridge from the spoken to the written. It can be argued that peer editing, while extremely valuable, is only one step in the writing cycle but that formulating and articulating ideas orally with a peer mentor needs to occur first.

One of the best things is that we become more critical, not of people, but say ‘how to do something’. We might say, “I can’t see that you’ve actually got your critical framework grounded – it’s sort of not making sense.” So we are actually up-skilling ourselves. [Student B focus group]

In addition, beyond the 4x4 sessions, the collegiality of student discussions across all of the different DWC sessions has created a physical network of social and learning support for higher degree students at the university that extends what supervisors can provide.

I like coming to those sessions because they are talking about things that I need to know more about, but I don’t want to hassle my supervisors about it. I don’t want to wear
them out. I like to ask those questions that I may have asked my supervisor, but did not get an explanation that satisfied me. [Student C focus group]

Insights gained from the DWC have assisted the learning developers to help students identify and make explicit what it means to be a doctoral writer. This includes understanding that writing is far more than the physical act of putting words on the page, but that it incorporates the ability to understand research practices, extract meaning from data, clearly articulate ideas, and then present, shape, and reshape text on the page. Understanding writing also means developing an enhanced tolerance of ambiguity while searching for meaning, and of particular note, it includes the belief that understanding will emerge as ideas are discussed, clarified, written, and refined through practice.

The 4x4 sessions within the DWC programme are popular, and we have found that the strategy is a valuable tool to help doctoral students structure their thinking and make writing breakthroughs. Sometimes we just need the right advice at the right time and even a relatively simple activity such as the 4x4 can be just what is needed.

References


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**Biography**

E. Marcia Johnson has a Ph.D. in Computer Applications in Education from the University of Toronto and taught in an Applied Linguistics department in New Zealand. She is currently Director, Centre for Tertiary Teaching & Learning, University of Waikato, Hamilton, New Zealand.
Fostering Student Engagement: Creative Problem-Solving in Small Group Facilitations

Patricia L. Samson
University of Windsor

Creative Problem-Solving (CPS) can be a transformative teaching methodology that supports a dialogical learning atmosphere that can transcend the traditional classroom and inspire excellence in students by linking real life experiences with the curriculum. It supports a sense of inquiry that incorporates both experiential learning and the development of critical thinking skills. Incorporating active learning strategies in a way that transcends the classroom and sparks interest and passion for students is an important pedagogical ingredient for educators. The key question driving this study is how can CPS as a teaching method be used to motivate students and engage them in a process of active learning within the context of a social policy course? This study examines student engagement and motivation in a problem-centred approach to teaching and learning, and provides a concrete example of a CPS exercise couched in small group facilitations to support peer learning.

Introduction

Creative Problem-Solving (CPS) is a powerful teaching method that can support a pedagogical shift in the classroom and foster both student engagement and motivation to learn. Caswell (2006) describes it as an approach to finding workable answers to problems that exist in real life. Treffinger, Selby and Isaken (2008) define CPS as a ‘well-established circular framework involving four central components that include: understanding the challenge, generating ideas, preparing for action and planning the approach’ (p. 392). Treffinger et al. (2008) view CPS as a systematic process involving linkages among the characteristics of both the individuals involved in the creative problem-solving process as well as the environment in which it occurs. Key influences on this process include a person’s way of processing information, how decisions are made, and the person’s perspective toward change (Treffinger et al., 2008). In CPS, participants work in groups to creatively solve a task or situation that is based in reality, but generally has no known or predetermined solution (Caswell, 2006).

CPS as a teaching method incorporates active learning strategies to engage students in working with complex situations. The overarching question for this study is “how can Creative Problem-Solving as a teaching method be used to motivate students and engage them in a process of active learning within the context of a challenging social policy course?” To answer this question, student engagement and motivation for learning will be examined and then linked to CPS as a teaching strategy by highlighting a specific example in a course through a small-group facilitation assignment.
Student Engagement in Learning

This concept of student engagement has risen to the forefront in the arena of teaching and learning, where a trend of decreasing levels of satisfaction in education has been identified (Delialioglu, 2011). Robinson and Hullinger (2008) describe student engagement as an important factor in the quality of education students are receiving. The more students are engaged in the classroom, the more willing they are to actively participate and contribute to an effective learning environment. Additionally, the more students’ belief the course work is ‘interesting and important’, the more motivated and engaged they are in the learning process (Pintrich & DeGroot, 1990). Thus, students’ engagement in learning and their sense of satisfaction in this process can be seen as being reciprocal. Factors identified as ways to promote student satisfaction include the addition of activities that capture students’ attention, are relevant to their goals and needs, and promote confidence that they can be successful in the course (Goldberg & Ingram, 2011).

Student engagement has been defined as ‘efforts of the student to study a subject, practice, obtain feedback, analyze and solve problems’ (Robinson & Hullinger, 2008, p. 101). Delialioglu (2011) defines student engagement as a process that involves students in activities that are considered ‘academically meaningful’ that contribute to both learning and personal development. A key way to engage students is to incorporate active learning strategies into the curriculum (Delialioglu, 2011; Goldberg & Ingram, 2011; Hayden, Ouyang, Scinski, Olszewski, & Bielefeldt, 2011). Studies that look at the concept of student engagement find that

- there are multiple and varying indicators and measures for student engagement
- activities targeting higher-order cognitive skills promote engagement
- engagement increases with multiple and varied forms of interaction between teachers and students
- increased student interest in an assignment promotes deeper levels of thinking
- activities involving collaborative investigations and incorporate activities such as observation, guided inquiry, socialization and interaction with experts, peers and teachers enhance student engagement in learning (Delialioglu, 2011; Dixson, 2010; Goldberg & Ingram, 2011; Hayden et al, 2011; Robinson & Hullinger, 2008).

These key findings are further supported by what are referred to as the “Seven Principles of Good Practice in Undergraduate Education” which include increased interaction between teacher and student, opportunities for allowing students to work cooperatively, utilization of active learning strategies, timely student feedback, requirements for students to spend time working on academic tasks, having high standards for academic work, and teaching that recognizes different learner needs (Delialioglu, 2011; Robinson & Hullinger, 2008).

It is important for teachers to integrate active learning strategies into the classroom in order to effectively engage students in the learning process. Dixson (2010) suggests that increased and multiple forms of communication and interaction between teachers and students may be connected to higher levels of engagement. An important component to student engagement is the concept of motivation for learning, of which self-directed learning is an essential consideration. Self-directed learning is an essential component for problem-centred approaches to learning and captures the ingredients necessary to motivate and engage students in the learning process.
Self-directed learning and student motivation

Self-directed learning has been defined as ‘a process in which individuals take the initiative in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies and evaluating learning outcomes’ (Knowles, 1975, p. 18). Students assume ownership of their learning and thus have an increased commitment to their overall education and related academic achievements.

Central components of theories related to adult learning principles revolve around the concepts of self-actualization, motivation and self-directed learning. Self-actualization is described as a sense of realizing one’s full potential (Maslow, 1954). According to Marquardt and Waddill (2004), the humanist perspective sees a person looking to achieve self-actualization through learning and embraces the concept of self-directed learning to achieve that full potential. The key principles of adult learning include a need to know the why of learning, motivation for learning and solving problems, building upon/incorporating prior experience, matching learning approaches to the diverse backgrounds of adult learners, and active involvement in the learning process (Bryan, Kreuter, & Brownson, 2009; Knowles, 1975; Knowles, Holton, & Swanson, 1998; Welty, 2010). Welty (2010) suggests that experience is the most salient feature for adult learners, as it generates needs, interests and motivation to engage in learning.

These principles combine to inform the process of self-actualization and self-directed learning for adults. The role of the teacher in this process is that of a facilitator (Knowles et al., 1998). Adult learning theories combine tenets of both the humanist and behavioural learning theories in terms of self-directed learning being influenced by a student’s “readiness to learn”, which was originally put forth by Thorndike (1932) from the behaviourist perspective of rules which govern the learning process. The concept of readiness to learn has been linked to student motivation for learning (Pintrich & DeGroot, 1990) and is an important consideration when looking at the process of engaging students in active learning.

These core principles of adult learning encapsulate the social context of learning and the construction of knowledge through dialogic interaction. Constructivists posit that knowledge is bound to the context, and people make meaning of their experiences through a process of constructing their own reality (Marquardt & Waddill, 2004). According to Schunk (1996), constructivist approaches to learning share some components with cognitive and behavioural theories and emphasize the social context of learning through such mechanisms as collaborative group work, peer feedback and dialogic interactions.

The key tenets of constructivist learning theory are that knowledge is built from within by thinking, social interaction is important in the construction of knowledge, the nature of cognition is functional and adaptive, and the purpose of cognition is to help people organize their experience of the world (Cakin, 2008). People need to integrate new information with prior knowledge in order to promote deep learning (Vogel-Walcutt, Gebrim, Bowers, Carper, & Nicholson, 2011). Within this framework, Creative Problem-Solving as a teaching methodology supports these processes. Planning learning activities for students that incorporate the key principles of adult learning is critical to an effective course design that promotes deep learning and the attainment of threshold concepts.

A review of the literature identifies a shift in pedagogy and viewing students as passive recipients of knowledge, or what Friere (1970) referred to as ‘empty vessels,’ to active participants in the learning process. The term Self-Regulated Learning has been used to describe ‘self-directed learning processes and beliefs that allow learners to transform their mental abilities’ (Zimmerman, 2008, p. 166). According to Pintrich and DeGroot (1990), self-regulated learning involves metacognitive strategies that students use to learn, recall and understand course material. It involves strategies that foster ‘cognitive engagement’ in the learning process that can increase the levels of
achievement for students (Pintrich and DeGroot, 1990). All of these processes can be brought to life through CPS and enhanced when incorporated into a small-group facilitation assignment for students.

In the field of social work, social policy analysis is considered a difficult course. Many students are focused on clinical pursuits, so recognizing the relevance and impact of the overarching legislative and procedural context of practice can be challenging. Social policy can at times be viewed in a similar vein as statistics, which can generate anxiety for some students. A problem-centred approach to teaching and learning in this light can aid students embarking on a social policy analysis project to develop the necessary skills in problem identification, research, critical analysis and synthesis of information to make effective policy change recommendations to address social issues impacting vulnerable populations in our society. The added layer of facilitating small peer group discussions and engaging them further in the problem-solving process helps promote deeper learning for these students by incorporating group work that mirrors what could happen in the real world.

The task for teachers lies in engaging those students who may be resistant to active learning, preferring the “traditional” education model that displays Friere’s (1970) banking concept of education. Some research studies related to student motivation for learning suggest that students who believe they are capable engage in more metacognition, use more cognitive strategies that include things such as rehearsal, elaboration and organizational strategies, and are more likely to keep working at a task than students who do not believe they can do the work (Pintrich, 2003; Pintrich & DeGroot, 1990).

Teachers face an ongoing challenge of encouraging students to be active and motivated learners. Research pertaining to student motivation to learn demonstrates that the motivational beliefs of students have a direct influence on academic performance (Paulsen & Feldman, 1999; Pintrich, 2003; Pintrich & DeGroot, 1990). According to Paulsen and Feldman (1999), students’ epistemological beliefs impact their motivation, the cognitive strategies they use, and the learning outcomes that will be achieved. Finding mechanisms to tap into these beliefs may be an entry point for enhancing a student’s motivation to engage in active learning within the classroom, and CPS is one way to achieve this.

CPS as a way to promote student engagement and motivation

Problem-solving activities within the classroom have been found to be effective mechanisms to engage students in active learning. According to Yen and Lee (2011), problem-solving activities shift the focus of the class to a student-centred orientation, which provides the setting for students to engage in more creative and interactive ways. These problem-solving activities in a course give students the chance to build needed skills in working collaboratively with their peers (Memory, Yoder, & Williams, 2003) and this process of collaborative learning has been associated with increased levels of course satisfaction among students (So & Brush, 2008).

Shea and Bidjerano (2010) note that group settings support the construction of knowledge through the social interaction opportunities that these types of forums present and the negotiation that occurs within the group processes. In a study assessing the impact of Problem Based Learning (PBL) in a large classroom setting, Klegeris, Bahniwal and Hurren (2013) found a 13% increase in the test scores of those students who were taught PBL when compared to those who had not received this instruction. A central tenet of PBL is the context of the problem being addressed and one of the main advantages of this instructional method over what might be considered a more traditional classroom model is the ability for students to develop skills in problem-solving, though the overall effectiveness and transferability of these skills is still a question under debate (Klegeris et al., 2013).

According to Delialioglu (2011), active learning strategies, student work that incorporates
collaboration to address tasks that are challenging, and timely feedback help increase both learning and academic achievement. In a study assessing student engagement in blended learning environments that included PBL and lectures, findings indicated that levels of student engagement were significantly higher in the Problem Based Learning portions of the course (Delialioglu, 2011). While being identified as something that is difficult to define, PBL has been identified as a type of experiential learning in “real life” situations and is reported to help students engage in an active learning process (Hmelo-Silver, 2004). Pease and Kuhn (2011) noted that a key feature of this approach to learning is the contextualization of learning via a problem that is presented to students who have no prior preparation on the topic. Generally, the problem is both the stimulus and context for learning, where small groups of students are given a problem to address by identifying what they need to determine a course of action to solve the problem (Hmelo-Silver, 2004; Parton & Bailey, 2008; Pease & Kuhn, 2011). According to Hmelo-Silver (2004), students formulate and analyze the problem assigned, gain an understanding and generate hypotheses surrounding possible solutions, and identify areas where knowledge is lacking relative to the problem; these gaps in knowledge then become the focus of the student self-directed learning process. Creative Problem-Solving, as a teaching methodology that incorporates these components of Problem Based Learning but going well beyond, can be seen as an effective way to engage students in learning.

The Key Components of Creative Problem-Solving

Small group formats have been shown to promote learning for students, and findings from a meta-analysis on this topic by Springer, Stanne and Donovan (1999) indicated that different forms of small group learning activities are effective in generating improved academic achievement and more positive attitudes toward learning overall for students. Small group forums allow students to develop value in the work of the group, support peer learning, aid in holding members accountable, and enable regular assessment of progress toward group goals, all of which influence the overall motivation for group members to achieve their goals (Springer et al., 1999). This social interaction between members in a group project provides a venue to create and enhance motivation for students who are participating and learning in this process (So & Brush, 2008). Creative Problem-Solving is one type of group activity that incorporates a problem-centred approach to learning for students that integrates those components of collaborative learning, problem-solving skills, dialogic interaction, and the social construction of meaning through group processes that can bring a subject within the context of course to life for students who are participating in this process.

To reiterate a brief definition of CPS, it is described as a group problem-solving process that addresses “wicked” problems in the real world (Caswell, 2006; Treffinger et al., 2008). Wicked problems are viewed as real, unsolved problems that have no known nor pre-set answers; they are considered to be ‘vague’ and require ‘creativity’ to resolve them (Caswell, 2006). As noted by Caswell (2006), in CPS, the real problem may not even be known or clear at the start and may emerge through the process of trying to solve an issue. Caswell (2006) identifies three triads related to Creative Problem-Solving that are seen as revolving around the concept of wicked problems. The first triad identified is the Fundamental Triad which includes familiarization, where students start to develop an awareness of the problem they are working on resolving; functionality, that involves clarifying the real issue to be addressed and how to proceed with its resolution; and testing, where effectiveness of the proposed solution is examined (Caswell, 2006). The second triad is identified as Harmonizing Structure, which encompasses the tools of communication, visualization, and collaboration in understanding the problem and generating possible solutions to address it (Caswell, 2006). The third triad, Theoretical Environment incorporates the concepts of narrative, participation, and inquiry in telling the story and engaging students in creating new knowledge in
developing unique solutions to the problems posed (Caswell, 2006). The role of the student in this process is one of active participation where personal assumptions and biases can be challenged and the views of others can be acknowledged and considered in the problem-solving process; students come together and work collaboratively toward resolutions of problems or issues (Caswell, 2006).

Within this framework teachers need to move beyond the traditional classroom and take on the role of facilitator and coach to encourage students to participate in knowledge creation through the problem-solving process (Caswell, 2006). According to Caswell (2006), teachers need to work at drawing out the knowledge and experience students bring with them and support a safe atmosphere in the classroom that allows students the ability to explore and develop their own resolutions. Such an approach fosters those central tenets of both the humanist and constructivist learning theories, combined with key components of Problem Based Learning and supported within a framework of experiential learning, that are all operationalized in the classroom through this specific teaching methodology.

Incorporating experiential learning

According to Kolb (1984), learning is best generated in an atmosphere where there is a dialectic tension and conflict that can promote a learning environment through a process of inquiry and understanding. Experiential learning theory has been described as a practice theory that combines ‘experience, perception, cognition and behaviour’ (Kolb, 1984, p. 21). The centrepiece of Kolb’s (1984) theory of experiential learning is the identification of four modes of learning through which new knowledge, skills or attitudes are achieved. These modes include concrete experience, reflective observation, abstract conceptualization, and active experimentation (Kolb, 1984). Kolb (1984) describes the learning process as a holistic cycle that integrates all of these components. The acquisition of knowledge is viewed as a transformative process that is continually being recreated (Kolb, 1984; Mezirow, 1990) in this learning cycle. These key components of experiential learning can be brought to life through the process of students engaging in a Creative Problem-Solving exercise within the classroom.

Experiential learning is a key ingredient that is incorporated into the context of many professional programs of higher education, including fields such as social work, nursing, medicine and education, to aid in the development of skilled practitioners. It supports the use of critical reflection in practice and contributes to the learning environment for students, particularly as it relates to the field practicums, internships and residencies in professional education programs. This is the realm that combines theory to practice and may be the most appropriate environment to assess the level and capacity of students to think critically.

Problem-centred learning activities, such as CPS, can provide students with opportunities that are based in reality and promote processes that include ‘active exploration and knowledge sharing among the participants’ (Yen & Lee, 2011, p. 139). Yen and Lee (2011) identify four major pieces involved in the process of problem solving and these include resources, heuristics, control in relation to these two components, and beliefs. For teachers, part of the process needs to include spending time in class to explicitly go over the knowledge and skills needed to engage in working collaboratively with peers to solve problems (Memory et al., 2003). This work will help frame an assignment for a course that incorporates a group problem-solving process as a major component to successfully complete the course requirements. The role of the teacher as facilitator and coach is an important ingredient in framing problem-centred learning activities within the classroom, and teacher presence in collaborative group experiences has been shown to demonstrate a positive relationship to improved self-efficacy and cognitive presence for students (Shea & Bidjerano, 2010). So and Brush (2008) also found that a feeling of connection that is generated in collaborative learning activities positively affects students’ motivation. Collaborative learning activities increase students’ interactions with each other, and indications are that this allows for more dialogue, interaction and engagement in a course (So
Fostering Student Engagement

& Brush, 2008). Hence, collaborative problem-solving activities within a course can promote active engagement and motivation to learn among students.

Through a problem-centred approach to learning, students are given a forum to generate knowledge through a process of negotiating meaning with others in their group (So & Brush, 2008). According to Memory et al. (2003), students tend to work better on problem-solving activities when they are involved in choosing the problem the group is going to work on. They also report that students then are able to give enhanced presentations on their own group projects and are better able to apply the skills they have learned in new activities moving forward (Memory et al., 2003). In this vein, Creative Problem-Solving can be integrated into a small group facilitation process for students, where they can discover and implement new skills in working through a real life problem scenario in a specific course.

Sample assignment: small group facilitation

In order to better conceptualize how CPS can operate within the context of a specific course, a practical example is described in what follows. The example is framed within a Social Policy Analysis course in the field of social work and outlines the purpose, key learning outcomes and a sample grading rubric. The purpose of the assignment is to aid students in learning about social policy analysis and develop skills in the assessment and recommendation of changes in current policies, programs or services to meet the needs of vulnerable people in our society.

CPS assignment: in groups of 3-5

Students will:

- Pose a “wicked problem” in relation to the issue identified, and engage as a group in the problem-solving process to develop unique solutions to the problem posed
- Facilitate a 60 minute small group discussion with their peers in class on the social issue they have chosen, providing an overview of the issue and current/related policy response to set the stage for the group dialogue to follow
- Facilitate the group discussion in class by using thoughtful questions based on their scholarly research, critical analysis and incorporation of course readings and concepts, with an aim to engage their classmates in further problem-solving activities to generate more possible solutions to the original social problem identified
- Be encouraged to be creative and integrate life experience and current events as they facilitate this process with their peers, to ground the learning from this assignment.

Learning Outcomes

Upon successful completion of this assignment, students will be able to:

- Identify relevant social issues and problems impacting vulnerable populations in society
- Express their own thoughts, feelings, values and judgements in an atmosphere that incorporates respect for the diversity of all students participating in the group process
- Critically analyze the social problem identified, integrate course concepts and generate possible solutions by applying the knowledge and skills learned through a collaborative group problem-solving process
- Synthesize all of the information and experiences of the group process and facilitate a group discussion with the class that integrates the key issues and possible solutions
This assignment engages the students in active learning through the process of Creative Problem-Solving in bringing this assignment to life. It is meant to cover the entire semester in order to allow sufficient time for students to thoroughly investigate their issues. Students have time allotted in class each week to work on the project, allowing time and space for both peer and teacher feedback over the entire course. The assignment requires that students move through a series of scaffolded learning components where the students in a small group first identify the social issue to be addressed, define the problem and engage in research and a critical analysis to determine possible courses of action to address the social issue, and achieve a sense of problem resolution, to the extent that is possible with wicked problems.

In line with the triads of CPS, the first phase of identifying the social problem captures the essence of the Fundamental Triad, where students become familiar with the social problem. They engage in a critical analysis of all of the factors that are contributing to the problem, clarifying the issues and how they are impacting the identified vulnerable population. The students then start to test out possible solutions to resolve the problem. Activities students can engage in during this phase include conducting a comprehensive needs assessment of the community involved that identifies assets, barriers and gaps. Students can also spend time getting to know the people being affected by the problem and asking their perspective on what could or should be done. This process allows students to develop an accurate and authentic picture of all of the issues involved.

Students are encouraged and supported by the instructor and their peers to employ tools such as concept mapping to visualize the various aspects of the issue, consult those impacted by the problem (narrative), examine societal responses and challenges, and ultimately put forth a possible solution. This work captures the second triad of CPS, the Harmonizing Structure. In the processing of assessing the needs of the community involved in the problem, group members are supported by both their peers in the group process and the teacher in mapping out all of the factors that need to be considered in order to recommend solutions. Tools such as concept maps, logic models or other visual representations can serve as effective mediums to organize and categorize large amounts of information. The narrative stories of the people impacted directly by the social problem can serve to enhance this process and builds in that component of reality in allowing voice to those most directly affected. This can aid students in developing relevant skills in working with people, which is an essential ingredient for professional social work practice. Students can also consult with City or Provincial agencies to determine overarching societal responses. All of these pieces will help inform the possible solutions that the group will create.

The third triad of CPS, Theoretical Environment, that incorporates the concepts of narrative, participatory and inquiry, is enacted by the group when they engage with the larger class in conducting the small group facilitation. This is where the group will highlight their work: identifying the issue, incorporating their critical analysis, synthesizing the material, and then engaging their classmates in further exploration of possible solutions. Rather than just providing a brief power point presentation to the class on their own experience with this exercise, the group of students are then expected to facilitate the learning of their classmates on this identified social issue using a similar problem-solving process. This subsequent small group facilitation in class allows the students to expand this process to the classroom setting where the group can then engage their peers in this creative problem-solving process to identify further possible resolutions to the social issue or problem identified. It infuses an active learning process into the classroom and fosters ingenuity and creativity for the students, enhancing their motivation through an interactive, dialogical exchange that promotes deep learning, critical reflection and critical thinking. Students engage in working with course concepts with one another and model what the problem-solving process would look like if they were working as social workers in a community agency who were tasked with resolving a social problem for a vulnerable group of clients. This interactive process embodies those concepts of collaborative inquiry within a constructivist paradigm.
and can support students in challenging their assumptions and prior experiences to come up with new ways of seeing things. This whole process of CPS can be an effective strategy to weave in the concepts of experiential learning and promote the development of critical and reflective thinking skills that can transcend the classroom and help prepare students for the real world.

A student’s experience of CPS

CPS as a mechanism for learning was powerful for this author, who experienced it as a student in a course on Learning-Centred Teaching in Higher Education. Students were tasked with forming small groups to learn about a specific teaching method that we then had to implement in class with our peers. This assignment was tremendously challenging and the most difficult task proved to be generating a wicked problem. The group members came from a variety of backgrounds and disciplines that brought in multiple perspectives, which made the process of achieving consensus on a specific problem to focus efforts on quite difficult. The actual process of each member articulating their perspective, conducting a scholarly review of the literature, and then engaging in planning and negotiation to map out an approach to solve the problem actually allowed the key issue to emerge. Group consensus on the problem to be addressed was established, that allowed a sense of ownership to grow, as well as a commitment among group members to develop solutions to mitigate the problem. The real learning came from the fact that the group owned both the problem and the subsequent process to resolve it. The instructor did not impose the problem on the group, but rather it emerged through group dialogue, exploration and research on the problem.

This approach to teaching demonstrates those key features of problem-centred learning that support the key principles of adult learning and engage students in a learning experience that goes well beyond a standard research project and served as the precursor to the creation of this Social Policy Project that incorporates a small group facilitation in a Social Policy Analysis course for social work students in this current study. CPS creates a learning scenario that draws on group dynamics, creativity, and collaboration in shaping both the problem and solution. Adding in group facilitation allows students to share their learning with their peers in a way that further engages the class in a collaborative learning community. It is a unique learning experience that can help students develop tangible skills needed in the process of social policy analysis, including skills in problem identification, scholarly research, collaboration, advocacy, brokerage, critical analysis and the integration of practical solutions and recommendations to complex issues and problems.

Conclusion

Strategies that engage and motivate students promotes deeper learning and fosters the development of effective problem solving and critical thinking skills. In addressing the overarching question posed at the beginning of this paper, Creative Problem-Solving is an effective teaching method to motivate and engage students in learning. It provides a forum to integrate real world experiences into the classroom setting and serves as a mechanism to engage students in an authentic learning process. Specific strategies that target scaffolded learning, incorporation of visual concept maps, storytelling, and social inclusion through the group experience for all students in the class serve to strengthen this experience.

Teachers need to find ways to incorporate active strategies in a way that sparks interest and passion for students. Incorporating a constructivist framework that supports such an approach may be a solution, along with the preparatory work in readying students to engage in such a pedagogical shift, as in some disciplines this teaching method may be considered outside of the norm of what is expected for some students in the classroom setting. A key role for teachers lies in helping students prepare for and embrace a change in teaching and learning approaches, to tap into that engagement concept and
spark some of that interest and motivation to learn in a course that can be considered difficult or challenging, such as a social policy analysis course. A research agenda that focuses on the pedagogy to support such a shift may be of merit. Creative Problem-Solving as a teaching methodology, in support of learning-centred teaching in a variety of contexts that embraces ambiguity and challenge, may be a starting point for such an agenda, particularly as it relates to the transferability of these problem-solving skills learned in the classroom to the real world environment.

References


163


**Biography**

Patricia L. Samson is a PhD Candidate and Sessional Instructor at the University of Windsor. Her research focuses on social work education, and teaching and learning in higher education more generally.

### Appendix

**Assessment/Evaluation of CPS assignment**

<table>
<thead>
<tr>
<th>During the Presentation (Beginning)</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Provide an overview of the social issue/problem and relevant policy response that was addressed in the group process</td>
<td></td>
</tr>
<tr>
<td>• Demonstrate logic of argument and provide evidence of analytical and critical thinking</td>
<td></td>
</tr>
<tr>
<td>• Concise, succinct and consistent flow of ideas throughout</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Small Group Discussion Facilitation</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Discussion is grounded in the literature related to the topic under discussion</td>
<td></td>
</tr>
<tr>
<td>• Critical analysis and synthesis of course concepts is evident</td>
<td></td>
</tr>
<tr>
<td>• Relevant life experiences, current events, and opinions of others are incorporated into the group facilitation process that demonstrates a collaborative learning environment</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Overall</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>• The topic is clearly delineated and focused</td>
<td></td>
</tr>
<tr>
<td>• Demonstration of team work in developing and presenting the material</td>
<td></td>
</tr>
<tr>
<td>• Thoughtful and provocative group discussion</td>
<td></td>
</tr>
<tr>
<td>• Solutions presented are well formed, logical and realistic to address the problem(s) identified</td>
<td></td>
</tr>
</tbody>
</table>
Learner Characteristics and Motivation: How to Achieve Efficient and Effective Learning

Catherine Marie Fraser Bates
Queens University

During the Society for Teaching and Learning in Higher Education Conference 2014, a workshop was held three consecutive times as part of the Pedagogical Speed Dating sessions to introduce experienced college/university faculty and instructional designers to an approach to instructional design that is based on increasing motivation. The purpose of the workshop was to demonstrate the use of Keller’s ARCS Model of Instructional Design for Motivation, specifically how to achieve effective learner/learner, learner/content, and learner/teacher interaction. The discussion focuses on the experiences of typical university and college students.

Introduction

Aim

This paper is based on a 30 minute workshop delivered in three consecutive sessions at the Society for Teaching and Learning in Higher Education Conference 2014 as part of the Pedagogical Speed Dating sessions. The aim of the session was to explore instructional design as a method of matching learner/teacher characteristics (motivation, experience, age, attitude, learning style, and background education) to the content. The context for the discussion was motivation of the typical university and college student with the objective to make recommendations for instructional strategies that would suit their characteristics. Constructivist conditions for learning was the frame within which the discussion was held.

Background

The use of the traditional lecture method is still prevalent in many universities and colleges today. The lecture method is a viable instructional strategy for intrinsically motivated (“how can I use my learning to better myself”) learners with life experiences, who are reflective or theoretical learners. It is suited to subject matter best delivered according to the behaviourist philosophy (stimulus, response, reinforcement). The lecture format may be less helpful for young students who are extrinsically motivated (“what’s in it for me”), who have limited life experiences, who are practical or active learners, and who must learn content that doesn’t have just one right answer. A constructivist philosophy may be called for in this case, which represents a paradigm shift for students from being passive recipients of instruction that has been designed for them, to being actively involved in
determining what their own learning needs are and how those needs can best be satisfied. This paper and the preceding workshop offers an opinion of how a theory of motivation can be used to match instructional strategies to learner characteristics.

Discussion

Learner Characteristics

The traditional university and college student can be classified as a young adult chronologically; however, due to their limited life experiences and dependence on external motivation (e.g., rewards in the form of grades for work assigned by a teacher in topics not of their choosing) up to this stage in their learning career they are more similar to young learners. The typical university and college student must achieve a university degree to be accepted into their future profession which can be argued does set the conditions for intrinsic motivation (i.e. goals that arise from within), however the case can equally be made for extrinsically motivated students who are aware that a degree or diploma are the entry level qualifications for their future work but who are living in the present and struggling to balance part-time work, parental expectations and the unfamiliar university/college culture potentially limiting their experience to short term goals based on the extrinsic rewards of grades. The differences between intrinsic (self-motivated) and extrinsic (external) motivation are important when choosing suitable reward systems (assessment types and criteria) and instructional strategies (conditions for learning).

Support

For some university/college students, it is necessary to generate intrinsic motivation to achieve a level of effort justification. Effort justification is the tendency to assign more value to an outcome that one has had to put great effort into achieving (Bandura, 1991). Conversely, outcomes that have rewards assigned by others are less motivating. The social cognitive concept of cognitive evaluation theory (CET) proposed by Eisenberg, Deci, Koestner, & Ryan (1999), “asserts that underlying intrinsic motivation are the psychological needs for autonomy and competence, so the effects of an event such as a reward depends on how it affects perceived self-determination and perceived competence” (p. 628). This theory is the best way to explain how to achieve efficient and effective learning in this group. The traditional university instructional strategy, less so in colleges, is the lecture method with the traditional reward a grade achieved in exchange for doing a certain amount of work to a certain standard assigned by the professor. While suitable for reflective learners, the lecture method puts those with other learning styles at a disadvantage. Good instructional design should include a selection of instructional strategies to motivate most students most of the time to achieve good academic results. One example is the use of a learning contract that assigns a range of assessments and a range of grades that the students “sign-up” to achieve. A student can contract with the professor at the beginning of the term to receive either an A, a B, or a C grade in exchange for predetermined products with quality and quantity described in a rubric. Once the contract is agreed upon between student and teacher, it is up to the student to uphold his or her end of the bargain. The motivation to learn is now placed firmly in the hands of the student. The student decides what level of reward they will receive from their level of effort (effort justification) and learner performance is not undermined by the traditional conditions of the classroom reward system (Eisenberg, Deci, Koestner, & Ryan, 1999, p. 629). Motivation is increased in a population that, although chronologically classed as “adult”, is more similar to younger more extrinsically motivated learners.
Application

Effort, performance, and consequence (Weibelzahl and Kelly, 2005, p. 81) is shown in the model below as the output of the learner and the organization (Figure 1). This model reflects the traditional self-directed conditions for learning of attention, effort, participation, and persistence (Garrison, 1997). Students bring their inputs while the learning organization supplies the environmental factors.

![Diagram](image)

**Figure 1**


Instructional Design to Support Learning Characteristics and Motivation

The theory and practice of instructional design is complex, however, the SERC Portal for Educators called Pedagogy in Action (accessed through Carleton University's Faculty Development site at http://serc.carleton.edu/sp/library/pedagogies.html) has an excellent section on Teaching Methods that will apply the environmental factors of motivation, learning, and contingency design and management. If environmental factors are considered to be externally controlled, then expectancy theory fits into this model as an approach to designing for extrinsically motivated learners. It contains 60 content-specific teaching methods that includes a description of the technique, tips for using each technique, research on the technique’s impact on learning, and examples. Many of these techniques can be employed in distance learning in education because they support instructional design based on intrinsic motivation based on learner/content interaction.
instead of learner/teacher interaction. What else could motivate a student to self-select a subject that can only be learned independently with minimal input from the teacher? To employ these techniques in a face-to-face setting lends support to the extrinsically motivated learner by providing external conditions for learning based on the internal capabilities of the learner (Gagne, 1974).

Using the ARCS Model in Curriculum Design

In 1983, John Keller designed the ARCS (Attention, Relevance, Confidence, and Satisfaction) model to help instructors design motivating curricula (McConnell, Hoover, & Sasse, 2001). The subcategories of each part of the model are shown in Table 1. Expectancy theory is the basis of the ARCS Model and suggests that the effort the student puts forth with respect to their learning is dependent on the value that the student places on the task. This is one way of fostering intrinsic motivation. Keller, in his paper titled *What Are the ARCS Categories*, describes the categories, identifies the design questions, and suggests support strategies. Participants at the Society for Teaching and Learning in Higher Education workshop on which this paper is based followed the same procedure to explore ways to design instruction for the extrinsically motivated learner.

### Table 1

**ARCS Categories**

<table>
<thead>
<tr>
<th>Attention</th>
<th>Relevance</th>
<th>Confidence</th>
<th>Satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1 Perceptual arousal</td>
<td>R1 Goal orientation</td>
<td>C1 Learning requirements</td>
<td>S1 Intrinsic reinforcement</td>
</tr>
<tr>
<td>A2 Inquiry arousal</td>
<td>R2 Motive matching</td>
<td>C2 Success opportunities</td>
<td>S2 Extrinsic rewards</td>
</tr>
<tr>
<td>A3 Variability</td>
<td>R3 Familiarity</td>
<td>C3 Personal control</td>
<td>S3 Equity</td>
</tr>
</tbody>
</table>

Workshop

The conference workshop was held for 30 minutes three consecutive times. Participants were introduced to the model based on the adaptation to Keller’s model (the model was printed on large table top sized paper). They discussed the parts of the model that could be influenced by instructional design and agreed that motivation could be one such element. Next, the ARCS Model itself was presented by showing participants a table like the one in Table 1 but with the sub categories missing. The participants worked together to put the correct sub-categories in the correct columns. This process led to a general discussion of the ARCS Model and how Keller created it to foster motivation through instructional design. The participants discussed the characteristics of the typical university or college student and agreed to address instructional design through the lens of the extrinsically motivated student. Approximately 30 different teaching methods from the SERC Pedagogy in Action website (each listed on separate pieces of paper) were put into the middle of the table and the group was invited to draw out a teaching method and discuss its relevance to a category or sub-category of the ARCS Model. The teaching methods fell under the categories of engaged pedagogy, visualizations, field based instruction, problem solving, and classroom labs. The participants either discussed their choice with a partner or with the group as a whole. Although the participants were college/university faculty, graduate students, or instructional designers, many were amazed by the depth and breadth of the types of methods from which to choose. They reported that having a focus for their choice – motivation – made it easier to consider how they would select instructional
strategies through the ARCS Model. Many spoke of challenging classroom situations and how consideration of an instructional strategy based on factors other than the content (although the content must also be a factor in good instructional design) would assist them in their approach to design. Toward the end of each session, the participants became engaged in peer to peer discussions aimed at solving particularly challenging design dilemmas. This movement during the workshop from a focus on the facilitator to the content to each other was the goal and a model for good collaborative learning.

Conclusion

The workshop was an introductory session aimed at showing how the choice of instructional methods and techniques that suit the learners’ needs should increase motivation and perhaps achievement. A future research goal is to document the role that increased motivation has in learner achievement. The challenge is to design a study that both evaluates the effectiveness of ARCS course design and measures learner achievement. This will be done by administering the Keller ARCS Course Interest Survey to courses designed with and without the ARCS Model of instructional design. The Keller ARCS Model and the adaptation of it described in this paper and used during the Society for Teaching and Learning in Higher Education Conference 2014 is one potential approach to instructional design. Good instructional design should foster interaction between the learner and the teacher, the learner and the material, and the learner and his or her peers. The design of the workshop was meant to model this approach. During the workshop the participants thought of motivation as a goal to be achieved with instructional design. The ARCS Model is more than 20 years old now; however, its utility remains. The ARCS Model can be used not only to design motivating curricula that draws on students’ interests, but it can also be used to base assessments on students’ motivational perceptions (McConnell et al., 2001). A workshop with a similar group to explore this use of the model would complement this workshop on motivation and instructional design. A complimentary approach to measuring achievement is the concept of deep learning as described by Entwistle (2012, p. 291). He has developed an assessment instrument called Approaches to Study Skills Inventory for Students (ASSIST) that measures the learning processes involved in a deep approach, as opposed to a surface approach, to learning through study skills. As always, professional instructional designers and learning specialists can provide advice and consultancy on education, training, learning, and professional development.

References


Acknowledgement

Thanks to Dr John Freeman for shaping the narrative of this essay.

Biography

Catherine Bates is a Doctoral Candidate in Education at Queen’s University and a retired Royal Canadian Air Force Training Development Officer. Her areas of interest are motivation, instruction, self-regulation, and immersive environments for learning. Her research involves how to achieve and measure deeper learning using a strategic approach based on self-regulation.

Catherine Bates is a Doctoral Candidate in Education at Queen’s University and a retired Royal Canadian Air Force Training Development Officer. Her areas of interest are motivation, instruction, self-regulation, and immersive environments for learning. Her research involves how to achieve and measure deeper learning using a strategic approach based on self-regulation.
“There is No Single Right Answer”: The Potential for Active Learning Classrooms to Facilitate Actively Open-minded Thinking

Victoria Chen
Queen’s University

Education is meant to open your mind, but is what universities are really doing? Rather than fostering open-minded thinking, the format of lecturing, the lack of interaction among students and instructors, and the passive nature of learning are likely producing the opposite, students with closed-minds. The development and implementation of Active Learning Classrooms (ALC) has the capability to counteract this negative trend by providing a configuration suited for more collaborative learning and opportunities for students to share their thoughts, hear other perspectives from peers, and have the potential to become more open-minded. A description of a study on students in a fourth year psychology course is provided in which the instructor changed her course in order to use the ALC to its fullest capacity. Students were also given an Actively Open-minded Thinking questionnaire (Stanovich & West, 1997) pre and post course, with results indicating that open-minded thinking increased over the term. Although there are many components that could contribute to this result, the impact that educational spaces may have on student learning are discussed.

Introduction

Instead of opening students’ minds to inquire more deeply about course content, most courses elicit student questions such as “Will this be on the exam?” and “What is the right answer for the exam?” Admittedly, during my undergraduate years all I wanted to know was whether the question would be on the exam and what answer was required to receive full marks. My curiosity for learning was absent, all non-exam information was ignored, and my main goal in class was to find the “correct answers” in order to achieve an A on the exam. This way of thinking could have been primarily due to the assessment format in most of my courses which typically were 200 item multiple choice questions; gaining a richer conceptual understanding did not provide an immediate dividend. But secondly, and perhaps more importantly, my mentality for learning was rooted in the lack of interaction and discussion I had with my instructor and fellow students.

It was clear from day one that when the instructor stated, “No questions are stupid, please ask,” any student who interrupted the class to ask a question stopped the flow of the lecture resulting in frustration for the other students in the room. At the same time, you could not pose questions to your peers during class because the instructor would chastise you
for talking in class. The lecture hall was designed as a space to listen to one person at the front of the room, not an appropriate place to have interactive conversations or ask off topic questions. Is this really the ideal environment for learning?

The literature on learning spaces suggests that the answer is no. Lecture halls create a physical and emotional hierarchical barrier between the instructor and students, and among students themselves (Baepler & Walker, 2014). The location of the instructor’s podium conveys the status of the instructor as the all-knowing leader and sole expert in the room, with students’ roles limited to listener rather than participant with valid contributions to learning. The format limits student to student interaction, and makes instructor to student interaction impersonal and disengaging (Baepler & Walker, 2014). Without interpersonal interactions and exposure to multiple perspectives, I suspect students are less likely to consider different perspectives on a topic or an argument. For example, Toplak and Stanovich (2003) found that fourth-year students listed significantly fewer arguments against a position they held compared to students in first-year, suggesting students were possibly becoming less open-minded over the course of their undergraduate degree.

Employers have also noticed this trend in seeing graduates with an increasingly limited and narrow frame of mind over the last decade (Vedder, Denhart, & Robe, 2013). In a recent survey in 2013, employers stated universities are producing too many graduates who lack the ability to be open to new ideas, to modify and question assumptions, critically think, and be innovative (Hart Research Associates, 2013). The snowballing effect of universities limiting opportunities for students to be open-minded to graduates having difficulty finding a job does not necessarily have a direct causal relationship, but in my experience could be a contributing factor if all learning experiences in university are restrictive in this manner.

One way to disrupt the default lecturing style is to change the physical space of the learning environment (Beichner, 2014; Brooks, 2012). When I began research on newly implemented Active Learning Classrooms (ALC) on campus, I saw a vastly different space from my undergraduate studies (see Figure 1). Instead of rows of seating, students sat in groups, were expected to talk to each other, and encouraged to share ideas with peers within and outside the group. The classroom lacked an identifiable front and was thus no longer a structured hierarchy. The spotlight was not on the instructor teaching, but rather on the students, their learning and perspectives.

![Figure 1](image)

**Active learning classroom (ALC)**

The initial drive to create ALCs was to provide advanced technologies and spatial configurations needed for science courses such as physics and engineering, giving instructors a seamless transition between lecturing and laboratory work within a single space (Beichner, 2014). Since then, ALCs have been used by other disciplines that could also benefit from the spatial configuration and interactive technology while still accommodating large course enrolments (Horne, et al., 2014). Studies on these new learning environments have shown vast improvements in student engagement and attendance compared to traditional classrooms (Walker, Brooks, & Baepler, 2011). Both students and instructors reported being more enthusiastic about learning and teaching in these environments (Thaman, Dhillon, Saggar, Gupta, & Kaur, 2013); instructors were more likely to incorporate active learning strategies into their courses (Oblinger 2006; Walker, Brooks, & Baepler, 2011). Active learning has been shown to increase content knowledge, critical thinking, and problem-solving abilities relative to results with
traditional lecture teaching strategies (McCarthy & Anderson, 2000). Active learning strategies gradually develop students’ adaptability, communication, and interpersonal skills (Kember & Leung, 2005).

Space Influencing Course Design

I became very intrigued by the concept of the learning space influencing instructors’ course design, and considered how an instructor who wanted to increase open-minded thinking among students could do so in an ALC. Upon interviewing all the instructors scheduled to teach in the ALCs, I encountered one instructor who expressed interest in completely redesigning her fourth-year psychology course in order to implement active learning techniques she could not otherwise do in a traditional lecture hall. She explained the difficulty in getting students to work in groups when seated in a lecture hall. Students were often resistant to turning around to face fellow students to form groups, or complained about moving all their belongings across the row to sit with other students to form a group. The simple task of forming groups consumes significant time during a class. In addition, she had always wanted to incorporate debates into a course but found it hard for students to hear or see each other across the lecture hall, thereby making the debates ineffective. She admitted this would be a significant departure from her normal lecture style of teaching in which she had complete control of the delivery of content and pace of the lecture.

A month later, I met with the instructor to see her newly designed course syllabus. The course syllabus outlined several activities that would take place throughout this course: class debates; student lectures; writing individual papers; developing as a group a Wikipedia entry on modern psychology; preparing exam questions as a group; and group discussions on controversial psychology topics. The aim was for students to develop a deep understanding of the complex nature of modern psychology, how there were several different movements, the cause and consequence of the movements, and how there were no single “right” answers.

This led me to conduct the current study in which I examined whether an active learning environment and pedagogy would increase students' open-mindedness over a single term. Data were gathered using Stanovich and West's (2007) Actively Open-minded Thinking (AOT) Questionnaire (available upon request from the authors) and from conversations between students and the instructor throughout the term this research was conducted. This research project was approved by the Human Research Ethics Board of Queen’s University.

Participants

All 40 students in this class were fourth-year psychology majors; 28 participated in the study. According to the instructor, this was the first course most students were taking that had a strong emphasis on group work. In most first to third-year psychology courses, class sizes are much larger with little to no group work. Participation in this study was on a voluntary basis with no monetary compensation. Students were told their participation would contribute to the development of how these classrooms were used for teaching future classes.

Actively open-minded thinking (AOT) questionnaire

The AOT questionnaire by Stanovich and West (1997) is composed of multiple subcategories including: flexible thinking, openness to ideas, openness to values, absolutism, dogmatism, and categorical thinking, which together provide a measurement for open-minded thinking. Actively Open-minded Thinking is generally defined as a person’s ability to actively reflect on his/her thinking, actively seek and process information that contradicts his/her beliefs, and be willing to alter his/her mindset after carefully considering opposing beliefs.
(Stanovich & West, 1997; 2007; Toplak, West, & Stanovich, 2012). Previous studies have shown that students with higher AOT scores are better able to contextualize prior knowledge and personal beliefs in order to make rational decisions (Stanovich & West, 2007).

The questionnaire was administered online using Fluid Survey outside of class time to limit disruptions to class sessions. The instructor posted the link to the questionnaire through the course website during the first week of class and again one week following the end of the class. Participants rated their agreement to 41 statements such as, “Right and wrong never change”, “I believe letting students hear controversial speakers can only confuse and mislead them,” “Changing your mind is a sign of weakness,” “No one can talk me out of something I know is right,” and “I have a lot of intellectual curiosity” on a scale of 1 - Disagree Strongly to 6 - Agree Strongly. The 41-items are treated as a single scale (i.e., a subscale is not calculated). The typical mean AOT scores from samples of university students in previous studies have ranged from 168 to 170 (SD = 18.2-18.3) (Sá, West & Stanovich, 1999; 2005; Stanovich & West, 1997, 2007). The scale has a minimum score of 41, and a maximum score of 246.

Findings

The mean of the sample was 184.96 and the standard deviation was 26.28. The scores were normally distributed, and the Cronbach’s Alpha was 0.84. Nine of the original 28 students completed the post-AOT (low response rate is discussed in the limitation section). In order to continue analyses, a Mann-Whitney U test was used to compare the pre-test score for the nine students to the pre-test scores of the original 28 pre-test scores to ensure the nine students were not different from the rest of the students. The results showed the sample of nine was not significantly different from the pre-test sample.

A paired samples t-test demonstrated post-AOT scores (M = 190.44, SD = 23.13) were significantly higher than the pre-AOT scores (M = 184.44, SD = 25.87), t(8) = 2.67, p = 0.03 suggesting AOT improved over the term. The effect size was calculated to measure the strength of the relationship between the two variables using Cohen’s d (1988). The effect size was d = 1.89 and is considered large suggesting a strong relationship despite the small sample size.

Pre-AOT scores were divided into two categories, high pre-AOT (above the sample’s mean AOT, N = 5) and low pre-AOT (below the sample’s mean AOT, N = 4) to determine the nature of the increase in AOT. The results showed students with low pre-AOT had a greater increase in AOT (M = 12.25, SD = 6.39) over the course of one term than students with high pre-AOT, (M = 1.60, SD = 3.36), t(7) = 3.24, p = 0.01. The interpretation of these results needs to be cautious because the groups were very small. However, on the basis of the difference in mean, there is an apparent increase in AOT from pre-test to post-test especially for those with low pre-AOT. The lack of significant change in high pre-AOT could be attributed to a ceiling effect (Cramer & Howitt, 2004) in scores because the high pre-AOT scores were already getting close to the maximum. See Figure 2 for depiction of findings.

![Graph of mean pre and post AOT scores](image)

Figure 2

Graph of mean pre and post AOT scores

The informal conversations I had with students during class breaks provide some further evidence to strengthen the AOT results. Repeatedly, students emphasized their excitement for the course
throughout the term. As one student stated, “I believe that the course in the active learning classroom did facilitate discussions and the sharing of information between students, as well as with the instructor.” Another student said, “I liked that a lot of the course was discussion based - I wasn’t just passively sitting and taking notes mindlessly.” I asked students to think about how the course and space allowed them to see other students’ perspectives on topics and whether this was different from courses in other rooms. The common answer was simply there were no discussions or conversations in other courses in their program, and they were mostly lecture based with individual assignments. Some students did however compare their experience to experiences in other disciplines that did have more discussions.

“Being able to see everyone in my table group made a huge difference for me to express my thoughts and to understand their thoughts compared to doing the same thing in a lecture hall.”

“The screens around the room helped me see what other groups were talking about and I was able to see so many different opinions on the same topic.”

“I liked that there were no right or wrong answers for the assignments but instead pushed us to look at issues on both sides.”

“I liked the challenge in this course and hearing other students’ thoughts on the topics often made me rethink my position.”

“I was very impressed with how relaxed it felt, and therefore created an environment for collaboration and authentic discussion. There wasn’t a pressure to get the answers right. I was more comfortable sharing my thoughts and understanding where other students were coming from.”

On the other hand, a few students mentioned they found it hard to balance between being completely open-minded to ideas from their peers and wanting the instructor to provide more direct information to them by confirming the “right” answer. As one student stated “I would have benefitted from the professor synthesizing the material and addressing the important point for each chapter and telling us what we needed to know for the exam.” Another student agreed with this student, “It would have been easier taking a course with just multiple choice exams [than working and coordinating with peers on activities], but this is something that we will have to deal with in the real world as well so it is a good learning opportunity.”

As for the instructor, she was surprised by how well the group format worked and enjoyed adopting the facilitator over the lecturer role. Having taught many years in the psychology department, she did not expect students to have so many different perspectives and have the ability to engage in the material to such a great extent. She enjoyed having both casual and formal conversations with students throughout the class and becoming better acquainted with students on a more personal level than in any previous course she had taught. Although there were logistic problems such as coordinating group activities, becoming accustomed to the technology, and learning how to efficiently move around in the space, she was very pleased with the space. “I learned a lot about what students are capable of by being in this space, and I will be including many activities in this course in my future courses.”

**Limitations and Challenges**

It is difficult to conclude whether the course and/or learning space led to an increase in AOT without a control group. However, there were no appropriate control groups in other courses in the program that would have produced meaningful comparisons. Although courses outside the department could have acted as control groups, the issue of difference in content and teaching and learning traditions would have confounded any possible analysis. The course is also not offered every year, and comparing this course to a course in a subsequent year or two would similarly not be meaningful.

The problem of the low participation in post-tests may be due to a couple of issues. First, the post-test was administered after the end of the term with the intention of capturing the entirety of students’ course experience. However, this placed the post-test during the exam period. Students participating in the study were preparing for the
course’s final exam. In addition, more than half of the students in the class were also defending their undergraduate theses that week. Thus, it was not a convenient time for students to complete the questionnaire. Second, after the students did the pretest, many students stated the questionnaire was far too long and cumbersome to complete on their own time (approximately 8 minutes). This could not be changed because removing questions would cause the scores to be invalid and eliminate crucial components of the AOT concept. It is likely the length of the questionnaire may have contributed to students' reluctance to complete it during their busy schedule. Third, the link to the post-test was posted on their course website, and it is unclear how many students checked the course’s website after the end of term. In hindsight, the questionnaire likely would have had a better post-test response rate if it was completed in class as time seemed to be the main issue for students. For current studies on ALCs, I have asked instructors to administer questionnaires or surveys at the beginning of a class or during break time. This has produced a much higher response rate for our current investigations.

Conclusions

Despite the limitations, this study is an example of how a space may impact an instructor’s course design and teaching strategies in ways that have the potential to influence students’ open-mindedness. Figure 3 provides a visual illustration of this relationship. The space alone would not lead to open-mindedness if the implemented pedagogy did not align with this goal. The new learning space offers opportunities for students to communicate their ideas to the peers in their group (round tables and screen) and to the entire class (circular configuration of tables around the room and screens on the walls). But an instructor needs to take advantage of this potential and incorporate appropriate activities which develop the capabilities of the spatial configuration and technology. Many instructors likely do the same activities in a standard lecture hall as were used in the course studied here, but the instructor in this study was reluctant to do so in traditional spaces and saw physical and technological barriers that would prevent her from implementing these activities. The space changed the instructor’s perception of what could be achieved in her course which in turn had the potential to influence students’ learning and open-mindedness.

Although only a small sample of students completed the post-AOT questionnaire, the findings do suggest students can become more open-minded over a semester when a course is delivered in an ALC. As Figure 2 illustrated, the greatest increase in open-mindedness was observed in students with lower pre-test scores than students with higher pre-test scores. The informal conversations with students provide some evidence to strengthen the suggested change in AOT over the semester. Students stated the spatial
configuration and technology allowed them to more effectively communicate within the group, see what other groups were doing, and share ideas. As a consequence, students reported feeling more comfortable in this room, and learned more by considering and understanding different perspectives. Furthermore, students believed the pedagogy used by the instructor deemphasized the sense of competition among the students and promoted a more relaxed yet intellectually challenging learning environment. This provides hope against the trend found by Toplak and Stanovich (2003) of fourth-year students being less open-minded than first-year students, as this group of students stated they were open to other students’ perspectives which in some cases contributed to changing their own opinions.

Implications

This study suggests that instructors need to consider the learning opportunities that could occur in their particular teaching space. In an ALC where the focus is on the students instead of the instructor, learning outcomes that may not have been possible or easy to accomplish in a traditional lecture hall may be considered. In this study, the focus was on the potential for students to increase their open-minded thinking, but many other cognitive thinking skills may also be considered.

After considering what learning activities and lessons are possible in a particular teaching space, instructors need to keep in mind that not all students may be comfortable with a learner-centered pedagogy on the first day of class. In this study, a few students mentioned slight issues specifically with the completely learner-centered pedagogy. They wanted more direct instruction from the teacher or for information to be confirmed by the teacher, and not discussed solely with peers. More students may have felt this way as well as suggested by Kain (2003), but did not express it to me or the instructor in this study. It would be naïve to assume all the students completely embraced the learner-centered pedagogy or that future groups of students would embrace this approach, thus instructors are well-advised to develop a balance between teacher-centered and student-centered activities dependent upon the specific instructional context. As the instructor in this study admitted, she was a bit unsure of how the course would proceed and was worried about the reactions of students despite all the planning and preparing she had done. Overall, students embraced the change in space and pedagogy and found it different but refreshing. It is easy to be consumed in the negative experiences reported by students. Several students jokingly said to me at the end of the study that they wished they were not graduating so they could take another course in this space. Taking a fifth year is probably not worth the additional experience in this classroom, but the comments do show how much students enjoyed learning in the ALC.

Just as there are no single “right” answers in the real world, there is no single “right” way to use the ALC. Every group of students creates a different dynamic, every subject is structured differently, and every instructor has their own comfort zone when it comes to balancing lecturing and facilitating. However, taking the step forward in fostering more open-minded students will lead to graduates that will be better prepared to take on the real world and all its complexities.

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Biography

Victoria Chen is a PhD candidate in the Faculty of Education at Queen’s University and an Educational Development Associate at the Centre for Teaching and Learning. Currently, she holds a Doctoral SSHRC for her research examining how Active Learning Classrooms can be authentic learning environments, which allow students to connect information learned in their courses to life after university and develop essential skills for employment (e.g., communication skills, presentation skills, analytical skills, etc.).
MySci Advisors: Establishing a Peer-Mentoring Program for First Year Science Student Support

Kirsten Poling
University of Windsor

Would you like to help your students adjust to university life? Perhaps you are simply interested in allowing them to feel more integrated into a department right from the start of their first year? These were the types of issues that we were hoping to address when we founded the MySci Advisors Program, a peer-mentoring group for first year students in the Faculty of Science at the University of Windsor. This program is run entirely on a volunteer basis with no working budget, so if you were considering starting a mentoring program but have been concerned about the cost of doing so, this essay may be of particular interest to you. MySci Advisors is only in its third year currently, so this essay is meant to focus on the lessons we have learned in the early establishment of the program. I outline some of the practices we have adopted for the program, some of the changes we have had to make along the way and provide some early evidence of success. It is my hope that others may be motivated to also form such a program or use this information to assist in their own early endeavours.

As academic pressures rise but resources become more limited, universities have experienced an increase in class size and a corresponding decrease in the amount of personalised attention that students may receive, particularly in first year classes. In order to improve student success in these large courses, and to help improve student retention rates, many institutions are searching for ways to help students adjust to and thrive in the university environment. Students experience many different types of pressures when entering university and alleviating these pressures is an important part of ensuring that they persist in their education (Tinto, 1993). One possible avenue for enhancing both retention and success of students is the establishment of mentoring programs, as they have been shown to facilitate a successful social and academic transition to university (Heirdsfield, Walker, & Walsh, 2005) and reduce stress amongst students (Mekdessi, Curran, Lam, Grech, & Nguyen, 2013).

Because transitioning to university often involves more than just a change in academic skills, we wanted to establish a mentoring program that would take more of a holistic approach and encompass many different facets of the adjustment to university life, from academic and study skills to social and career support. While there are many models for mentoring programs (Crisp & Cruz, 2009; Gershenfeld, 2014; Jacobi, 1991), we chose to focus on transforming the learning experience by fostering a positive collaborative environment based on student peer mentoring in the Faculty of Science. Science programs often involve large first-year classes with little sense of community. Furthermore, as a large number of science students
vie for a limited number of spots in professional schools, there can be a heavy focus on competition. Thus, focusing our efforts on peer-mentoring in this Faculty would allow us to develop a program specific to Science needs while fostering a more community-minded approach in an inherently competitive environment.

Why did we establish the MySci Advisors program?

A major impetus for starting a mentoring program in the Faculty of Science at the University of Windsor was a survey conducted as part of a separate study, asking about the pressures that students faced in their transitional first year. During the Fall semester of 2011, students from science courses in various years of their programs were surveyed and asked to rate aspects of their academic experiences and attitudes, using a 5 point Likert scale. Out of 235 students, approximately 70% reported having moderate to high anxiety levels when entering first year courses and many reported that they did not feel that they had achieved their academic goals in their first year of university. In addition, these students were asked about various resources that they thought might have assisted them in their first year of university, including the possibility of a peer mentoring program. Students in their first and second year were more likely to say that a mentoring program would not have been helpful; however, approximately 25% of them did rate such a resource in the highest two categories of the Likert score in terms of the potential to help them at university (Figure 1).

![Figure 1](image-url)

*Responses of students asked whether they thought that a mentor would have been useful for improving their academic experience. Students who rated the idea a 1 or 2 on the Likert scale were grouped into the “Less useful” category and those who rated the idea a 4 or 5 on the Likert scale were grouped into the “More useful” category.*
Interestingly, there was a shift in the importance attributed to the idea of a mentoring program. In third and fourth year, students were more likely to rate the idea of a mentoring program in the two highest Likert categories than in the lower rankings; 35-40% of the students in these years said that a mentoring program would have been useful in assisting them (Figure 1).

In addition, during follow-up interviews, many students commented on how they wished they had a peer mentor to help guide them through their early years of university. Many upper year students also expressed the desire to serve as mentors for younger students so that they could help less experienced students navigate the problems they would likely encounter.

Due to the results of this survey and an exceptionally eager group of students, we began planning the MySci Advisors program the following year, during the summer of 2012. Because MySci Advisors has only completed two complete academic years, there is not yet extensive quantitative data, so instead this essay will focus on current practices, in the hopes that sharing these methods with others will help in the formation of their own peer mentoring programs and also demonstrate that such a program can be established with few resources other than willing volunteers. I will share some qualitative observations and some of the lessons we have learned along the way that have allowed us to streamline our process while still providing what we feel is a valuable resource for our students.

The MySci Advisors program

The MySci program is run on an entirely volunteer basis and without a budget, so all efforts put into the program are cost free, except in terms of time spent. Our program is affiliated with the student-led Science Society on campus, so this offers us the ability to recruit both our mentors and mentees using their events and mailing lists, and allows us to book rooms on campus free of charge. Our mentoring program is not course-specific, nor is it meant to provide tutoring specifically. Rather our focus is on students sharing advice about how they have adjusted to university demands, how they have determined the best study skills, and the information that they have gathered along the way towards their specific academic and career goals. To that end, we pair our mentors and mentees on the basis of major foremost, but also on the basis of career interests; we also try to provide some compatibility on the basis of personal interests, so that students are able to form a successful relationship that will endure the course of the academic year. Each year we have approximately 50-80 pairs of mentors and mentees and most of these pairs last throughout the entire year; in many cases longer lasting friendships or mentoring relationships continue into subsequent years.

The organising team

The success of the program is entirely dependent on the presence of a coordinated organising team, which must be enthusiastic, organised and willing to put a concerted effort into the program. Especially during the beginning of the fall semester, when advertising, registration and pairing occur, there is a great deal of work to be done. In addition, over the course of an academic year, communicating with both mentors and mentees requires many emails, announcements via the learning management system and continual monitoring to ensure that all participants are informed of requirements and events. Typically the organising team consists of myself and three upper level undergraduate students. Because I want to maintain the peer aspect of the program, most of the advertising and communicating directly with students is done by the undergraduates on the organising team, while I conduct the background organisational tasks and anything that requires dealing with higher academic channels.

Sharing of tasks and keeping track of mentors and mentees is made simpler using online document sharing services such as Dropbox and
Google Drive, but it is imperative to have a clear list of assignments for each member of the organising team. Initially, we tried to loosely distribute tasks; for example, each member of the team periodically paired mentors and mentees when they were inclined to do so, but we quickly discovered that with multiple people, more structure was required to avoid duplicate pairings and emails. In addition, with several people on the organising team, it is inevitable that one student will be more proactive and perform more of the tasks. To maintain equitable workloads, distinct tasks are necessary and help to ensure that no task remains incomplete.

Mentor recruitment and training

Mentors are recruited during the summer from third and fourth year students getting a major within the Faculty of Science; on our campus, this includes Biological Sciences, Chemistry and Biochemistry, Computer Science, Earth and Environmental Sciences, Economics, General Science, Mathematics, and Physics. In each year, between 50 and 90 upper year students have volunteered to be mentors. While we do have an application and interview process, these are largely informational and serve to give us an idea of the background and experiences of the mentors. We accept almost all people who volunteer, as they are all in good academic standing; however, some students are deemed unsuitable as mentors. Depending on responses to the interview questions, the organising team can decide that a mentor candidate has poor inter-personal skills or the wrong motivation for being a mentor (i.e. they wanted volunteer experience rather than actually wanting to help others). In this case they are not accepted to the program.

It should be noted that usually we receive more volunteers for mentoring than the number of students that request a mentor, suggesting that many students are not aware that they need assistance in their first year or are not successfully utilising all of the resources that are available to them. The fact that many students are not yet aware that they need assistance in their first year is consistent with the survey results that were reported earlier in this paper. Publicity for our mentoring program when recruiting first year mentees emphasises that students often later wish that they had utilised such a resource, making it clear that they should take advantage of these services now. In terms of recruiting mentors, the extra volunteers allow us to be more selective in our process of choosing mentors without the risk of leaving a first year student without a mentor.

In order to be assigned a mentee, mentors must attend a training session at the end of the summer or the beginning of the fall semester. This ensures that they are familiar with their responsibilities for the program and what role they should serve for their mentees. During the training, we provide them with a guidebook that includes information about campus resources, so that they can better guide their mentees as to where to seek help for a particular issue. Many of our mentors have commented that this has even helped them learn about campus resources they were not aware were there, so we believe that we are comprehensive in this regard. Mentors also are trained on appropriate confidentiality and safety issues. In addition, using role-playing exercises, the mentors model how they will assist first year students who are experiencing some of the common issues that may arise particularly during the first weeks of the semester; during these exercises, other mentors brainstorm together about ways to provide support for the first year student. During the training session, we stress the importance of using each other as resources and the fact that the organising team is a support network for mentors, so that they do not feel isolated when trying to help a struggling mentee. Because our mentors are volunteers, we feel very strongly that they should not feel solely responsible for their mentee’s success or struggles.

Mentee recruitment

Mentees are recruited from the same departments as mentors, but with the additional extension that
if they are getting a minor within the Faculty of Science, they could also apply to get a mentor in that same program. A minor at our institution typically requires many of the same core courses as a major, and students may share the same professional and academic goals, so we feel that those minors could also benefit from a mentor within the Faculty of Science. Mentees are also recruited during the summer at orientation events and via email, but typically we do not get a large number of students signing up during these events. For the recruitment of mentees, our most successful time has been during the first week of the fall semester, when students arrive on campus and sign up to participate in the program.

Mentees are also recruited throughout the fall and into the subsequent semester. As course loads increase and exam marks are handed out, we get more mentees that decide they do need help after all; this is when students are more receptive to hearing about available assistance programs like MySci and they see the value in talking to fellow students who have already determined how to get past academic difficulties. To ensure that the first year students know that they can still sign up for the program beyond the first week of the fall semester, we continue to advertise online and in first year classes. Because we usually have plenty of mentors that have signed up, we can pair up any new mentees easily as the academic year progresses.

Over the years, we have changed our recruitment process in an attempt to ensure that we would have more active participants. In our initial year, we had computer stations at welcome week events where first year students could directly sign up for the MySci program. However, in the excitement of welcome week, students signed up for many things, and ultimately many were not really interested in participating. This led us to modify our procedure so that there was a slightly more involved process; this now ensures that if students complete the extra actions necessary to sign up, they are truly interested in getting a mentor assigned to them. The current process involves getting names and emails and sending prospective mentees a subsequent email welcoming them to the MySci program. This email includes information about their responsibilities for returning correspondence from their mentors and includes a link where they can go to actually register for the program. We find that this has greatly reduced the proportion of mentees that are non-responsive to communications from the mentors and the organising team.

Mentor/mentee matching and communications

As mentioned previously, our primary criteria for matching mentors and mentees are their majors/minors and career goals. In the context of our program, we feel that major is of the greatest importance; while tutoring in courses is not a part of our program, we believe that the experiences and study skills are most likely to be similar within the same major. Career aspirations are also used as a major criterion because first year students can learn about the process of preparing for a particular career goal from their mentor, who would naturally be further along in the process. Of course, there are certain majors and career interests that are much more heavily subscribed than others and certain majors with low enrolments that are problematic. We have had problems pairing students in our Earth and Environmental Sciences majors as well as in Economics. While we have been able to pair some people in these programs, due to their smaller size, we often have either only mentees or only mentors. We continue to struggle with recruiting from these programs regardless of targeted recruitment of particular students, contact with the appropriate student clubs, or contact with the professors in these programs. If a requested match is not possible, we try to pair on the basis of minor or the highest degree of similarity in program. In such cases, both mentor and mentee are consulted independently to see if the potential match would be acceptable to them.

In order to be sensitive to any cultural issues and to ensure the highest possible comfort
level in the relationship, when we gather information for pairings, we ask if students would prefer to be paired with someone of the same gender. As with major, we try to accommodate gender requests as much as possible. However, in certain programs gender requests are harder to fulfil (e.g. a female computer science mentor). As with the other pairings, we consult with both mentor and mentee to see if they can work with a different gender or if they would prefer to be paired with someone in a different but related program. Making these decisions before assigning a pair helps to reduce frustration or tension due to an inappropriate match, which does occur with other mentoring programs on campus.

Communication between mentor and mentee is a key component of MySci program. Once a potential match is identified, we email the mentor information about their mentee and tell them to make contact. We require mentors and mentees to meet in person the first time they communicate and that they both sign off on a mentor/mentee agreement. This agreement sets the ground rules for the relationship; as part of the agreement, mentors and mentees decide upon the primary form of communication they will use, how often they will communicate and if there are any issues that are off-limits for discussion. These agreements are then submitted to the organising team so that we could be sure that communication had been established and both parties were in agreement as to the context of the relationship that they were establishing.

During the first year of the MySci program, we had a number of mentees that did not respond to the mentors. This was frustrating for the mentors who were eager to help and led to the establishment of the enhanced application process for mentees that was mentioned previously. During the subsequent years, we have also made sure to specify during mentor training sessions that if a potential mentee does not respond within a week or two to the initial contact email, mentors should inform the organising team. The organising team then sends a follow-up email to say if no contact is established within a week, the potential mentee will be dropped from the program. This has reduced the waiting period for mentors and has helped reduce their frustration levels due to repeated attempts at contact.

Monthly reports

Because so many students are involved in the MySci program, we are not able to directly meet with all of them on a regular basis, but we want to ensure that mentors and mentees keep communicating and the relationship is working to everyone’s benefit. To ensure that both of these objectives are being met, we require mentors to submit monthly communication logs; during training sessions, we stress that this is a required part of the program. Because our mentors are all volunteers, we do not want this requirement to be too onerous, so the report is simply a synopsis of how frequently communication occurs, topics that are discussed and any issues that arise that the mentor thinks may need further attention.

During the first year of MySci Advisors, we had mentors submit reports through a site constructed in the learning management system on our campus. While this was a convenient way to contact all of the mentors at once, it was not the most efficient way to read all of the reports and mentors occasionally had technical issues. In subsequent years, we have switched to a Google form, where everyone can submit their information, and then the responses are compiled into a worksheet. The organising team can send the link to the form in the reminder email shortly before the reports are due, and part of the form involves simply checking off what topics were discussed. This allows the mentors to more easily report on their activities while still leaving room for comments if more substantial issues have arisen. This also has allowed the organising team to more quickly scan the responses and look for any existing issues that needed to be remedied.

Mentees are not required to submit monthly reports, because we fear that requiring them to complete monthly assignments would
further add to their stress as first year students. Although we do not require them to complete monthly reports, they are asked to participate in a voluntary assessment of their mentors and the MySci program as a whole so that we can use their feedback to improve how we serve the first year community. Because these reports were voluntary, we tend to get low participation, with approximately only 15% of mentees responding in a given semester. In addition, those that do respond are generally highly motivated to do so because they are quite enthusiastic about their experience so the information that we have gathered from those students may be skewed.

What are the benefits and where do we go from here?

We believe that the MySci Advisors program has benefitted students in the Faculty of Science, although at this point the evidence is largely qualitative. We have been very gratified to hear positive comments from both mentors and mentees about how the program has had a positive influence on their academic careers. Naturally it is easier to imagine the benefits for mentees; we have received numerous comments from the first year students about how their mentors have helped them succeed. These comments include reports of receiving reassurance in the intimidating university atmosphere, improvements in study and organisational skills, and helping to keep students motivated through their academic struggles, just to name a few. I believe that one of the most telling pieces of evidence is the fact that now that the first cohort of mentees are in their upper years, many of them are returning to be mentors. These students report that they feel that there have gotten through their academic careers in large part due to the advice and assistance they received from their MySci mentors and now they would like to be able to provide that support to others. In the future, I would like to solidify the analysis of these positive effects by quantifying retention rates of mentees and also examining the number of these students that continue their education beyond undergraduate studies. This would allow a concrete examination of the effectiveness of the program while adding to the limited number of mentoring programs that have been examined using rigorous research methods (Gershenfeld, 2014). Ultimately, I believe that the MySci program can play an important role in science student success by showing that the Faculty of Science is supportive of student needs; it may be more important to student satisfaction and persistence that students perceive that an institution is attempting to help them, regardless of a measured effect (Kuh, Kinzie, Buckley, Bridges, & Hayek, 2006).

While the benefits to mentees are usually the focus of peer-mentoring programs, we have always felt that it is important that the mentors benefit as well, particularly since MySci is strictly a volunteer program. We have collected some preliminary qualitative data that suggest where the possible benefits are occurring; many mentors have reported gaining skills in communication, empathy, and exhibiting patience. Some mentors have specifically linked their gains to future careers; one mentor stated that helping someone develop academically can be useful to their future potential career as a high school educator. Many of the student volunteers who became mentors have also commented that they now see themselves more as an integral part of a community due to the fact that they were helping others and making a connection with new students. Many of our mentors do return for a second year if possible which attests to the fact that they are aware of the benefits of mentoring and enjoy helping new students. As with the mentees, I would like to quantify some of these effects by more rigorously examining data pertaining to outcomes and attitudes. There is a growing awareness that mentoring is, and should be, a reciprocal relationship (Colvin & Ashman, 2010; Heirdsfield, Walker, Walsh, & Wilss, 2008) and I think it is important to be able to document that MySci mentors are receiving benefits along with the mentees. This would also allow us to better serve the volunteers by addressing any dissatisfaction that
may arise, although to date no volunteer has reported dissatisfaction with the way the program is being run.

Given the increasing number of students entering many universities and the lack of concomitant increases in resources, it is likely that students will continue to feel a great deal of stress and competition when entering university. A peer mentoring program such as MySci Advisors can make a large difference in terms of providing students with assistance and the belief that their institution is genuinely concerned about their needs. I will continue to run the MySci Advisors, with the intent of formalising the results, while not losing the friendly and helpful nature of the program.

References


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Biography

Kirsten Poling is a Science Teaching and Learning Specialist in the Department of Biological Sciences at the University of Windsor. Her primary interest is in helping students realise their potential during their undergraduate experience. Her efforts to support students have resulted in extensive mentoring of nursing and biology students, research on new biology laboratory exercises and the use of Tablet PC computers to enhance student engagement, as well as the development of the MySci Advisors program.
Realizing Partnership Potential: A Report on a Formal Collaboration Between a Teaching and Learning Centre and Libraries at the University of Toronto

John Bolan, Patricia Bellamy, Carol Rolheiser, Joanna Szurmak, Rita Vine
University of Toronto

In 2010, the University of Toronto’s Centre for Teaching Support & Innovation (CTSI) and University of Toronto Libraries (UTL) jointly launched Partnering for Academic Student Success (PASS), a partnership to foster new opportunities for collaboration between academic librarians and those involved in developing excellence in university teaching. This article describes the challenge of professional education in support of the teaching mission for librarians, and a partnership designed to address this need. The article reports on the genesis, goals, and key principles contributing to the partnership’s success, while discussing implications and recommendations for those seeking to develop similar programs of intentional collaboration that enable teaching/learning goals.

Partnership Genesis: University of Toronto Libraries and the Centre for Teaching Support & Innovation

As Canada’s largest academic library, the University of Toronto Libraries (UTL) is a decentralized system of 44 libraries spread across three campuses in the Greater Toronto Area. Of the 145 librarians employed at the University of Toronto (University of Toronto, 2013), approximately 60 are engaged in teaching and learning. The University’s Centre for Teaching Support & Innovation (CTSI) was created in 2009. It provides leadership in teaching and learning, as well as support for pedagogy and pedagogy-driven instructional technology to over 12,500 faculty members and over 4,300 teaching assistants. UTL and CTSI came together with the goal of supporting librarians wishing to enhance their teaching expertise.

The challenge of teaching librarians’ roles and approaches to professional learning

Although instruction has long been part of academic librarianship (Hopkins, 1982), there has been a sharp upward trend in the amount of librarians’ time and effort dedicated to teaching (Walter, 2008), which is now seen as a core service (Sproles, Johnson, & Farison, 2008). Librarians’ teaching responsibilities are expanding, as their work extends beyond
classrooms and into online platforms (Walter, 2008). Librarians increasingly develop and deploy information literacy instruction, often with faculty (O’Clair, 2012), and have been making inroads into instructional design and educational technology (Shank & Dewald, 2012).

This increase in responsibility has generally not been accompanied by a matching increase in relevant professional education. A national survey of Canadian librarians revealed low pre-service training for their teaching roles (Julien & Genuis, 2011). The survey also found that teaching preparation by Canadian librarians tended to be self-generated and informal (Julien & Genuis, 2011). Many librarians expressed anxiety, uncertainty, and insecurity about their teaching and pedagogical expertise (Julien & Genuis, 2011).

The interplay between professional identity and pedagogy for teaching librarians contributes to complex relationships with faculty vis-à-vis their own teaching (Austin & Bhandol, 2013; Julien, 2009). Comparing their work and skills to those of faculty, however, has given teaching librarians a renewed sense of the importance of their teaching mission, not just to the students, but also, increasingly, to the faculty (Marcum, 2012).

Provenience of the PASS initiative

Early in her mandate the CTSI’s new director, a Professor of Education, advocated a collaborative model for building teaching capacity at the University. In alignment with her Centre’s teaching-focused mandate, the director collaborated with a chief librarian from one of the University’s campuses to propose an initiative that would integrate the work of librarians and teaching centre staff in complementary ways while supporting librarians’ pedagogical competencies. The Partnering for Academic Student Success (PASS) initiative signalled the start of a capacity-building investment in connecting teaching librarians to the teaching faculty, and to the learning goals they share for University of Toronto students.

Following the 2010 approval of PASS by the chief librarians from each of the three campuses, the director of CTSI and the chief librarians developed the vision that has guided the program:

To create a partnership between professionals engaged in supporting instructor pedagogical development, including support in the integration of information literacy and use of library resources. The overall goal is to increase capacity for integrative learning and academic excellence within classrooms. (Bellamy, Fedko, & Hook, 2011, p. 13)

Specific goals for and the criteria for success of PASS include:

- building a strong partnership between CTSI and instructional librarians;
- collaborating to support existing CTSI programs and initiatives;
- identifying and developing new initiatives;
- refining and informing sustainable and scalable best practices in faculty-librarian collaboration, and identifying challenges that influence collaboration between instructional librarians and faculty; and
- advancing the focus on learning outcomes and the integration of information literacy to influence systemic changes enhancing student success at the course, program, and institutional levels.

Structuring the PASS workflow

In 2010-2011, three librarians, one from each campus and each holding leadership roles in information literacy, were seconded to work two days a week at the CTSI. Beginning in 2011-2012, the time commitment was reduced to one day per week to create a more sustainable model. UTL’s
information literacy coordinator was added as an ex-officio participant, with the remaining three positions opened up to annual applications. Over time the goals have been slightly adjusted to permit greater focus on librarian teaching development and collaboration with existing CTSI programs and in the creation of new ones. To provide continuity and ongoing mentoring, at least one seconded librarian remains in the program for a subsequent year. Accordingly, each cohort benefits from having members with PASS experience as well as members who are new to the partnership.

PASS librarians attend weekly CTSI staff meetings and report regularly on activities alongside other CTSI staff members. Additional bi-weekly meetings between the CTSI director and PASS librarians provide opportunities to work through project challenges, connect librarians to new opportunities, and optimize the integration of CTSI and library activities.

Building the PASS foundation

Much of the work in 2010-2011 consisted of laying the groundwork for the future. PASS librarians worked with the CTSI’s director on projects that supported the overarching goals described above. Some key accomplishments included:

- integrating PASS librarians within the CTSI workplace, leveraging the benefits of co-location and embeddedness, and deepening participation in CTSI;
- participating as learners in CTSI instructor workshops for personal development and to observe the CTSI learning strategists model teaching practices;
- regularly sharing insights with other UTL librarians through committees, reports, and emails;
- producing and synthesizing material to support the promotion and integration of librarians in workshops and courses; and
- conducting research, surveys, and background studies to understand teaching librarians' professional development needs.

Creating a Community of Teaching Librarians

Key in CTSI’s overall vision has been the commitment to capacity building as a way of promoting instructional excellence and the development of teaching expertise. The motivating factor is the ideal of building a community of librarians with enhanced pedagogical knowledge and teaching strategies in order that they can extend their expertise as resource people across the UTL. The PASS team has focused on concrete strategies to help move toward this vision.

Growing through integration and serendipity

Participation of the PASS team in weekly CTSI staff meetings has led to their inclusion in CTSI projects where librarian expertise can be both leveraged and enhanced. PASS librarians are included in the planning and delivery of major CTSI-sponsored events, including the university’s annual Teaching and Learning Symposium, New Faculty Orientation, Back-To-School week, the annual two-day Course Design/Redesign Institute, and the two-day Scholarship of Teaching and Learning (SoTL) Institute. Often, seemingly small-scale opportunities for librarian participation have evolved into ongoing and more dynamic engagements. As an example, librarians developed connections with online learning leaders who attended CTSI meetings, which led to librarian participation in the development of online and hybrid courses, including high-profile University of Toronto Massive Open Online Courses (MOOCs).

Learning alongside faculty

CTSI’s Fundamentals of University Teaching Course is an eight-week, 16-hour program that is taught by award-winning faculty. All UTL librarians are eligible
to apply for one of six spots reserved for librarians, with the remaining 12 available to continuing appointment faculty. PASS librarians admitted into the course learn alongside faculty colleagues, leveraging this work with regular post-class meetings and facilitated discussions focused on teaching contexts and strategies unique to librarians. Through this course experience librarians have developed different kinds of relationships with faculty and their co-learning has fuelled deeper understanding of instructional issues.

Creating resources for all librarians

PASS librarians have not only contributed to CTSI online and print resources but have also produced a number of resources specifically for teaching librarians, based on expressed needs identified through surveys. These have included outlines, lesson plans, promotion ideas, and faculty testimonials that can be used by librarians to demonstrate support for their teaching-related functions. The Guide for teaching librarians (2014), for example, is a one-stop guide to showcase these resources and provide easy access by UTL’s teaching librarians.

Lessons Learned

Ongoing research and reflection have been integral to the PASS initiative, and have been used extensively throughout the entire life of the initiative to determine community priorities and needs, to ascertain the effectiveness of various initiatives, and to guide the monitoring and adjustment of our collective work. The PASS team uses a variety of methods, including formal surveys, focus groups, weekly evaluations, and reflective writing to gather information that, in turn, guides modifications to existing PASS programs and shapes future PASS activities. This body of evidence allows PASS participants to build on the work of previous years while developing fresh initiatives grounded in expressed needs.

Surveys and focus groups

A discrete example of an evidence-based evolution in programing is illustrated through librarian participation in CTSI’s Fundamentals of University Teaching course. The first year PASS team, tasked with exploring ways to develop instructional excellence among teaching librarians, surveyed thirty-eight University of Toronto teaching librarians to learn about their attitudes toward information literacy instruction, their pedagogical knowledge, and their interests in professional development. Survey results revealed a wide-variety of teaching backgrounds, skill sets, teaching environments, and opportunities for embedding information literacy into courses. Most respondents expressed a need for pedagogical training.

As a result of the librarian pedagogical needs evident from the survey, in 2011-2012, the second year of the PASS program, six librarians participated in CTSI’s eight-week Fundamentals of University Teaching course, which had previously only been offered to faculty. Those librarians wrote reflections related to weekly classes and participated in a focus group at the end of the course to evaluate its potential for building librarian teaching capacity. In response to the evidence gathered from their reflections and the focus group, in the third year the PASS team established post-class discussion groups for librarians participating in the next offering of the Fundamentals course, and these discussion groups are a continued yearly feature. The discussion sessions immediately follow each class and are moderated by librarians who attended the previous year’s course. These discussions provide librarians in the Fundamentals class with an opportunity to collaboratively reflect on their learning and immediately relate it to their own teaching contexts. This specific example has resulted in building a stronger community of support for ongoing pedagogical learning.
Reflections and debriefs

At the end of a secondment year, each PASS librarian writes a personal reflection relating their most significant learning experience, their most significant challenge, their most significant group achievement, and their suggestions for improving the experience for future participants. This document becomes the basis of a one-on-one discussion with the CTSI director, who is in a non-evaluative role related to the PASS participants. Participant reflections provide qualitative evidence of personal transformations such as the following example from one librarian: “Immersion in the CTSI culture has helped me shift my focus from teaching to learning.”

Reflections also identify values that librarian secondeees have solidified or that they wish to nurture, such as the two following examples:

The internalization of changed values for instruction and collaboration is the most significant learning experience from my PASS experience.

I know I felt that trust—and the excitement about collaborating—from the first day at CTSI. With trust came the permission to dream, think, strategize, collaborate, and care. Without trust, it would have been much harder to commit and engage.

Finally, reflections also help PASS participants to analyze new behavioural patterns and see the change in their actions, as described by the following secondee:

One of the great pleasures of participation is watching librarians on the team each assume leadership in an important area of teaching and learning, reaching out to support and educate their library colleagues across the system to become more engaged with teaching and learning at the U of T.

Seven key lessons

From a variety of data-gathering methods utilized throughout the three years of the PASS initiative, including survey, focus group and reflection data highlighted in this report, we offer seven key lessons from which others considering similar partnerships may benefit.

1) Formalize the partnership

The intentionality of PASS through a formal agreement by CTSI and UTL leaders, combined with the accountability of regular meetings and an annual report, allows CTSI staff and PASS librarians to develop new perspectives and see patterns in their work through ongoing cycles of reflection and analysis. As a result, new opportunities to support and engage faculty and students have emerged, reducing silos and de-privatizing teaching practices.

2) Assess needs and set goals

A retrospective look at PASS drives home the importance of its sequential and long-term goals. PASS’s initial goals were reasonable and achievable, yet still aspirational in terms of the potential difference this partnership could make to the teaching and learning structures and culture of the University. Rigorous initial background research and diagnostic work (e.g., librarian survey), combined with ongoing formative assessment (e.g., focus groups, annual reflective writing, and interviews) have helped ensure that we are identifying librarian needs, interests, and goals so that these continue to serve as the basis for ongoing professional development and programmatic initiatives. As well, emerging institutional priorities provide ongoing opportunities for PASS and CTSI colleagues to be responsive and look for new ways to combine and extend their collective expertise.
3) Prioritize face-to-face interaction

Many PASS successes have emerged serendipitously, but face-to-face interaction continues to be key. Time spent by librarians, CTSI, and faculty not just in close proximity but regularly engaging with one another, has created connections that have been leveraged in later projects. For example, the CTSI and UTL connections were harnessed in a joint proposal to the University for the renovation of shared space. The new space was designed to optimize the many ways that future collaborative work might take place, for students, faculty, and staff. Finally, the social and informal nature of interactions between PASS librarians and CTSI staff created a sense of familiarity and shared purpose that fuels continued collaboration.

4) Give it time

Repetition of experiences has deepened librarian engagement in PASS activities. Years two and three of PASS, for example, featured a pattern of greater integration and expansion of successful initiatives. The benefits emerged with time, and without the extended time period available to the PASS team, these benefits may not have been evident. For example, a fledgling community of practice for UTL teaching librarians emerged only after the second year of librarian participation in the Fundamentals of University Teaching course.

5) Create an environment where risk taking is encouraged

Strong norms for trust and risk-taking have provided PASS participants confidence in their individual and collective leadership ability, and the assurance that they will not be judged negatively for less-than-successful experiments. The latitude is counterbalanced with built-in accountability, including regular reporting to library supervisors, the writing of a yearly report shared with the broader University community, and a year-end individual written reflection and discussion with the CTSI Director. Participants consistently remark on the balance of risk-taking and accountability when describing why they think the PASS program is able to generate so many successful initiatives. The balanced atmosphere is also a direct product of monitoring and support by an engaged leadership.

6) Let opportunities reach out to you

PASS experimented with two different approaches: PASS librarians entered their secondments with a proposed individual project versus no individual project proposal. While both approaches have benefits, our experience suggests that the former approach was less successful and that the most valuable outcomes have arisen from discovering projects that only became apparent in the context of partnership activities. To the extent that the partnership is aimed at creating an environment of possibility, it may be best to allow opportunities to arise organically but, importantly, within a broader frame of identified partnership goals. As the authors of the 2011-2012 PASS report noted, “we learned the value in letting the opportunities reach out to us” (Bellamy, Kemble, Szurmak, & Vine, 2012, p. 1).

7) Ensure that communication takes place often and at all levels

Communication at many levels is essential to increase visibility and maintain administrative and community support for the program. To that end, CTSI and the UTL both communicate PASS activities to their communities through a variety of channels including list-serves, mailing lists, website announcements, and blog postings. As well, the CTSI director reports regularly to library leadership on PASS successes and challenges. In addition to annual reports that outline progress related to PASS goals and criteria for success, PASS librarians provide monthly updates to a university-wide librarian
committee and report regularly to their managers. This is especially critical in balancing workload; the time and effort required by the PASS initiative sometimes means that other work must be absorbed by the secondee’s home library. Indeed, this has been one of the challenges that PASS continues to address.

Implications for Implementation at Other Universities and Colleges

This report provides evidence of a partnership model that specifically addresses the challenge raised in the broader literature: The increase in instructional responsibility for librarians that has generally not been accompanied by increased support in the form of relevant professional education. The PASS initiative is generating evidence that through formal partnerships such as this, ongoing pedagogical development for librarians can be better supported. Just as important, however, is that through such partnerships the collective expertise of librarians can be intentionally leveraged in realizing the broader teaching and learning goals of an institution.

Drawing on our key lessons learned, we connect back to the literature related to academic librarianship and identify a number of broader implications for those wishing to develop similar partnerships.

Recent research and writing related to leadership in higher education, including the changing landscape of academic librarianship, reflects new perspectives on traditional leadership models that have a much greater emphasis on “flexibility, agility, innovation, and team-based structures” (Garson & Wallace, 2014, p. 42). Commitment from top administrators is a prerequisite for a PASS-type program. Relationships need to be built intentionally from design through implementation. While libraries and teaching support centres have much in common, their cultures and habits are different enough that ad hoc approaches may not be the most successful. Deliberate, planned measures by leaders to inculcate partner relationships are required from the outset and increase the chances that individual and organizational goals can become more closely aligned and that sustainable capacity-building models develop over time. As Garson and Wallace (2014) note, “Employees become active participants if they believe the change will create opportunities for themselves as well as for the organization. They are motivated by and participate in an environment replete with new tasks, functions and goals” (p. 43).

Initiatives like PASS require some elasticity to meet emergent priorities and to be able to respond to these new opportunities in an agile manner. Indeed, creating an environment that fosters such outcomes is likely one of the goals of this type of partnership. Just as important, however, are documented, achievable goals and scheduled formal and informal progress reports to immediate and senior leadership as they build an important level of accountability into the initiative.

Partnerships like PASS require partners who are change agents and believe they can have impact and influence on the other and are willing to work through the challenges. Receptivity to new ideas and new ways of thinking about teaching, service and delivery are required at operational and leadership ends for the partnership to work to its fullest. This type of shared leadership necessitates “a willingness to explore and engage with curiosity, a readiness to learn and adapt, and above all a questioning as to the relevance and applicability of established and new models to the organization” (Gwyer, 2010, as cited in Garson & Wallace, 2014, p. 47). The effect of shared leadership, boundary spanning, and an eagerness to experiment with new models of intentional partnerships can be a lasting change in the cultures of both teaching centres and libraries. As a result, teaching centres and libraries can better realize the shared goal of empowering and supporting the instructors and students they serve.
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Biographies

John Bolan is an Instructional and Reference Librarian at the University of Toronto Faculty of Law’s Bora Laskin Law Library, and is an Adjunct Instructor at the Faculty of Law and the Faculty of Information. He was seconded to the Centre for Teaching Support & Innovation from 2012-2014.

Patricia Bellamy is librarian emeritus, University of Toronto Libraries. As Acting Information Literacy Librarian, she was seconded to the Centre for Teaching Support & Innovation for the first two years of the partnership from 2010-2012.

Carol Rolheiser is the director of the University of Toronto’s Centre for Teaching Support & Innovation and Professor in the Department of Curriculum, Teaching and Learning. Her research focuses on teacher education/development, teaching in higher education, instructional and assessment innovation, education/university partnerships, professional development, leadership, system reform, and managing educational change.

Joanna Szurmak is a Digital Projects librarian at the University of Toronto Mississauga where she also liaises with the psychology, math, and physical science departments. Szurmak, a 2011-2013 Centre for Teaching Support & Innovation secondee, is researching narrative frameworks in science instruction and creative processes in library work.

Rita Vine is Head, Faculty and Student Engagement at the University of Toronto Libraries. She coordinates information literacy instruction and the Libraries’ liaison librarian program. Rita has been seconded to the Centre for Teaching Support & Innovation since 2011.
Integrated Testlets: A New Form of Expert-Student Collaborative Testing

Ralph C. Shiell and Aaron D. Slepkov
Trent University

Integrated testlets are a new assessment tool that encompass the procedural benefits of multiple-choice testing, the pedagogical advantages of free-response-based tests, and the collaborative aspects of a viva voce or defence examination format. The result is a robust assessment tool that provides a significant formative aspect for students. Integrated testlets utilize an answer-until-correct response format within a scaffolded set of multiple-choice items that each provide immediate confirmatory or corrective feedback while also allowing for the granting of partial credit. We posit here that this testing format comprises a form of expert-student collaboration, we expand on this significance and discuss possible extensions to the approach.

Introduction

Course assessment is a key component of university courses, and yet in comparison to the delivery of course content, the methodology of assessment is less frequently considered. It is rare to reflect why and how we assess, and even more rare to address how to most effectively conduct the assessment (Mazur, 2013). The most immediate purposes of classroom tests are both to assess students’ learning outcomes and to act as a motivator for students (Ebel & Frisbie, 1991), yet instructors now increasingly have many additional objectives from conducting assessments, including providing formative experiences such as practice in problem solving, opportunities for meta-cognitive reflection, and confidence-boosting opportunities.

Even within a purely summative context, it has long been assumed that assessment through a set of free-response questions (also called constructed-response questions) is the most effective approach to assess student understanding. Here a student generates an acceptable response by demonstrating their integration of a wide and often complex set of skills and concepts. To score the question, an expert interprets each response and gauges its level of “correctness.” In contrast to these are multiple-choice questions (termed items), where response options are provided with the correct answer (the keyed option) listed along with several incorrect answers (the distractors). The student’s task is then to select the keyed option from this list. Free-response questions are usually presumed a more valid assessment tool as they do not provide students with the correct answer and are perceived to better assess the combination of cognitive processes needed for solving problems that integrate several concepts and procedures. The explicit solution synthesis required by free-response questions furthermore suggests to instructors a strong (but often false) sense of transparency of student thinking. Nonetheless, the scoring of multiple-choice items is quicker, more reliable and cheaper (Haladyna, 2004), and with proper construction, multiple-choice items can be powerful tools for the
assessment of conceptual knowledge (DiBattista, 2008). Many introductory final exams consist entirely of multiple-choice questions, where the procedural advantages of multiple-choice testing are weighed against any pedagogical disadvantages stemming from an exam format that may necessarily measure only compartmentalized conceptual knowledge and calculation procedures. Overall the use of a multiple-choice format for formal assessments in many disciplines is not wholeheartedly embraced, and, when possible, greater exam weight is still typically placed on traditional free-response questions that require explicit synthesis to solve the problem at hand.

To address the perceived drawbacks of multiple-choice testing a number of variants have been introduced; specifically in order to assess complex cognitive processes and/or to reward partial knowledge. These include manipulating the choices given to students so that options contain different combinations of primary responses only some of which are true (complex multiple choice, type K, true-false or type X, and multiple-response formats) (Berk, 1996), manipulating the stems by asking students for predictive or evaluative assessments of a scenario rather than simply recounting knowledge (Berk, 1996), confidence or probability weighting of options (Ben-Simon, Budescu, & Nevo, 1997), and the “multiple response format” in which multiple stages are created within each multiple-choice item, with scores weighted according to whether the reasoning is correct (Wilcox & Pollock, 2014). Interpretive exercises consist of a series of items based on a common set of information/data/tables, with each item requiring students to demonstrate a particular interpretive skill to be measured (Linn & Miller, 2005). Assessment goals such as recognizing assumptions, inferences, conclusions, relationships and applications can each be independently measured. Meanwhile, another framework of assessment, collaborative testing, that specifically addresses formative goals is rapidly gaining in popularity. Here students initially write a test as individuals and then form small groups to rewrite the test, with consensus required for each response before submission. The marks are typically weighted for the two stages 85%:15% respectively, and such testing brings both formative and meta-cognitive aspects to the assessment, with increased learning taking place under such a setting (Gilley & Clarkston, 2014). Many of the advantages of collaborative testing, including knowledge gain, are believed to result from the dialogue between students and their peers (Wieman, Rieger, & Heiner, 2014).

We have recently invented a new multiple-choice-based assessment platform that is designed to combine the procedural advantages of multiple-choice testing with the pedagogical advantages of free-response, while also contributing to a formative nature of assessment. Such integrated testlets (ITs) utilize an answer-until-correct response format within a scaffolded set of multiple-choice items that each provide immediate confirmatory or corrective feedback while also allowing for the granting of partial credit. We posit that the skilful engineering of question scaffolding together with the anticipation of students receiving immediate feedback during the test comprises a form of passive expert-student collaboration. In this article first we introduce ITs and then describe their construction and operation, specifically exploring the notion that they embody aspects of collaborative testing.

### Integrated Testlets

While conventional testlets (Haladyna, 1992) and interpretive exercises are multiple-choice item sets with a common context but composed of independent items, an IT purposefully interrelates the multiple-choice items so that knowledge of the answer for a given item is helpful or even required for answering subsequent items. The degree to which solving later items depends on the answers from former items defines the extent of integration in an IT. We typically denote ITs as either “weakly-integrated”, “moderately integrated”, or “strongly integrated”, while traditional testlets would be considered “non-integrated”. Adopting an answer-until-correct approach permits our deployment of such an integrated set of multiple-choice items because it avoids a ‘double-jeopardy’ situation (where
a student is unknowingly penalized twice; once for an initial item which is answered incorrectly, and again in a subsequent item which requires this previous answer), and it also permits all students, regardless of their score on earlier items, to progress through the testlet. The correct answer to each item is conveyed to the students with full/partial/zero marks awarded as appropriate before they proceed to the next item with full knowledge of the correct answer. For our particular implementation of this approach we choose to use commercially available Immediate Feedback Assessment Technique (IF-AT) cards (Epstein et al., 2002) with boxes coated in a similar way to scratch-and-win lottery tickets, concealing a star within the keyed-response option and the distractor options being blank. Students answer each item until a star is revealed, and they then advance to the next item within the testlet with full knowledge of the answers to all previous items. In addition to being able to access higher-level learning, students also leave the exam with full knowledge of their score. It has been demonstrated that such an answer-until-correct approach is substantially preferred by students compared to the “Scantron” method (DiBattista, Mitterer, & Gosse, 2004). Moreover, immediate feedback has been demonstrated to improve learning outcomes relative to the results observed with delayed feedback (Dihoff, Brosvic, Epstein, & Cook, 2004).

Figure 1 shows a research-validated integrated testlet (Slepkov & Shiell, 2014) specifically designed to test higher-level thinking in a first-year Introductory Physics course. The topic is that of mechanics, and involves the understanding and application of the vector nature of forces, determining friction, Newton’s second law, and one- and two-dimensional kinematics, with items aligned to particular learning outcomes of the course. It is an example of a strongly-integrated testlet, as will be described below. This particular IT was designed to replace a free-response question and therefore aims to test analytical, conceptual, evaluative, and procedural knowledge. For the purposes of this article, we do not presume the reader to have an understanding of the physics needed to solve the IT, nor do we aim to teach such knowledge here. Rather, we use this testlet as a canonical example of the construction and operation of ITs.

As part of a formal comparison between IT and free-response formats in exams within an Introductory Physics class we deployed a set of concept-equivalent ITs and free-response questions and found both formats to be both highly discriminating and reliable (Slepkov & Shiell, 2014). A purely psychometrics-based analysis suggested that the free-response format was marginally better at both these measures, but further analysis exposed a large inter-rater variability with the free-response format scoring, while also suggesting that the range of marks awarded for free-response was artificially dispersed, with students between the top and bottom cohorts receiving scores that were only weakly proportional to their mastery of the material. Some additional advantages of ITs are the reduced time it takes students to complete a question, and that the resulting grade distributions appear to more reliably reflect students’ knowledge. Overall we find that ITs are a highly-effective multiple-choice testing platform for assessing deeper knowledge.

To date we have composed approximately forty ITs in physics (our principal discipline), ten ITs in chemistry, and single ITs in each of calculus, biology, psychology, art history, and 20th century literature. These are scaffolded and integrated to different extents, with the strength of integration roughly scaling with the quantitative nature of each discipline. We now summarize how we design and deploy ITs, specifically with reference to the example given in Figure 1, and further we make a case for how ITs can embody a collaborative conversation between instructor and students.

Construction and Implementation of Integrated Testlets: a Collaborative Conversation

The first step in composing an integrated testlet is the identification of a complex problem. In the introductory physics example shown in Figure 1 the
Kinematics and projectile motion

A piece of ice is 6.00 m from the edge of a roof of height 5.00 m at an angle of 15° to the horizontal as shown in the figure, when it begins to slide. The coefficient of kinetic friction between the ice and the roof is 0.2. Ignore any air resistance.

1) Which of the following graphs best represents the speed of the ice as a function of time, beginning from the moment when it first begins to slide and ending when it leaves the roof?

![Graphs A to E]

2) Which of the following free-body-diagrams is most correct for the ice at position P?

![Diagrams A to E]

3) How much time elapses between the ice beginning to slide and it leaving the roof?

A. 0.65 s  B. 4.3 s  C. 1.1 s  D. 2.2 s  E. 1.6 s

4) At what (horizontal) distance from the base of the house does the ice land?

A. 5.3 m  B. 1.9 m  C. 19 m  D. 3.5 m  E. 2.5 m

An example of a strongly-integrated testlet from an Introductory Physics course. This particular IT tests mechanics, and specifically the vector nature of forces, Newton’s 2nd law, projectile motion, and kinematics.
problem to be solved is determining how far away from the side of a house a piece of ice lands after it slides off a roof. Such a question is a mainstay of traditional free-response exams and homework assignments, but is typically too complex for assessment by multiple-choice items. Our ITs usually (but not always) consist of four multiple-choice items, each representing a non-trivial step in solving the problem. The concepts and procedures for solving the problem are deconstructed much as one would when composing a scoring rubric and each multiple-choice item often increasingly and cumulatively mines students’ abilities within the cognitive process dimension and/or the knowledge dimension of the revised Bloom’s taxonomy (Anderson & Krathwohl, 2001). In fact, we often “reverse-engineer” our ITs by formally solving a targeted free-response problem, constructing a scoring rubric that is based on our assessment/learning objectives, and then reconstructing a set of multiple-choice items that span these objectives. The actual choice of multiple-choice items depends on many considerations such as the size of the procedural or cognitive leap between items, the extent of the requirement of the knowledge from any given intermediate step to cue the next step, and the importance of any intermediate step to fulfil our learning objectives. As a concrete example, Item 1 in Figure 1 assesses the student’s ability to resolve forces into their components, to apply knowledge that kinetic friction exerts a constant force on a moving object, and finally to apply Newton’s second law to determine that the acceleration of the ice down the roof is constant. Thus, Item 1 is already more than a simple recollection or identification-based multiple-choice question. Item 2 requires students to appreciate the origin of forces, and to determine that despite the fact that the ice travels along a curved path in the air it does so while being acted on by a single constant force (gravity). Item 3 then requires the application of the kinematic distance-time equation to an object experiencing the motion represented in Item 1. Finally, Item 4 extends this to the case of two-dimensional motion. Thus, Item 4 is highly scaffolded by Items 1, 2, and 3. In fact, as described below via “integration maps”, the solution to Item 4 unquestionably depends on the solutions to Items 2 and 3.

For ITs to work well, we closely follow the best practices for multiple-choice question construction (Frey, Petersen, Edwards, Pedrotti, & Peyton, 2005). Thus the stimulus, i.e. the initial text and diagram that describe the problem within an IT, is clear and consistent, containing as much information as possible while avoiding irrelevant details. The IT in Figure 1, as is often the case, also contains a diagram as part of its stimulus. Consistency in wording is particularly important. For example, after initially introducing the ice, it is referred to using the same nomenclature within all items that comprise the IT. The stems within all items are then formally written as questions. Furthermore diagrams are labelled unambiguously. Note for example that the designated point on the trajectory is unambiguously labelled with a “P”, rather than “A”, which is instead used as an option label, or a “1”, which can be confused with a magnitude of some sort.

Much consideration goes into the construction and choice of distractors, particularly in an integrated testlet where corrective feedback can actively address major student misconceptions and thus supports how an item provides scaffolding for subsequent items. For each item the distractors are constructed by anticipating students’ answers to the item, and often involve knowing common misunderstandings in either concept or application. For example, in Item 1 the two distractors C and E present the misconception that a constant net force acts to increase speed (true) but in a nonuniform/nonlinear way (false). Distractor D presents the misconception that a terminal speed is reached, which is not valid in this situation. Both distractors B and C present the misconception that the speed starts with an offset, or “trapping” students to conflate a starting height offset with a starting speed offset. Similarly, in Item 2 the distractors correspond to the commonly-encountered confusion concerning the direction of the acceleration of an object when it is already moving. Items 3 and 4 are numerical questions, for which there are an infinite number of possible incorrect answers. Here we present numerically-plausible distractors, some of
which are derived from typical mathematical errors or mathematical misconceptions. Furthermore, the precise choice of numerical distractors is considerate of a common student practice of “edge avoidance” (i.e. we often allow the keyed response to be the highest or lowest available value).

What makes ITs unique is that while answering each item students have a form of passive conversation with the instructor after they make their response, and they then either continue (if they have in fact chosen the keyed option) or they pause and refine their thinking (if they have chosen a distractor). This is a two-way conversation: The instructor has choices in how they scaffold the questions, the extent to which they wish to cue certain concepts, and their choice of distractors. For example, depending on the assessment goals of the instructor, they may choose to exclude a distractor that represents a simple and non-instructive “trap”. Thus, if a student arrives at such an answer (for example, due to a trivial mistake) they find it absent and thus revisit their thinking. In effect, the instructor’s anticipation of such a mistake—and their avoidance of trapping for it—is part of the conversation with the student. Likewise, deliberately choosing to include a distractor that traps for a key misunderstanding is also part of the conversation: the student discovers that they have made an error and by subsequent selection of a correct response has been informed (in effect by the instructor) that their original thinking was flawed. This conversational interpretation of student thinking is supported by an analysis of the partial marks awarded in ITs, which themselves were found to be highly discriminating (Slepkov & Schiell, 2014). That is, those students in the upper quartiles earned a higher fraction of available partial marks than those in lower quartiles, which implies that students improve their understanding in a selective and proportionate manner. To be sure, such a delayed passive conversation does not represent fully active peer-student and expert-student collaboration, but it does share some of the immediate-feedback attributes of collaborative testing. Unlike peer collaborative testing, however, with ITs the student always ends up with the “expert” answer (i.e. the correct answer). Thus, we view ITs as passive expert-student collaborative tests, and we shall conduct further studies, involving analyzing time-sequences of students’ rough written work and post-test interviews to more concretely determine the validity of this perspective.

There is some preliminary evidence that such a conversation takes place during IT-based examinations. In our previous study (Slepkov & Shiell, 2014) we surveyed students after an Introductory Physics midterm exam that contained two ITs and two free-response questions, each of which covered independent and different topics. We asked students “For the multiple-choice parts of the midterm (i.e. the testlets), did you use answers you uncovered from the early questions to answer any of the later questions in a testlet?” A substantial 90% of the students said they had done so at least once. This indicates that most used the scaffolding, and therefore the implicit conversation described above, as we had intended. On the other hand, while scoring the free-response questions it became evident that if students were confused or ignorant about how to begin to answer the question, they had very few tools to allow them to demonstrate partial knowledge or how to answer the rest of the question. The lack of scaffolding opportunities within the free-response format is a major disadvantage of that technique over ITs.

As part of IT design, we find the creation of integration maps to be a highly useful endeavour. Integration maps represent for the instructor the flow of cognitive processes involved in moving through an IT, which themselves can be represented by a concept map, as shown in Figure 2a. This shows the individual steps involved in working through the complete problem from stimulus to answering the last item. The integration map, shown in Figure 2(b), can then help the instructor to select particular items for the IT. This map makes clear the relationships between Items (questions) 1-4. As mentioned above, the solution to Item 1 only weakly informs the answering of Item 3, whereas the solutions to Items 2 and 3 are required to obtain the solution to Item 4. Item 1 and Item 2 are independent, but together they aid to scaffold Item 4. The opportunity to grant partial credit in a multiple-choice exam is a major boon to
the IT approach. The IF-AT cards, for example, allow this by simply assigning marks based on the number of tries a student took before uncovering the correct response. The precise choice of marking scheme for items, and therefore the proportion of partial credit granted, will affect both how students approach each IT and influence the test psychometrics (such as mean test score and measures of item discrimination). In five-option items, we typically grant full marks for the selection of a correct answer in the first response, half-marks for correct responses in the second selection, and one-tenth-marks for correct responses in third selections; with no marks given for subsequent selections. This scoring scheme, designated \([1, 0.5, 0.1, 0, 0]\), has been adopted as a balance between keeping the expectation value for guessing sufficiently low as to make passing of the test statistically unlikely due to guessing alone with a desire to prolong students’ intellectual engagement with items via partial credit incentives.

We could however use any number of alternate schemes. We have assessed the effects of marking students based on a variety of schemes ranging from “generous” (i.e. \([1, 0.7, 0.3, 0, 0]\)), through “harsh” (i.e. \([1, 0.3, 0, 0, 0]\)) to “dichotomous” (i.e. \([1, 0, 0, 0, 0]\)).

(a) A concept map for the integrated testlet shown in Figure 1. Items 1-4 are labelled Q1-Q4 and the steps between them are shown with arrows. (b) An integration map that summarizes the interrelationship between the items chosen for this IT. A dashed arrow indicates a weak relationship between questions, where knowledge of one item may potentially inform the other, while a solid arrow indicates that the solution of the latter question is predicated on knowledge of the former. In this case, explicit knowledge of the concepts/procedures tested in Q2 and Q3 are needed for the solution of Q4.
We find that compared to dichotomous scoring, adding any reasonable partial credit scheme slightly boosts the average score, while maintaining the highly-discriminating nature of a good test (Slepkov & Shiell, 2014). Certainly, we have seen no evidence that partial credit dilutes the discriminatory power of the test.

The gold-standard of testing—albeit impractical in a classroom setting—is through a *viva voce*, or oral defence, format. Such an examination truly represents an active expert-student collaborative test. Further supplementing the perspective of ITs as an (albeit delayed) collaborative conversation between expert and student are the other ways in which ITs can closely share the benefits of a *viva-voce* format, but which are absent in both multiple-choice- and free-response-based exams. One example within a quantitative discipline such as physics is to ask students to recall (or determine) from a list the correct representation of a formula that can usually be found on their formula sheet, but is redacted in this circumstance. This formula can then be used within subsequent items in the IT. By composing distractors in the manner described above, the expert engages in a “delayed-discussion” with the students and, further, provides expert guidance during the assessment should a student not initially select the keyed option, which in this case corresponds to the correct version of the formula. This is very similar to a dialogue that frequently occurs within an oral examination, where the student is first probed on fundamental laws in science (i.e. the relevant equations), before these are then applied to the particular problem at hand.

**Conclusions**

An integrated testlet (IT) is a relatively new assessment tool that measures students’ understanding of complex ideas through a set of scaffolded multiple-choice items, each adopting an answer-until-correct format. Students continue answering each item within an IT until the correct answer is revealed to them, and they then advance to the next item with full knowledge of, and benefit from, answers to previous items. ITs can be valid and efficient replacements for free-response questions, as they assess complex cognitive processes and can also reward partial knowledge. We posit that this testing format comprises a form of expert-student collaboration, approaching the gold-standard of a *viva voce*, or oral defence, format. The extent of the delayed-discussion between expert and student has been discussed, reflecting the expert guidance given during the assessment to those students who do not initially select the keyed option for an item within an IT. Indeed, ITs in scientific disciplines may be adapted to even better replicate an oral examination by first building up the foundational principles underpinning particular concepts, and then, after that “conversation” is concluded successfully, subsequently apply these concepts to a real-world situation that is almost always too complicated for a stand-alone multiple-choice or free-response approach. This would constitute a super-IT or an integrated (interdependent) set of ITs. An entire exam could then comprise a flowing set of related testlets, with immediate confirmatory or corrective feedback at each step — a significant leap towards that which happens in a *viva voce* exam but with the reliability and streamlined advantages of multiple-choice testing.

**References**


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**Biographies**

Ralph Shiell is Associate Professor of Physics at Trent University where he is engaged in pedagogy research and optical physics research, and has taught at all undergraduate and graduate levels since 2004. His interests in physics education come from an appreciation of science as a highly-connected entity, with distinct concepts that together enable a deep understanding of the natural world.

Aaron Slepkov is Assistant Professor and Canada Research Chair in the Physics of Biomaterials who is haunted by the question of why physics is so unpopular among students. En route to a satisfactory answer, Aaron works to develop and measure innovative and effective assessment tools for science education.
Peer Review of Teaching: Sharing Best Practices

Shaya Golparian, Judy Chan, Alice Cassidy
University of British Columbia

In this paper, we share examples of best peer review of teaching practices, drawing on our involvement in the design and implementation of the Peer Review of Teaching program at the Centre for Teaching, Learning and Technology. We review the history of the Peer Review of Teaching Initiative at the University of British Columbia and explain key aspects of the interactive peer review of teaching session we facilitated at STLHE 2014. We provide examples generated by participants of that session, as well as participants of Centre for Teaching, Learning and Technology workshops on peer review of teaching. We share future steps for the Peer Review of Teaching Program at UBC.

Introduction

How can you positively influence student learning by conducting peer review of teaching? In what ways do you support colleagues who ask you to sit in on their classes and provide them with feedback?

Having been involved in different developmental stages of the Peer Review of Teaching (PRT) Program at the University of British Columbia (UBC), we led an interactive session on this topic at STLHE 2014, intended for people who have conducted peer reviews of teaching. Our goals were to have participants explore classroom peer reviews from a variety of perspectives and to leave the session being able to help colleagues at their institutions and contexts in new ways.

In this paper, we will provide an overview of our PRT Initiative at UBC, describe key elements of the conference session, and place peer review in the context of related work.

What do we mean by Peer Review of Teaching?

Chism (2007) defines peer review of teaching as a form of evaluation designed to provide feedback to instructors about their teaching in order to foster improvement or make personal and/or career decisions. Related terms are summarized by Cassidy and Lee (2011). Peer review of teaching occurs along a continuum from informal to formal. Informal peer review, usually conducted for developmental purposes, is often defined as *formative* peer review. Formal peer review, usually conducted for evaluation purposes, is defined as *summative* peer review. The terms *formative* and *summative evaluation*, first introduced by Scriven (1973) within the context of program evaluation, have now been widely adopted in the evaluation of teaching.

As noted in Cassidy and Lee (2011), The Center for Excellence in Learning and Teaching at Iowa State University conducted a literature review of peer evaluation of teaching, with links to best
practices. Peer review has gained prominence internationally and for online teaching as well, such as through the Australian Learning and Teaching Council. While programs of peer review of teaching now take place at several institutions (for example: University of Waterloo, Kansas State University, University of Nebraska, etc.), it was less common when we started this process at UBC.

Classroom peer reviews can be a transformative process for both reviewee and reviewer as it provides an opportunity for the reviewee to have feedback on their teaching, and it exposes the reviewer to different styles and techniques of teaching. Cassidy and Johnson (2006) designed and first implemented a 4-hour workshop, *Developing your skills as a Peer Reviewer: Introductory workshop*. The model, a three-part process, involves a pre-observation meeting, class observation, and a post-observation meeting. Notes taken at each of the three stages comprise a report that is provided to the reviewee. They may wish to include it in their teaching dossier or application for a job, promotion and/or tenure. Additional steps such as meeting with the students, and/or post-observation meeting reflection have been described elsewhere (Buskist, Ismail, & Groccia, 2014; Hitchens, 2014).

Based on the Instructional Skills Workshop (ISW) model (http://iswnetwork.ca/about/isw-program-in-detail/), the process is reviewee-focused and currently informs both formative and summative peer review of teaching processes. The model that Cassidy and Johnson (2006) developed and that Centre for Teaching, Learning and Technology (CTLT) continues to use fits the collaborative model described by Gosling (2014) where teaching is improved through constructive facilitated dialogue and self and mutual reflections. Reviewees may choose any aspect(s) of course design, teaching, student learning and/or assessment to be included during the review process.

### History of the Peer Review of Teaching Initiative at the University of British Columbia

As will be explained below, the Formative PRT Program is one part of the broader Peer Review of Teaching Initiative at our institution. Peer Review began at UBC in 2006 as a request by one faculty member in Dentistry with one-year funding from the campus-wide Teaching and Learning Enhancement Fund. Cassidy and Johnson (2006), working at the Centre for Teaching and Academic Growth (TAG), now called the CTLT, designed a 4-hour training workshop called *Developing your skills as a Peer Reviewer: Introductory workshop*. To this day, we recommend that peer reviewers participate in this workshop to practice techniques they will use in a peer review. Thinking to the future, Cassidy and Johnson (2006) also designed an Advanced Workshop for trained colleagues who had completed several peer reviews. After this initial work, additional funding in 2009 and 2010 allowed workshops to be offered to a greater number of Faculties.

Some specialized workshops followed, such as for faculty within Pharmaceutical Sciences, and Teaching Assistants in Physics, Faculty of Science (co-facilitated by a Physics Teaching Assistant). A version of the workshop was modified as part of the Peer Teaching Network within Faculty of Science’s Science Centre for Learning and Teaching (Cassidy & Lee, 2011).

As a broader Initiative, in 2008, a working group was tasked with developing principles and procedures for the formal summative evaluation of teaching, to inform decision making regarding re-appointment, promotion and tenure. Principles include accuracy, integrity, transparency, diversity, credibility, and usefulness (Egan, 2010).

From 2010-2011, the working group initiated a program to train nominated representatives from each Faculty in the principles and practice of the summative peer review of teaching process. Those faculty members have been actively
involved as leaders of the Summative PRT Program across UBC.

Today, each Faculty has developed and implemented a procedure suited for their individual needs. In some Faculties formative peer review of teaching is a mandatory process while in other Faculties it continues to be offered on a volunteer basis.

CTLT offers the Developing your skills as a Peer Reviewer: Introductory workshop three times per year to faculty members interested in learning more about both the formative and summative PRT process, as well as to those interested in learning the necessary skills needed in the peer review process. All interested participants are then invited to join a team of volunteer reviewers of the Formative PRT Program, described in more detail below. The three authors of this paper have all been reviewers in this program.

We also lead customized versions of the workshop on request. Over the past two years, we have designed and led such workshops for the Faculties of Forestry, Land and Food Systems, Law, Pharmacy, Sauder School of Business and Science as well as departments and other units such as Asian Studies, Botany, Cellular and Physiological Sciences, Electrical Engineering, Human Kinetics, Pathology, and Physics (for Teaching Assistants).

Additionally, over the past year, one of us (Golparian), in collaboration with CTLT colleagues, designed and implemented a customized PRT Program for Asian Studies, including reviewer training workshop development and facilitation, resources development, and program coordination. The program which consists of a 1.5 year long cycle of two formative peer reviews and a summative peer review, is required by all lecturers chosen to undergo this process. Golparian continues to offer consultation on the coordination of this program in her new role at CTLT.

Now near the end of the second part of the cycle, Golparian has been in consultation with reviewers, reviewees and the department head, with program evaluation and redesign taking place throughout the process. The third phase of the first cycle, Summative reviews will take place in the fall of 2015. In the meantime, the second round of the program started in January 2015 and the feedback from the first round of reviews (from both reviewers and reviewees) will inform the modification and the redesign of the program for the second round.

CTLT has also been actively involved in Summative PRT processes at UBC. Leaders within faculties meet twice a year to discuss successes and challenges and to modify/redesign their implemented processes.

In 2014, in consultation with Dr. Simon Bates, CTLT Academic Director, one of us (Golparian) developed a program evaluation survey for formative and summative peer review of teaching processes at UBC. The survey, which was sent out to all faculty members at UBC, received 100 responses. These responses provide us with a list of challenges and opportunities that reviewers and reviewees have experienced as part of the Summative and Formative PRT processes, and highlight several action items including the need for clarification and better communication around the PRT process (i.e.: the importance of pre and post observation meetings; Faculty specific standards). Results, presented to the leaders of the Summative PRT Initiative, are being used to make decisions around the redesign of each of their faculties’ peer review processes.

The Process of the Formative Peer Review of Teaching Program

The PRT workshop that we offer at the CTLT is designed to support reviewers and reviewees in both Summative and Formative PRT processes. The workshop provides reviewers with an opportunity to acquire and practice skills needed to conduct peer reviews of teaching, and it provides reviewees with an opportunity to familiarize themselves with the peer review of teaching as well as their roles and responsibilities throughout the process.

The processes for Formative (for developmental and mentoring purposes) and
Summative (for reappointment and hiring purposes) reviews are different in each Faculty and/or department, however all processes (should) involve a pre-observation meeting, an observation and a post-observation meeting. The following explains a generic process for a formative peer review of teaching:

To request a formative peer review of teaching, reviewees usually contact potential peer reviewers who would be listed on the department website. In certain cases reviewees are assigned to reviewers by the department and are then asked to communicate/connect with them. Formative reviews are often voluntary, however, in some departments, they are mandatory.

Whether the formative peer review is voluntary or mandatory, a reviewee contacts reviewers and provides the following information:

- Contact information
- Aspect(s) of their teaching they would like to have reviewed. These could include:
  - Classroom teaching (e.g. first year math class with more than 100 students, graduate seminar with 4 people, Problem Based Learning session)
  - Course design
  - Student assignments
  - Student supervision
  - Teaching dossier and/or other teaching materials
  - Other materials as requested

If the reviewee would like the reviewer to conduct a classroom observation, the reviewee then suggests possible dates, or a time frame and talk or email to set up details of a pre-observation meeting, classroom observation(s), and a post-observation meeting.

After the classroom observation, the reviewees reflect on what happened during the class and whether they feel they accomplished their objectives for the day. They record any issues or events that they would like to discuss with their peer reviewer. During the post-observation meeting, they review, reflect on, and possibly also respond to the peer reviewer’s feedback report. Finally, reviewees decide whether or not to submit the peer reviewer’s report (along with their own) to their employment file and/or to include it in their teaching portfolio/dossier.

Key Elements of the STLHE Session

We involved participants throughout the session, at the same time modelling some of the techniques, especially active listening and role-playing that form part of the workshop to become a peer reviewer. We invite you to modify the elements below for your own use.

Index Card Question

As people came into the room, we wanted to involve them right away. We asked them, in 10 words or less (noting that it would be shared with others), to write their answer to the following question on an index card: How does peer review of teaching (PRT) help students learn?

Role Play

We modelled a typical interaction between reviewer and reviewee in the pre-observation meeting. We did this to set the tone for the session and show in a real way how the pre-observation meeting works. We also wanted participants to reflect and draw on their personal experience to ask questions and share their experiences (Mundy & Chan, 2013).

Debrief and Overview of the Process

We explained that the pre-observation meeting is one of the three parts of the PRT process. A hand-out that noted each part, with links was distributed (Cassidy & Johnson, 2010).
Poll

We asked the following questions, asking for a show of hands to answer each:

- How many of you conduct peer reviews of teaching?
- Did you do a training for it or not? Was it for formative or summative purposes?
- Was it official or informal?
- How many people do it some other way? Ask participants to share some experiences?
- Was the review voluntary (requested by the reviewee) or mandatory?

Discussion

The above activity led to an open discussion about the various ways to conduct PRT. At this time we also read out some of the index card contributions. We ask participants to share best practices as well as challenges in PRT.

Based on examples generated by participants of the STLHE session, as well as participants of other peer review workshops we have led, we present a list of best practices in the peer review of teaching (listed in alphabetical order):

- Ask reviewee how they feel/think the teaching went – invite their in-depth reflection (in post-observation meetings)
- Be sensitive to needs of reviewee
- Be specific
- Clarify purpose of the review (in pre-observation meetings)
- Check how teaching resources and lesson plans are aligning with existing curriculum
- Confirm confidentiality (formative reviews)
- Focus on goals identified in the pre-observation meetings (in post-observation meetings and for formative reviews)
- Have a frank exploration of what’s possible in terms of outcomes
- Help address any fears of being reviewed—provide reassurance
- Offer an initial recap of pre-observation meeting (in post-observation meetings)
- Offer tips to improve teaching
- Present reasoning
- Revisit confidentiality and purpose (in post-observation meetings)
- Show a sense of empathy
- Share examples of other teaching techniques
- Sit beside, not across
- Smile, be welcoming, friendly and open
- The process should be a dialogue
- Tie into the reviewee’s objectives and provide specific feedback as requested by the reviewee (in post-observation meetings and for formative reviews)
- Validate first (identify/share strengths)
- Work with rather than against

Similar lists are generated during customized PRT workshops in each Faculty and department as guidelines for their Peer Review of Teaching best practices. Each customized list reflects the culture of individual Faculties and departments.

Many of the contributions also served as a debrief of what STLHE session participants saw happening during the role play of a pre-observation meeting. This mirrors what we do in the actual workshop.

Next Steps

CTLT continues its involvement with the PRT Initiative at UBC, such as offering the Introductory and Advanced workshops as well as customized versions for departments and faculties.

Based on the 2014 PRT Program Evaluation Survey results, one of us (Golparian) has recommended that CTLT develop the Peer Review of
Teaching Program so that it would include additional training workshops on Classroom Observation Criteria and Process, Best Teaching Practices, Providing Constructive Feedback, and Developing/Writing a Peer Review of Teaching Report.

Since the design and implementation of the customized program in Asian Studies, CTLT has been contacted by a few other departments at UBC for support around the development of department-specific PRT Programs. We anticipate that other departments and faculties will also be contacting us for support around PRT Program design and additional customized workshops and programs. This process will be customized to suit the needs of individual departments (Toth & McKey, 2010).

We will also need to draw on the experiences from current active peer reviewers to understand modifications and adaptations made to the 3-step process originally developed. For instance, one of us (Chan) has conducted Small Group Instruction Feedback as requested by a reviewee, immediately after her classroom observation. In other cases preliminary reports were prepared prior to the post-observation meetings and subsequently revised after the meeting with the reviewee. These modifications, as well as those documented by Bell and Cooper (2013), Buskist et al. (2014), and Hitchens (2014) should inform future development of the Peer Review of Teaching process.

CTLT is also in the process of developing a Peer Review Program for Graduate students, consisting of two components: Peer Review of Teaching and Peer Review of Presentations. The goal is to support graduate students in improving their teaching and presentations skills. Future information about this program can be found on the CTLT website. CTLT will also continue to share its experiences with the wider Peer Review of Teaching community and engage in conversations with other Educational Developers who are actively involved in the design, development and evaluation of such programs.

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Biographies

Shaya Golparian, Ph.D., is an Educational Developer: TA Development Programs Coordinator, at the Centre for Teaching, Learning and Technology (CTLT), in the University of British Columbia. Shaya coordinated the Peer Review of Teaching Program at CTLT between April 2013 and August 2014 and has also conducted peer reviews as part of this program.

Judy C. K. Chan, Ph.D., is an Educational Developer, Faculty Programs, at the Centre for Teaching, Learning and Technology (CTLT) and a sessional lecturer at the Faculty of Land and Food System (LFS) at the University of British Columbia. She was a member of the ad hoc formative peer review committee in LFS and continues to conduct peer reviews as part of her educational developer role.

Alice Cassidy, Ph.D. is an Educational Developer, workshop and program designer and facilitator in the Faculties of Science and Land and Food Systems (LFS) at the University of British Columbia. In 2006, she co-designed the Peer Review of Teaching Program at the Centre for Teaching and Academic Growth (TAG), now called the Centre for Teaching, Learning and Technology CTLT, including the 4-hour workshop and advanced workshops that are offered today.
Teaching Assistant Competencies in Canada: Building a Framework for Practice Together

Cynthia Korpan
University of Victoria

Suzanne Le-May Sheffield
Dalhousie University

Roselynn Verwoord
University of British Columbia

This paper examines the stages of development for a framework of teaching assistant (TA) competencies initiated by the Teaching Assistant and Graduate Student Advancement (TAGSA) special interest group (SIG) of the Society of Teaching and Learning in Higher Education (STLHE). TAGSA initiated an iterative consultative process to inform the creation of the competencies that sought input from the STLHE community on four occasions. At each stage of the consultations, the competencies were formed and re-formed, their purpose and value debated, and the challenges of creating a development framework recognized. This process, described in this paper, resulted in a clear, succinct and flexible framework that can be used across institutions in multiple contexts.

Introduction

This paper examines the stages of development for a framework of teaching assistant (TA) competencies initiated by the Teaching Assistant and Graduate Student Advancement (TAGSA) special interest group (SIG) of the Society of Teaching and Learning in Higher Education (STLHE). STLHE’s mandate is to enhance teaching and learning in higher education. Similarly, TAGSA seeks to raise the profile of TA and graduate student development in Canada by providing leadership and undertaking initiatives to support the attainment of teaching and professional skills through a strong network of like-minded professionals and students.

TAGSA began working on this framework in the fall of 2012 to support institutions, departments, schools, faculty, educational developers, TAs, and others responsible or interested in the teaching preparation of TAs. The framework took as its starting point and inspiration, STLHE’s Ethical Principles in University Teaching, developed in 1996 by 3M National Teaching Fellows, faculty members from post-secondary institutions across Canada who have received a 3M National Teaching Fellowship, the most prestigious teaching award in Canada.
The development of the framework is timely. As competition for jobs increases, universities in Canada are attracting increasing numbers of Master’s and Doctoral students (Association of Universities and Colleges of Canada [AUCC], 2011; Maldonado, Wiggers, & Arnold, 2013; Rose, 2012). In addition to undertaking advanced studies, many of these students take on important teaching roles at the undergraduate level as tutors, markers, tutorial leaders, lab or discussion leaders, and TAs. Many of these students seek training through formal TA programs as well as through workshops and seminars, in order to prepare for their various teaching roles (McAlpine & Åkerlind, 2010). These programs are often offered through learning and teaching centres, but the content, quality, and outcomes of these programs vary greatly (Roehrig, Luft, Kurdziel, & Turner, 2003), leading to inconsistency in the kinds of skills and abilities that TAs develop.

The introduction of the framework for TA competencies – statements that define what being a capable TA looks like – is one way that universities can begin to articulate a common knowledge and skill set for TA work. TA competencies can give ownership of the learning process to TAs by identifying expected areas and levels of performance, thus allowing TAs to self-assess their skills and performance. From an organizational standpoint, the adoption of TA competencies would help educational developers design more effective TA training programs that ensure that all TAs have a common learning experience. In articulating TA competencies, it is important that the competencies are strictly connected to TA skills and performance, as opposed to graduate student professional development, in general. This separation ensures that the acquisition of skills related to graduate student teaching is seen as a specific and valued task.

Once development began, TAGSA became aware of a similar effort by the Graduate Student Professional Development (GPSD) group that is part of the Professional and Organizational Development Network in Higher Education (POD) in the United States. GPSD kindly shared their draft competencies with TAGSA. A distinct difference existed between what TAGSA was envisioning compared to GPSD’s competencies. GPSD’s were broad in scope and focused on developing graduate students as educators and for academic careers. TAGSA’s focus was strictly on TA development.

Despite the existence of literature that delves into TA and graduate student competencies (Schönwetter & Ellis, 2007; Simpson & Smith, 1993) and the existence of previous work on graduate student competencies (i.e. POD’s graduate student development work), TAGSA believed in the importance of an iterative consultative process to inform the creation of the competencies. Such an approach is, of course, in keeping with the collaborative spirit of TAGSA, and STLHE more broadly. Moreover, TAGSA members who led this project believed that conversation with educational developers and those in the higher education community, would deepen and enrich our own discussions and would result in a more comprehensive set of competencies. In addition, our hope was that seeking input from others would result in stronger interest in, commitment to, and use of the competencies when they were completed.

As a result, TAGSA sought input from the STLHE community on four occasions, in addition to an informal TA focus group. Beginning with the educational development community, Cynthia Korpan, Suzanne Le-May Sheffield and Svitlana Taraban-Gordon, three TAGSA executive committee members, held a pre-conference session at the 2013 Educational Developer’s Caucus (EDC) conference in Waterloo, Ontario, presenting a possible competency framework and seeking feedback. Building on the work in the first session, the second session led by TAGSA executive committee members Cynthia Korpan, Suzanne Le-May Sheffield, and Roselynn Verwoord, was an opportunity for participants to provide input at a pre-conference workshop at the 2013 STLHE Conference in Cape Breton. The third opportunity for feedback was provided at the 2014 Calgary EDC conference led by Cynthia Korpan and Suzanne Le-May Sheffield. Finally, the competencies were shared by Cynthia Korpan and Roselynn Verwoord at the 2014 inaugural TAGSA pre-conference as part of the STLHE Conference at Queen’s University in
Teaching Assistant Competencies in Canada

Kingston. This iterative consultative process resulted in valuable contributions from the higher education community that substantially informed the TA competencies. At each stage of the consultations, the competencies were formed and re-formed, their purpose and value debated, and the challenges of creating a developmental framework recognized. This process, described below, resulted in a clear, succinct and flexible framework that can be used across institutions in multiple contexts.

Stages of Development

Beginning the iterative process

A discussion paper (Korpan, 2012) was distributed to participants prior to the 2013 EDC session, providing a general overview of TA responsibilities, available professional development opportunities for TAs that varies across institutions, and the need for more focused and consistent professional development of teaching for this group. The paper also outlined other already-existing frameworks that this TA Competency Framework could draw upon. These previous frameworks included STLHE's Ethical Principles in University Teaching (1996) in Canada, and Simpson and Smith's (1993) 26 competencies (grouped into six skill areas) based on US expert consensus. The purpose of sharing this paper with workshop participants was to help participants to think about the possible value of establishing TA competencies and the possible nature of these competencies.

At the outset of the session, the three facilitators presented definitions of 'competency'. The first definition of ‘competency’ was “combinations of those cognitive, motivational, moral and social skills available to (or potentially learnable by) a person or a social group that underlie the successful mastery through appropriate understanding and actions of a range of demands, tasks, problems and goals” (Weinert, 2001). The second definition was from Smith (1996, 2005) and focused on the ability to take domain knowledge and use it in new situations, demonstrating that a person is able to successfully synthesize knowledge to do a certain thing in the right context.

Within the frame of these definitions of competency, the group was asked to consider the benefits or detractions of a national set of competencies for TAs and decided that the benefits far outweighed any issues that might arise. They believed that a national framework would provide clear benchmarks that would give profile, recognition, legitimacy, and credibility to TA work. They also recognized that a national framework would allow institutions to view TAs as having established transferable competencies. This consistency would enable research to be conducted nationally in this field of study. Concern was raised, however, about a framework being used to establish a ‘minimum’ standard that might result in ‘teaching to the standard’ and not beyond, or using the standard as an evaluation tool rather than as a developmental tool. These concerns were recorded by the executive in order to inform future work.

In the second part of this session, the facilitators suggested three core competency categories: cognitive (TA knowledge), functional (TA skills), and social (TA attitude, behaviour and efficacy). While these categories were open for debate, the plan for this part of the session was to focus the discussion on the skill sets that educational developers believed TAs should demonstrate within each competency category. The group of approximately 20 educational developers worked in small groups to explore each of these categories and then came together in the larger group to share the ideas generated. The value of a TA competency framework was realized through these conversations, as we explored the breadth and depth of our expectations for TAs. This was perhaps the key takeaway from the session.

The following areas of focus were suggested by the group for the cognitive category: (1) discipline-specific knowledge, (2) pedagogical knowledge (including an awareness of the scholarship of teaching and learning), and (3) institutional knowledge. There was some debate as to whether ‘approaches to learning’ should be included in this category. For the
At the end of the session the facilitators introduced the idea of a developmental competency model. We asked the group to consider whether it would be useful to organize the competencies they had named into categories for first-time, mid-term, and experienced TAs. In principle, participants felt that a developmental model was useful and appropriate. However, this group, and subsequent groups, expressed concern that developmental levels would be difficult to standardize based on the varying backgrounds of TAs and as a result of different disciplinary and institutional contexts.

Additional issues were explored by the group as ideas unfolded including whether or not the competencies should be written in the form of learning outcomes using Bloom’s Taxonomy (Bloom, 1956). There was also discussion about how the competencies would be used in practice, and thus the importance of keeping the competencies as broad categories with flexibility within each. Educational developers were certainly eager to stress the range of work, and thus the extent of the competencies, that TA appointments entail. They expressed strong opinions about the importance of recognizing TA work and supporting TA development. The group also stressed the importance of protecting TAs from premature evaluation of their work that would interfere with a professional development focus. They also remained concerned that standardization of competencies could problematize TAs learning to teach in context.

Cautions, clarifications, and questions

At the pre-conference workshop at STLHE 2013 in Cape Breton, workshop participants were first introduced to the history of TAGSA’s competency development based on the work completed at EDC 2013. Most of the participants had not been involved in the previous EDC session involving the articulation of the competencies. Two goals for the session were to have participants: (1) complete the competencies for first-time TAs, with the possibility of constructing a developmental model; and (2) identify several possible competencies for TAs and how these competencies might be introduced and developed in their own contexts.

At the start of the session, the presenters provided some context for the participants by defining competencies and explaining why they were used, articulating the value of TA competencies, and identifying some of the challenges and issues. This was followed by introducing the TA development framework that incorporated feedback from the EDC conference session. The focus on the development of knowledge competencies, skills competencies, and social competencies was highlighted. In addition, the framework’s inclusion of first-time TA, mid-term TA, and experienced TA competencies within each area of the framework (knowledge, skills, and social competencies), was introduced using the Dreyfus and Dreyfus (1980) model as a foundation for this developmental focus.

Finally, workshop participants were introduced to the proposed competencies (see below) for first-time TAs. In small groups, participants were invited to refine the wording and suggest additions and deletions to the draft competencies.
Proposed First Time TA Competencies

Knowledge competencies

1. Preparing to be a teaching assistant: The potential TA will reflect on the values and goals associated with the discipline, and how to ‘be’/’think’/’do’ in the discipline. Additionally, the potential TA will reflect on what experience he or she can draw upon and apply to his or her teaching role.

2. Seeking discipline specific content knowledge: Once appointed, the TA will seek out information about content that is directly pertinent to the duties he or she is assigned. TAs will ask for the following information, if applicable, for each course: (a) how to sequence and deliver content to satisfy course goals, (b) how the course fits into the curriculum, and (c) how the discipline fits into the institutional context.

3. Inquiring about pedagogy and beginning to develop teaching identity: TAs will draw on their own experience from the discipline to inquire about the pedagogies that are favoured over others in that discipline (called signature pedagogies). TAs will also ask for other teaching methods that may be suitable for particular content (called pedagogical content knowledge). Lastly, TAs will request information regarding research about teaching and learning in the discipline (referred to as the Scholarship of Teaching and Learning (SoTL)).

4. Understanding teaching and learning: TAs will obtain information about how course objectives, activities, and assessment align in the course they are assigned. TAs will seek out knowledge about the different learning styles of students, theories that inform teaching and learning, and strategies for fair evaluation and assessment. Throughout the term, TAs will actively reflect on their teaching experience so that they may critically engage with the process to continually develop their teaching identity.

5. Awareness of institutional knowledge: TAs will be responsible for searching out the rights and responsibilities associated with their teaching role.

Skill competencies

1. Preparing to teach: TAs will seek out information about how to prepare lesson plans, rubrics, class outlines, and student feedback forms suitable for the duties assigned. Additionally, TAs will get help on how to do the following that pertain to their duties: use classroom and online technology; work with a diverse student population; give clear, concise, and stimulating presentations; keep a focus on learner centered teaching; mentor students; actively listen; give and receive feedback; help students work effectively in groups; engage in effective communication; and ask effective questions.

2. Requesting information about how to navigate challenges: TAs will ask for instruction on how to manage their time efficiently, set priorities, manage the classroom, resolve conflict, and manage student expectations.

Social competencies

1. Effective interpersonal communication: TAs will find out what questions to ask course supervisors about their TA role, while establishing and maintaining a professional relationship and interactions. With colleagues, TAs will seek out support, resources, and engage in a collegial collaborative relationship. With students, TAs will be available, approachable, inclusive, fair, and enthusiastic.
2. *Demonstrate professionalism:* TAs will aim to be professional, confident, sensitive, and resilient; have integrity; maintain confidentiality of student work; balance time between work and life, and plan future goals; develop lifelong learning habits; and engage in reflective practice.

During the small group report-back, the working groups shared helpful feedback that raised larger questions about how the TA competencies would be used. For example, participants wanted to know if the competencies would be used by all TA training programs and emphasized the challenge of having first-time TA competencies for institutions where there are no TA training programs. Additionally, several participants raised questions about the appropriateness of the competencies for first-time TAs, particularly given that TAs have varied prior teaching experience and the level of complexity in the TA competencies may not be attainable for many first-time TAs. Questions were also raised about the suitability of the first-time TA competencies for the varied roles that TAs have in different institutions, particularly given that some TAs don’t interact with students in their TA duties, but instead only work as marking TAs. How would the competencies reflect this variation? These cautions and questions were noted by the workshop facilitators.

Participants were then introduced to the other conceptual stages in the development model (see Figure 1) including mid-term TA and experienced TA, and invited to provide feedback on developing competencies using these stages.

**Figure 1**

*TA developmental competency model*

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- **First-time TA** is defined as any graduate student who has not held a TA position before, whether they are MA or PhD, even if he or she has previous teaching experience in another capacity. Stages 1 and 2 (Dreyfus & Dreyfus, 1980).

- **Mid-term TA** is considered to be any TA that has more than one term of experience but less than five terms as a TA. Stage 2 (Dreyfus & Dreyfus, 1980).

- **Experienced TA** is when a TA has experience of five terms or more and is in his/her PhD. Stage 3 (Dreyfus & Dreyfus, 1980).

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During the feedback on the developmental competency model, participants raised questions about the definitions for each stage of the model including first-time TA, mid-term TA, and experienced TA, citing concerns with the varied roles that TAs may be assigned. For example, one participant mentioned that a TA could be a marker for five terms, which would place them at the mid-
term TA level in the developmental competency model; however, they likely would not have the knowledge, skills, and social competence expected of a TA operating at this level. Additional concerns were raised about placing experienced instructors at the first-time TA level based on the fact that they haven’t had any formal TA appointments but may have a wealth of experience to draw from as a previous instructor. These cautions and questions were noted.

At the culmination of the session, there seemed to be general consensus that broadening the competencies in order to increase their applicability across varied institutions and TA experiences, was the next logical step. The executive committed to working on this and to reporting back at the next EDC conference in February 2014. The revised TA competencies encouraged those working with TAs to create context-specific learning outcomes to support the attainment of the knowledge, skill, and social competencies and included examples of learning outcomes for each competency to help individuals create their own context-specific learning outcomes. The revised TA competencies also highlighted two developmental foci: before TA appointment and after TA appointment in lieu of the first-time TA, midterm TA, and experienced TA categories.

At the EDC conference in February, 2014, TAGSA ran another pre-conference workshop to refine the next version of competencies. As usual, the session provoked lively discussion. Similar issues were raised in this group (of about 12) as in the 2013 STLHE group. They noted that many variables exist within disciplines and that this fact could render the competencies not very useful. Institutions were recognized to be in constant flux and each quite different; for example, some have TA unions, or different forms and breadth of professional development. This group also wondered how to best represent and tie together the three competencies. This issue highlighted the importance of promoting the symbiotic relationships between the competencies to ensure that implementation of the competencies was mutually beneficial to all involved and that everyone in an institution who is responsible for preparing TAs has an obligation to engage with the competencies.

This group also felt strongly that the development model was not useful. Many good reasons surfaced, such as that it would be difficult to apply in all contexts because not all institutions have doctoral programs. Another issue raised was that not all competencies may be developed at the same rate, partly because of the variable TA duties and responsibilities but also because of the varied experience and educational levels of TAs. The question about competency evaluation also came up again, particularly around how to ensure that the competencies did not become a mechanism to measure minimum standards.

Going forward, despite earlier discussion about providing outcomes for each competency, the group wanted to make sure that the competencies were kept broad and not constrained by the action verbs that an outcomes approach would necessitate. It was also suggested that to encourage broad adoption and use of the competencies, development of resources for faculty and departments would be necessary. During the session, one small group of participants began to think about how they could work with such a framework to implement competencies at their institutions. The lack of outcomes did not prove to be a hindrance to this process for them.

Finding Balance between Complexity and Simplicity

Prior to the STLHE 2014 session, one of the members of the TAGSA executive invited a group of experienced TAs she works with through the Teaching Assistant Consultant (TACs) program at the University of Victoria to examine the competencies. TACs are mentors for new TAs in their respective departments and are responsible for closely assisting new TAs to ensure they have the background information, skills, and support needed as they step into the TA role. TACs viewed the competencies from their perspectives as TA mentors. The TACs suggested trimming the document. They found it overwhelming for a beginning TA and felt that
departments and faculty would feel the same. The TACs did appreciate the inclusion of a section titled, “Before TA appointment.” They felt that this set the tone for graduate students to realize the significance of the role they were taking on and to get them thinking about their upcoming TA assignment. This section was later reframed (see final version below) to acknowledge the restrictions TAs are confronted with regarding their TA appointments.

In preparation for the STLHE 2014 conference at Queen’s University, the TAGSA executive committee worked towards presenting the competencies in a form that could be piloted in the upcoming academic year. We realized that we could continue to consult but that it would be difficult to reach a consensus about the content and best way to represent the competencies. This is possibly a constraint of the iterative consultative process. Therefore, taking EDC 2014 and TACs’ feedback into account, we highlighted the main framework concept and created a visual representation to help tie all the competencies together. This visual representation (Figure 2) was introduced at the STLHE 2014 session. The final TA Competency Framework is depicted in Figure 3.
Once appointed as a TA, REFLECT on:

1. The skills and attributes brought from previous work and disciplinary experience
   Possible learning activities/goals/outcomes:
   - Define the values and goals of your discipline and describe how these will inform your approach to TA work.
   - List your teaching related experience and the associated skills that you bring to the teaching assistant role (for example, from being a swimming instructor or tutor).
   - Recall successful teaching strategies that you encountered during your undergraduate degree and previous TA experience (if applicable).

Seek the following:

KNOWLEDGE of...

1. How to develop a personal teaching identity
   Possible learning activities/goals/outcomes:
   - Investigate teaching philosophy statements or revisit your own, so that you can think about the values and goals you deem important in a teaching role.
   - Search out the rights and responsibilities associated with your TA role and reflect on your approach to fulfilling these duties.
   - Seek feedback early, mid- and end-of term through a combination of observation and/or written responses by professionals, peers, and students, about your teaching, facilitating, or other duties performed.
   - Be critically self-reflective about the strategies and methods you employ in your TA work in order to continually improve your ability to provide the best conditions for students’ learning.

2. Discipline specific content knowledge related to the course assigned
   Possible learning activities/goals/outcomes:
   - Seek to be familiar with the content that is directly pertinent to the duties you will be performing.

3. Pedagogy and teaching strategies suitable to duties assigned
   Possible learning activities/goals/outcomes:
   - Find out the most appropriate pedagogical methods to successfully fulfill those duties. For example, if you have been assigned to lead discussion in tutorials, seek out strategies that you can use to encourage discussion, how to develop questions suitable for the content, and how to work with students of differing abilities and engagement. Through professional development opportunities, you will seek out knowledge about pedagogy and teaching strategies to enhance your TA work.

4. What is meant by learning-centeredness
   Possible learning activities/goals/outcomes:
   - Understand that your work is about the learner and find information about ways to accommodate the learning needs of students.

SKILLS about...

1. What is required to perform duties assigned
   Possible learning activities/goals/outcomes:
   - Learn the skills required to fulfill those duties. These skills may include, but are not limited to: learning how to prepare lesson plans, rubrics, class outlines, or student feedback forms; use classroom and online technology; work with a diverse student population; give clear, concise, and stimulating presentations; keep a focus on learner centered teaching; mentor students; actively listen; give and receive feedback; help students work effectively in groups; engage in effective communication; and ask effective questions.

2. How to navigate challenges
   Possible learning activities/goals/outcomes:
   - Manage your time efficiently, set priorities, manage the classroom, resolve conflict, and manage student expectations so that you do not encounter adverse challenges in your work.

ABILITY to...

1. Demonstrate professionalism
   Possible learning activities/goals/outcomes:
   - Aim to be professional, confident, sensitive, and resilient with your interactions with everyone you work with.
   - Ensure that you maintain integrity and confidentiality of student work at all times.
   - Actively balance your time between work and life, and plan future goals.
   - Develop lifelong learning habits and engage in reflective practice about your work and teaching.

2. Develop strategies for effective interpersonal communication
   Possible learning activities/goals/outcomes:
   - Actively seek answers from the course supervisor through appropriate communication channels about the questions you have about your TA role, while establishing and maintaining a professional relationship.
   - With colleagues, you will seek out support, resources, and engage in a collegial collaborative relationship by participating in professional development provided by your department and other units on campus.
   - With students, you will be available, approachable, inclusive, fair, and enthusiastic in all communication while maintaining professional boundaries.

Figure 3
Framework for teaching assistant competency development (text)

227
At the beginning of the workshop, participants (about 25 that work specifically with graduate student professional development programming) were first asked whether TAGSA should continue refining the competencies, move to testing them, or dismiss the whole idea. The group was also asked if there were other ideas or approaches that TAGSA should consider. There was consensus that TAGSA should continue the work on the TA competencies. At that point, participants were asked to work in groups with the pared down visual representation to discuss what could be done next and to consider how they could test a part of the framework or the entire framework at their institution (no guidelines were provided but left to each person to approach development in the way that best suited his or her institution). The group at STLHE 2014 appreciated the visual conceptualization but argued that more context was required. After significant discussion, it was decided to keep the visual representation but include the competency details that were developed and presented at EDC 2014.

Moving forward

TAGSA’s primary goal for the TA competency development project has been to ensure that the framework is broadly implemented. After STLHE 2014, the completed document incorporated the key aspects that were consistent throughout the collaborative process. It is broad but directed, and flexible and adaptable enough so that it can be used by multiple institutions and groups within institutions.

This final framework was distributed through appropriate listservs (EDC, POD, STLHE, and TAGSA) so that educational developers, faculty, TA program coordinators, and anyone else interested could use the framework over the 2014/2015 academic year. We asked the TAGSA pre-conference group to consider adopting part of or the entire framework and to report back at the TAGSA pre-conference of STLHE 2015. Specifically, we are interested in knowing: what was done, what worked, what changes may be necessary, and the successes and challenges experienced. The TAGSA pre-conference will include a session devoted to discussion about these pilot implementations. Our intent is that through piloting the competency framework in different ways, we will have a good sense of how to develop supplementary materials to encourage broad adoption and use of the competencies to assist faculty, departments, educational developers, and TA program coordinators. We look forward to sharing results and furthering development of these national TA competencies to help ensure that TAs are supported in the academic workplace.

References


Teaching Assistant Competencies in Canada


Acknowledgement

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Biographies

Cynthia Korpan is the Professional Development Programs and TA Training Manager at the Learning and Teaching Centre at the University of Victoria. Concurrently, Cynthia is a PhD Interdisciplinary candidate, and in her second term as chair of Teaching Assistant and Graduate Student Advancement (TAGSA) special interest group of the Society for Teaching and Learning in Higher Education.

Dr. Suzanne Le-May Sheffield is the Director of the Centre for Learning and Teaching at Dalhousie University. She administers the Certificate in University Teaching and Learning for graduate students and teaches the graduate course that is part of the Certificate. She has long been interested in the development of graduate students as teachers.
Roselynn Verwoord is a PhD Student in the Department of Educational Studies at the University of British Columbia (UBC) and a Curriculum Consultant at the UBC Centre for Teaching Learning and Technology. Her academic interests include SoTL, curriculum development, graduate student development, and teacher education.
Teaching Culture Perception: Documenting and Transforming Institutional Teaching Cultures

Erika Kustra, University of Windsor
Florida Doci, University of Windsor
Kaitlyn Gillard, University of Windsor
Catharine Dishke Hondzel, University of Western Ontario
Lori Goff, McMaster University
Danielle Gabay, McMaster University
Ken N. Meadows, University of Western Ontario
Paola Borin, Ryerson University
Peter Wolf, Queen’s University
Donna Ellis, University of Waterloo
Hoda Eiliat, University of Windsor
Jill Grose, Brock University
Debra L. Dawson, University of Western Ontario
Sandy Hughes, Wilfrid Laurier University

An institutional culture that values teaching is likely to lead to improved student learning. The main focus of this study was to determine faculty, graduate and undergraduate students’ perceptions of the teaching culture at their institution and identify indicators of that teaching culture. Themes included support for teaching development; support for best practices, innovative practices and specific effective behaviours; recognition of teaching; infrastructure; evaluation of teaching and implementing the student feedback received from teaching evaluations. The study contributes to a larger project examining the quality of institutional teaching culture.

Introduction

In order to build an innovative, sustainable, and high quality post-secondary educational system, we need to consider the extent to which institutional cultures value quality teaching. As Cox, McIntosh, Reason, and Terenzini (2011) note, a culture with improved teaching quality is likely to lead to improved student engagement and learning.

Institutional culture can be defined as the embedded patterns, behaviours, shared values, beliefs, and ideologies of an educational institution (Kezar & Eckel, 2002), and it matters because the culture of an educational institution helps to shape the experience for both educators and students. “Quality teaching” is a dynamic, contextual term, which may hold a
variety of meanings for different stakeholders (Harvey, Burrows, & Green, 1992; Harvey & Stensaker 2008; Hau, 1996; Scott, 1998). Hénard and Roseveare (2012) suggest that at its simplest level, quality teaching is “the use of pedagogical techniques to produce learning outcomes for students” (p.7). Institutional culture and quality teaching should be considered together, as there is an important relationship between institutional culture and teaching (Stein, 1997). The main focus of this component of an ongoing research program was to determine faculty, graduate and undergraduate students’ perceptions of the teaching culture at their institution and identify indicators of that teaching culture.

Institutional teaching culture plays a major role in defining ways of perceiving, thinking, and feeling about the nature and scope of education. For example, in an effective institutional teaching culture the importance of teaching is recognized, teaching is constructively assessed, various stakeholders and resources are engaged, and teacher development is supported (Hénard & Roseveare, 2012; Paulsen & Feldman, 1995). Evidence suggests that culture can positively influence outcomes such as student persistence, learning, and engagement (Berger & Braxton, 1998; Berger & Milem, 1999; Cox et al., 2011; Grayson & Grayson, 2003).

Measuring the quality of an institution’s teaching culture is challenging and generally takes the form of proxy measures, called indicators. Indicators can reveal the current state and perceived progress toward a specific objective. To assess the progress or change within an educational institution, four groups of performance indicators are customarily evaluated: input, process, output, and outcome indicators (Borden & Bottrill, 1994; Cave, Hanney, Henkel, & Kogan, 1991; Chalmers, 2008; Richardson, 1994). Input and output indicators are generally responsible for the quantitative measurement of an intended result or change; with input (or presage) indicators assessing the resources involved in supporting the institution (Chalmers, 2008) and output indicators measuring what is produced (Bruke, 1998). Process indicators provide an understanding about an institution’s current practices and quality of practice, and inform further initiatives and policy decisions, leading to quality enhancement (Kuh, Pace, & Vesper, 1997). Process indicators are usually qualitative and consider the most practical and appropriate measures of quality teaching and learning within higher education institutions (Chalmers & Thomson, 2008). Outcome indicators examine the quality of an educational program and the abilities of graduates (Warglien & Savoia, 2001). In some analyses, the output and outcome indicators are considered together as product variables (Gibbs, 2010).

Figure 1

Relationship Between Indicators and Teaching Culture
Figure 1 illustrates the relationship between indicators and the quality of a teaching culture. Input and process indicators (qualitative and quantitative) together clarify the available resources and infrastructure. Input indicators are often related to quantity of resources, and process indicators are the means and processes (an institution’s current practices). Understanding these indicators provides the appropriate information and context to better interpret the output and outcome indicators. Together indicators give a picture of the quality of an institution’s teaching culture.

Various indicators from any one of these types may be used to assess whether an institution values quality teaching, teaching enhancement, and a teaching culture. If researchers wish to determine whether teaching quality is a priority, it is helpful to consider the level at which quality teaching might be considered a priority within an institution. Information about the teaching culture may be gathered from three inter-dependent levels: university or institution-wide, program or departmental level, and individual level (Chalmers, 2008). For the purposes of this study, information gathered at the individual or departmental level would be used to gain a better understanding of the institutional culture.

Before engaging in a change process, Kezar and Eckel (2002) recommend campuses conduct audits of their institutional cultures, since assessing change requires knowledge of the current position, and future goals. The larger study on teaching culture that this team of eight institutions has commenced aims to document and analyze educational stakeholder perceptions on the importance of quality teaching at a university, and various components that contribute to an institutional culture that values teaching. This project involved a pilot study to develop a perception survey, and identification of additional possible indicators through which one could assess an institutional culture. The hope was to allow institutions to establish a baseline, evaluate change over time as well as the effectiveness and impact that projects have on shifting institutional culture. In addition, institutions could use the survey findings to identify practices and strategies to enhance their teaching culture.

Unfortunately, we currently do not have adequate measures to gauge institutional teaching cultures. Consequently, the main goal of the inter-institutional team leading this project was to develop a survey instrument that assesses the prevailing perceptions regarding the teaching culture among key stakeholders – the Teaching Culture Perception Survey (TCP S), and to identify separate indicators that could be used to triangulate information.

The selection of indicators to be included in the perception survey was guided by Hénard and Roseveare’s (2012) conceptual framework that identifies seven overarching themes, to which they refer as levers that provide concrete ways to foster quality teaching in post-secondary institutions. Their levers are:

1) raising awareness of quality teaching;
2) developing excellent teachers;
3) engaging students;
4) building organization for change and teaching leadership;
5) aligning institutional policies to foster quality teaching;
6) highlighting innovation as a driver of change; and
7) assessing impacts.

Their framework was adapted for the current project to more closely address the Canadian context, to decrease overlap between concepts, and to shorten the survey length. Eight Ontario universities participated in the project which was funded by a Ministry of Training, College, and Universities’ Productivity Innovation Fund grant (Kustra et al., 2014). As part of this project, a series of focus groups were conducted in order to determine 1) perceptions of teaching culture, 2) indicators felt to reflect institutional culture, and 3) perceptions of the teaching culture survey designed by the research team. The focus groups were run with full and part-time faculty members, sessional and contractually limited instructors (referred to by different titles at different institutions). We will refer to this group as
‘faculty’ for brevity and consistency. Additionally, undergraduate and graduate students participated in the focus groups. For the purposes of the current paper, we will focus on the analysis of the focus group results that identified participant perceptions of the teaching culture at their institution, and the indicators they felt might reflect that institutional culture.

Methods

The research project was collaboratively developed by members of eight institutions: University of Windsor, The University of Western Ontario, McMaster University, Ryerson University, Guelph University, University of Waterloo, Brock University and Wilfrid Laurier University. Three sites were chosen to conduct the research: University of Windsor, The University of Western Ontario and McMaster University, with research ethics approval received from each institution.

Participants

Each institution held a series of focus groups with undergraduate students, graduate students and faculty members. Each group had a maximum of 10 participants, and the total number of participants at each institution is outlined in Table 1.

<table>
<thead>
<tr>
<th>University</th>
<th>Undergraduate</th>
<th>Graduate</th>
<th>Faculty/Administrators /Sessional</th>
<th>Total</th>
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<tr>
<td>University of Windsor</td>
<td>25</td>
<td>5</td>
<td>8</td>
<td>38</td>
</tr>
</tbody>
</table>

Procedure

This study was part of a larger study, including an online survey (Kustra et al., 2014). Participants were recruited from those who completed the Teaching Culture Perception Survey (3869 completed the survey: 729 faculty, 1602 graduate students, 1514 undergraduate students and 24 students with undeclared level). As part of the Teaching Culture Perception Survey conducted online, participants were invited to submit their email addresses if they wanted to participate in future focus groups. Once the survey was closed, potential focus group participants were emailed an invitation to participate in the focus groups.

The focus groups were facilitated by trained research assistants, and lasted 60 minutes. Before discussions began, participants were informed about the purpose of the focus group, and were asked for their verbal permission to be audio recorded. Participants who refused audio recording were invited to leave the focus group. Consenting participants were asked to provide a pseudonym on a name card to increase confidentiality.

Each focus group followed the same script (for full script see Kustra et al., 2014), addressing three types of questions: 1) perception of the teaching culture at their institution, 2) indicators of that culture, and 3) perception of the TCPS. The focus of this article is on the first two types.

234
The faculty focus groups included questions such as: “What is the teaching culture at [ … ] institution?”, “What are some components of quality teaching?”, Probe: “What are the products of quality teaching?” and “Is the survey missing any questions what would tell more about the culture of teaching quality?”

Questions for students included: “How do you know if a university values teaching?”, “What is done at the university that signals that teaching is a priority?”, and “How do you know if a university does not value teaching?”

Upon completion participants received a gift certificate of $20 toward Hospitality Services at their respective institutions. All sessions were audiotaped, and transcribed exactly from the audiotape by research assistants. Once transcriptions were complete, research assistants were assigned to re-read the transcripts to increase the accuracy.

Qualitative software (MaxQDA) was used to tag recurring themes for focus group questions related to the quality of the teaching culture and indicators. Themes were examined by research assistants from at least two institutions to ensure consistency of approach.

Results

The main focus of this component of the research program was to determine faculty, graduate and undergraduate students’ perception of the teaching culture at their institution and identify indicators of that teaching culture. These questions are addressed in turn below by participant group. For the purposes of anonymity, when a centre for teaching and learning is identified, it will be referred to as the ‘centre’.

Faculty Focus Groups

During the focus groups, faculty members from all three institutions identified both positive and negative input and process indicators. The frequency with which these indicators were mentioned varied between focus groups; however, several common themes were identified in the transcripts. Overall, the five most commonly mentioned indicators of teaching culture for faculty were: support for teaching, recognition of teaching, infrastructure, priority given to teaching, and teaching evaluations.

Support for Teaching

Faculty members identified a number of teaching and learning practices that were supported by their institution that demonstrated commitment to teaching. For example, participants specifically identified teaching and learning centres and most indicated that the units offer important resources and provide meaningful and relevant support for teaching. One participant stated:

You can ask to have a review by the [centre] and someone will visit your classroom and give you feedback, and there’s also things like [the program] where you can visit other people’s classroom and get feedback from them.

Although there was a considerable amount of positive discussion around the support for teaching, it was not uniformly positive. This might be reflective of different institutions, or of different cultures within the institutions. For example, another participant had a different view:

I think that you know we’ve put a ton of money into [the centre] and most of my colleagues, they don’t have a high opinion of that, shall we say. They would much rather see the money spent in you know concrete supports for teaching like more TA support, or better classrooms, more proctors for tests ….

Other faculty mentioned that while centres were present, they wondered if they were adequately resourced:

Well for [the director of our centre] is there an adequately resourced teaching support center?
That’s a pretty important question because they do a lot of work.

Recognition of Teaching

Teaching awards were seen as providing the university with an outward means to demonstrate its commitment to teaching and learning:

*Recognition of teaching excellence [is] critically important.*

Some faculty members, however, were cynical about the selection process and the value placed on teaching within individual departments. Selection criteria, and factors including gender, merit, and number of awards, were questioned. Another focus group participant felt that teaching awards were not valued:

…there are you know teaching awards that people can strive towards, and all sorts of things like that. But, on the ground, is it valued? … I think my students value what I do, but I don’t think the university values it very much.

These excerpts provide indication that while the input indicator of recognition of teaching is generally valued, there is cynicism by some around award value and validity. These conflicting perspectives speak to competing priorities, and relate to process indicators to be discussed shortly, namely the ways in which research is valued over teaching and the perceived lack of a valid measure to evaluate quality teaching.

Infrastructure

Aging teaching spaces and inappropriate infrastructure was frequently linked to the culture of teaching. For example,

*It was a soulless room with very poor AV facilities, with students not in a space where you could do anything but stand at the front.*

Another faculty member indicated that

*We talk about being student-centered and focused, you know, and making teaching important and we do everything in the opposite direction. .. we’ve just renovated a whole bunch of classrooms, …. and then we walk into room after room after room and all the seats are bolted to the ground.*

Infrastructure is an input indicator that was generally discussed as a barrier to effective teaching, impeding the use of best practices to engage students in active and meaningful ways. Infrastructure concerns ranged from the types of seating available to overcrowded classrooms to aging or broken technology.

Research above Teaching

When asked to describe the teaching culture on their campus, many of the faculty members who participated in the focus groups laughed or smiled, and then commented that the university culture was not about teaching; it was about research. Participants from every field spoke about how teaching was seen as a ‘load’ or a ‘burden’ that was escapable only if you could bring in enough research funding. Teaching release and sabbaticals were referenced as rewards for well-funded researchers while effective teaching was rewarded with an increased teaching load or larger class sizes. The impact of sessional or contractually limited positions was raised frequently. An example of this perspective is:

*I’m a limited term faculty member so I have a heavy teaching load, and I constantly see people who are tenured faculty members in our department trying to figure out ways to not have to teach. ….. We’re not considered to be the same level of importance... So the message is that what you’re doing really isn’t important…*

Another faculty member indicated that:
Promotions are definitely based on research almost solely because effectively if the letters don’t come back from the external reviewers as warm or better there’s no chance for promotion no matter how good of a teacher you are. And they actually see very little about your teaching because they get your CV and that’s what they do their ranking based on.

A faculty member highlighted that this emphasis is evident as early as the recruitment of new faculty.

I think that part of the issue is that we recruit faculty based on research and we ask people to deliver teaching.

Faculty members outlined that the unequal value of teaching and research was particularly reflected in hiring, tenure, and promotion practices.

Teaching Evaluations

Many participants noted that teaching is difficult to measure, and the methods in place were inadequate. Some believed that student ratings of instruction (also known as student evaluations of teaching or course evaluations) were inaccurate, or were more indicative of popularity, course content, or easiness of a course rather than effective teaching. For example,

So if teaching was really valued here, there would be a mechanism for measuring the effectiveness of the teaching that the faculty had confidence in, and that’s definitely not a student opinion survey. Then there would be another mechanism that allowed that to be factored into our PT decisions in a measurable, justifiable, accountable way.

Another faculty member said:

We have, I think, a sound course evaluation form because it focuses on how effective [you were]… Now, you could be completely disorganized, and never comb your hair, and speak too loud, or not speak well at all, but still be an effective instructor.

Together, these concerns speak to the value that the focus group participants themselves placed on teaching quality and the commitment they had to providing their students with meaningful learning experiences. Other discussions that took place in the focus groups revolved around the value that faculty members placed on engaging students in meaningful and transformative exercises and discussion, research-inspired teaching, and innovative and engaging teaching methods. A few participants echoed the student perspective that accessibility and face-to-face contact was important, since ever-increasing class sizes made accountability on the part of the faculty member and the student difficult. Though current student ratings of instruction were generally considered an invalid way to measure effective teaching, most faculty members agreed that there would need to be a broader overhaul of the system before an alternative system could be enacted.

Overall, faculty identified input indicators (such as teaching support, infrastructure and recognition of teaching) and process indicators (such as hiring and promotion processes and teaching evaluations), which may be valuable for further study of teaching culture. Additionally, the focus group findings indicated existing teaching cultures included both positive and negative examples of most of the possible indicators.

Graduate Student Focus Groups

Graduate student participants shared many of the same concerns as faculty and undergraduates. Graduate students spoke about supporting innovative pedagogy and research-inspired teaching, support for teaching development and recognition of teaching as noteworthy indicators of a valued teaching culture.

Supporting Innovative Pedagogy

Graduate student participants noted that adequately supported innovative pedagogy is an important
indicator of an institution’s teaching culture. They specifically focused their comments on the effective use of technology and class time. The following student describes the potential damage to an institutional teaching culture when innovative pedagogy is embraced without sufficient support:

*I find universities rushing into it [online learning] because they save money. While there is an important need for online learning, when it’s entirely online learning without any opportunity for in-course, and no support for teachers to understand technology and run an online course, that’s when I see university’s not valuing education and students.*

The availability of technology would be an input indicator, but appropriate use of the technology and developing innovative methods are primarily process indicators, dealing with the delivery of programs. Again identifying both quantitative and valuable qualitative indicators.

**Research-inspired Teaching**

A second major theme for graduate students was research-inspired teaching; they viewed a quality teaching culture as one in which professors teach students how to find answers themselves rather than, simply, teaching them the answers. However, they acknowledge that the methods must be implemented well, or the experience is not effective:

*You are saying, here is your teacher and they are going to give you a bunch of materials and here you go teach yourself and your paper is due in about 3 months. I felt that way. I’m teaching myself, so what am I paying you for?*

**Support for Teaching**

Similar to the faculty focus groups, students identified the need for support for teaching development for graduate students as represented in this comment:

*We have so many hours in our TA forms [forms listing expected roles and hours]… and most of them are done sitting in lectures, so why not put those hours toward training a TA and feel you’re getting paid for these training hours… "I’ve already taken this course and it would benefit me a lot more to be trained."

Graduate students also felt that professional development for instructors is an indicator of a teaching culture:

*The biggest indication that the university doesn’t really value teaching, is the fact that instructors are not actually given any direction on how to teach people. "You’re here for research. We’re going to put you in front of a classroom, and we don’t really care whether you actually know what you’re doing there."*

**Recognition of Teaching**

Similar to faculty, graduate students identified promotional incentives for teaching as indicative of a culture that values teaching. The most frequently mentioned motivational incentive was recognition through awards, though like the faculty, problems with the process of identifying and distributing awards were also raised.

*I mean if a school values teaching a lot, there would be some awards set up for that instead of just the best scholars of the year, or the best publisher of the year. Maybe they’d have a best teacher of the year.*
institutions’ teaching culture. These themes are further explored below.

Undergraduate Student Focus Groups

The five most cited indicators of a quality teaching culture to undergraduates were use of best teaching practices, specific behaviours associated with effective teaching, teacher accessibility, evaluation of teaching, and implementation of student feedback.

Best Practices

Students from all three institutions commonly reported that professors’ use of best teaching practices reflected value in teaching. The most frequent practices centred on collaborative learning, such as group discussion, classroom participation, or problem-based learning. Also of interest were effective use of technology and simplification of complex concepts.

I think professors should let students participate more. They should let students discuss issues or questions themselves, and [professors’] conclusions should come last. … The contemporary education system discourages us to think critically. If they give us all the conclusions, students are more likely to think less.

The use of current and supported best practices is a process indicator because it is a means to deliver effective teaching. A valuable qualitative insight to understand teaching culture.

Specific Behaviours

Undergraduate students identified specific behaviours that they associated with effective teaching as evidence of a culture that values teaching. These behaviours are not coherent methods to be included in best practices, but rather specific behaviours that students perceive as indicators of respect, expertise and professionalism. Like best practices, they are also process indicators, related to delivery of the program.

Some students repeatedly mentioned specific behaviours such as professors who walk around the classroom, write their own textbooks, demonstrate passion for the material, dress in a professional manner, and arrive to class on time. The following comment reveals a student’s interpretation:

[Professors] don’t really have a professional demeanour: showing up later than the students, not really dressing as a person who’s supposed to be your superior and who’s supposed to be instilling all this information to you. You look up to them to see where I can go. When they don’t put the effort into coming on time, it makes it feel like it’s just a side thing that they’re doing.

Teacher Accessibility

Participants reported that the availability and approachability of professors may demonstrate the value they place on teaching. For example, in reply to the question, “When you think of quality teaching, what comes to mind?” a student indicated:

Being accessible outside of the classroom hours and really [communicating] that you want the students to understand, that you’re going to spend the energy to help them understand if they don’t get it in class.

Teacher accessibility may be classified as an input indicator when related to time professors organize their time around teaching, research, and service as institution-supporting resources, and it may also be a process indicator, related to the delivery of a program.

Teaching Evaluation

Like faculty, both graduate and undergraduate students identified the development of valid measures of teaching effectiveness and opportunities for students to provide feedback to instructors on their teaching as indicators of an institution’s teaching culture. Undergraduate, graduate students and faculty agreed upon the major flaws of the current
evaluations for teaching. Moreover, undergraduate students extended their concern with teaching evaluations to include unmet expectations for the implementation of students’ feedback. Undergraduate participants expressed discontent with current measures of teaching effectiveness and the need to develop more effective assessments. Students suggested the process needed to be more sophisticated – including more questions on the surveys, opportunities for mid-term feedback to professors, and the availability of an independent observer to provide feedback on teaching. One student commented that:

I have a professor who will continuously ask for feedback through the semester and not at the end. And I was wondering why the university’s not providing the student feedback from previous years to teachers.

Implementation of student feedback

Students mentioned that actually using student feedback and evaluations of instructors were indicators of a quality teaching culture; though many reported a lack of necessary change to address grievances. Ensuring that faculty members utilize student feedback constructively to enhance their teaching has the potential to impact teaching culture by improving the standard of teaching at an institution. This will also empower students by demonstrating that their opinions are valued. Further, including the teaching evaluations in promotion, tenure, and hiring decisions indicates that administrators value teaching. Implementing student feedback would be a process indicator, providing understanding about an institution’s current practices leading to quality enhancement. The following comment illustrates the impact when there is not a constructive response:

Where does our feedback go? … like, for this situation that we had, when we did report to the acting dean, it felt like there was nothing done and the professor actually retaliated and we were like “Oooh, so should we have said anything?”

Discussion

Focus groups from three different institutions identified complementary themes from focus groups of faculty, graduate students and undergraduate students. In many cases, faculty members identified input indicators – resources that currently exist such as centres for teaching and learning and teaching awards; however, they also mentioned that, while the indicators were present, they were not sufficiently resourced. Faculty members at each institution also indicated that aging infrastructure was a major barrier to teaching effectiveness, and that the space for teaching needs to be adequately designed to support learning and student-teacher engagement. Both support for teaching and infrastructure are types of input indicators, representing operational variables that exist within the university to support and enhance a culture of teaching quality. These are factors over which an institution has control, and can take steps to address, though they carry resource implications.

Themes that related to process indicators were viewed as more problematic, suggesting a negative campus culture surrounding teaching. The two main themes that emerged as process indicators from faculty, and echoed in the comments of students, suggest that teaching quality is frequently overshadowed by a push for greater research, and that the processes in place to evaluate quality teaching are in need of improvement. Faculty members and students identified an unequal value of teaching and research that was particularly reflected in hiring, tenure, and promotion practices. Hiring practices could be considered either input indicators, or process indicators, and the process of hiring, tenure and promotion are accepted in the literature as important factors in an institutional culture (Cox et al., 2011; Kember, 1997).

Faculty, undergraduate and graduate students equally emphasized the need to improve teaching evaluations. Students identified the need to ensure implementation of the feedback collected from the students’ evaluations. Faculty and graduate students also highlighted the need for valid and
valuable promotional incentives or recognition for teaching. The themes that emerged, such as that of supporting teaching, recognizing effective teaching, constructively evaluating teaching, engaging stakeholders and dedicating resources; are all consistent with the international literature (Cashmore, Cane, & Cane, 2014; Cox et al., 2011; Hénard & Roseveare, 2012; Paulsen & Feldman, 1995; Percy et al., 2008).

Interestingly, the participants in the focus groups identified only input and process indicators. The literature indicates that outcome indicators, although the least common, are considered more useful than input indicators for bringing about meaningful change (Chalmers, 2008).

The Quality Teaching Culture project is a research program to develop and validate assessments of institutional teaching cultures that are appropriate for the Canadian context. An initial phase of this research program involved conducting focus groups with faculty members as well as undergraduate and graduate students to identify significant and relevant indicators of an institution’s teaching culture to pursue.

If the themes identified at the three institutions are common at the provincial or national level, initiatives to target those themes could be extremely powerful. For example, the Scottish higher education sector, supported by the Scottish Higher Education Enhancement Committee (SHEEC), identifies one theme of national importance to focus quality enhancement efforts across the country over the course of three years (Gunn, 2014; Schofield, 2007; Quality Assurance Agency for Higher Education, 2014). Enhancement efforts and themes across Scotland have been successful, likely because the activity is supported by resources, infrastructure, and the structured integration of student voice by intentionally involving students in the process. These enhancement themes have had an impact on the teaching culture at institutions across the country; because this large-scale change is made in a collaborative fashion, with evidence of changing practice, it is integrated into decision-making and strategic planning (Matchell, 2008).

A process to examine teaching culture has the potential to change the way postsecondary institutions in Canada view and value teaching. Raising awareness of teaching and promoting quality enhancement can have a long-lasting effect on the culture of teaching, and, ultimately, on student learning.

References


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Biographies

Erika Kustra is the Director, Teaching and Learning Development at the University of Windsor.

Florida Doci is the Project Research Coordinator for the Teaching Culture project, University of Windsor.
Kaitlyn Gillard is a Research Assistant from the University of Windsor.

Catharine Dishke Hondzel is a Research Assistant at The University of Western Ontario.

Lori Goff is the Manager, Program Enhancement at McMaster University.

Danielle Gabay is a Research Assistant at McMaster University.

Ken N. Meadows is an Educational Researcher at The University of Western Ontario.

Paola Borin is a Curriculum Development Consultant at Ryerson University.

Peter Wolf is the Associate Vice-Provost (Teaching and Learning) at Queen’s University.

Donna Ellis is the Director, Centre for Teaching Excellence at the University of Waterloo.

Hoda Eiliat is a Research Assistant at the University of Windsor.

Jill Grose is the Director, Centre for Pedagogical Innovation at Brock University.

Debra L. Dawson is the Director for the Teaching Support Centre and the Director of the Centre for Research on Teaching and Learning in Higher Education at The University of Western Ontario.

Sandy Hughes is the Director, Centre for Teaching Innovation and Excellence at Wilfrid Laurier University.