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Enhancing the Research-Teaching Nexus: Building Teaching-Based Research from Research-Based Teaching

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Definitions and practical interpretations of the research-teaching nexus are various, but almost invariably the link between teaching and research lies in the direction of transferring research into teaching rather than vice versa. This transfer is achieved by using research to inform teaching and, less frequently, by engaging students in research. Usually these students are final year undergraduates and the research project is purpose-built to develop in students the desired course learning outcomes. This paper reports an alternative realisation of the teaching-research nexus. It presents a case study of teaching that was informed by research and engaged both first year and final year undergraduate students in research, using problem-based learning. Subsequently, the research undertaken by the students as part of their learning process directly informed development of a large, government-funded research project, thus completing an unusual two-way relationship in which research underpinned teaching and learning activity, and teaching and learning activity underpinned research.

This paper presents a case study of the development of a research-teaching nexus in the context of two undergraduate business research methods courses in an Australian university, one first year course and one final year course. In both cases existing mathematics-based statistical analysis courses were transformed into problem-based learning courses that engaged students, working in collaborative research groups, in the exploration of an authentic and ongoing research problem: "What factors influence students' decisions to drop out of university?"

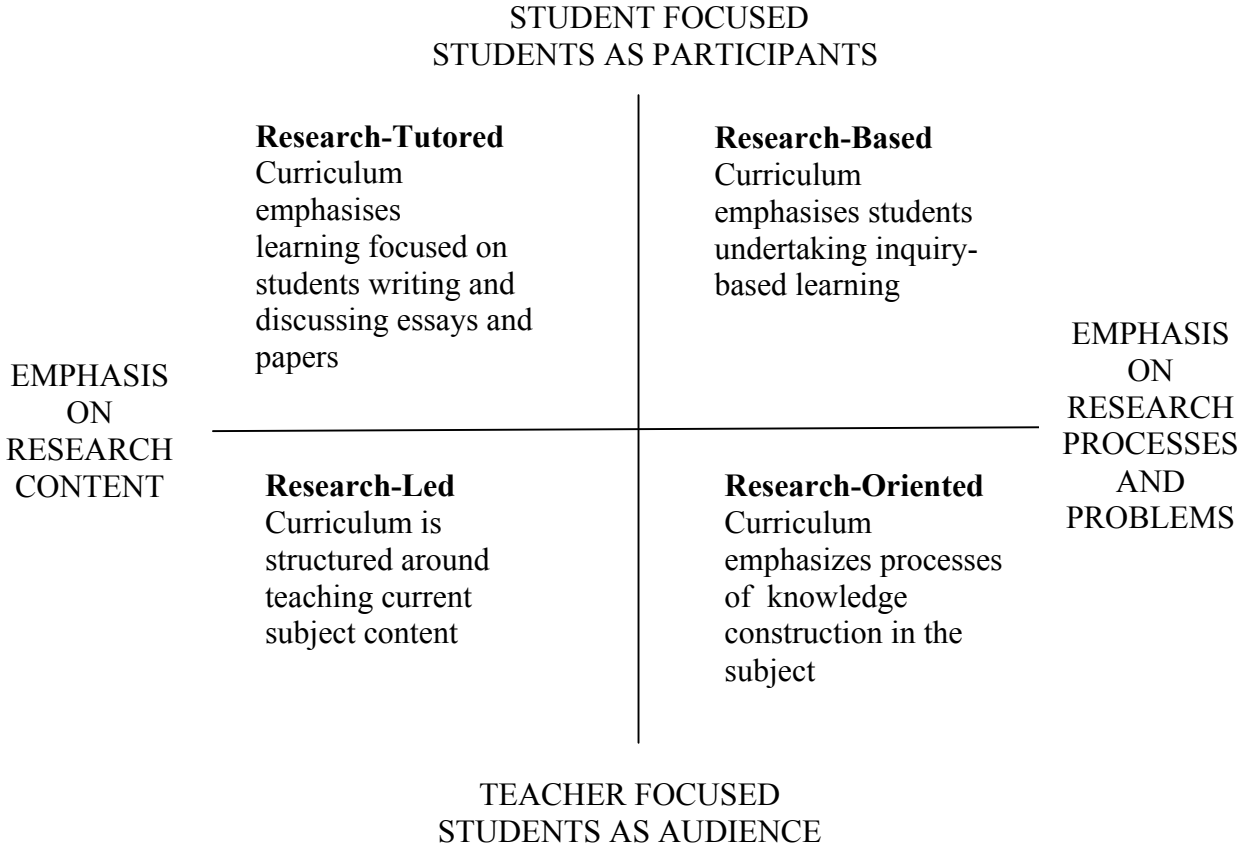
The paper begins with an overview of literature relating to the research-teaching nexus and to problem-based learning. Subsequently it describes the activities undertaken by the students and lecturer in the two courses transformed into problem-based learning courses, as well as the students' responses to the transformation. Next it details how, in a reversal of the usual process of feeding research into teaching/learning activities, teaching/learning activities fed directly into research and led to the gaining of a large government grant. Finally, the paper details evaluations of the transformed courses, presents reflections on the implemented research-teaching nexus and, on the basis of these, makes recommendations related to the implementation of a similar research-teaching nexus in other discipline areas.

Defining the Research-Teaching Nexus

Definitions and conceptualizations of the research-teaching nexus are numerous. Hoddinott & Wuetherick (2005, p. 32) describe "a continuum between teacher-focused research-based course content and a student-focused research-based process of learning." Similarly, in their discussion of "research-led teaching" Holbrook and Devonshire (2005) describe the research-teaching nexus in terms of research-informed teaching – where disciplined-based research informs content – and research skills teaching – where students develop research skills. They add, however, the additional element of research-inquiry teaching, when academics use research to investigate the effectiveness of teaching and learning activities, which Griffiths (2004), in his conception of the research-teaching nexus, refers to as "research-informed teaching." Neumann (1994) also invokes an academic perspective on the research-teaching nexus, describing it as a multi-level relationship focusing on the global (i.e., collectively, departmental research interests provide direction, frameworks and a resource base for the courses offered students), as well as the tangible (i.e., teaching serves to disseminate research knowledge and skills) and the intangible (i.e., teaching serves to develop in students a critical approach to "knowledge" and a positive attitude to learning).

McLean and Barker (2004), however, discover two dominant conceptualizations of the research-teaching nexus: one that emphasizes the role of inquiry-based learning in enabling both researchers and students to build knowledge and negotiate meaning (see, for example, Brew, 2003), and one which emphasizes curriculum design leading to the development of students' research capacity. This latter element is also present in Healey's four-quadrant schema of the research-teaching nexus (Healey & Jenkins, 2006), reproduced as Figure 1. It is this schema that will be used to describe the teaching and learning activities discussed in this paper because of its comprehensive inclusion of the elements of student learning activity present in other conceptualizations of the research-teaching nexus. It should be noted that "often the most effective learning experiences involve a combination of all four approaches, but... the emphasis should be placed on the student centered approaches in the top half" (Healey & Jenkins, 2006, p. 48).

Figure 1
Curriculum Design and the Research-teaching Nexus



Achieving a Research-Teaching Nexus

Intriguingly, while strongly advocating the integration of research into teaching, many of the authors of papers on the research-teaching nexus acknowledge empirical research findings such as those of Hattie and Marsh (1996) which point to the lack of reciprocal relationship between teaching and research (e.g. Neumann, 1994; Griffiths, 2004; McLean & Barker, 2004). It has been argued, however, that such findings are an artifact of the research method used (Verburgh, Elen, & Lindblom-Ylänne, 2007) or of a misinterpretation of the research proposition (Prince, Felder & Brent, 2007), for there is direct evidence to indicate that students themselves value the linking of research with teaching (Robertson & Blackler, 2006; Turner, Wuetherick, & Healey, 2008), as long as this does not lead to the hijacking of the curriculum by the lecturer's personal research interests (Neumann, 1994; Turner et al., 2008). Both administrators and academics argue for the value of the research-teaching relationship in terms of maintaining content currency and achieving competitive advantage in the recruitment of high quality postgraduate students (Taylor, 2007; 2008), and some academics also argue that the integration of research into teaching enables them to try out new research ideas (Griffiths, 2004; Robertson, 2007). In general, this academic-student sharing of ideas is perceived to occur most readily in the teaching of postgraduate students (Smeby, 1998), although Neumann (1994) and Robertson (2007) provide examples of such sharing at undergraduate level, particularly with students in the later years of study and in social science or humanities courses.

Generally, the achieving of a research-teaching nexus in undergraduate teaching involves academic control over content and learning tasks, i.e. in Healey's terms, research-led and research-oriented curriculum design (Healey & Jenkins, 2006). However, as Lips' (1999), Weatherall's (1999) and Robertson's (2007) discussion exemplifies, when the research-teaching nexus is enacted through a research-based curriculum design by engaging students in problem-based (or inquiry-based) learning, students potentially become

co-learners and co-researchers with the academic. In this case, the academic implicitly or explicitly cedes control over the learning process, allowing students to make 'mistakes' and follow avenues of inquiry - as do academic researchers - that may ultimately lead in the wrong direction or to a dead end. This aspect of task and process authenticity contains inherent problems for students who seek certainty or look for their learning to be guided by an "expert." It also poses problems for academic staff whose performance is often evaluated by students in terms of the perceived clarity of task and desired outcomes.

Implementing Research-Based Teaching Through Problem-Based Learning

Problem-based learning (PBL) is a student-centered teaching approach that has its roots in cognitive learning psychology and constructivism (Dewey, 1916; Piaget, 1954; Vygotsky, 1978). It reflects the constructivist assumption that learning inevitably involves the personal construction of knowledge, enacted through social and collaborative learning processes involving realistic and authentic tasks (Draper, 2002; Barrell, 2007).

In PBL, student work is generally organized around a complex, ill-structured problem that may not necessarily have any one correct solution, i.e. a 'messy' problem (Torp & Sage, 2002, cited in Savery 2006) that invokes multiple reasoning paths and multiple solutions Jonassen, 1997). The problem itself functions as 'a content and knowledge organizer, learning environment contextualizer, thinking/reasoning stimulator, and learning motivator' (Hung, 2006, p. 56), especially in courses previously characterized by a lack of student interest (Mykytyn, Pearson, Paul, & Mykytyn Jr, 2008). Weiss (2003, p. 25) notes, however, that a poorly designed problem – far from inspiring learning – may act only as the catalyst for 'a scavenger hunt for information from resources' provided by the teacher.

Although PBL is usually combined with some traditional teaching approaches such as lecturing – and is arguably more effective when it is (Barraket, 2005) – the problem is ideally presented before course content and tools are made available. In a learning environment characterized by discussion and peer interaction (Hmelo-Silver, 2004), students collaboratively strive to locate relevant information and solve the problem at hand. The role of the academic is to facilitate learning rather than "transfer knowledge" and to provide guidance and information, often on a just-in-time basis, and increasingly through the use of electronic communication tools (Hunt & Tyrell, 2000; Van Rooij, 2007). Despite perceptions that PBL involves little or no guidance of learning (Kirschner, Sweller, & Clark, 2006), a significant time commitment to preparation, management, and ongoing evaluation of learning is required to achieve the high level of scaffolding that is critical to the success of PBL (Simons, Klein, & Brush, 2004; Hmelo-Silver, Duncan, & Chinn, 2007; Oliver, 2007). Ironically for the academic from whom so much more time is taken to build a research-teaching nexus using problem-based learning, the act of teaching usually becomes less visible to students than it would have been had s/he simply delivered research-led lectures.

Enacting the Research-Teaching Nexus in Undergraduate Classes: A Case Study

Problem-Based Learning in Year Three: The Existing Course

In the small regional university that is the focus of this case study, Advanced Research Methods is a semester 1 compulsory course for all undergraduate third year marketing students and an optional course for other undergraduate students in the Faculty of Business. Its long-term goal is to provide graduates with the skills to conduct research in the business world. Its short-term goal is to provide marketing students with the skills necessary to work in small groups and complete a research consultancy for a local organisation in the following semester. The course spans 13 weeks, comprises 25% of a full-time student load, and involves students each week in a two-hour lecture, a one-hour tutorial, and a one-hour computer laboratory. To gain entry into the course students are required to perform at least at Credit level (65% or higher) in their first year introductory course, Applied Research Methods.

In its original form, prior to the revisions described here, instruction in Advanced Research Methods was heavily concentrated upon the mathematics of statistics. Three textbooks were used – a univariate statistics text (Hair, Anderson, Tatham, & Black, 1998), a multivariate statistics text (Argyrous, 1996), and a guide to the SPSS statistical software package (Coakes & Steed, 2001) – as well as a 416-page book of selected readings. Assessment comprised mid-semester (15%) and final (50%) exams and two assignments (15% and 20%) in which students were provided with 'dummy' data sets and required to conduct and write up appropriate statistical analyses.

Despite being a demanding course, many students performed very well in Advanced Research Methods. Upon its completion they had the skills to analyze quantitative data using univariate and multivariate techniques, yet when they undertook their research consultancy the following semester, they often made naïve mistakes such as poor choice of variables to represent the concepts they hoped to measure and poor choice of measurement scales which made analysis of data difficult.

In its last year of traditional presentation, 38.96% of Advanced Research Methods students achieved a final grade of Credit or higher. At the same time, however, a large proportion (37.66%) of students failed the course, including 18.42% of students who, although still formally enrolled, dropped out and did not attempt to take the final exam.

Problem-Based Learning in Year Three: The Revised Course

The goals for the transformation of Advanced Research Methods into a PBL course were, first, to increase the engagement of students with the course – particularly less able students – in an effort to reduce both the drop-out and failure rates and, second, to provide students with more practical research skills. The nexus between teaching and research was to be achieved not just through a research-based curriculum (i.e. problem-based learning), but also through a research-led approach which saw relevant examples from the academic's own organizational climate research included in lectures and the use of a book of readings which included several of the academic's papers illustrating the application of different statistical techniques. Through use of a textbook co-written by the academic (i.e. Manning & Munro, 2006) instead of the previous three texts, the curriculum also reflected a research-oriented approach aimed at developing simultaneously in students a theoretical understanding of survey data statistical analysis as well as the practical capacity to use SPSS to analyze data.

Concurrent with the course transformation, within the Faculty a small group of academics (including the academic teaching the course) were discussing the possibility of applying for a teaching grant focusing on student retention and attrition. The value of student input into such a project was recognized, and thus it was decided that the problem at the core of the curriculum should be "What factors influence students' decisions to drop out of university?" This problem not only met the condition of authenticity, but it was also a "messy" problem. It also seemed likely to engage students' interest, challenging them to weigh relevant literature against personal experience when developing research constructs. This research question was presented to students at the end of the first introductory lecture.

The problem-based learning activity spanned two stages: Stage 1, design of the study; and Stage 2, quantitative data gathering and analysis. In Stage 1, the 91 students undertook literature searches and ran focus groups in tutorials, choosing students from amongst them to act as focus group moderator and recorder. Building on these preliminary activities, in small groups they identified relevant concepts, developed conceptual frameworks and operationalized the concepts as measurable questionnaire variables. In an individual assignment (worth 20%) each student reported on these concepts and frameworks and consequent hypotheses. In whole group discussions questionnaire items devised in small groups were selected or rejected for inclusion in a single questionnaire. In Stage 2 students used hard copies of this questionnaire to gather data, and then they entered the data into SPSS files which the academic aggregated into a single SPSS file and posted on Blackboard. Students then individually decided upon the analyses required, conducted the analyses using SPSS and individually wrote up the results of their analysis as their second assignment (worth 30%). At the end of the course students completed an examination (worth 50%).

Throughout the course, communication between the academic and all 91 students took place online via Blackboard, as well as in lectures and tutorials. Tutorials and Blackboard represented environments within which possibilities could be explored – in small groups in tutorials, and with the whole group via Blackboard. Lectures represented environments for information gathering and whole group decision-making. On Blackboard students could post, for example, themes or concepts identified in the focus groups or academic literature, details of relevant articles, competing models describing relationships between concepts, or details of instruments available to measure identified concepts. In each two-hour lecture during Stage 1, the last 30 minutes were devoted to discussion and democratic resolution of issues relating to project design, such as concepts to be measured, the model to be tested, the instrument/items to be used, the population from which the sample would be selected, and the logistics of data collection.

In Stage 1, each week the academic "drew a line in the sand" and specified which issues needed to be resolved by the end of that lecture. One of the earliest sets of issues resolved related to the concepts to be measured and the model specifying the relationship between those concepts. Two models, both with strong support, had been posted onto Blackboard. In the lecture, arguments were presented to support both. The issue was resolved via a show of students' hands. The outcome was viewed as "less than satisfactory" by some who had supported the alternative position, and at least one student commented to the academic that he would withdraw from the course because of the model chosen (he didn't).

Throughout the process students were allowed to make both good and poor decisions. For example, in the lecture when the group decided how each concept would be measured, the students had agreed upon the questionnaire items that were to be used to operationalize the research concepts and were satisfied they had completed this part of the design process. It was not

until it was brought to their attention by the academic that anyone in the group realized that they hadn't worked out how to measure their most important concept and the focus of the whole study - student retention. The academic's suggestion that his research involving employee turnover intention might provide some clues as to how to measure student retention (amongst students still enrolled) led eventually to students including in their questionnaire an item that required students to respond to the statement, "I am likely to leave this university within the next twelve months," using a 7-point scale.

In another example, students voted to collect data within lectures for "core" courses (introductory courses compulsory for all undergraduate students). This method was agreed upon – despite the fact that no student had thought to ask permission from the staff members teaching these courses – and the academic teaching Advanced Research Methods made no comment about the decision. In Stage 2 of the project, it was found that such permission would not be forthcoming, and the students hurriedly made alternative arrangements.

Problem-Based Learning in Year One: The Existing Course

Applied Research Methods is a 13-week, semester 2 course, compulsory for all undergraduate students in the Faculty of Business. Its goal is to develop basic business research skills.

In its original form the course used three textbooks (Cavana, Delahaye, & Sekaran, 2001; Coakes & Steed, 2001; Voelker, Orton, & Adams, 2001), and it focused on the mathematics of statistics using a traditional lecture-tutorial format. Assessment comprised a literature review and short answer questions (20%), tutorial participation (10%), two assignments (15% each) in which students were provided with "dummy" data sets and required to conduct and write up specified statistical analyses, and an exam (40%).

The course was pitched at a low level, mostly requiring students to perform basic calculations following patterns set by the teacher. Implicitly it was assumed that these activities would develop in students the required conceptual understanding of research methods. Although over a third of all students usually received distinction or high distinction grades in the course, these students often did not in subsequent courses demonstrate the capacity to apply appropriate research methods or adequately critique empirical research.

Problem-Based Learning in Year One: The Revised Course

The revision of Applied Research Methods was designed to develop students' conceptual understanding so that graduates of the course would be able to choose and use appropriate research methods and statistical analyses rather than just perform calculations and conduct specified analyses. The revision resulted in a course that, like the more advanced course, challenged students to develop conceptual frameworks and hypotheses and engaged them in data collection and analysis. However, it used a modified, more overtly guided, less-collaboratively-based form of PBL to achieve this. Although students were asked to grapple with an authentic problem and their activity led to development of a questionnaire designed to address the problem, they were not asked to cooperatively decide upon and resolve all issues associated with researching the problem.

As with the third year group, the 229 first-year students were given the question, "What factors influence students' decisions to drop out of university?" They too conducted focus groups in tutorials to gather peer responses to this question, and in tutorials each student also conducted an in-depth interview on this question with another student. In tutorials, rather than developing their own research methods and procedures, however, students were provided with potentially relevant conceptual frameworks and analysis options. Guided by an academic, in groups students discussed and debated the merits of these and their relevance to the given problem. Each student subsequently submitted a qualitative analysis of focus group content and their interview data, a resultant set of hypotheses, and a one page questionnaire designed to quantitatively investigate the issues raised in the focus groups and interview (worth 20%).

Using the students' focus groups analyses, hypotheses, and questionnaires, as well as academic literature on retention and attrition as a foundation, the academic teaching the course constructed a questionnaire which all Applied Research Methods students completed during a lecture. This questionnaire data, collated by the lecturer, was then given to students to analyze. Their report on this analysis formed part of the course assessment (30%), with the remaining assessment marks allocated to tutorial participation (10%) and an exam (40%).

Evaluating Impacts of the Research-Teaching Nexus: Student and Staff Outcomes

Student Outcomes

The introduction of PBL and other aspects of the research-teaching nexus was accompanied by dramatic changes in student grades in both courses (Tables 1 and 2). In the third year course, the proportion of students failing fell from 37.66% to 18.68% and the proportion of students who did not take the final exam

fell from 18.18% to 8.79%, yet there was no increase in the proportion of students receiving High Distinctions (1.30% to 1.10%) or Distinctions (15.58% to 12.09%). The proportion of students receiving a grade of Credit or higher, remained relatively stable pre- to post-implementation of the PBL course, rising only from 38.96% to 41.76%. This pattern of results in the third year course arguably shows that the changes implemented served to make the course less intimidating (as evidenced by lower drop-out rate) and more comprehensible (as evidenced by the lower failure rate), without compromising academic standards by simply making the course easier.

In the first year course failure rates rose (25.37% to 32.32%) and the proportion of students receiving a Distinction or High Distinction dropped considerably (from 34.63% to 20.52%).

The reduction in high grades may be seen as an indicator of increased rigor in the course. In this context, the relatively small increase in the failure rate may be seen as a positive. It suggests that, despite the greater rigor, the PBL approach was effective in helping weaker students comprehend the course material.

Table 1
Student Results MKG301 *Advanced Research Methods*, 2005 and 2006

	2005 (n=77)		2006 (n=91)	
	Frequency	%	Frequency	%
Grades				
High Distinction	1	1.30	1	1.10
Distinction	12	15.58	11	12.09
Credit	17	22.08	26	28.57
Pass	18	23.38	36	39.56
Fail	29	37.66	17	18.68
Breakdown of fails				
Didn't sit final exam	14	18.18	8	8.79
Completed all assessment	14	18.18	5	5.49

Fail: < 50%, Pass: 50-64%, Credit: 65-74%, Distinction: 75-84%, High Distinction: 85-100%.

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Table 2
Student Results BUS101 *Applied Research Methods*, 2005 and 2006

	2005 (n=205)		2006 (n=229)	
	Frequency	%	Frequency	%
Grades				
High Distinction	22	10.73	6	2.62
Distinction	49	23.90	41	17.90
Credit	50	24.39	59	25.76
Pass	32	15.61	49	21.40
Fail	52	25.37	74	32.32

Fail: < 50%, Pass: 50-64%, Credit: 65-74%, Distinction: 75-84%, High Distinction: 85-100%.

Informally, it was clear to the academic teaching the courses that both first and third year students had engaged more effectively with subject matter typically perceived as difficult and that they had enjoyed the opportunity to investigate a topic of direct relevance to them. Many were also pleased to have the ideas developed in the process of their learning fed back into the research on which their teacher was engaged. The value of their contribution was made manifest two years later when all Faculty of Business students were invited to complete a questionnaire that formed part of a national study on student retention and attrition, for which the group of academics who first devised the research problem had received a large government grant.

Additionally, two of the students involved in the third year course so enjoyed the experience that they opted to undertake an Honours year supervised by the academic teaching the course, and these two students are co-authors of this paper.

Academic Staff Outcomes

Academic staff outcomes arising from the development of this research-teaching nexus took two primary forms: student evaluation responses and the gaining of the large grant. Typically at the end of each course in this university students are asked to evaluate their teacher's performance, with the results of such evaluations used for the purposes of performance review and promotion. The summary of the results for *Advanced Research Methods* and *Applied Research Methods* for the year prior to the introduction of the

PBL course and the year of the PBL course are provided in Table 3.

In the third year course, no dramatic changes were observed in response to any of the items and responses were stable for two items, including overall satisfaction. Slight improvements were found in responses to the items relating to the teacher's manner and the support provided, yet slight reductions were found in responses to items relating to course structure, clarity of concepts and objectives, and learning environment. This suggests that the uncertainty and reduction of teacher dominance associated with engaging students in a PBL research-based curriculum may, paradoxically, lead to improved student learning outcomes while potentially damaging academic staff outcomes. In the first year course, improvements were found in responses to almost all evaluation items, and particularly those relating to the effectiveness of the learning tasks, course structure, and teacher's manner. Given these improvements, it seems likely that the more negative evaluation of the feedback provided reflects the academic's tendency to ask students further questions rather than provide the answers requested. Reductions in evaluation scores, such as those seen here, do not argue against the introduction of a research-based curriculum, but they do highlight the need for the gathering of student success data such as those presented in Table 1.

Beyond student evaluation outcomes, the unusual teaching-research nexus described in this case study underwrote a very positive outcome for the academic teaching the courses and his colleagues. The data gathered by third year students and the questionnaire completed by first year students were analyzed and used in the construction and trial of an initial questionnaire which, several drafts later, became the questionnaire used to collect data for a national project on attrition and retention. This project was one of only 17 selected from 154 applications to receive a grant that year from the Australian Learning and Teaching Council – the peak national body for learning and teaching – and it was awarded funding of $219,877 to conduct research into attrition and retention and use that research to bring about changes in the seven project partner universities. The input of the undergraduate students involved in the research-based curricula was vital in giving focus to the research proposed in the grant application, and it also enabled testing of a questionnaire, demonstrating the viability of the project and that progress had been made prior to the application for funding.

Conclusion: Reflections and Recommendations

The transformation of Advanced Research Methods and Applied Research Methods into research-based, PBL courses achieved many of the envisaged teaching and learning outcomes: they achieved desired changes to failure rates without lessening of the courses' intellectual rigor; in Advanced Research Methods naïve mistakes commonly made in the following semester market research consultancies were successfully brought forward, and positive feedback on improved student performance was received from the coordinator of the market research consultancies; in Applied Research Methods students dealt more effectively with notoriously difficult subject matter. The transformation also underpinned the success of academic colleagues in obtaining a large, national teaching grant.

From an academic's perspective, PBL involves a much closer engagement with students than does the traditional presentation of courses, and the implementation, management, and assessment of PBL demands a significantly greater time commitment. Students interact more with their teacher, asking questions both face-to-face and through emails and postings on Blackboard. Although this additional interaction enables the academic to better understand how students are progressing, watching the slow movement of students through the process (particularly in Stage 1 of the advanced course) can also be emotionally taxing. Further, although PBL is not unguided teaching, this is not always appreciated by students who may become critical of a perceived lack of support during the course and ultimately evaluate the course as lacking clarity of direction or structure or feedback – a potential negative staff outcome that needs to be addressed through systematic data collection. Nevertheless, in terms of learning outcomes, research-based teaching delivers significantly greater benefits to students. They not only gain knowledge but also learn to ask appropriate questions and subsequently apply what they have learned even in complex or ambiguous circumstances.

In the case study presented, in an unusual two-way flow of activity, research-based teaching led to both improved learning outcomes for students and improved research outcomes for academic staff. Although the context of this research-teaching nexus case study is the teaching of research methods, the two-way process described may be adapted to any discipline in which student perspectives on a specific topic could productively inform development of a teaching or research grant application. For example, assessable documentation detailing students' strategies for thinking about, say, a physics or a history problem that forms part of a PBL course could underpin a grant application for research into how to address the difficulties faced by students and required curriculum changes. Ultimately, the opportunity to "double-dip" on the research-teaching nexus provides a powerful incentive for an academic to give the time required to develop effective research-based teaching.

Table 3
Student Feedback on Teaching: MKG301 *Advanced Research Methods* and BUS101 *Applied Research Methods*, for courses in traditional and PBL form (responses on 5-point Likert-type scales)

	3rd Year		1st Year	
	Original	PBL	Original	PBL
1. The lecturer makes clear what I need to do to be successful in this unit.[1]	4.50	4.20	3.90	4.01
2. The lecturer is skilled at developing a class atmosphere conducive to learning.[1]	4.40	4.30	3.50	4.11
3. The lecturer has a good manner (eg friendly, helpful, enthusiastic).[1]	4.60	4.80	4.00	4.37
4. The lecturer shows appropriate concern for student progress and needs.[1]	4.00	4.10	3.70	3.70
5. The lecturer provides feedback that is constructive and helpful.[1]	3.90	4.00	3.70	3.52
6. The lecturer helps me to improve my understanding of concepts and principles.[1]	4.30	4.10	3.70	3.78
7. The lecturer structures and presents the unit in ways that help me to understand.[1]	4.30	4.10	3.60	3.82
8. The lecturer is knowledgeable in their subject area.[1]	4.70	4.70	4.50	*
9. The lecturer sets tasks that are useful as learning experiences.[1]	4.10	4.30	3.50	3.71
10. Overall, how would you rate the teaching of this lecturer in this unit?[2]	4.60	4.60	3.80	4.05

[1]1 = 'strongly disagree', 2 = 'disagree', 3 = 'neutral', 4 = 'agree', 5 = 'strongly agree'.[2]1 = 'very poor', 2 = 'poor', 3 = 'satisfactory', 4 = 'good', 5 = 'very good'.* item not included in survey

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Developing Professional Forums that Support Thoughtful Discussion, Reflection, and Social Action: One Faculty's Commitment to Social Justice and Culturally Responsive Practice

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There are many challenges facing those educators who strive to ensure that their pre-service teachers understand the issues surrounding equity and social justice. In response to these challenges, and in response to the interests, questions, and concerns of the faculty in a School of Education, two professors worked collaboratively with administrators, faculty, and staff to organize Professional Forums. These Professional Forums were designed to support and engage faculty in the re-visioning of their courses as well as their pedagogical practices for pre-service teachers, with the specific goal of enhancing students' understanding of equity, social justice and global issues. In this article, we share our objectives, structures, expectations, and outcomes for the six different Professional Forums we designed and implemented over a two-year period.

Teacher educators are intentionally, and responsibly, seeking ways to best inform and support the culturally responsive practices of pre-service teachers. However, there are many challenges facing those educators who strive to ensure that their pre-service teachers understand the issues surrounding equity and social justice. In a recent study, Jennings (2007) examined the data from 142 institutions and surmised that the major challenges to the inclusion of diversity within courses was faculty disinterest, faculty discomfort, faculty lack of knowledge, time constraints, and student disinterest and discomfort. Gay (1977) elaborates on this issue by suggesting that, ". . .teacher education curriculum must be designed to help teachers acquire the knowledge, attitude, and skills consistent with the principles of cultural pluralism and to translate the philosophy of multicultural education into classroom practices" (p.56-57). Marshall (1990) further explains, ". . .the basic content knowledge that many teachers have studied while training to become teachers may not have included varying cultural perspectives" (p.586). In response to these challenges, and in response to the interests, questions, and concerns of the faculty in a School of Education, two professors worked collaboratively with administrators, faculty, and staff to organize Professional Forums. These Professional Forums were designed to support and engage faculty in the re-visioning of their courses as well as their pedagogical practices for pre-service teachers, with the specific goal of enhancing students' understanding of equity, social justice and global issues.

In this article, we share our objectives, structures, expectations, and outcomes for the six different Professional Forums we designed and implemented over a two-year period. We share feedback from faculty and staff, artifacts, suggestions for resources, scholarly texts and articles, and audio and video materials that were introduced and utilized in each of the Professional Forums. Our intent in documenting this process, and in sharing the data and resources from the six Professional Forums that engaged our faculty, is that it may support the design and implementation of thoughtful and critical Forums for faculty and staff within other institutions.

Professional Forums

As co-chairs of a Diversity Committee in a large School of Education, we are exploring and developing ways to create intentional epochs of time where faculty and staff meet on a regular basis to discuss, share, problem solve, question, and examine beliefs and practices focused on culturally responsive pedagogy and social justice issues in their own classes and beyond. Our goal is to support faculty and staff in their own professional growth in the area of diversity, as well as to ensure that they have the resources and information needed to support their efforts in developing socially-conscious and culturally-responsive pre-service teachers. In our School of Education we support a broad definition of diversity as a structure that includes the tangible presence of individuals representing a variety of attributes and characteristics (Talbot, 1996, p. 381). These characteristics include, but are not limited to: ability, age, ethnicity, gender, geographic origin, language, race, religion, sexual orientation, socioeconomic status, or other physical or special needs. Our intent in this study was to encourage faculty to include more cultural engagement and service learning opportunities both locally and globally, in order to help pre-service teachers move beyond the concept of "heroes and holidays" toward a multicultural curriculum that truly addressed all aspects of diversity and culturally responsive pedagogy.

This article focuses on the specific ways we addressed, throughout the past two years, the issue of defining and redefining effective multicultural curriculum transformation. We created six different Professional Forums that are currently being offered on a voluntary basis to faculty in a School of Education. These Forums were designed so faculty were able to meet regularly, in a variety of contexts, throughout the year. In these Professional Forums, faculty were encouraged to explore and discuss ways that they could enhance their course curricula and pedagogy in order to inform and enhance pre-service teachers' understanding of inequity in schools. We addressed further the need to develop pre-service teachers' understanding of global issues and culturally-responsive practices in order to meet the needs of students in their care. Within these forums, faculty had opportunities to describe practices they currently used in their teaching and the ways in which those practices supported students' understanding of multiculturalism, share ongoing research on issues related to diversity and social justice, recommend and share resources they utilized in their own classes, suggest materials for a Multicultural Resource Center located in a School of Education, and aid in the development of a University-wide Diversity Portal.

In each Professional Forum, we supported faculty and staff as they developed further the critical consciousness needed to transform their instruction (Nieto, 2000; Landreman, Rasmussen, King & Jiang, 2007). A primary goal in creating Professional Forums was to ensure that they evolved from the interests, comfort levels, and specific areas of concern that faculty were sharing, and that they would address, from a thoughtful informed stance, the faculty's interests and specific needs. To achieve this goal, we decided to provide Forums that mirrored the paradigm of Professional Learning Communities that included supportive and shared leadership, collective creativity, shared values and vision, supportive conditions, and shared personal practice (SEDL). Darling-Hammond (1996) advises further that Professional Learning Communities include the following characteristics: collaborative inquiry, shared decision making, and joint planning of instruction.

Theoretical Framework

In order to develop culturally-responsive dispositions in pre-service teachers, many teacher preparation programs implemented Multicultural Education; however, many pre-service teachers still lack the skills or dispositions necessary to make them effective in the classroom (Weisman & Garza, 2002; Sleeter, 2001). Marshall (1990) explains, "One of the greatest tragedies is that many teachers simply have not had a formal professional opportunity to explore techniques and strategies more appropriate for their work with diverse student populations" (p. 586). Therefore, it seems imperative that teacher educators must address broader issues than simply "tolerating diversity and group difference" (Jennings, 2007, p. 1265) and reactivate and re-envision faculty commitment to social action in course design (Cochran-Smith, 1999). Other concerns involve the overly simplistic ideas about what is required for pre-service teachers to develop cultural understanding (Villegas & Lucas, 2002; King & Baxter Magolda, 2005; Pope Mueller & Chatham, 2004). Landreman, Rasmussen, King & Jiang (2007) and Cochran-Smith (1999) confirm that there has been scant critical examination of the attitudes and development of teacher educators in this context.

In confronting these challenges, critical questions arose: how are faculty members going to facilitate a more dynamic approach to aspects of diversity, and how can they address global issues that ultimately engage pre-service teachers in viewing teaching as social change and the transformation of structural oppression? What kind of support from the institution can be provided for faculty to develop their courses, field experiences, and cultural engagements to address these needs? It is suggested by researchers that we must look more closely at how contexts are structured for professional development for faculty to discuss and design curricular engagements that enhance their practice. Potthoff, Dinsmoor, & Moore (2001), in their review of literature, identified two critical areas necessary for change to occur: establishing a readiness for change and community building. Therefore, we designed Professional Forums that addressed both the interests and comfort levels of faculty, as well as the contexts that would support faculty growth and social action. We utilized the research of Potthoff, Dinsmoor, & Moore (2001) who advised that when creating an effective community, the context should provide: voluntary participation; large and small gains which should be celebrated; inclusion of faculty, staff and students should; change initiatives which should be aligned with the organizational structure; ongoing qualitative and quantitative assessment.

An extensive body of research suggests that Professional Learning Communities have important benefits for faculty. Lenning & Ebbers (1999) state, "Faculty benefits include diminished isolation, a shared purpose and cooperation among faculty colleagues, increased curricular integration, a fresh approach to one's discipline, and increased satisfaction with their students' learning" (p.iv). Senge (1990) suggests the faculty be engaged in Professional Learning Communities where they have "the ability to carry on 'learningful' conversations that balance inquiry and advocacy, where people expose their own thinking

effectively and make that thinking open to the influence of others" (p.9).

Each Professional Forum was open to all full- and part-time faculty and staff. Our goal was to support all members of the School of Education through a shared commitment and a common discourse that focused on the issues surrounding ways to meet the diverse needs of all pre-service teachers whom we serve**.** DuFour and Eaker (1998) explain that developing shared understandings and common values in a professional learning community is the first and most important characteristic of a professional learning community. They explain, "What separates a learning community from an ordinary school is its collective commitment to guiding principles that articulate what the people in the school believe and what they seek to create" (p.25).

This paper highlights specifically the "process" and development of the six Professional Forums and the benefits associated with faculty coming together to engage in a multicultural discourse that "offers people a language to further their understanding of racism, sexism, etc., and explore issues of equity, justice, and privilege within and outside of school" (Loughran, Fernsten, & Schlichting (2007, p.3). Several benefits include the potential to transform curriculum, methods of teaching the curriculum, and the types of resources shared with students. In each forum, we shared artifacts brought by the faculty, discussed how we established a Resource Center within our School of Education for faculty, and the developed the University Diversity Portal. These resources are now shared across the University, and serve as a focus to highlight faculty research that addresses equity and issues of social justice.

We also present data collected throughout the two-year period as we continuously elicited feedback from participants in each Professional Forum. As Potthoff, Dinsmoor, & Moore, (2001) share, "an important aspect when developing a community for professional development is the use of ongoing assessment." Data included feedback and observations from each forum; surveys; face-to-face interviews; verbal and written reflections from faculty, staff, and students; artifacts; and email responses.

Professional Forums that Supported Thoughtful Discussion and Reflection

Professional Forum # 1: Brown Bag Lunches

The first Professional Forum we developed was a series of monthly Brown Bag Lunches which were scheduled from 12:30 p.m.–1:30 p.m. on alternate days each month in order to accommodate the teaching schedules of the faculty. The primary focuses of the Brown Bag Lunches were to provide a context where faculty could engage in open and honest discourse necessary to build a genuine sense of trust and community and to provide a context in which faculty were able to discuss their teaching practices within courses that supported pre-service teachers' understanding of diversity, as well as specific ways to best meet the needs of students in the schools. In our initial meeting, in order to support conversation and introduce a common language and knowledge base, we invited several faculty members from different departments within the School of Education to share examples of Multicultural Framework(s) that they currently used in their own classes to support the teaching of diversity and social justice. The faculty were invited to explain the frameworks and the issues these frameworks raised for students, as well as the discussions that ensued. Some of the frameworks shared by faculty included: Gorski, P. (2008) *Five Approaches to Social Justice Activism*; Bennett, M. J. (1993) *Developmental Model of Intercultural Sensitivity*; and Banks, J. (2008) *Four levels: Approaches to Multicultural Curriculum Reform.*

These informal sharing sessions were optimal opportunities for faculty and staff to come together in a non-threatening and collegial environment, to learn from each other, to ask questions, and to elicit advice in support of their teaching. These meetings also provided a place where faculty were encouraged to bring and present any resources and/or materials that they were using currently in their courses, especially those that provided a different insight or teaching strategy that could lead to an enhanced understanding or conversation on the issues surrounding diversity. Some examples of resources that were shared and discussed during the Brown Bag lunches included: theoretical and pedagogical articles, textbooks, quality children's and adolescent literature, literature-based strategies, videos, websites, and internet resources. We discovered that many faculty were unaware of these valuable, informative resources and many left the meetings with books, activities, and videos in hand. Often, at the subsequent Brown Bag lunch, these faculty members shared how they had utilized the resources and the impact that the resources had on their students' learning and understanding. One faculty member offered the following reflection on the Brown Bag discussions:

> I don't want to go to a workshop and just sit down and get a video or activity, but better, I want to read and think about them, brainstorm with other people how you might implement them, and how you might help pre-service teachers think about issues. The Brown Bag lunches helped me keep a good pulse on the readings, resources, and the frameworks available.

Another faculty member shared her feelings about the Brown Bag Lunches, and she stressed the importance of meeting people where they are in their approach to teaching about diversity and social issues. She shared:

> I benefited from talking with colleagues in the Brown Bag Lunches. . . just having time, or discussing how to use all the resources. I think that's one of the things I really enjoyed was the sharing, the how-to's, and the strategies. That may be because of where I am. . .I have the knowledge and I have the commitment. . .I wanted the how-to's. There are other people who have the commitment, but not the knowledge, who are not ready for the how-to's. We are all at different places and so we have to accommodate for that and not throw everyone into the same spot.

During the first year, as well as the fall of the second year, the primary focus of this forum was on resources and discussion about course content, pedagogy, and issues. However, through conversations with participants we discovered that some of the faculty also engaged their students in community agencies that needed assistance. The Brown Bag Lunch afforded us the opportunity to invite members of local community agencies to talk about their needs, programs, and specific ways that our faculty and students could provide meaningful service and support. Invited representatives from agencies included; the director of a homeless shelter, the director of an afterschool program for adolescents, and the coordinator of a local literacy center. The discussions that ensued provided participants with opportunities to understand how they and their students could connect with community-based projects working with children and families from diverse populations. We were also able to develop reciprocal and ongoing relationships with each agency. Most recently, we observed several programs areas within the School of Education re-visioning their Program of Study to include more experiences for pre-service teachers in diverse environments. These placements will ensure that students have opportunities to work with diverse populations and to be a part of a support system for people within a given community. These opportunities will support pre-service teachers as they learn first-hand the importance of understanding, and working with, the home and community environment of the child.

Professional Forum # 2: Annual Faculty Diversity Showcase

The second Professional Forum evolved through conversations with faculty and staff in the Brown Bag Forum. We discovered that there was a "disconnect," or, rather, a lack of understanding, about what other faculty and staff were doing in regard to writing, research, presentations, and teaching. Several faculty were engaged in interesting and transformative research and teaching on the issues surrounding diversity, but there was little awareness of their efforts among the School of Education faculty and beyond. It wasn't disinterest, but rather a significant lack of communication, or lack of opportunities for communication, between faculty and staff, especially between individual departments. We acknowledged that in the dynamic and intense environment of a School of Education, there were few, if any, opportunities to share or present substantive research, innovative ideas, and teaching strategies. We also acknowledged that many of these efforts could be most relevant to all members of the School of Education in their teaching, research, supervising student interns, working with Community-based programs, and potential service-learning opportunities. As we discussed this realization with faculty in both the Brown Bag Lunches, as well as the Diversity Committee meetings and subcommittee meetings, we discovered a genuine interest and eagerness among faculty to share their individual areas of research and to learn more about what their colleagues were doing. One member shared:

> We need a systematic approach to what we are doing in each of our classes. . .sharing in the Brown Bag sessions was such an important first step but we need to move forward. We are not finding out where the holes are and really thinking about how we are going to address these issues developmentally from when students come into the School of Education and what we are each doing to ensure their growth. I think right now it is haphazard, and we don't even know what's going on in each other classes. I really feel that is the first step so I am really pleased that we are taking this on in the Showcase.

To address these needs and concerns of faculty, and to ensure a more systematic approach that would support the sharing of ideas and the dialogue between faculty within and between departments, we proposed an Annual Faculty Diversity and Technology Showcase. This Professional Forum invited all full and part-time faculty and staff to present their research and highlight their teaching in the area of Diversity and Technology.

The Showcase was held in the central Atrium in the School of Education on a Thursday afternoon/evening from 2:00 p.m.–6:00 p.m. in order to accommodate and encourage attendance of both undergraduate and graduate students. Each participant was offered a table

for posters and/or other display materials along with resources and computers. Funding was provided for any necessary items. Internet access was provided to each presenter and members of the Technology Assistance Center were on hand to offer assistance. There were refreshments provided throughout the day.

In our first year, there were 24 presentations involving 33 faculty and staff from all departments in the School of Education. In our second year, there were 27 presentations involving 48 faculty, staff and students. A wide range of topics and issues were presented. Some of the titles included: "Community Mapping: Development and Understanding of Resources," "Incorporating a Diversity Emphasis in I-Search Assignment," "Intern Impact on Student Learning Across Diverse Populations," and "The Elephant in the Room: How Racial Beliefs Affect Classroom Practice of Pre-service Teachers." Faculty and staff from across campus were invited to, and attended, the Showcase, including other administrators. For example, the Associate Provost for Institutional Diversity and Inclusion, the Dean of the School of Business, and the Dean of Student Affairs. This support from administrators sent a powerful message to faculty and students. One faculty member commented, "I thought it was great that several administrators from other buildings came to see and learn about what we're doing." The Associate Provost offered his insight on the Showcase:

> I was impressed with the collegiality of the people serving in the projects and the resources that were utilized including both teachers and students (for example: Junior Seahawk Academy; Research-based approaches to serve diverse high school learners; pre-school at risk; the disillusioned teacher). These projects demonstrated the level of commitment and expertise of the faculty in the School of Education. I hope that we can continue these venues to showcase the contributions made by education faculty to their disciplines, UNCW and the communities we serve.

After the Showcase, feedback was solicited from participants through email and faculty surveys. Faculty were asked to share their experiences, to respond to questions about the Showcase, and to offer suggestions for future events. A sample of responses included the following: One professor shared, "It was great for my students to participate with me. They learned a lot. . .both from interacting, and from presenting with faculty." Another shared, ". . .it is important to note that this is an opportunity for students to see faculty as researchers. From my perspective, this is the highlight of the Showcase. . .that students engaged in the conversations along with faculty." Yet another faculty member shared, "I had no idea what was going on in other colleagues' classrooms. . .what other faculty were doing to address diversity with their students. We have so much to learn from each other, and this Showcase was a great way to begin that process." One of the students who had the opportunity to collaborate and present her research in a poster format with a faculty member stated, "I had some conversations that I think influenced people to think a little more about their definitions of diversity. . .and a few people challenged me to think as well." Another faculty member suggested a better day and time for future Showcases so that student participation is enhanced: "I think it would be an improvement to have the Diversity Showcase up for a Tuesday and Wednesday during the semester, rather than a Thursday at the end of the semester." Many faculty members appreciated the informal context for the Showcase and the "friendly" setting. One presenter commented, "The Diversity Showcase was a perfect opportunity for us to explain our projects or research in a small and friendly setting that allowed for one-on-one interaction with interested faculty, staff, and students! I was impressed with the wide variety of topics that were on display! I thoroughly enjoyed learning about what others were doing."

Professional Forum # 3: Professional Reading Response Groups

In our ongoing conversations with faculty and staff in both the Brown Bag lunches and Diversity Showcase, several faculty expressed an interest in creating a more "formal," scholarly Professional Forum where faculty and staff would come together to discuss research-based articles on social justice, multicultural education, and equity in education. In response to this interest, we designed a Professional Reading Response Group that met once a month for two hours. In the initial meeting, the group unanimously agreed to meet on Fridays since most faculty do not have classes on that day. They also agreed that members of the group would suggest the articles for consideration and that the members of the group would decide on one or two articles to be read each month.

In order to focus on the topics for the articles, and to be sure that this Professional Forum addressed the interest areas of each member of the group, we invited the members to generate a list of topics/issues that they wanted addressed in the Professional Reading Groups. Several of the topics generated by the group included: defining social justice, teaching ESL students, critical race theory, gender and pre-service teachers, education of males, sexual identity, socio-economic issues in education, means by which religion impacts education, academic diversity, and autism and the needs of special education students. A sample of the articles discussed

in the Professional Reading Response Group include the following: "Five Rules for Teaching Social Justice" (Pettit, J. 2005), "Reclaiming Teacher Quality: The Case for Social Justice" (Shakman, K., Cochran-Smith, M., Jong, C., Terrell, D., Barnatt, T., & McQuillan, P., 2007), "Losing Strangeness: Using Culture to Mediate ESL Teaching" (Roswell, J., Sztainbok, V., & Blaney, J., 2007), and "New Directions in Multicultural Education: Complexities, Boundaries and Critical Race Theory" (Ladson-Billings G., 2003).

Typically, one or two members of the group – usually the individual(s) who suggested the articles – would volunteer to "lead' the discussion by introducing the article, discussing their choice of article, and sharing thoughts and insights on the article. The articles were circulated via email to all faculty and staff in the School of Education prior to each meeting, along with an invitation to attend the Professional Reading Response Group.

Professional Forum #4: Evening Video Night

Another Professional Forum evolved in response to the faculty's interest in creating a forum that would encourage student involvement and support conversation and interaction between students, faculty and staff on the issues and topics surrounding diversity. After generating several ways to accomplish this, we decided on an Evening Video Night. Faculty felt this would be an authentic, engaging way to meet with students within and outside the course context to explore issues of diversity and to support a genuine discourse with students that would lead to greater awareness, understanding, and communication. A faculty/student committee was formed to "screen" and suggest potential videos, and they were charged with identifying a movie and suggesting a faculty member who would introduce the video and moderate the discussion with students and faculty. Faculty was notified of the event in meetings and via email and they were encouraged to invite their students to attend. Posters were also displayed throughout the School of Education to extend the invitation to all.

The structure of the Evening Video Night involved a group of faculty and students viewing a movie together that addressed diversity and social equity with an opening and follow-up discussion moderated by a faculty member. The faculty member "set the stage" for the movie, explored issues presented in the movie, generated possible ways that the movie enhanced faculty and students' understanding of the issues surrounding social justice and diversity, and discussed how the movie could have an impact on and/or influence their teaching and dispositions. Our first Evening Video Night was hosted by a faculty member from India who shared the engaging video, *Namesake* (2006). She opened the evening with an interesting presentation on her culture, her life experiences growing up, her family's expectations of her as member of this Indian culture, and the conflict that caused as she grew up in America. The discussion truly set the stage for this video which addressed each of those issues from the stance of the main character. It offered the participants a genuine "look" into another culture, and the expectations, perceptions and pressures of growing up and living in a country different from one's own, while maintaining one's history, culture and heritage.

One student who attended this forum commented in a written reflection, "This movie allowed me to empathize with immigrants who live in America in ways I have never thought of before." Another student wrote that the movie encouraged her to be more sensitive toward others. She explained, ". . .you never really think about how someone from a different culture accommodates themselves to our way of life." In response to how this movie might impact her teaching in the future a student wrote, "I will try to recognize other cultures, because different cultures deserve respect just as much as we deserve it!" She also commented that in her future classroom she needs to remember, for her students who have parents who are immigrants, that, "It is not easy being American born when your parents are still so strongly associated with their former country, and as teachers we need to be aware of these issues and be respectful of them." The increased sensitivity and awareness we observed through watching this movie and the subsequent discussion between faculty and students was further affirmed by the following student who explained that she had grown up in multiple diverse contexts. She discussed how this movie really emphasized for her the importance of her role as a future teacher. She explained:

> I was oblivious to the struggles of people in that situation, and I had never thought about the fact that those children were born and raised here in America. It is sometimes hard for me to remember that children are still being raised to discriminate against others, something the movie and comments after the movie helped me realize. We have to try and make our students knowledgeable enough of other cultures and people so that they develop a healthy respect for them.

It was not only watching the movie that enhanced pre-service teachers' awareness, but more importantly, the conversation that was facilitated by the moderating faculty member and other faculty members at the forum. As one student stated, "Being able to watch the movie and listen to the faculty facilitator make it 'real' was the most important. Also, other international

faculty members' comments added to what I learned." Several other movies suggested for future viewing and discussion included: *Skin Deep* (Reid, F. 1995), *What's Race Got to Do with It?* (Cheng, J. 2006), *De Nadie* (Dirdamal, T. 2005), *The Shadow of Hate* (Guggenheim, C. 1995), *The Color of Fear* (Mun Wah, L. 1995), *Lost Boys of Sudan* (Mylar, M, & Shenk, J. 2004), *The Language You Cry In* (Toepke, A. & Serrano, A. 1998).

Professional Forum # 5: Faculty and Staff Retreat

In our ongoing research and conversations with faculty, and as faculty began to express a greater interest in community engagement, we discovered that a significant lack of communication existed in our relationships between teacher educators at the university and local community-based programs. As a result, we planned a half-day Fall Faculty/Staff Retreat. We invited all faculty and staff from the School of Education and assembled a distinguished panel of educators from local and regional school districts and administrators of community-based programs who interact with our students and families from diverse populations. The panel for the retreat included: an assistant principal, a community activist, an administrator and activist from the Literacy Council, an elementary school teacher from a rural school with a high population of children who are learning English as a second language, and a high school teacher who works within a diverse school context. The retreat was held in a large conference hall on campus. There were 68 participants in attendance. The day began at 8:30 a.m. with breakfast followed by introductions; presentations by each member of the panel; whole group question, answer and discussion; and lunch in small groups where the discussions continued. The afternoon session included break-out groups, with a member from the panel joining each group. Each participant was able to choose the group/presenter with whom he or she wanted to interact. The day concluded with closing discussion and remarks. We utilized surveys and interviews to obtain data from this Fall Retreat. The following are samples of specific feedback from participants: "We need to have more dialogue like this with schools so we are moving together toward mutual goals." "Importance of service learning and the key role the coordinator plays in facilitating the needs of community organizations." "Continued conversations! Call to action!"

Professional Forum # 6: Diversity Portal

The Diversity Resource Portal was a natural extension of our efforts. It was created to further support faculty's commitment to diversity and social justice by providing a variety of informative and useful resources and materials. It is a free, searchable database committed to informing educators about innovative ways of viewing, addressing, and teaching about issues surrounding diversity. The Diversity Portal contains information about books, book chapters, articles, media (video and audiotapes) available within the School of Education or the University Library, and information about web-based diversity resources. In the future, the Portal will also highlight faculty research and provide a blog for discussion. As educators, we believe that every person deserves respect and equal access to education; therefore, the Portal aims to provide fresh insights into diversity issues that explore and question current ways of understanding systematic inequalities in education. Faculty and staff are invited to submit any relevant resources or materials for consideration to be posted on the Portal. By empowering everyone to be a part of the creation and ongoing development of this Portal, we aim to develop a sense of ownership and build wide-spread awareness of the Portal and the many resources available and, as a result, to ensure frequent use and access by faculty and staff.

Closing Thoughts

It is imperative that all pre-service teachers understand their unique role in the development of equity in a global society in their schools, communities, and beyond. We discovered that by creating Professional Forums that supported faculty in confronting the issues of equity, social justice and culturally responsive practices, along with presenting and sharing materials and resources that supported these goals, our faculty began creating more connections within and across programs. These connections allowed faculty to grow in their commitment to meeting the holistic needs of their pre-service teachers and supporting their understanding of diversity and social justice. Faculty began engaging in genuine multicultural discourse that significantly impacted their teaching, research, and interactions with their pre-service teachers, schools, and communities. Through these forums we discovered that, "There is a deep hunger among faculty members for more meaningful collegial relationships and more 'conversational structures' in our institutions" (Gabelnick et al., 1990, p. 86). We found that through the variety of Professional Forums developed, and faculty's enthusiastic participation and attendance at these forums, we were able to address many of the issues raised by Jennings, 2007, including faculty disinterest, faculty discomfort, faculty lack of knowledge, and time constraints.

We discovered the importance of providing a variety of Professional Forums for faculty, staff, and

students to choose from that addressed their specific areas of interests and needs. We also discovered that it was through discussion in the first Brown Bag Forum that faculty and staff often offered suggestions and co-constructed ideas for future Professional Forums, which addressed specific needs of faculty and provided a variety of contexts for discussion and social action. We recognized how this ongoing effort has the potential to develop more relationships among faculty, between departments, and across campus so that there are genuine opportunities for sharing projects and resources, as well as discussing teaching and research, not only at conferences, but within their own academic context.

It was essential that we provided faculty with time and opportunities, through these Professional Forums, to engage in meaningful conversations. We recognized that:

> Such work to design curriculum continuity is time consuming and not always recognized as important work . . . just as the pre-service teachers need discussion over time, then the same applies to faculties who have a desire to develop a program that will effect change in pre-service teachers' understanding about diversity issues (Potts, Triplett, & Rose, 2008, p. 13).

Through this two-year evolving and ongoing multi-faceted project within one institution with a large teacher education program, we had the opportunity to examine closely how faculty in Higher Education come together to create supportive networks for discussing issues and supporting practices that could significantly enhance their pre-service teachers' understanding of social equity and culturally response practices. Each forum provided enlightening insight, thoughtful discourse, and a supportive network of caring and committed faculty. As Chavez (1990) explains, "Once social change begins, it cannot be reversed. You cannot uneducate the person who has learned to read. You cannot humiliate the person who feels pride. You cannot oppress the people who are not afraid anymore. We have seen the future, and the future is ours" (Cesar E. Chavez Foundation). Through these Professional Forums we discovered, as Margaret Mead explained, that one should "never doubt that a small group of thoughtful committed citizens can change the world; indeed, it's the only thing that ever has."

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Service Learning and Civic Responsibility: Assessing Aggregate and Individual Level Change

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This study sought to expand the extant literature regarding the effectiveness of a higher education service-learning project designed to increase students' civic and socially responsive knowledge and intentions. A class with a semester long service-learning component was administered a pre- and post-test assessment using multi-item scales to determine if a student's sense of civic responsibility would increase. Our hypothesis predicting overall mean or aggregate change in civic responsibility was not affirmed by the paired *t*-tests or analysis of covariance tests. However, using growth curve modeling, we investigated between-individual differences in within-individual change. The study's results demonstrated that significant variation in individual differences between time one and time two did exist. Particularly noteworthy was the finding that previous service-learning experience, outside the classroom setting, predicted the level of civic attitudes and predicted the level and change of civic action.

With a growth of service learning courses and activities in higher education, questions have been raised regarding how undergraduate programs using pedagogically sound instruction can prepare students to be socially aware, actively engaged citizens (Altman, 1996; Bringle, Phillips, & Hudson, 2004). Studies attempting to measure gains in civic attitudes and civic responsibility in participants of service-learning projects face numerous hurdles. First, duration and intensity of projects are identified as a major limitation in research design (Kiely, 2005; Myers-Lipton, 1998). The most frequently implemented form of service learning is the project "added on" to an existing class (Tryon et al., 2008, p. 16). When exposure is limited to several hours a week for a single semester, it is difficult to provide a depth of experience that will alter attitudes developed over a lifetime (Danzig & Szanton, 1986). The intensity of interaction between members of a service-learning project (e.g., students, faculty, and agency staff or client) is best conducted in smaller class settings, resulting in smaller sample sizes and the loss of power to detect effects (Tryon, et al.).

Second, the literature recognizes the need for more rigorous research designs including control groups, pre-tests and post-tests, use of multi-item scales, and the inclusion of appropriate control and confounding variables as covariates (Bringle et al., 2004; Danzig & Szanton, 1986; Myers-Lipton, 1998). Studies of service-learning projects of greater intensity and duration also revealed the need for examining factors including the amount of previous service (both in and outside the classroom) as well as demographic variables including gender, age, race, year in school, and other aspects of the participants (Kiely; Myers-Lipton). It has been suggested that if most of the research on the topic shows only modest gains in these attitudes, it is because so many studies have been lacking in these elements of research design (Bringle et al.).

Third, Bernacki and Jaeger (2008) reviewed the literature on service learning's impact on students' moral development and found the results to be mixed. The results of their own study (2008) revealed that while scores on moral development and orientation did not change significantly, they did find that students taking service-learning courses self-reported more positive outcomes than students taking courses without a service component. Their students engaged in service learning reported that they had become more compassionate and had a greater understanding of social problems. Bernacki and Jaeger's results are consistent with other studies (Astin, Volgelgesang, Ikeda, & Yee, 2000; Boss, 1994) that analyzed self-reported positive student outcomes. Bernacki and Jaeger stated that "such self-reported changes are important to investigate as they may represent precursors to increased levels of prosocial variables like moral reasoning and orientation" (p. 8).

In addition, Eyler and Giles (1999) offered growing evidence that service learning is effective in increasing socially responsive knowledge in students, but stated that the literature reveals the need for a greater understanding of the role that service learning plays in this increase. One possible explanation has been the relationship between positive student outcomes and student interest in the nature of the service-learning activity. Morton (1995) identified different service paradigms and proposed that student outcomes reflect the degree to which students perceive being well matched with a type of service-learning project they find interesting or meaningful. Morton looked primarily at activities related to charity (helping individuals meet immediate needs) and social change (addressing broader issues to help groups or communities). Moely, Furco, & Reed (2008) expanded Morton's descriptions of service paradigms to include students who valued both charity and social change and

those who placed little value on either category. This final category is helpful when assessing outcomes of students engaged in service learning as part of a class requirement. The results of the investigation revealed that, except for the last group, those placing little value on either type of service activity, "the match between preference and service activities was related consistently to positive outcomes" (Moely, Furco & Reed, p. 44).

Finally, Bringle and colleagues (2004) acknowledged the fact that service learning "has special characteristics" that call for additional measures to adequately assess outcomes (p. 25). This is especially true when measuring changes in traits related to socially responsive knowledge such as values or moral attitudes (Shumer, 2000). Additionally, Bringle and colleagues encouraged the use of multi-item scales in assessing service-learning outcomes and have compiled an extensive list.

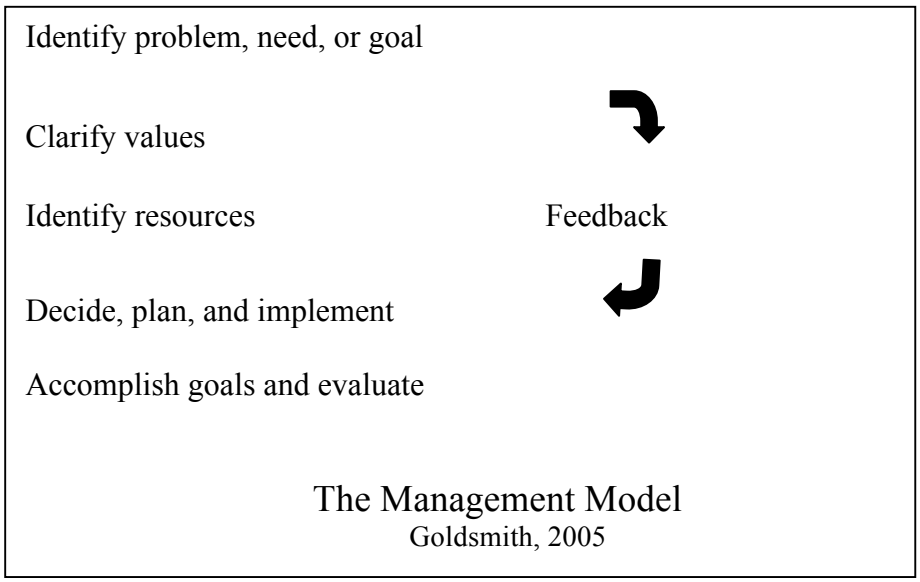
Although we conducted an intensive semester long project involving students in small groups, a faculty instructor, and selected agency staff, which resulted in a small sample size, we offset this design limitation by including and expanding upon the reported findings from the service-learning literature. Our design included (a) pre-and post-test assessments of positive outcomes assessing civic responsibility (e.g., civic attitudes and civic action), (b) control of potentially confounding variables including assessments of previous service-learning experience inside and outside the classroom, (c) service-learning projects that the student groups selected based upon their particular interests and values, and (d) multi-item scales selected for their relevance to service learning and for the quality of evidence supporting the scales' validity and reliability. In addition to the normal tests of group differences employed by previous studies (e.g., paired *t*-tests and repeated measures ANCOVA to assess aggregate level change), the current study used growth curve analyses to investigate between individual differences in within individual change. Finally, we collected qualitative data, in the form of a single, open-ended question at the end of the post-test, and asked the participant, "What do you feel was the greatest benefit achieved by your involvement in this project?"

Service Learning in Family and Consumer Sciences

The field of family and consumer sciences was founded upon principles of civic responsibility (Heggested, 2005). In the late 1800s, early leaders in the field worked to apply scientific principles to address the contemporary concerns and issues facing individuals, families, and communities. Poor conditions in food, water, housing, and the lack of resources to improve family life prompted scientists of the day to seek ways to improve living conditions for populations in both urban and rural areas in the United States. Early leaders in the field of family and consumer sciences (called domestic science at the time) are recognized as founders of social movements that combined civic responsibility with scientific principle (East, 1980; Hunt, 1942). John Dewey (1917), a proponent of experiential learning, was instrumental in getting programs of domestic science into schools in the early 1900s. He viewed course work in nutrition, food safety, clothing production, child development, and other subjects as the everyday activities that form the basis for teaching broader principles and preparing students to be socially responsive adults. The field of family and consumer sciences is still focused on improving quality of life through educational programs in middle and high schools, adult education programs, extension programs, and other forms of community outreach. Family and consumer sciences programs in higher education offer areas of study that have become very specialized, but they are still centered upon improving the quality life for individuals, families, and communities (American Association of Family and Consumer Sciences, 2009).

In 2005, a service-learning experience was incorporated into a core course within a family and consumer sciences program in a private, medium sized university. The course content, family systems and resource management, is a component of a curriculum core that spans all majors within the family and consumer sciences department including foods and nutrition, dietetics, retail merchandising, education, and general family and consumer sciences. Students tend to view each major as a separate field of study, unrelated to other majors or to the overall field of family and consumer sciences. On evaluations, students commented that they failed to see the relevance of the management process to their own field of study. The service-learning project was added to the course to create the opportunity for students from different majors to work together and to apply steps from a management model to a "real life" project in cooperation with a community agency. Requiring the students to plan and execute a service-learning project within the parameters of a management model would allow all activities to closely align with the course content. After the first year, it became evident that the project taught the students more than course content. Qualitative data suggested that the students were becoming more aware of issues within their communities. During the third year that the course was offered, quantitative data was gathered to determine if participation in the service-learning project increased the student's sense of civic responsibility as assessed by published measures of civic actions (Moely, Mercer, Ilustre, Miron, & McFarland, 2002) and civic attitudes (Mabry, 1998), as well as by an open-ended question.

Figure 1
A Management Model Provides Structure for Service-Learning Projects Within Any Discipline



The Service-Learning Project

The structure of the service-learning project was adapted from a model developed by Leach-Steffens (*Management project packet*. Department of Family and Consumer Sciences, Northwest Missouri State University, unpublished class materials). A management model (see Figure 1) by Goldsmith (2005) provided the framework for integrating service-learning with course content. The class was divided into randomly assigned groups of 3 or 4 students. Each group was responsible for locating a community agency willing to work with the students to meet a need or goal as identified by the agency. This format is consistent with the project-based service-learning model, which is the most favorable use of community agency time and resources when students are engaged in a project of short duration (Tyron et al., 2006). "Many organizations have special projects that they lack the capacity to do. Having students with specific skills do those projects can fill those capacity gaps" (Tyron et al., p. 22). Students were provided with contact information for local agencies, but were given the freedom to contact groups not included in the list. The instructor provided guidance when it was requested but allowed students to generate ideas based upon their own experiences. Thus, the list of possible community sites was longer and more varied than a list provided by the instructor and increased the likelihood of a match between student interests and the nature of the service activity. Students were given guidelines designed to ensure that each project aligned with each step of the management model. Because the first step of the management model is to work with an agency or group to identify a need, students were not allowed to join a service activity already in progress. The project had to be original and based upon the needs of the community agency. The project had to be planned, completed, and evaluated within the semester. Each student was required to contribute a minimum of twenty hours to the project.

Study Hypotheses

The extant empirical literature on change in certain outcomes as a result of participation in a service-learning project demonstrates small effects at best (Bringle et al., 2004). Explanations for such follow a number of lines of thought relative to measurement, design, and analysis. First, courses that employ a service-learning pedagogy tend to have smaller class sizes. This results in low statistical power to detect effects which may be small for the second reason: namely, that the time allotted for change to occur is limited to one semester, usually four months or less. Thus, meaningful change or change that is measurable must happen relatively quickly or it will not be detected. Further, longitudinal follow-up to assess on-going effects is not conducted, and classroom researchers are limited to two time points or pre- and post-assessments of the service-learning project during a particular semester or course period. Small numbers of students and short amounts of time combine to mitigate power for the detection of effects. Third, the

type of outcome assessed – for example, very specific questions relative to aspects of the service-learning project versus more global assessments of attitudes and actions – will also influence the ability of a study to measure meaningful differences in short time periods. Finally, as with almost all correlational or non-experimental research studies, inclusion of theoretically and empirically important covariates or statistical controls is necessary to reduce potential alternative explanations and to maximize a study's ability to detect change.

The present study faced similar challenges. First, a class of 44 students (44 students completed the pre-assessment, but due to end-of-the-semester scheduling conflicts, only 34 completed the post-assessment) participated in a service-learning project that varied across multiple groups. Second, the study's project occurred over a typical semester, a time period that began in January and ended in late April. Third, we proposed to assess change in student participants' more global assessment regarding their intentions to engage in future community service or civic actions (Moely et al., 2002) and their civic attitudes relative to community service (Mabry, 1998). However, we hypothesized that students' scores would increase between pre- and post-assessments on both dependent variables:

Civic Action and Civic Attitudes.

In addition, recent methodological and statistical advances have allowed investigators to go beyond assessments of differences in aggregated mean levels of an outcome (e.g., paired samples *t*-tests or repeated measures ANOVA or ANCOVA). Growth curve modeling (a technical explanation is beyond the scope of this article; however, interested readers are encouraged to consider Curran & Hussong, 2002; Duncan, Duncan, Strycker, Fuzhong, & Alpert, 1999; Lorenz, Wickrama, & Conger, 2004) – essentially a multi-level model – focuses on assessments of between-individual differences in within-individual change (or interindividual differences in intraindividual change) that are not considered in models examining mean differences alone. For example, one student may increase quite a bit in a measured outcome (e.g., an increase of 10) over time whereas another might not change much at all, e.g., a net change of 0, and it is possible for a third to decrease over time, e.g., a decrease of 10. If, in this case, the aggregate mean or average is inspected, it may appear stable over time. It is possible for much individual change to occur (in our example, two of three individuals experience 10 points worth of change in the outcome), while aggregate level change remains relatively stable (in our example, the net mean change would be zero; for an empirical example, see Krause, 1999). Thus, we hypothesized that such variance will occur in our sample for both outcomes regarding initial level and change.

Growth curve modeling (GCM) estimates a mean level of an outcome at one time, and a corresponding variance of that mean based upon individual respondents' scores. Significant variance of the mean or level at Time 1 provides empirical evidence of between individual differences at that point in time. Additionally, GCM estimates a slope or change in the mean level of an outcome across time points, and again, a corresponding variance of that slope or level based upon the slope or change of each participant. Significant variance of the slope provides empirical evidence of interindividual differences in intraindividual change over time. GCM allowed us to test our hypothesis that between individual differences in intra or within individual change occurred over the course of the semester. In addition, predictors of initial level and change or slope may be incorporated into a growth curve model. We investigated, as a research question, whether or not individual characteristics such as year in school, ethnicity, and individual experience with service learning (both inside and outside of the classroom) were associated with growth factors (initial level and slope) of Civic Action and Civic Attitudes.

Method

Participants

After receiving approval from the university's committee on the use of human subjects in research, student participants were assessed both before the service-learning project was presented in class and after the project was finished at the end of the semester. Forty-four undergraduate students enrolled in a Midwestern university family and consumer sciences course provided responses to the survey; at follow-up, 34 students responded. The analyzed final sample consisted of 32 females and 2 males. The mean age was 20.76 years with a standard deviation of 2.09 years, and ages ranged from 19 to 29. The sample consisted of 29 Caucasians, 3 Blacks, one Hispanic, and one listed as "other." Eleven students were classified as sophomores, 16 as juniors, and 7 as seniors.

Measures

Civic attitudes scale. The Civic Attitudes Scale (Mabry, 1998) was designed to assess participants' cognitive thinking regarding civic responsibility and consisted of five items, scaled from 1 = strongly disagree to 5 = strongly agree. An example of a question asked was, "It is important to help others even if you don't get paid for it." Cronbach's alpha, a widely used assessment of internal-consistency reliability of a scale (Cronbach, 1951; Pedhazur &

Table 1

Descriptive Statistics of Study Variables at Time 1 and Time 2 (N = 34)

Variable	Mean	SD	Min	Max	Mode
Previous Classroom SL Experience (Time 1)	2.26	1.16	1	5	1
Previous Non-Classroom SL Experience (Time 1)	3.50	1.31	1	5	5
Self Esteem (Time 1)	41.71	5.27	24	50	42
Self Esteem (Time 2)	40.71	5.05	28	50	39
Civic Attitudes (Time 1)	20.59	2.57	14	25	20
Civic Attitudes (Time 2)	20.71	2.83	13	25	19
Civic Action (Time 1)	34.12	3.52	25	40	33, 34
Civic Action (Time 2)	33.41	4.18	27	40	28, 40

Table 2

Correlation Matrix of Study Variables

	1	2	3	4	5	6	7	8	9	10
1. School Year	-									
2. Race	-.11	-								
3. Classroom SL Experience	-.12	.33***	-							
4. Non-Classroom SL Experience	-.05	-.14	.13	-						
5. Self Esteem (Time 1)	.12	-.27	.10	-.09	-					
6. Self Esteem (Time 2)	-.06	.04	.28*	.06	.64***	-				
7. Civic Attitudes (Time 1)	-.31**	-.28*	-.07	.49***	.06	.19	-			
8. Civic Attitudes (Time 2)	-.21	-.26	-.12	.48***	-.05	.17	.58***	-		
9. Civic Action (Time 1)	-.17	-.23	.01	.62***	.13	.21	.56***	.41*	-	
10. Civic Action (Time 2)	-.13	-.31*	-.01	.43***	.06	.21	.63***	.73***	.63***	-

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$ (two-tailed tests).

Schmelkin, 1991) for this scale at time 1 was .81 and at time 2 was .89.

Civic action scale. The Civic Action Scale (Moely et al., 2002) was designed to assess participants' future behavioral intentions regarding civic duties or actions, and it was comprised of eight items, scaled from 1 = strongly disagree to 5 = strongly agree. An example of a question asked was, "I plan to do some volunteer work." Cronbach's alpha for this scale at time 1 was .93 and at time 2 was .94.

Predictors and covariates. In addition to race (0= non-White; 1= White), the study measured (a) Rosenberg's (1965) Self-Esteem, a well-known 10-item scale assessing global self-esteem (alpha = .87 and .73, Time 1 and Time 2, respectively); (b) the student's year in school (e.g., 1= freshman); and (c) two questions assessing whether or not the student had previous classroom or outside the classroom service-learning or community service project experience (1 = no experience at all to 5 = a great deal of experience). Also, we collected qualitative data, in the form of a single open ended question at the end of the post test, and asked the participant, "What do you feel was the greatest benefit achieved by your involvement in this project?"

Data Analytic Procedure

SPSS 17.0 was used to conduct dependent pairs *t*-tests and repeated measures ANCOVA (Civic Action and Civic Attitudes at Time 1 and Time 2) with covariates Time 1 assessment of self-esteem, student's

year in school, and previous in the classroom and outside of the classroom community service experiences. We hypothesized that participating students would increase their civic responsibility, assessed by Civic Attitudes and Civic Action, over the course of the semester. In addition, based upon recent advances in analyzing change in a growth curve environment, including designs with two measurement occasions, this study specified and tested models of level and slope or change of Civic Attitudes and Civic Action including predictors of each. Duncan and colleagues (1999) demonstrated how to estimate growth curves to model change over two time points: errors for the repeated measures are fixed to zero, intercept loadings fixed to one, and loadings for the slope or change factor were fixed to zero (Time 1) and to one (Time 2). These models, therefore, are just identified with no degrees of freedom, but account for the multi-level structure of the data. For these analyses, we employed *Mplus* 5.2 (Muthén & Muthén, 1998-2007), a program that computes full-information maximum likelihood (FIML) estimates in the presence of missing data. This method of handling missing data is preferred over pairwise or listwise deletion of cases, producing more efficient and less biased parameter estimates (Allison, 2003; Schafer & Graham, 2002). A second benefit of *Mplus* included use of its robust maximum likelihood (RML) estimator for all analyses, providing parameter estimates with standard errors robust to non-normality and non-independence of observations (see Muthén & Muthén).

Results

Descriptive statistics and zero order correlations for all study variables both at Time 1 and Time 2 are found in Tables 1 and 2. Small changes were observed in the mean levels of the dependent or outcome variables, Civic Attitudes and Civic Action. The zero order correlations, estimated using M*plus* and FIML, revealed at least two noteworthy observations. First, previous non-classroom service-learning experience was significantly and substantively associated with pre- and post-assessments of both dependent variables, e.g., Civic Attitudes and Civic Action, with correlations ranging from .43 to .62. Second, other predictors such as School Year, and Race were also significantly associated with targeted outcomes at different time points, affirming our need to include these as predictors of level and change in the growth curve models.

Our hypothesis predicting overall mean or aggregate change in student participants' Civic Attitudes and Civic Action was not affirmed by the paired t-tests (t = .15, p = .88 and t = .73, p = .47, respectively) or the repeated measures analyses (with covariates). For example, the repeated measures multivariate test of time (Time 1 and Time 2) controlling for Time 1 self-esteem, year in school, race, and previous service-learning and community experience (both in and outside the classroom) for Civic Attitudes was not significant, $F(1, 28) = 2.44$, p = .13, η^2 = .08. For this test, the observed power was low at .33. Similar results were obtained for the same test of Civic Action: $F(1, 28) = .635$, p = .43, η^2 = .02. Again, observed power was low at .12. Thus, consistent with previous empirical work on small samples, both our dependent pairs t-tests and our repeated measures ANCOVA tests failed to reach statistical significance, and our observed power or ability to detect an effect was low.

However, based upon recent advances in the analysis of repeated measures data (Curran & Hussong, 2002; Duncan et al., 1999; Lorenz et al., 2004) we hypothesized significant interindividual differences in intraindividual change, and our univariate growth curve models affirmed this for both Civic Action and Civic Attitudes: significant variance both in level at Time 1 and in change was found. Thus, we proceeded to specify and estimate predictors of level (Time 1) and change in both outcomes, Civic Action and Civic Attitudes (see Tables 3 and 4).

Regarding Table 3, predictors of level and change in Civic Action, the first noteworthy result is that almost 50% of the variance (R^2) in the level or mean of Civic Action at Time 1 is explained by the predictors. Significant individual Time 1 predictors included Self Esteem (β = .17, p = .03) and previous Non-Classroom Service-learning Experience (β = .50, p = .003). Thus, at Time 1, students who reported higher levels of Self-Esteem and higher levels of previous service-learning exposure outside the classroom setting reported higher levels of Civic Action at Time 1, controlling for the other predictors in the model. Second, only previous Non-Classroom Service-learning Experience predicted change in Civic Action (β = -.44, p = .003), resulting in only 16% of the variance explained.

When considering the predictors of level and change in Civic Attitudes (Table 4), a similar trend is found. First, School Year (β = -.28, p = .03) and again, Non-Classroom Service-learning Experience (β = .29, p = .02), are the two significant predictors helping to explain 45% of the variance in Time 1 Level of Civic Attitudes. On average, students who were in their sophomore and junior years and who had more extensive experience with service learning outside the classroom reported higher levels of Civic Attitudes at Time 1. However, no significant predictor of change in Civic Attitudes was found, and consequently, only 5% of the variance was explained by our model. Over 44% of the sample scored between 22 and 25 on Civic Attitudes at Time 2, resulting in little variance to

Table 3

Time 1 Predictors of Level and Change in Civic Action

	Level			Change		
Time 1 Predictors	*B*	SE	β	*B*	SE	β
1. School Year	.57	.71	-.10	.73	.94	.15
2. Race	-.25	.60	-.03	-.89	1.14	-.15
3. Self Esteem	.16	.07	.17*	-.16	.14	-.22
4. Civic Attitudes	.44	.30	.26	.39	.33	.28
5. Classroom SL Experience	-.23	.47	-.06	.48	.72	.14
6. Non-Classroom SL Experience	1.78	.60	.50*	-1.31	.61	-.44*
R^2	.50			.16		

*$p \leq .05$. (two-tailed test).

Table 4

Time 1 Predictors of Level and Change in Civic Attitudes

	Level			Change		
Time 1 Predictors	*B*	SE	β	*B*	SE	β
1. School Year	-.99	.45	-28*	.26	.69	.08
2. Race	-.72	.43	-.17	.01	.57	.002
3. Self Esteem	.02	.08	.04	-.04	.08	-.08
4. Civic Action	.17	.12	.29	-.12	.18	-.21
5. Classroom SL Experience	-.22	.27	-.80	-.13	.42	-.06
6. Non-Classroom SL Experience	.62	.26	.29*	.27	.62	.13
R^2	.45			.05		

*$p \leq .05$. (two-tailed test).

explain. As a validity check, we compared our FIML results (N=44) reported above with results for those of the reduced sample (N=34) and found no major differences in the significant predictors (or their valence) of level or slope; however, we did notice a reduction in effect size, which was as expected. Finally, selected responses to our open-ended question regarding the greatest benefit experienced by students participating in this project are incorporated into the following discussion section.

Discussion

The present study sought to expand the extant literature regarding the effectiveness of a higher education service-learning project to increase students' civic and socially responsive knowledge and intentions (Altman, 1996; Eyler & Giles, 1999). In order to add to the existing knowledge base in the service-learning literature, and to provide evidence for service-learning efficacy within our own department and university, the authors adapted and implemented a service-learning project with community agencies, incorporating problem-based objectives designed around a project management model (Goldsmith, 2005) and a project packet adapted to the needs of the specific course (Leach-Steffens, unpublished class materials). Specifically, the study hypothesized that as a result of the service-learning project experience, participants' civic responsibility (assessed by validated measures of Civic Attitudes and Civic Action) would increase. In addition, based on recent advances in the analysis of change allowing investigators to assess between-individual differences in within-individual change, the authors hypothesized that significant variation in Time 1 levels of Civic Attitudes and Civic Actions would be found, and secondly, that significant variation between-individual differences in within-individual change would be found. Finally, as a research question, this study investigated Time 1 predictors of level and change in both outcome measures.

First, consistent with other studies of change over time due to implementation of service learning projects (Bernacki & Jaeger, 2008), the present study did not find significant change when comparing mean or aggregate levels of the two key outcome variables between Time 1 and Time 2. Previously, it was noted that lack of a number of research design and statistical elements may cause this paucity of little change. For example, small sample sizes, often associated with research done in single class settings where major projects are implemented, result in low power to detect effects. Change in global assessments of cognitive measures may also be more difficult to detect relative to other skill-based or behavioral assessments – it may be easier to teach and develop a skill or learned behavior than to alter thinking and intentions. Add to these limitations a shorter time over which change may occur, e.g., three to four months in a college semester, and the study's lack of findings may be explained.

Of course, poorly designed and implemented projects and poor measures are also sources of concern. Regarding the former, our students were randomly assigned to groups and during the course of group project selection, some individuals voiced negative concerns about the community agencies their group chose to serve. Thus, within groups, some members might readily engage and experience positive change in their civic responsibilities, whereas other members of the same group might tolerate the experience or worse, leading them to score lower at Time 2 on the two measures of civic responsibility than at Time 1. Regarding the latter concern, poor measures, the study's two dependent outcomes were highly correlated and difficulty assessing change in one, necessarily resulted in difficulty assessing change in the other. Also, previous work with the Civic Attitudes Scale by Mabry (1998) in a similarly designed study (pre- and post-assessment of a service-learning experience) found no significant changes for female participants. In addition, descriptive assessments show that our sample, on average, scored relatively high on the two outcomes at both time points, leading to somewhat of a ceiling effect. Other limitations to the present study included the lack of diversity in regards to both gender and ethnicity; 85% of the participants were White and 94% were female, limiting generalizability of the study's findings.

The present study did include two variables measuring previous service-learning experience inside and outside the classroom. Our campus has a high percentage of students involved in Greek life and its philanthropies. In light of this, the study assessed previous service-learning experience as a control variable (for the hypothesis of mean level change) and as a predictor variable (for the hypothesis of between individual differences in within individual change). And it is with the latter findings, the predictors of level and change in the outcomes that this study's findings are noteworthy.

Second, our hypothesis of significant differences between participants in individual change was supported for both outcomes. Individual participants reported varying levels of Civic Action and Civic Attitudes at Time 1, and likely, as a result of the service-learning project, reported varying amounts of change at Time 2. In light of these findings, the important questions to address concerned the factors at Time 1 that contributed to the initial levels and the changes in the outcomes. Over and above the demographic and control variables included in our models, previous service-learning experience *outside of the classroom* significantly and positively contributed both to Time 1 levels of Civic Action and Civic Attitudes; the greater the participant's amount of experience, the higher his or her score on the outcome. Interestingly, a high score at Time 1 led to lower levels of change or conversely, a low score at Time 1 led to greater change over time for Civic Action but not Civic Attitudes. Thus, evidence exists that for some students who entered the course with little service-learning experience, the project influenced change in their assessment of Civic Action. Inspection of the items included in the Civic Action scale revealed a distinct emphasis on future involvement with volunteer work, community, community action programs and community service organizations. We believe these items and this scale most closely tapped our students' experience with a community service organization (e.g., Easter Seals or Children's Home) and led to significant findings of change, whereas the items of the Civic Attitudes Scale tended to be more global, assessing whether or not participants thought it was worthwhile to help others or make a difference in the world.

Our quantitative findings demonstrate that as service-learning experiences become more prominent on today's campuses, it is important for researchers to measure participants' previous experience, especially if such experience might be related to the targeted outcome. Also, the previously mentioned design, measurement, and quantitative analysis points need to be addressed, e.g., sample size, specificity of items in measure corresponding to the service project, and assessments of aggregate levels of change versus individual differences in change.

While the quantitative measures and analyses were designed to assess civic responsibility and not course content, the open ended nature of the single qualitative question gave students the opportunity to respond to any aspect of the project. Of the 34 self-reported responses, one was negative. Discussion included in the negative response indicated a lack of match between the student's interest and the group's selected community

organization and service project. The remaining 33 responses were positive and suggested that the students felt well matched to the nature of the service activity. The structure of this project allowed each student group the freedom to select the agency with which they worked. The specifics of each group's service activity were determined by both the agency and the students in the group, thereby increasing the chances for a positive match between student preference for type of activity and the actual project. Four of the positive responses related to course content. Students responding in this manner identified positive outcomes related to time management, teamwork skills, and communication skills: all components of course content related to management. The remaining 28 positive responses reflected prosocial variables related to civic responsibility and to increased feelings of self worth. The literature suggests that self reported positive outcomes may be precursors to future civic action (Bernacki & Jaeger, 2008). Many of the responses directly stated intent to continue service work. Selected quotes from the responses illustrate the positive nature of the self-reported outcomes. One student noted, "I was not only able to help an organization, but I was also able to get involved in the organization and I plan on being part of it next year as well." Another student wrote, "… I think a way to really get what I want from this project is to follow up and aid in other processes of the project and its organization…I want to do more volunteering in the future, but I know I feel I help more by interacting, laughing, and teaching others (especially children)."

When attempting to measure student service-learning outcomes related to civic responsibility, there is a recognized need for well planned activities that are closely related to course content (Moely et al., 2008). Bringle and Hatcher (1999) include the processes of structure, feedback, and values clarification as necessary components for a positive learning experience. The management model used in this project incorporated all of these elements. It was part of the course content of this particular class, but may be easily adapted to provide students in any discipline a model for addressing immediate needs or critical issues within their field of study. Most curriculums are already too full to add additional classes. This management model may be used to structure projects of varying sizes within existing classes. While not all courses in a curriculum are well suited to service learning, all fields of study will include courses that will potentially benefit from this pedagogy.

Altman (1996) proposed that socially responsive knowledge should be as important a part of the undergraduate curriculum as knowledge of specific content areas and professional skills. It is likely that many content areas will continue to add service-learning components to existing courses. Consequently, small sample size and short duration will continue to pose limitations for outcome measures of these service-learning activities. The structure of the management model and a look beyond aggregate means to examine individual changes may prove beneficial for assessing service-learning outcomes in projects of this nature.

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The Many Faces of Formative Assessment

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In this research paper we consider formative assessment (FA) and discuss ways in which it has been implemented in four different university courses. We illustrate the different aspects of FA by deconstructing it and then demonstrating effectiveness in improving both teaching and student achievement. It appears that specifically "what is done" was less important since there were positive achievement gains in each study. While positive gains were realized with use of technology, gains were also realized with implementation of nontechnology dependent techniques. Further, gains were independent of class size or subject matter.

The issues of assessment and accountability have gone beyond the classroom and entered the political arena. With this development they have become less nuanced as broad generalizations and policies are sought. What sometimes gets lost in many of these discussions is the fact that the educational sector is incredibly varied by grade, by subject, and by instructional format. Yet, at every level of instruction within this sector, the focus continues to be on improving instructor practices and raising student achievement. In this research paper we are going to consider an aspect of assessment that has been garnering increasing interest, specifically formative assessment, and consider different ways in which it has been implemented. All of the studies are in higher education and were subjected to statistical analyses. The goal is to illustrate the different types of formative assessment by deconstructing the concept and then demonstrating effectiveness in improving both teaching and student achievement.

Assessment

Assessments should define in measurable terms what instructors should teach and students should learn. Thus assessment, whatever form it takes, defines the playing field of academic interaction where the processes of teaching and of learning should be mutually reinforcing. However, in an era where accountability has become a driving force, certainly in the K-12 educational reform movement, the definition of how and what an instructor should teach and how and what a student should learn is becoming significantly narrower.

As usually understood, assessment is used by most instructors to determine what learning has occurred, and it serves as the basis for the assignment of grades. Such assessment is *summative* as it is the end point of the teaching-learning sequence. Assessment is *formative* when the evidence is used as an on-going process within the class to adapt the teaching to meet student needs as well as providing feedback to the students (Black & Wiliam, 1998). Specifically, according to Heritage, Kim, and Vendlinski (2007), formative assessment is a systematic process to continuously gather evidence about learning. The data are used to identify a student's current level of learning and adapt lessons to help the student reach the desired learning goal. In formative assessment, students become active participants with their instructors, sharing learning goals and understanding how their learning is progressing, what steps they need to take and how to take them. However, it is very difficult for instructors not to focus on summative assessment measures since the prevailing pressures for improved learning drive them inevitably in this direction. Some have indicated that the time has come when formative assessment, occurring within the learning process, needs greater prominence (Black & Wiliam 1998; Layng, Strikeleather, & Twyman 2004). In reality, both formative and summative assessment need to be incorporated into a total learning process.

Formative assessment informs both instructors and their students as to the degree to which the students have mastered the material. Feedback to the students serves two functions: to identify problem areas and to provide reinforcement of successful learning and achievement. Feedback to the instructor serves to identify the degree to which instruction was successful and to identify needed changes in instruction. It can be used to distinguish between individual and group problems that can then be used to suggest solutions: revision of instruction, specific group work, or individual remediation. The model, as shown in Figure 1, is a dynamic one recurring throughout the course. It is composed of the following stages.

1. The instructor constructs a lesson module and related assessments based on the perception of the students' readiness and prior knowledge (Stage 1).
2. The instructor presents the lesson module (Stage 2)

3. The instructor administers an assessment (Stage 3).
4. The instructor considers assessment results. The student considers the assessment results (Stage 4).
5. Dialogue between the instructor and the student begins (Stage 5). Depending on dialogue with the instructor, the student adjusts learning style or proceeds with current style.
6. Depending on the dialogue, the instructor adjusts teaching or proceeds to the next learning module (Stage 6).

Although not stated, this model underpins much of the research that has been conducted thus far and makes explicit the connections between the role of the instructor and the role of the student. For the instructor, formative assessment generally implies frequent assessments that vary by: a) how formal the assessment is (exam, quiz, or class discussion), b) its length, c) depth of knowledge expected, and d) format, altered instruction based on assessments, instruction on the interpretation and use of the assessment results, and perhaps altered classroom interaction to increase student learning and engagement. For the student formative assessment means considering adjustments in studying and perhaps in classroom behavior in light of assessments (see Figure 1).

Wiliam and Black (2003) argue that formative assessment is the only way for which a strong *prima facie* case can be made for improving learning. While students across the achievement spectrum should benefit from the incorporation of formative assessment techniques, it has been argued that the effects should be more notable for the lower achieving students, and research has supported this position (Athanases & Achenstein 2003). Possible gains for higher achieving students could be limited by the fact that they most probably have already incorporated many of the student related formative assessment practices.

Wiliam and Black noted that they were able "to identify 20 studies that showed that innovations which included strengthening the practice of formative assessment produce significant and often substantial learning gains" (2003, p. 41). However, the research base on formative assessment and the efforts to demonstrate its effectiveness in improving teaching and learning have focused very heavily on K-12 classrooms and the professional development of in-service instructors, have generally focused on the role of the student and the student reactions, and have been based on small samples (Boston 2002; Ruston 2005; Taras 2002; Brookhart, Moss, & Long 2010). Aspects of FA that been researched have focused on students at all grade levels from early childhood (MacDonald, 2007) to university students (Costa, Mullan, Kothe, & Butow 2010; Carrillo-de-la-Pena et al. 2009). Furtak, et al. (2008) present an impressive model of FA, yet it is focused entirely on the student.

The use of personal and online computer based feedback and student self-regulation systems has been researched (Pachler, Daly, Moore, & Mellar 2010; Wang 2006; Heinze & Heinze 2009; Ibabe & Jauregizar 2010; Miller 2009) with varying degrees of success found. Chen-Ming, and Ming-Chen (2009) present a very sophisticated and complex on-line system with embedded data mining, but it is only for student use. Other researchers have focused on the way use of formative assessment affected student behaviors irrespective of the delivery system used. While Carrillo-de-la-Pena et al. (2009) argued that there is a dearth of empirical studies of FA's impact on achievement, they did find a positive effect on student achievement in their research. Lipnevich and Smith (2009) found that while feedback to students had a positive effect on learning, it did not matter whether the feedback was computer generated or from the instructor. Chin and Teou (2009) found use of concept cartoons effective with middle school aged students. Furtak and Ruiz-Primo (2008) found FA could be effectively used to improve students' writing and discussion skills. Marcotte and Hintze (2009) found that a use of self-regulated learning environment had a moderate effect on students.

On the instructor side, research has been done on the ways in which FA has affected teaching. Shavelson et al. (2008) discussed the role of instructors in the development of materials that would then be provided to students for their self monitoring. Puddy et al. (2008) showed the way in which continuous monitoring and adjusting positively affected participants in a mental health program. Frey and Fisher (2009) document how teachers in one school collaborated over a four year period to embed formative assessment techniques in the curriculum, resulting in significant achievement gains. However, Luttenegger (2009) found that instructors were not skilled in implementing FA, and Heritage, Kim, Vendlinski, and Herman (2009) provided empirical evidence that instructors were better at drawing reasonable inferences about student levels of understanding from assessment information than they were at deciding the next instructional steps.

Further, mentors have been found effective in helping in-service and pre-service instructors implement formative assessment practices during their practicum courses (Ash & Levitt 2003; Athanases & Achenstein 2003). Ruiz-Primo and Furtak (2007) broadened the discussion of assessment to informal interactions, although more attention has been paid to formal, planned assessment contexts.

Formative assessment techniques are increasingly being conducted online (Gipps 2005). The online environment presents opportunities for formative assessment to be conducted more efficiently by decreasing student feedback time (Beatty et al. 2008) and facilitating peer-feedback and collaboration. It has been shown to positively affect achievement (Cassady, Budenz-Anders, Pavlechko, & Mock 2001; Chung, Shel, & Kaiser 2006; Henly 2003; Peat & Franklin 2002; Smith 2007; Wang, Wang, Wang, & Huang 2006), attitudes, and student/instructor interaction (Chung, Shel & Kaiser 2006). Tierney and Charland (2007) also identify a strengthening of student voices as critical to improving formative assessment. Online tools provide increased opportunity for students to initiate formative assessment by allowing them to interact with instructors virtually (Nichol & Macfarlane-Dick 2006).

Although student use of online formative assessment tools is limited, virtual office visits and chat room attendance have been positively related to increases in student achievement (Lavooy & Newlin 2008). It follows, then, that students who initiate formative assessment processes in addition to completing those created by instructors in their coursework may further increase the knowledge gained during a course. To date, empirical research has yet to determine whether student initiated formative assessment has a different effect on summative learning outcomes than teacher initiated formative assessment activities.

Another FA technique that is generating interest is the use of clickers. Mayer et al. (2009) situate the use of clickers in a theoretical context involving deep or generative learning. Specifically, they indicate that clickers facilitate students' use of self-questioning and foster what they term the "self-explanation effect." They hold that research on the self-explanation effect has shown that students perform better on a final test when they are encouraged to explain aloud to themselves as they read a textbook rather than simply read the text without self-explanation. While this statement refers to reading a textbook, the same logic has been applied to the type of behavior required in a clicker-augmented lecture. On the other hand, Hatch, Jensen, and Moore (2005) believe that the effectiveness of clickers resides in the fact that they require the students to pay attention to what is happening in class. As proof of their belief they report that the students who seem to most benefit from clickers are those who have mild to moderate degrees of attention deficits.

In sum, not enough attention has been paid to the fact that formative assessment can be operationalized in different ways. To advance the discussion, we are going to consider four different types of formative assessment, all at the university level. The courses involved varied from chemistry to mathematics to physics to an educational assessment course with enrollments ranging from 19 to over 250 students. Taken together, these studies demonstrate the applicability of formative assessment to all or part of a university course.

Study 1: Formative Assessment Can Be Effective in the Large Lecture Setting

General Chemistry is the first course in chemistry and is a requirement for most science and health profession majors at a large urban university. The enrollments are large and the courses are composed of large lecture sections, smaller discussion sections, and laboratory sections. Exams tend to require factual recall and problem solving. It is a difficult course for many as it is their first exposure to what is expected of science classes at the university level. As a result it is also a course that traditionally has a high withdrawal rate and a high failure rate. The focus of the study was to capture the effect on student achievement of the incorporation of formative assessment techniques.

In the fall of 2005, a study was conducted to determine if formative assessment techniques could be successfully incorporated into this large lecture university science course. Two lecture sections were taught by the same instructor under two different conditions. Each of the sections had over 200 students enrolled. The students were not assigned to the sections, and demographic characteristics and mean ability levels as measured by the students' entrance SAT mathematics and verbal test scores were similar. Both sections were morning classes which met for three 50-minute periods a week. Pre/post achievement and attitudinal data were collected at the beginning and at the end of the semester in each section. Additionally course evaluation data were collected as well.

While the content and exams of the two sections remained the same, the sections did differ in the way they were taught. One section was traditionally taught (the non FA section) and the other had elements of formative assessment techniques embedded in it (the FA section). The students in the formative assessment courses were given weekly, small, content-based quizzes. The quizzes were graded, and any problem areas identified were discussed in the class day immediately following the "quiz day." Appropriate instructional modifications were made. However, once the quizzes had been discussed in the "formative assessment" course, all of the quizzes and answers were made available to all of the students in both sections on the course related web pages.

Statistical analyses of the data indicated that students in the FA section experienced a greater gain in achievement than did those in the non-FA section as

demonstrated in a regression analysis where the student's post-test score was the dependent variable and included the following independent variables: student's mathematics and verbal SAT scores as controls for prior knowledge, the number of hours the student reported doing homework and attending class, the student's age, a dummy for the student's desire for getting good grades, the student's score on the 7 point "like's science" scale, and a dummy for whether the student was in the FA section or not (see Table 1 for complete results). A regression captures the size of the effect and enables controlling for possible factors that could affect the results, in this case ability and attitude toward science. In this analysis, all other things equal, being in the section in which FA techniques were used added 51.2 points to a student's total point count for the semester. This gain represented a more than 6.4% increase as a function of the way the course was taught. In addition, graded on the same scale, 50% of the students in the FA section received an A or a B. In the non FA section, 39% received an A or a B. Also, 6% more students failed the non FA section. Further, FA section students gave higher rating to the course than non-FA-section students.

Gibbs and Lucas (1996) held that instructional methods need to vary by class format. This study supports that position in that it demonstrates the fact that formative assessment techniques can be successfully incorporated into the large lecture format with positive results.

Table 1
Study 1: Regression Analysis

	Regression Coefficient	Significance
In FA section	51.245	.017
Mathematics SAT	.238	.094
Verbal SAT	-.329	.019
Number hours/week spent on homework	-2.425	.026
Age	-9.411	.079
Want good grades dummy	72.714	.009
Like science scale (0-7)	10.834	.250
Constant	711.200	.000

Study 2: Formative Assessment in Differential Equations Courses

Sadler (1998), in an article about formative assessment, argued that grades may be counter productive to formative assessment in that they are focused on what has been accomplished and not what needs to be done. Taras (2002) argues that grades often have the unfortunate effect of distracting students from what they should be focused on and that is learning. Further, according to Taras, "I reiterate that marks have a place even in formative assessment, but not in isolation and not before feedback and judgements have been interiorized" (p. 507). This study focuses on whether the students taking the quizzes also assume some control over their own learning, which will be measured by their performance on regular tests and the final exam.

In this study increased feedback to students was tried under different conditions in four sections of a differential equations course during two semesters at an urban university, two in the Spring 2007 and two in the Fall 2007 semesters. The university where the research was done is very large, thus reducing within semester and between semester contamination threats. The sections were generally of the same size (N=30 students) and did not differ in gender and race/ethnicity distributions, nor in their ability as measured by their entrance SAT scores.

The same materials and the same number of tests (4) were administered in each class. What differed was the weight of the quizzes. The course instructor, an experienced mathematician, opted to implement a number of quizzes in each course, but put only grades on some and detailed analyses on others, a strategy that had been found effective with younger students. There were three formative assessment sections, and one control section. Lastly, in addition to content-based pre- and post-tests, pre- and post-survey attitudinal and behavior data were collected as well. The number of students was reduced from 117 to 79 because of the need to have data from all of the different sources (pre-test results, post-test results, pre-survey results, and post-survey results). The students for whom data were complete were not different from those for whom the data were incomplete.

In these analyses, the dependent variable is the post-test content score. To control for confounding factors such as variability in the initial knowledge base, a regression analysis was performed (see Table 2 for details). The R Square indicated that 24 percent of the variation in the dependent variable was explained by the independent variables taken together. The F statistic was significant at the .000 level. The variable most strongly related to the dependent variable was the student's pre-test content score as evidenced by the Beta value of .41. However, controlling for differences in ability, being in one of the formative assessment sections added 10.30 points to the final score as shown by the regression coefficient, which is equivalent to a whole grade difference, that is, a "B," instead of a "C".

To assess how implementation of FA affected the students, an analysis of residuals was conducted. Here, the actual test score was subtracted from the predicted test score. A negative result meant that the student

Table 2
Study 2: Regression Analysis

	Regression Coefficients	Significance
Student in FA section dummy	10.30	0.028
Number of hours spent per week on going to class and doing homework	0.30	0.022
End of course academic self confidence dummy	5.09	0.082
Course pre-test results	0.17	0.002
Constant	40.55	

Table 3
Study 2: Number of Hours Per Week Devoted to Various Activities

	At the beginning of the semester				At the end of the semester			
	Overall mean	Students performing well above expectations	Students performing as expected	Students performing well below expectations	Overall mean	Students performing well above expectations	Students performing as expected	Students performing well below expectations
Watch TV	6.49	5.53	4.96	4.59	6.26	8.43	4.94	8.56
Play computer games	3.11	2.89	2.58	3.68	2.93	2.22	2.27	5.66
Talk to friends	12.26	13.11	11.44	10.55	9.88	11.09	9.83	8.50
Do household chores	5.88	4.11	7.13	7.15	6.53	4.72	6.88	7.60
Play sports	4.00	4.86	3.72	2.27	4.06	4.47	4.62	2.22
Work at a paying job	14.28	10.29	14.39	19.86	11.54	9.66	11.82	12.00
Go to class	18.32	18.43	18.00	15.63	17.67	17.19	17.99	17.34
Do homework	14.33	12.71	15.52	12.00	17.28	14.56	18.23	17.44

performed higher than expected, and a positive result meant that the student performed lower than predicted. In all, 58.2 percent of the students performed higher than expected. The difference score ranged from a student whose predicted score was 51.62 points higher than the actual score earned to a student whose predicted score was 31.81 points lower than what was actually earned. The first student performed below expectations, while the latter student performed above expectations.

Next the data were divided into three groups: those who achieved well above what was expected (80^{th} percentile and above), those who achieved well below what was expected (20^{th} percentile and below), and those in the middle percentiles. A student classified in the 80^{th} percentile or higher on this difference score need not have achieved at the highest level, but certainly did achieve significantly higher than predicted. Also, it is possible for a student to have achieved a good grade, yet be in the 20^{th} percentile or lower on the difference score. What would be true of such a student is that s/he achieved significantly less than predicted. The difference score is a value added model designed to capture the effects of what happened in the classes. While not statistically significant, a greater percentage of those achieving well above expectations were in the formative assessment sections than was the case for those students in the control or non-formative assessment section.

At the beginning of the semester the students were asked to estimate the number of hours per week that they spent in eight areas. These items were included in the post survey as well. At the beginning of the semester, on average, 30.65 hours were spent per week on academic activities, going to class (18.32), doing homework (14.33), and talking to friends (12.26). At the end of the semester, the number of hours talking to friends declined and the number of hours doing homework increased. When the students are divided according to whether they performed well above what was predicted (80^{th} percentile and higher), as expected (21^{st} to 79^{th} percentiles), or well below what was predicted (20^{th} percentile and lower), interesting patterns emerge. It is apparent that those students who performed below prediction had time allocation problems from the start as they spent almost twice as much time at a paying job as those students who performed well above what was predicted (see Table 3 for details). This was at the expense of going to class, doing homework, and doing household chores. At the end of the semester, these students had reduced the number of hours working and increased the hours doing homework. It is apparent that getting a good start is crucial.

Integrating formative assessment techniques – in this case quizzes – into a university course during the semester did have a significant affect on student performance. In this case, students allocated their time differently. Those students who performed significantly above expectations devoted time early in the semester to their course work, while those who performed significantly below expectations did not. At the end of the semester, students in this latter group re-allocated their time and more than likely were playing "catch up."

Study 3: Class Context: Assessing the Effects of Interactions

The use of formative assessment can be very time consuming both for the students and the faculty. In this study, the goal was to measure the effect size of participating in a class that was structured to facilitate the interaction component of formative assessment. The research question for this study was: To what extent is student achievement a function of differences in instructor/student interactions. The goal was to go beyond determining if there were a relationship between achievement and aspects of formative assessment and to quantify the difference if statistical significance were attained.

Among the formative assessment vehicles included in these analyses are online quizzes, instructor office visits, and email conversations with the instructor. Additional data that were collected include pre/post attitudinal and behavior surveys, pre/post subject knowledge tests, quiz taking history, and email and office logs of university students taking tests and measurement courses over two semesters.

Data were collected from upper division students enrolled in two sections of an Educational Assessment – Tests and Measurement course taught by the same instructor. The database is composed of student demographic and achievement items (gender, race/ethnicity, GPAs, SAT scores, course grades by components (tests, online quizzes, pre/post-test results, etc.), and attitudes and behaviors (electronic contacts and office contacts decomposed into FA-related and non-FA-related) and pre/post survey responses.

The students were told that they were participating in an NSF funded study and generally what its focus was, but specifics of the project were not discussed. The students were not paid stipends, but randomly selected students were given gift certificates to the university bookstore for their participation. The sections were generally of the same size (N=30 students) and did not differ in gender and race/ethnicity distributions, nor on their ability as measured by their entrance SAT scores. The same materials and the same number of tests were administered in each class. What differed was the fact that online quizzes were incorporated into two of the sections and not in the other two.

Students in two sections completed an online quiz for each of 19 chapters prior to the scheduled session covering that chapter. Quizzes were available through a companion website (Luftig 2009) to the course text (Miller, Linn & Gronlund 2009) and were composed of 20-41 objective items per chapter. Students completed quizzes on their own and emailed the results to the instructor. Results sent to the instructor included percent correct and a log of answers to each item. To measure forms of student initiated formative assessment, the instructor kept a log of all student emails and office visits. Student- initiated contacts were coded as administrative or content-oriented. Contacts about schedule, syllabus, attendance, and grades were considered administrative issues. Requests for clarification on a procedure or concept and requests for assistance with assignments are two examples of content-oriented, student-initiated contacts.

In an analysis of the two sections for which online quizzes were available, the quiz average was not related to knowledge gain, but the number of quizzes taken was related. Additionally, in a regression analysis of those 46 students enrolled in the FA section, the percentage of contacts that were formative assessment was negatively related, and the percentage of electronic contacts was positively related (see Table 4 for further results). Thus, the findings indicate that complex relationships exist and that the attitudinal items need to be incorporated into the model being estimated.

Table 4
Study 3: Regression Analysis

	B	*p*
Pre-test (out of 100)	0.333	0.061
Number of quizzes completed out of 19	1.265	0.015
Total number of office visits	-1.221	0.026
Total number of non FA online contacts	1.514	0.031
Total number of online FA contacts	-4.947	0.046
Constant	26.621	0.028

It is apparent that integrating formative assessment techniques, in this case online quizzes, during the semester into a university course did have a significant effect on student performance. A number of issues still need to be addressed. Is this the only effect that the integration of formative assessment can have? Are some students affected more than others? Do some students need to be affected more than others? In a related study Stull, Schiller, Jansen Varnum, and Ducette (2008) showed that embedding in class formative assessment opportunities in mathematics courses prompted some students to study earlier in the

semester than others. Will this be the same with online formative assessment opportunities?

Study 4: The Use of Clickers in an Introductory Physics Class – Fostering Student Interaction as a Method of Formative Assessment

Use of personal response systems (primarily known as "clickers") has become a widely recognized means of increasing student interaction in large lecture classes. These clickers allow the students to respond to various forms of instructor provided questions, usually in a multiple-choice format, and provide instantaneous feedback to the students and the instructor concerning the extent to which the students in the class have mastered the material. In effect, the use of clickers is a means by which instructors and students in large lecture classes can obtain the same kind of interaction that is available in small classes where instructor/student interaction is more feasible. As Duncan (2005) says, "... students press a button on a hand-held remote control device corresponding to their answer to a multiple choice question that is being projected on a screen, see the correct answer along with the class distribution of answers, and hear a description of the thinking that leads to the correct answer" (3).

Most of the research on clickers has focused on the perceptions of how useful and enjoyable students found these devices (Draper & Brown 2004; Duncan, 2005; Latessa & Mouw 2005; Campbell, Knight, & Zhang 2009). In general, this research has reported that students find clickers helpful in their attainment of course content. As some writers have commented, however, there is a clear possibility that the effectiveness of clickers may be due to some extent to the Hawthorne effect. Outside of these student opinion studies, however, there has been very little research investigating whether clickers have an impact on student achievement and attitudes. In addition, there has been no direct investigation of whether clickers are more or less effective for specific subgroups of students. The present study will fill some of these gaps in the literature by providing data from an introductory physics class in which clickers were used as one form of formative assessment.

This study was conducted at a large, public, urban university in the northeastern section of the country. The class in question was introductory physics, a course that meets the university's requirement for a core science class as part of the general education requirements. The course is offered in both the fall and spring semesters, with approximately 150 students in each section. As part of a National Science Foundation Grant, the instructor agreed to offer the fall section of the course using the typical course format (large lecture with minimal class participation) and the spring semester using clickers. In both classes the course content was as identical as possible under normal classroom conditions. Specifically, the same textbook was used in both classes, the course outline was identical, and all quizzes and assignments were identical. The only difference between the two classes was that the instructor used clickers as an integral part of his presentation in the spring course. For the most part, this involved the students responding to questions, usually in multiple-choice format, that covered the material already presented in the class. These data were then fed back to the instructor and to the students. If 75 percent or more of the class missed an item, the material was either immediately reviewed, or was taught in another format in a later lecture. The questions used for the clicker data were not presented again in any of the quizzes or the final.

In both classes a pre-survey was given to capture student's attitudes toward, and previous experience with, science. The survey contained two types of questions: those focusing on content (e.g., "I'm sure I can understand the most difficult material presented in science class" and those that would be considered more "constructivist" in nature (e.g, "There is only one correct way to solve science problems" and "Learning science is mostly memorizing facts"). The same questionnaire was administered at the end of the course. In addition, both classes were given an identical set of course examinations consisting of three quizzes and a final exam. The classes were essentially the same in terms of their demographic profiles while their achievement results were not, as shown in Table 5 where the mean performance of the two classes of students, expressed as percentage correct for the three quizzes and the final are presented.

Table 5
Quiz and Final Exam Performance

	Quiz 1	Quiz 2	Quiz	Final
Clicker	48%	64%	76%	85%
Non	52%	51%	64%	77%

Since use of clickers is becoming more common, it is important that the impact of these devises be systematically studied. The results from this study offer support for clickers, but also indicate some areas of concern. It is significant that students in the clicker class obtained higher scores on the quizzes and final exam as compared to students in the non-clicker class. In an analysis of the attitudinal surveys, it appears that students in the clicker class seemed more confident in their ability to solve difficult problems. To some extent, however, these benefits may have been obtained at the cost of an over-emphasis on discrete and clearly demarcated outcomes. That is, the students in the

clicker class seemed intent on providing answers to the questions asked, and seemed less open to exploring and investigating physics. This was supported by the finding that students in the clicker class are more concerned with obtaining a good grade in the class. It is also interesting that clicker use seems most pronounced for students who have a moderate initial level of interest in the course. It is possible that students who had a high level of initial interest found that the clickers did not increase their understanding of the material, and they ultimately stopped paying as close attention as they should have. This is evidenced by the fact that the most pronounced difference in quiz performance occurred later in the course.

The data from this study suggest that the use of clickers can facilitate performance in physics, at least to the extent that this is measured by performance on objective quizzes and exams. It is also encouraging that the clickers seemed to enhance the students' sense of competency and mastery in dealing with the content. It is discouraging, however, that this enhancement seemed to be achieved by making the students over-emphasize concrete knowledge.

Conclusion

A number of points can be made about the use of formative assessment techniques. First, formative assessment clearly has a role to play in improving teaching and learning at the university level. While all of the instructors who participated in these studies were very skeptical of these formative assessment techniques at the outset, each has continued their use beyond the time frame of his or her study. Secondly, it appears that specifically "what is done" is less important since there were positive achievement gains in each study. Third, while some of the formative assessment techniques imply considerable instructor commitment (Study 1 and Study 2), positive student achievement effects were realized with lower levels of commitment (Study 3). Fourth, while positive gains were realized with use of technology, gains were also realized with implementation of nontechnology dependent techniques. Lastly, gains were independent of class size or subject matter.

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Podcasting as Complement to Graduate Teaching: Does it Accommodate Adult Learning Theories?

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Technology in higher education has exploded within the last decade, as educators become more knowledgeable about its uses and students become more demanding of access and convenience to teaching and learning. This article shares results of an exploratory study that determined graduate students' perceptions of podcasting access and utility in courses as related to adult learning theory. Reading materials and listening to podcasts produced favorable results in terms of students' perceived understanding of the subject, with the majority of students surveyed recommending reading the course materials and listening to same-materials via a podcast. A higher percentage of students listened to the podcast in its entirety compared to students reading all of the material presented. Survey results indicated complementary components of adult learning in terms of reflective behavior. A total of 76 percent of students agreed the podcast enhanced or clarified their understanding. Whether the interaction was potent enough to foster action or transformation remains a personal experience based on prior learning. Twelve percent of students were neutral in their response; memorization or rote recall characterized their non-reflective learning experience. Students who perceived the podcast as of no value would not respond to the podcast or reject the podcast as non-important to their learning need as represented by 12 percent of the students in this study. The use of podcasting in graduate courses continues to evolve, and addressing adult learning theory in relationship to technology needs to be further explored.

In the current era of technology in higher education, opportunities abound to utilize hardware and software to assist stimulation, enhancement, and motivation of learning in diverse academic environments. The omnipresence of mainstream media and flexible and independent access to technology has encouraged adult learners to become more receptive to new forms of instruction in the classroom. With on-demand media files, students can now easily download instructional information and lessons from the web to their computers or portable media players and complete course assignments at times amenable to the demands of their personal and professional lives. Similarly, with audio editors easier to use, more educators have learned the process of recording and editing audio, thereby creating access points to learning materials in their courses. In academe, coursecasting has presented a new kind of learning environment, and podcasting, as one technological medium, allows students individual access to course content such as recorded instructions and lectures, graphics, and videos.

Podcasting Application and Benefits

IPods may be as commonplace as cell phones in the lives of individuals. In 2007, Apple reported selling over 100 million iPods (Apple, n.d.), and within the last few years, an explosion of learning with iPods (i.e., podcasting) has infiltrated college and university campuses across the globe. In reviewing enhancement of student-learning experiences, survey results at the University of Washington showed 76% of student respondents owning an iPod or other MP3 player (Lane, 2006; see, also, Evans, 2008). A recent report expanded upon the student trend for access and convenience in learning saying, "To some degree, those [more convenient learning] situations are already happening, and they will be amplified as time goes on: Students will increasingly expect access to classes from cellular phones and other portable computing devices" (Chronicle Research Services, 2009, p. 4).

In early stages of review, podcasting (as well as other newer web tools of wikis, twittering, and blogs) has been examined from student perceptions of utility, use, and receptiveness of the technology application (see, e.g., Richardson, 2006). Student response to the use of podcasting has shown positive perceptions (e.g., Edirisingha & Salmon, 2008; Lane, 2006; Lee & Chan, 2007; Reynolds & Bennett, 2008; Tynan & Colbran, 2007). In 2006, 57% of medical students surveyed indicated that iPod technology with access to content would be useful in learning (Palmer & Devitt, 2007). Podcasts as a form of content review were noted by 45% of students in a course through Harvard Extension School (Malan, 2007), and undergraduate students expressed that podcasts were more effective for review than their textbooks and their personal notes (Evans, 2008). According to Tynan and Colbran's (2007) study, a majority of law students noted podcasting as particularly useful for lecture content.

Other findings suggested the following benefits of podcasting: (a) flexibility and portable convenience (Duke University, 2006; Edirisingha & Salmon, 2007; Evans, 2008), (b) ability to catch up on content (Lane,

2006), (c) reduction of students' anxiety due to isolation in distance-learning settings and their sense of inclusivity (Lee & Chan, 2007), (d) increased student engagement (Carle, Jaffee, & Miller, 2009), (e) improved teaching and learning (Dale, 2008), and (f) enhanced learning experiences (Boulos, Maramba, & Wheeler, 2006).

Then, too, a few research studies found unfavorable attitudes towards podcasting (Knight, 2007) with little learning benefit for students (see, e.g., Abt & Barry, 2007), including limited capturing of visual materials or class discussions (Lane, 2006). Findings in one particular study noted that students' achievement with podcasting will require future study of individual self-efficacy and self-regulation (Hodges, Stackpole-Hodges, & Cox, 2008). And Malan (2007) pointed out, "It is this technology's reach [educational accessibility] that we claim is significant, not the technology itself" (p. 389).

Podcasting and Relationship to Learning Theory

Technology has changed the way students learn, and technology has changed the way educators teach – with this, there are a multitude of options to structure discipline content and provide opportunities for technological application in higher education. However, the receptivity of new and emerging technologies present more questions than answers. As one example, Snyder (2009) explained that educators may select a particular medium (e.g., threaded discussion forum, blog, wiki), because it is available to them or use an instructional method (e.g., lecture, discussion, cooperative groups), because it is the method with which they are most familiar; however, they may not have a clear understanding of how the tool or method supports a particular type of content or instructions. (p. 48)

With the infusion of technology into academic course materials, questions of educational effects and impacts emerge. As practitioners in adult learning and instructional developers of our own graduate courses, we focused on supplementing teaching methodology and learning with podcasting, seeking answers to one question: How does podcasting complement adult learning theory?

In search of answers, we chose to acknowledge adult learner characteristics of our students and then structure specific instruction in graduate courses to address the issue of adult learning theory with the infusion of podcasting. Because the spectrum of adult learning is diverse and broad, the exploratory study discussed in this paper considered one seminal adult learning theory as evident in student podcasting learning experiences. Although there are numerous models in adult learning, adult learning theory is not one single or simple thing, and careful consideration should be given to different learners (Hartley & Bendixen, 2001). There is, however, some agreement that adult learners possess qualifications, as defined in the literature as characteristics. We assumed in the design of course podcasting exercises that our adult students:

- Draw upon past life and work experience, which enables reasoning and reflective thinking during the learning process;
- Exhibit a high need to find relevance and applicability of learning;
- Possess healthy skepticism related to well established attitudes, beliefs, and values; and
- Require readiness, stimulation, and motivation to learn (see, e.g., Brookfield, 1991; Conner & Clawson, 2004; Cross, 1992; Merriam, Caffarella, & Baumgartner, 2006).

We defined Podcasting as providing on-demand audio files that our students can download from the internet to a MP3 mobile device. We did not seek to discuss or debate the value of podcasting in comparison to other learning technology media. We acknowledged and valued the philosophical statement of Daines, Daines, and Graham: "Learning remains the responsibility of the adult learners; as teachers we cannot learn for our students. We can, however, strive to provide sound and accessible learning opportunities for them by thoughtful planning and preparation . . ." (1993, p. 131). Moreover, we decided to utilize one theoretical framework of adult learning in our study: reflective learning theory.

Adult Learning Theory: Jarvis and Adult Life Experiences

Considering the complex, multifaceted, and diverse theories of adult learning, it would not be appropriate here to address each and every andragogical framework of adult learning. Respectful of this, we did examine constructs of learning (Borg & Gall, 1989) within a seminal theory of adult learning, that is, reflective learning theorized by Peter Jarvis (2002a; see, also, 1992, 2006).

Meaning-making is one critical difference between pedagogy and andragogy. With an accumulation of life experiences, adult learners reinterpret an old experience in comparison to a new set of expectations or information, thus giving a new meaning and perspective to an old experience. Choosing what to learn and the importance and meaning of incoming information are often seen through the lens of experiences in life, including prior formal, informal, and experiential learning. Guiding the practice of adult educators in the

twentieth century, Jarvis (1992) explained potential learning as private and individualistic (p. 167), hinging on an individual's reception to disjunctive experiences wherein there is disparity between stored knowledge and information presented (p. 84). With disharmonious experiences, Jarvis believed that students can choose to seek meaning as relative to their experiences – reflected upon, evaluated, and interpreted to reach understanding.

With our fast-paced, changing society, opportunities for learning are ever-present, and an individual's contemplative choice to reflect on something new is part of the process of learning, guided by an adult's concomitance and capacity to self-direct learning. Jarvis (1992, 2002a) emphasized learning as an ongoing process of individuals making meaning of everyday experiences. He further explained:

> Learners do come to education with a great deal of knowledge and expertise. They should not be treated as empty containers . . . Education should now both seek to use the learners' expertise and build on their knowledge, which can be done through a variety of teaching techniques . . . . (in Jarvis, 2002b, p. 208)

Boud, Cohen, and Walker (1993) promoted reflective processes of experiences as critical to transference of learning to new situations for an individual, with lived personal experiences and the intent of these experiences as foundational for reflection (see, also, Leberman, McDonald, & Doyle, 2006).

Although meaning perspectives within reflectivity are exceedingly complex and somewhat controversial in theories of adult learning, their application to conceptualizing and understanding how learning affects students remains invaluable, particularly to facilitators of adult learning utilizing technological tools to complement the learning of students. As Merriam and Caffarella (1999, p. 285) noted, the Jarvis model of adult learning "concentrates on explaining the responses one can have to an experience . . . a strength of the model. These responses encompass multiple types of learning and their different outcomes, a refreshingly comprehensive view of learning." And although there are more recent alternative theoretical conceptions of reflective practice of life experiences, this paper expresses a first step in examining fundamental learning concepts in relationship to podcasting experiences of adult learners.

Because research (see, e.g., Ford & Chen, 2000; Whyte, Karolick, Nielsen, Elder, & Hawley, 1995) found that learning style impacts achievement and successful student interaction in a non-traditional learning environment – for example, online learning – determination of the participants' preferred learning styles might offer additional insight. In conceptualizing learning theory, Boyatzis, Cowen, and Kolb (1995) noted that learning style is a preferred way that an individual deals with information, taking stimuli and constructing meaning (see, also, Kolb, 1984). Learning styles are dependent to, and mutually supportive of, learning theories.

In order to improve our understanding of adult learners' responses to podcasting, an exploratory design was carried out. The objectives included capturing whether the student indeed downloaded and played the podcast. Additionally, we explored the utility of the podcast experience in regards to graduate students' perceptions of *productive use of time* and whether the student would recommend to classmates *listening to the podcast*. The responses to these and other survey questions provide data as to whether the experience allowed for valued knowledge that may then be strategically used in the future.

Methods

The sample of 60 students was conveniently selected from the graduate programs and courses at a large Midwestern university for this study. The graduate courses that introduced the instructional podcast were in Nursing, Social Work, and Library Information Science. Four weeks into the courses, an initial survey was administered regarding the students' perceptions of the required readings and typical unit materials. This permitted a period of control as well as data collection of students' demographics and preferred learning styles (Fleming & Mills, 1992). During the next unit, one week later, a podcast unique to each course with content (no longer than 10 minutes) was uploaded into iTunes via the online courseware. Students were informed of the podcast availability. Podcasts were individualized to each course exercise and included an explanation of unit expectations, overview of the major concepts, or related discussion and reflection. A post-podcast survey was administered to determine the access and utility of the podcast.

Instrumentation for this exploratory study allowed for a comparison of the standard assigned reading to that of the podcast. Survey questions were related to access, number of times the material was reviewed, multitasking, clarification that was achieved, and the potential for the student to recommend that others access the material. The visual, auditory, read/write, kinesthetic (VARK) instrument has been used to help students identify how they learn (Fleming & Mills, 1992). However, some researchers have suggested that the statistical properties are not appropriately robust for research usage (Levine-Brown, Bonham, Saxon, & Boylan, 2008). Since visual and auditory learners appear to have strong classroom learning, we queried

participants as to their preferred learning preference (VARK) in order to explore any overarching preference toward one style (Parker & Mitchell, 2006). The datum from this one question can inform whether potential bias exists as well as assist in framing the discussion.

Both surveys were pilot tested, and IRB approval was obtained. Data were collected by each course professor and combined into a spreadsheet for access and analytical comparison. Data were entered and analyzed via Excel™.

Results

Participation in both surveys was 85 percent (9 of the 60 students chose not to participate), and demographic data points were captured; non-female students represented 15.6 percent and non-white students were 9.8 percent. The students' ages varied with 49 percent between the ages of 17 to 28, 38 percent between 29 to 44 years, and 13 percent were 45 years or older.

Survey participants were given a choice of learning styles with descriptive options for visual, auditory, read/write, and tactile/kinesthetic (VARK). The results indicated that 35.4 percent of respondents indicated visual, 37.5 percent learned through reading and writing, 16.6 percent indicated auditory, and 10.4 percent identified tactile/kinesthetic as their learning style preference. Learning preferences reveal the ways a student needs to inculcate the materials and concepts. There was no one preferred preference for the participants studied.

Students either accessed the podcast from a laptop, desktop, or mobile device since the podcast was available for download through the university course management system. Only three students reported downloading the podcast to a mobile learning device

Table 1
Access of Reading Versus Podcast *(N=51)*

Questions Regarding Reading and Podcast Access	% YES	% NO
Reading: Did you read the materials from beginning to end?	56	44
Podcast: Did you listen to the podcast from beginning to end?	96	4
Reading: Did you read it more than once? One time = 69%, two or more times = 31%	31	69
Podcast: Did you listen to the podcast more than once? One times = 50%, two or more times = 50%	50	50
Reading: While reading the material did you do anything else? Watch TV, laundry, child care, talk to friend	44	56
Podcast: While listening to the podcast did you do anything else? Email, websurf, homework, at work	65	35
Reading: Did you take notes while reading the material?	23	77
Podcast: Did you take notes while listening to the podcast?	40	60

Table 2
Students' Perception for Utility of Reading Versus Podcast *(N = 51)*

Questions Related to the Utility of Reading and Podcast	% Strongly Disagree or Disagree	% Neutral	% Strongly Agree or Agree
Reading: The reading clarified and/or enhanced my understanding of the subject.	14	17	69
Podcast: The podcast helped to clarify and/or enhance my understanding of the subject.	12	12	76
Reading: The reading is not a productive use of my time.	45	23	32
Podcast: The podcast is not a productive use of my time.	66	22	12
Reading: I would recommend that other students taking this course complete the reading.	6	29	65
Podcast: I would recommend that other students taking this course listen to the podcast.	13	11	75

Survey participants were given a choice of learning styles with descriptive options for visual, auditory, read/write, and tactile/kinesthetic (VARK). The results indicated that 35.4 percent of respondents indicated visual, 37.5 percent learned through reading and writing, 16.6 percent indicated auditory, and 10.4 percent identified tactile/kinesthetic as their learning style preference. Learning preferences reveal the ways a student needs to inculcate the materials and concepts. There was no one preferred preference for the participants studied.

Students either accessed the podcast from a laptop, desktop, or mobile device since the podcast was available for download through the university course management system. Only three students reported downloading the podcast to a mobile learning device. Fifty percent of students accessed the podcast more than once while only 31 percent read the unit text materials more than once. More students multitasked while listening to the podcast than when reading the course material with 40 percent taking notes while listening (see, Table 1). Table 2 indicates that 34 percent of respondents agreed or were neutral that the podcast was not a productive use of time while 75 percent would recommend that other students taking the course listen to the podcast. Similarly, 55 percent of respondents agreed or were neutral that the reading was not a productive use time, but 65 percent would recommend that other students taking the course complete the reading.

Discussion

Our exploratory study found that students took advantage of the podcast, and some listened to it multiple times. Not all of the students read the written material, and fewer than half read it more than one time. The students tended to multitask more while listening to the podcast than when reading the written material. The most common additional task was taking notes while listening to the podcast. As such, the students generally believed they were more productive while listening to the podcast than while reading the written material.

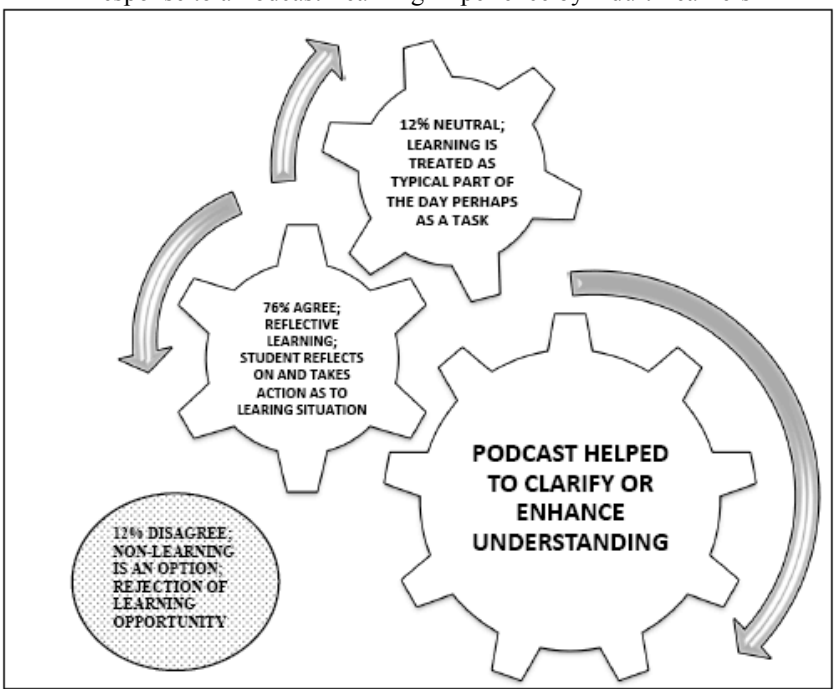
Most all of the students listened to the podcast on a desktop or laptop computer and not on a mobile device. This does not support the idea that students wish to be more mobile when learning. It is possible that the students were accessing the podcast at work, school, or somewhere other than home while listening, but it does not appear that the students listened to the podcast while being mobile. Age may have played a role in how the students listened to the podcasts. Fifty-one percent of the students were 29 years of age or older and have not grown up in the age of iPods and MP3 players, thus they may not have been as tech savvy as younger students. Students were not asked if they had any technical difficulties in listening to the podcasts. It is unknown whether students tried, but were unable, to download the podcasts to their mobile devices. The students strongly supported the readings and the podcast as important for subsequent students to complete when taking the course in the future.

A low percentage of the students responded that they were auditory learners as opposed to visual or reading/writing learners. The findings might have been different with a diversity of students; multiple methods of delivery might be needed to meet the various learning styles of all students. Since only one question explored learning style, the impact of this result can perhaps guide future work related to adult learning preferences and podcasts.

The podcast experience illustrates Jarvis' model (2006) as either non-learning, a non-reflective experience, or as a reflective learning experience (see, Figure 1). For instance, students who perceived the podcast as of no value would not respond to the podcast or reject the podcast as non-important to their learning need. This option can be accomplished through choice of non-engagement as represented by 12 percent of the students in this study. These students disagreed that the podcast enhanced or clarified their knowledge as related to the course. Interestingly, four percent of students did not access the podcast from beginning to end. Conversely, students that valued the podcast as important to their learning milieu would access the podcast and integrate the content as part of the reflective learning experience. A total of 76 percent of students agreed the podcast enhanced or clarified their understanding. Whether the interaction was potent enough to foster action or transformation remains a personal experience based on prior learning. Some students that neither had a reflective learning or non-learning interaction with the podcast may skim the podcast, not reflect on the material but mimic the material presented. Twelve percent of students were neutral in their response; memorization or rote recall could characterize their non-reflective learning experience.

The adult learning theory of Jarvis is conceptually described in the aforementioned examples of podcast experiences as reported by this graduate student population. Graduate students are knowledge seekers in that they seek additional learning to expand their prior knowledge. Adult learners with life experience are positioned for meaning-making which presents an ideal scenario for educators. Instructors may want to consider podcasting as a medium to assist with learning, providing a structure for analysis or interpretation for content, thus fostering improved reflection.

Figure 1
Response to a Podcast Learning Experience by Adult Learners



A Future Glimpse of Podcasting and Adult Learning Theory

With dynamic technological changes in higher education, the need for more convenience, rapidity, and abundance of technology will endure. The focus on learners will change teaching and learning, and as recently predicted, "The faculty member, therefore, may become less an oracle and more an organizer and guide, someone who adds perspective and context, finds the best articles and research, and sweeps away misconceptions and bad information" (Chronicle Research Services, 2009, p. 10).

Although some support (see, e.g., Brill & Park, 2008) that emerging technology research include examination of andragogical theory designed for the student learning experience, most studies has not connected technology and learning theory. At present, this research need exists. For educators as organizers and guides, podcasting as a complement to the adult learning theory may be a persistent technological application in teaching and learning.

Results presented in this article support adults' learning via the application of podcasts, but more research is needed to determine the effectiveness of this application. The intention of this exploratory study was to describe how podcasting may complement adult learning theory as conceptualized by Jarvis through the examination of delivered instructional podcasts and the perceptions of graduate students. The use of podcasting in graduate courses continues to evolve, and addressing adult learning theory in relationship to technology needs to be further explored.

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Are Choice-Making Opportunities Needed in the Classroom? Using Self-Determination Theory to Consider Student Motivation and Learner Empowerment

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Self-determination theory (SDT) underpins research on learner empowerment, but it is rarely discussed in empowerment-related literature. In addition, a motivational measure stemming from SDT has received little visibility in communication research. To address these concerns, this study focuses on motivational theory and measurement in an attempt to tease out the relationship between motivation and learner empowerment as well as how these constructs are related to students' choice-making opportunities in the classroom. In essence, this study aims to offer a strong synthesis of the literature related to these constructs, and also to make methodological and practical advancements in understanding student motivation, learner empowerment, and how freedom in the college classroom shapes students' enthusiasm for learning.

Student motivation is an important precursor to learning, and therefore, is a meaningful aspect of any successful classroom experience (Pintrich & Schunk, 2002). Building on motivational research, learner empowerment also has been found to be integral to the learning process (Frymier, Shulman, & Houser, 1996; Houser & Frymier, 2009). Studies on both motivation and empowerment have examined a variety of related factors such as self-efficacy, values, goals, interests, and – most directly related to the current study – opportunities for self-determination in educational contexts (Wigfield & Eccles, 2002b). Self-determination, or students' autonomous choice-making abilities, can be considered a distinct feature of higher education, one that differentiates it from elementary levels of schooling. As students move from high school into college classrooms, that is, they often experience a shift away from mandatory activities and toward those that are more voluntary or student-controlled. Choice-making opportunities for students are, in part, communicated to students through a syllabus that can speak of an individual's options related to course activities, e.g., choosing to submit a book report instead of taking a quiz or selecting the dates on which work is turned in. Students in college courses also have differing degrees of freedom to choose whether or not to attend class, depending on a teacher's attendance policy. This study's focus on choice as a fundamental aspect of motivation, then, includes an examination of students' self-determination related to both course assignments and attendance. Such an examination can provide clarity for both researchers as well as practitioners, and especially instructors in the classroom as they attempt to tap into the positive outcomes associated with students' motivational tendencies (e.g., feelings of control, perceptions of self-efficacy).

While ultimately exploring the matter of student choice in order to draw some very practical conclusions for instructors in their classrooms, this project began by attempting to tease out the relationship between motivation and learner empowerment, and by making comparisons across two scales measuring motivation. Motivation and empowerment are overlapping constructs that, to some degree, share history. So, in addition to offering practical advice for teachers, this manuscript offers clarity for researchers on the theoretical and methodological relatedness between these two constructs. The purpose of this project was, thus, three fold: 1) to explore the interconnections between student motivation and learner empowerment, 2) to bridge two fields of inquiry – educational scholarship and communication research – on the topic of student motivation measurement, and 3) to investigate the impact of student choice on motivation and empowerment in the classroom. In essence, this study aims to offer a strong synthesis of the literature related to these constructs, and also to make methodological and practical advancements in understanding student motivation, learner empowerment, and the ways that freedom in the college classroom shapes students' enthusiasm for learning.

Motivation

Building on Heider's (1958) work on personal and impersonal causality, and also working from deCharms' (1968) differentiation between behaviors stemming from one's own volition and those that do not, Deci and Ryan (2002) have inspired roughly thirty years of self-determination research. Their scholarship has explored feelings of autonomy (self-controlled behavior) and motivation in schools, in organizations, in health contexts, on the athletic field, and beyond (e.g., Deci, Connell, & Ryan, 1989; Deci & Ryan, 1995; Deci, Schwartz, Sheinman, & Ryan, 1981; Deci, Vallerand, Pelletier, & Ryan, 1991; Ryan & Deci, 2000; Ryan & Grolnick, 1986; Ryan, Plant, & O'Malley, 1995; Ryan & Stiller, 1991). In educational settings specifically, students' autonomy has been linked to intrinsic motivation (Deci et al., 1981; Ryan & Grolnick, 1986);

and, in turn, intrinsic motivation corresponds to a great number of positive outcomes such as decreased anxiety (Gottfried, 1982), daily well-being (Reis, Sheldon, Gable, Roscoe, & Ryan, 2000), and enhanced academic performance (Deci & Ryan, 1985; Grolnick & Ryan, 1987).

According to self-determination theory (SDT), people are intrinsically motivated when they are self-determined (Reeve, Deci, & Ryan, 2004, p. 33). At the root of self-determination is a personal sense of control; when people are self-determined, they see themselves as initiators of their own activities and as having opportunity to make their own choices (Deci & Ryan, 1985). Moving beyond concerns with external rewards and punishments (Bandura, 1977), and differing from Rotter's (1954) notion of locus of control, "self-determination is not concerned with control over outcomes, but rather with the initiation and regulation of behavior" (Grolnick, Gurland, Jacob, & Decourcey, 2002, p. 149). To be self-determined means being self-propelled to act and thus having agency in one's own performances.

In addition to pointing to the very basic human need for autonomy, or that need for an individual sense of control and personal agency, SDT posits that people are more motivated when their needs for competence and relatedness are met. The need to feel competent refers to perceived opportunities for having influence in a given situation, feeling effective, and having a sense of "confidence and effectance in action" (Deci & Ryan, 2002, p. 7). The need to feel related stems from one's desire to care for others and to be cared for by others – to be socially connected.

This short list of innate human needs, i.e., autonomy, competence, and relatedness, as has been posited by SDT, provides a way to think about both human tendencies and social environments. As Deci and Ryan (2002) argue, they are expected across settings, domains, cultures, and developmental periods. "Although they may have different expressions or different vehicles through which they are satisfied, their core character is unchanging" (Deci & Ryan, 2002, p. 7). That is, "the healthy human psyche ongoingly strives for these nutriments and, when possible, gravitates toward situations that provide them" (Deci & Ryan, 2002, p. 7). In educational contexts, then, considering the basic needs in terms of classrooms as either need- supportive or need- obstructive environments, as well as how teacher-communicated expectations may impact student behavior, is in line with the context-related supposition of SDT.

SDT suggests that motivation can be examined across contexts by way of its differing types on a continuum: amotivation (not feeling compelled to act), intrinsic motivation (acting to gain a sense of personal satisfaction or enjoyment), and extrinsic motivation (acting to gain approval from others or for some external outcome). Though "self-determination is manifested most vividly and purely in intrinsically motivated behavior" (Grolnick et al., 2002, p. 149), there are variations on both intrinsic and extrinsic motivation. Ryan and Deci (2000) provide an extensive discussion of the self-determination continuum and the many types of motivation. On the left/non-self-determined side of the continuum lies amotivation (being without intention to act), and on the right/self-determined end of the continuum lies intrinsic motivation (having the intention to act for its own sake, for enjoyment, and not because of external pressure). Between these two polar ends lie four varieties of motivation, and, from left to right, they appear in this order: external regulation (acting for external reward or to avoid punishment), introjected regulation (acting to avoid bad feelings such as guilt or to attain good feelings like pride), identified regulation (acting because of the value tied to the behavior or outcome), and integrated regulation – the level of motivation most closely aligned with intrinsic motivation (acting because of the value tied to the behavior or outcome, but also because of the integration of those behaviors into a broader schema of values, needs, and behaviors). All of this is to say that there are multiple types of motivation, and not simply two (e.g., trait/state) or three (e.g., intrinsic/extrinsic/amotivation).

In communication research, scholars often conceptualize motivation as either trait-like or state-related, a practice that stems from Brophy's (1983, 1987a, 1987b) research on students in classrooms. Whereas state motivation refers to students' desires to participate, study, and learn in a specific context, trait motivation is the broader orientation or enduring predisposition toward learning more generally (Brophy, 1987b; Christophel, 1990). Students' state motivation is flexible, and teachers are "capable of stimulating the development of student motivation toward learning" (Christophel, 1990, p. 324). Certainly, differentiating trait from state human tendencies is important, and it has served its purposes across an array of communication research studies. However, for some studies, a bifurcated notion of motivation may oversimplify the complexities at work relative to individuals' internal drive and impetus toward action.

Also common in communication scholarship is the use of unidimensional instruments to measure students' "trait" or "state" motivation toward learning (e.g., Beatty, Forst, & Stewart, 1986; Christophel, 1990; Richmond, 1990). A Google Scholar (http://scholar.google.com/) search yielded Christophel's (1990) work as having been cited in 202 subsequent articles and, similarly, Richmond's (1990) work as having been cited 100 times since its publication.

Indeed many researchers continue to measure students' motivation in a unidimensional fashion and report their work across the spectrum of communication journals (e.g., Comadena, Hunt, & Simonds, 2007; Jones, 2008; Myers & Zhong, 2004). Although single-factor instruments have shed light on students' motivation toward learning, investigating this construct with a multidimensional measure might better illuminate the complexities of this phenomenon. In this paper, we argue that a means for measuring state or trait motivation that also takes into account the subtle differences across types of motivation is needed in the discipline of communication studies. We make this argument in light of the decades of motivational research conducted by those working with SDT and given the well-researched self-determination continuum delineating varying categories of motivation. Certain research projects may indeed benefit from a more nuanced understanding of motivation as a construct.

Further, given the multidimensional nature of motivation and the similarities of those dimensions to empowerment facets, untangling the moments of overlap across motivation and empowerment constructs is paramount to the further advancement of related empowerment research. Indeed, scholars differ on how empowerment relates to motivation. For example, Frymier, Shulman, and Houser (1996) assert that empowerment is a broadened version of motivation, but Weber and Patterson (2000) contend that empowerment is a "conceptually ambiguous construct" (p. 23) and "abstractly defined" (p. 23). The following section, then, focuses on empowerment as a construct closely related to motivation, and examines areas of conceptual overlap between and across the two.

Empowerment

Empowerment is connected to motivation in a number of ways. Most directly, it has been conceptualized as a set of motivational processes that increase personal initiation, persistence to complete a task, and feelings of self-efficacy (Conger & Kanungo, 1988). These processes are energizing and related to intrinsic task motivation (Thomas & Velthouse, 1990), and scholars have pointed to the importance of goal alignment between the empowering and the empowered (Luechauer & Shulman, 1993). Empowerment has been considered an "expanded and more inclusive conceptualization of motivation" (Frymier et al., 1996, p. 184), and indeed many of its aspects, e.g., feelings of having impact or competence, overlap with motivational constructs. Feelings of control, while tied to both empowerment and motivation, are what distinguish learner empowerment from other related concepts (Schrodt et al., 2008). Similar to motivation, empowerment can be experienced at the trait and state level (Thomas & Velthouse, 1990) and can be influenced by interactional partners, e.g., teachers or supervisors (Frymier et al., 1996). While the study of empowerment has its origins in organizational research on manager-employee relationships (Block, 1987), learner empowerment in the classroom has been the focus of a small body of research (Frymier et al., 1996; Glasser, 1990; Houser & Frymier, 2009; Schrodt et al., 2008).

Thomas and Velthouse (1990) are among the earliest empowerment scholars, and they utilize a variety of theorists' work including that of Deci and Ryan (1985) in their cognitive model of empowerment portraying four related dimensions: meaningfulness, competence, impact, and choice. These four dimensions function as task assessments, or judgments people make when facing a task, that serve as intrinsic reinforcements as people carry out their day-to-day activities (Thomas & Velthouse, 1990). The construct of empowerment is built upon SDT principals, but because choice is central to SDT, Thomas and Velthouse (1990) use the word choice as the fourth dimension instead of "the more abstract or philosophical term, self-determination" (p. 673).

The four primary empowerment factors overlay quite neatly with the basic human needs as delineated by Deci and Ryan (2002). For example, meaningfulness (based on self beliefs, ideals, and values) as well as choice address the human need for autonomy/self-determination, and impact (based on beliefs relative to making a difference/having an influence) sounds very similar to the basic human need for competence. Table 1 illustrates how the four dimensions of empowerment – meaningfulness, competence, impact, and choice – as presented by Thomas and Velthouse (1990) are similar to the basic human needs as delineated by Deci and Ryan (1985, 2002); the purpose of this table is to simply point to the areas of similarity, and not "sameness," across constructs. The brief history of empowerment research clearly is entrenched in areas of overlap with related constructs. We have attempted to offer, therefore, a brief history of empowerment-related research and to consider its motivational underpinnings. The next section focuses on choice as autonomous, self-determined action and as a salient factor working across both the motivation and empowerment literatures.

Choice

Motivation is at once an individual's sentiment and a response created given a certain set of social/contextual/communication-based cues. Because motivation is in part a "result of the home and school environmental contexts individuals encounter"

Table 1
Similarities Across Human Needs and Empowerment Dimensions

Human Needs Deci and Ryan (1985; 2002)	Empowerment Dimensions Thomas and Velthouse (1990)
Autonomy (control, personal agency)	Choice (self-determination) Meaningfulness (self-beliefs, values)
Competence (confidence, influence)	Competence (confidence) Impact (influence)
Relatedness	

(Wigfield & Eccles, 2002a, p. 5), offering students choices in a classroom may enhance their feelings of self-determination and intrinsic motivation to participate in class activities. As Ryan and Deci (2000) suggest, "SDT is concerned not only with the specific nature of positive developmental tendencies, but it also examines social environments that are antagonistic toward these tendencies" (p. 69). One could argue, then, that some of the more traditional classroom approaches whereby the teacher controls students' movements and work are "antagonistic," potentially "zapping" students of their motivational tendencies. Indeed, research supports the idea that teachers are influential in students' motivational processes (e.g., Richmond, 1990), and studies have illuminated some of the social and communication-based precursors to academic motivation in the classroom (e.g., Kerssen-Griep, Hess, & Trees, 2003). In fact, some have offered "practical recommendations on how to support students' autonomous motivation" (Reeve et al., 2004, 32). Teachers, then, are centrally involved in students' motivations to perform well in their classes and can work to support students' needs – to include students' need for autonomy – in ways that are aligned with SDT.

One way to support students' autonomy in the college classroom may be to communicate possibilities for student control – to delineate choice-making opportunities – in the course syllabus. Indeed, a precursor of student motivation in the college classroom may very well be the language utilized in the course syllabus given its status as a primary means for introducing and guiding course activities throughout any given term. Through the syllabus, an instructor's approach and an entire course experience are in fact "framed" in particular ways (for discussion, see Thompson, 2007). Language utilized to describe an attendance policy, the learning assignments, as well as other teacher-controlled expectations, e.g., seating charts, mandatory or voluntary office consultations, study groups/learning communities, are all communicated through a course syllabus, and these explanations offer insight into how self-determined students will be allowed to be in any given class. This study examines two primary forms of student choice: choice-making opportunities relative to assignment completion and class attendance.

The Current Study

Though previous research suggests that college student perceptions of empowerment are positively associated to state learning motivation (Frymier et al., 1996), the relationship between motivation and empowerment remains ambiguous. As described previously, the four primary factors of empowerment (Thomas & Velthouse, 1990) overlay and build on those delineated by SDT (Deci & Ryan, 1985), but little is known about the relationship between intrinsic motivation and learning empowerment. That is, SDT clarifies the human needs of autonomy/choice, competency, and relatedness, and Thomas and Velthouse (1990) offer a cognitive model of empowerment with four related dimensions (meaningfulness, competence, impact, and choice). Subsequently, the measure of learner empowerment (Frymier et al., 1996) was developed, building on the work of Thomas and Velthouse (1990), but oddly not mentioning Deci and Ryan's (1985) SDT. It is reasonable to assume that the dimensions of intrinsic motivation, underpinned by SDT principles, will be strongly associated with measures of learner empowerment. The first mission of the current study, then, is to tease out the relationship between motivation, as measured on the multidimensional Situational Motivation Scale (SIMS) (Guay, Vallerand, & Blanchard, 2000) and learner empowerment. Given the need to sort out these relationships methodologically, and given the overlapping theoretical work underpinning these two constructs, the following hypotheses are posed:

H 1: Levels of intrinsic motivation as measured on the SIMS will be highly and positively correlated with learner empowerment dimensions.

H 2: Levels of extrinsic motivation and amotivation as measured on the SIMS will be

highly and negatively correlated with learner empowerment dimensions.

Because most communication research relies on a unidimensional measure of state motivation, the State Motivation Scale (SMS) (Christophel, 1990; Richmond, 1990), it is important to investigate its performance in comparison to the multidimensional SIMS (Guay et al., 2000), a scale commonly employed in other disciplines, e.g., psychology, education, business. A means for measuring motivation and its fine gradations may enhance future research efforts in the communication discipline, for as Guay, Vallerand, and Blanchard (2000) explain, "without a multidimensional measure of situational intrinsic and extrinsic motivation, we are limiting our possibility to address important theoretical issues" (p. 210). Exploring relationships across measures is critical, then, as communication scholars move forward with examinations of motivation across contexts. To address this need, the first research question is raised:

RQ 1: How does a unidimensional measure of state motivation relate to a multidimensional measure of situational motivation?

Autonomy, or the ability for individuals to have a sense of personal agency, has been found to be associated with increased intrinsic motivation as well as with greater satisfaction among students (Ryan & Grolnick, 1986). Because teachers can effect students' state motivations toward learning (Christophel, 1990; Ellis, 2004), the potential for an instructor's course design, requirements, and policies as they are communicated in a course syllabus to effect student perceptions is reasonable to assume. Especially when opportunities for students to initiate their own learning activities are presented in a college course syllabus, students would presumably feel more self-determined, and thus more intrinsically motivated to participate in the class. Students in college classrooms, though, have been found and theorized to be lacking in perceived choice-making opportunities (Frymier et al., 1996). Frymier, Shulman, and Houser (1996) developed a measure of learner empowerment utilizing the four factors of meaningfulness, competence, impact, and choice. In their first iteration, "choice" did not load as a factor. Though the authors theorized that "choice" may not be a part of the classroom experience, they also alluded to the degree to which "choice" may be subsumed under their "impact" factor with its emphasis on self-agency and self-control. The possibility for student choice-making opportunities in college classrooms and the influence those opportunities have on related factors remains undetermined. A more practical aim of the current study, then, is to investigate the potential of college classrooms to be non-controlling, autonomy-supporting environments that permit some degree of choice, and to assess the impact that students' choice-making opportunities have on their intrinsic motivation to participate in that class. For the current study, we consider opportunities for "choice making" by students in college classrooms to be possible by way of assignments in the course or via an attendance policy for the class. These two avenues for student choice making will be explored in relation to motivation with the next research question.

RQ 2: Is student "choice" on assignments and on attendance associated with student motivation?

Because learner empowerment has been conceptualized as a motivation-based construct that has comparable dimensions to intrinsic motivation (Frymier et al., 1996; Thomas & Velthouse, 1990), student choice-making opportunities may also influence learner empowerment. Similar to the second research question, then, student choice making will be explored in relation to learner empowerment with this third research question.

RQ 3: Is student "choice" on assignments and on attendance associated with student empowerment?

Method

Participants

Four hundred nineteen students (295 females, 122 males, 2 declined to report) on a large U.S. campus who were enrolled in courses spanning a variety of disciplines participated in this study. Individuals ranged in age from 17 to 46 (M = 20.32, SD = 3.20). One hundred sixty-nine participants were Caucasian, 99 were Asian-American, 88 were Latino, 27 were African American, and 3 were Native American; thirty-three individuals did not fall within the predetermined ethnicity categories or declined to report ethnic background. These demographics reflect those of the broader university student body from which these data were drawn. Individuals came from all class levels, including freshmen (n = 163), sophomores (n = 102), juniors (n = 76), and seniors (n = 69); eight participants did not indicate their class standing. Participants were drawn from both lower-division and upper-division courses and from both small-sized and large lecture-hall type classrooms.

Procedure

Students completed the questionnaires in classrooms on campus during regularly scheduled class time. Surveys were distributed in eight different classrooms, four in which students were not offered any choice-making opportunities in terms of assignments to

complete for the course. In the other four courses in which surveys were distributed, students were offered several avenues to make choices about which assignments to complete. These choices included a small menu of assignments from which students could select those they wished to complete, or at the very least, the choice of turning in a paper or taking a final exam at the end of the semester. The first author targeted the four "choice" courses purposely, then matched those four courses with "non-choice" partners of similar level (lower or upper division), size (small class or large lecture), and type (general/basic education course or major course). The eight courses were chosen from across five academic departments housed in a college of liberal arts. The second author coded all syllabi for "assignment choice" as a way to check the purposeful sampling of the first author; they achieved 100% inter-coder reliability. Two hundred and fifty-one students completed questionnaires in courses categorized as having choice on assignments; 168 students filled out surveys in the "non-choice" courses.

Attendance policies were analyzed separately following data collection. Both authors coded the course syllabi for "choice on attendance" based on the instructors' stated attendance policy, resulting in 100% inter-coder reliability. Two hundred and seven students filled out questionnaires in courses where attendance was optional; 212 students completed surveys in courses where attendance was mandatory.

Instruments

To assess students' situational motivation the multidimensional Situational Motivation Scale (SIMS) (Guay et al., 2000) was utilized. The SIMS consists of 16 items, each measured on a 7-point Likert-type scale (1 = not at all to 7 = extremely). These items address a single overarching question that was slightly modified for this study, from "Why are you engaged in this activity?" to "Why are you doing the work for this class?" The items are designed to measure the four subscales of intrinsic motivation, e.g., "Because I think that this activity is interesting"; identified regulation, e.g., "Because I am doing it for my own good"; external regulation, e.g., "Because I am supposed to do it"; and amotivation, e.g., "There may be good reasons to do this activity, but personally I don't see any." Items for each of the four sub-scales were summed to provide composite scores for each type of motivation: intrinsic motivation ($M = 3.61$, $SD = 1.49$, $\alpha = .893$), identified regulation ($M = 4.46$, $SD = 1.39$, $\alpha = .807$), external regulation ($M = 4.98$, $SD = 1.42$, $\alpha = .799$), and amotivation ($M = 2.84$, $SD = 1.39$, $\alpha = .841$).

Learner empowerment was measured using Frymier, Shulman, and Houser's (1996) Learner Empowerment Scale (LES). This measure is comprised of 35, 7-point Likert-type scale (1 = never to 7 = always) items. The LES assesses three dimensions of empowerment: impact ($M = 4.02$, $SD = 1.01$, $\alpha = .862$), meaningfulness ($M = 4.68$, $SD = 1.19$, $\alpha = .916$), and competence ($M = 5.22$, $SD = .98$, $\alpha = .889$). To measure these three dimensions of learner empowerment, the LES includes such items as "My participation is important to the success of this class" (impact), "The information in this class is useful" (meaningfulness), and "I have the qualifications to succeed in this class" (competence). Items for each of the three sub-scales were summed to provide composite scores for each type of empowerment.

State motivation was measured by the State Motivation Scale (SMS) (Christophel, 1990; Richmond, 1990). The SMS consists of 16 sets of 7-point semantic differential items, e.g., exited/not excited, involved/uninvolved, motivation/unmotivated. Students were asked to report their feelings about the specific class they were in, and they were instructed not to report about their feelings on learning more generally. Once 9 items were reverse-coded, all 16 items were summed to provide an overall state motivation score for each student; scores ranged from 1.31 to 7.00 ($M = 4.66$, $SD = 1.10$). This measure had an alpha reliability of .925.

Results

The two hypotheses focused on the relationship between the situational intrinsic motivation measure (SIMS) and the learner empowerment scale (LES). By examining the dimensions on both measures, important theoretical clarity relative to the two constructs, motivation and learner empowerment, can be gleaned. Specifically it was predicted that levels of intrinsic motivation as measured on the SIMS will be highly and positively correlated with learner empowerment dimensions (H 1) and that levels of extrinsic motivation and amotivation as measured on the SIMS will be highly and negatively correlated with learner empowerment dimensions (H 2). Intercorrelations between the two measures reveal that all dimensions were significantly correlated to all dimensions of the empowerment measure in the direction anticipated. That is, both hypotheses were supported (See table 2).

The first research question explored the relationship between the unidimensional measure of state motivation (SMS) and the multidimensional measure of situational motivation (SIMS). Results revealed that the SMS was significantly correlated with all dimensions of the SIMS. Specifically, SMS was positively associated with SIMS dimensions of intrinsic motivation, $r(403) = .679$, $p < .001$, and identified regulation, $r(404) = .579$, $p < .001$. The SMS was negatively related to external regulation,

Table 2
Intercorrelations between SIMS and LES

	Impact Empowerment	Meaningfulness Empowerment	Competency Empowerment
Intrinsic Motivation	.574**	.747**	.310**
Identified Regulation	-.476**	.685**	.342**
External Regulation	-.334**	-.354**	-.175**
Amotivation	-.335**	-583**	-.314**

** p < .001

Table 3
Interaction Results of Student Choice on Assignments and Attendance on their Levels of Motivation and Empowerment

		No Choice on Assignments	Choice on Assignments
Intrinsic Motivations			
	No Choice on Attendance	High	Low
	Choice on Attendance	---	---
Identified Regulation Motivation			
	No Choice on Attendance	High	Low
	Choice on Attendance	---	---
External Regulation Motivation			
	No Choice on Attendance	Low	High
	Choice on Attendance	High	Low
Amotivation			
	No Choice on Attendance	Low	High
	Choice on Attendance	High	Low
Impact Empowerment			
	No Choice on Attendance	High	Low
	Choice on Attendance	---	---
Meaningfulness Empowerment			
	No Choice on Attendance	High	Low
	Choice on Attendance	Low	High
Competency Empowerment			
	No Choice on Attendance	High	Low
	Choice on Attendance	---	---

r(403) = -.284, p < .001, and amotivation, r(402) = -.467, p < .001, on the SIMS measure.

The second and third research questions investigated the relationships between student choice-making possibilities in a class and students' levels of motivation (*RQ 2*) and empowerment (*RQ 3*). Table 3 provides a chart of the findings. To examine if students who have choice in selecting their assignments and in attending class have greater levels of motivation than students who do not (*RQ 2*), a 2 (choice on assignments vs. no choice) x 2 (attendance optional vs. attendance mandatory) MANOVA was computed. When using the unidimendional measure of state motivation (SMS), no significant results emerged. However, when using the multidimensional measure of situational motivation (SIMS), results of the factorial MANOVA uncovered a significant multivariate interaction effect of choice of assignments by choice of attendance on students' levels of motivation, Wilk's $\lambda = .755$, $F(4, 407) = 32.961$, $\eta^2 = .245$, $p < .001$, as well as significant multivariate main effects for both assignment choice, Wilk's $\lambda = .933$, $F(4, 407) = 7.356$, $\eta^2 = .067$, $p < .001$, and attendance choice, Wilk's $\lambda = .960$, $F(4, 407) = 4.208$, $\eta^2 = .040$, $p < .005$.

Students who had little to no choice on assignments and whose attendance in class was mandatory (intrinsic motivation: $M = 5.46$, $SD = .210$; identified regulation motivation: $M = 5.57$, $SD = .211$) reported higher levels of intrinsic motivation, $F(1, 413) = 96.301$, $\eta^2 = .190$, $p < .001$, and higher levels of identified regulation motivation, $F(1, 413) = 36.279$, $\eta^2 = .081$, $p < .001$, than students who had quite a bit of latitude in assignment choice but had required attendance (intrinsic motivation: $M = 3.17$, $SD = .102$; identified regulation motivation: $M = 4.17$, $SD = .102$).

Students who had a great deal of choice on assignments but whose attendance in class was mandatory (amotivation: $M = 3.21$, $SD = .110$; external regulation motivation: $M = 5.34$, $SD = .101$) reported

higher levels of amotivation, $F(1, 413) = 51.445$, $\eta^2 = .111$, $p < .001$, and higher levels of external regulation motivation, $F(1, 413) = 64.338$, $\eta^2 = .136$, $p < .001$, than students who had little to no assignment choice and had required attendance (amotivation: $M = 1.72$, $SD = .228$; external regulation motivation: $M = 3.78$, $SD = .209$). In general, the findings of *RQ 2* suggest that students find a consistent message with choice on assignment and choice on attendance to be more motivating than when there is a mis-match between the two.

To explore if students who have choice in selecting their assignments and in attending class have greater levels of empowerment than students who do not have that freedom (*RQ 3*), a 2 (choice on assignments vs. no choice) x 2 (attendance optional vs. attendance mandatory) MANOVA was computed. Results of the factorial MANOVA uncovered a significant multivariate interaction effect of choice of assignments by choice of attendance on students' levels of empowerment, Wilk's $\lambda = .769$, $F(3, 385) = 38.448$, $\eta^2 = .231$, $p < .001$, as well as significant multivariate main effects for both assignment choice, Wilk's $\lambda = .935$, $F(3, 385) = 8.954$, $\eta^2 = .065$, $p < .001$, and attendance choice, Wilk's $\lambda = .913$, $F(3, 385) = 12.295$, $\eta^2 = .087$, $p < .001$.

Students who had little to no choice on assignments and whose attendance in class was mandatory (impact empowerment: $M = 5.26$, $SD = .145$; meaningful empowerment: $M = 5.91$, $SD = .169$; competency empowerment: $M = 5.67$, $SD = .150$) reported higher levels of impact empowerment, $F(1, 391) = 74.739$, $\eta^2 = .162$, $p < .001$, higher levels of meaningful empowerment, $F(1, 391) = 103.080$, $\eta^2 = .210$, $p < .001$, and higher levels of competency empowerment, $F(1, 391) = 13.345$, $\eta^2 = .037$, $p < .001$, than students who had little to no assignment choice but had optional attendance (impact empowerment: $M = 3.76$, $SD = .085$; meaningful empowerment: $M = 4.20$, $SD = .099$; competency empowerment: $M = 4.95$, $SD = .075$). Thus, the findings of *RQ 3* suggest that when teachers make attending class optional, this strategy actually may serve as a disempowering factor for students.

Discussion

The central aims of this study were to clarify how motivation and learner empowerment are related, to examine the performance of and draw comparisons across two motivational measures, and to investigate how student choice-making opportunities may be related to student motivation and learner empowerment. We argue that an analysis of how learner empowerment, given its relatively new and small body of literature, relates to the broader and more established literature on motivation is desperately needed. We also contend that an understanding of how the two motivational scales – one less familiar to communication scholars than the other – are related can only enhance motivational studies in the discipline. While both of these efforts are driven by a robust need for theoretical and methodological clarity, the practical importance of understanding this notion of choice, or student self-determination in a classroom, is equally strong.

The SIMS (Guay et al., 2000), with its four types of motivation, was found to be highly correlated with the LES (Frymier et al., 1996), indicating that there is indeed strong overlap across these motivation and empowerment measures. These findings reinforce the notion that intrinsic motivation is positively associated with learner empowerment, as well as that extrinsic motivation and amotivation are negatively linked to learner empowerment dimensions. Theoretically and methodologically, the two bodies of research related to these constructs intersect in varying ways across differing literatures. This study works to bring these bodies of research together, attempting to explain the motivational underpinnings of empowerment and to uncover the ways in which these relevant measures are interconnected. That empowerment is highly and positively correlated with intrinsic motivation, and that it is highly and negatively correlated with extrinsic motivation and amotivation reinforces the strong motivational origins upon which empowerment is based. These results support earlier notions that empowerment is a broad version of motivation (Frymier, Shulman, & Houser, 1996), and they make a step toward clarifying the ambiguity that continues to exist for communication scholars who assert that empowerment is a "conceptually ambiguous construct" (Weber & Patterson, 2000, p. 23).

To further flesh out the similarities and distinctions across instructional measures, this study compared the unidimensional SMS (Christophel, 1990; Richmond, 1990) with the multidimensional SIMS (Guay et al., 2000) student motivation indices. As predicted, the SMS (Christophel, 1990; Richmond, 1990) was positively correlated with the two types of intrinsic motivation as measured on the SIMS (Guay et al., 2000) and negatively correlated with external motivation and amotivation as measured on the SIMS; these results firmly situate the SMS as a measure of intrinsic motivation and not extrinsic motivation or amotivation. These findings thus affirm the utility of the SIMS for measuring three different types of motivation and not just one, as is the case with the SMS. Especially in light of the decades of self-determination research, the credibility afforded to SDT (Deci & Ryan, 2002), and its contribution with regard to the various types of motivation, gleaning more detailed information from study participants about their subtle motivational differences is clearly advantageous. These results suggest that the SIMS measures up to – and for some purposes surpasses – the utility of the

SMS, which currently functions as a "gold standard" in the communication discipline.

One of our primary goals with this research study was to highlight the utility of the SIMS (Guay et al., 2000), a measure that has received little visibility among communication researchers when compared to the SMS (Christophel, 1990; Richmond, 1990). While the SIMS yielded powerful findings with regard to our primary and "applied" question about students' choice-making opportunities in the classroom, the unidimensional SMS uncovered little by way of these relationships. We argue, then, that a more nuanced measure of motivation – one that measures differing motivational types as posited by SDT (Deci & Ryan, 2002) – is needed in communication research when studies seek to measure the subtle shifts in motivation types, e.g., when attempting to uncover differences between intrinsic motivation and identified regulation. The SIMS, too, offers an alternative to the SMS in that it focuses on a particular task or activity (with its series of items directed toward a named activity) more so than the SMS. Certainly the SMS has strong footing in communication research, is an important measure when needing to tease out trait and state motivations, and can be adapted to measure an individual's feelings about engaging in a particular task. However, as a bipolar and unidimensional measure comprised of general terms, the SMS is limited in its use for accessing the differing types of motivation that warrant exploration in some lines of communication scholarship.

Furthermore, this study offers unique insight into how something as mundane as a teacher's assignment structure or attendance policy may influence a student's intrinsic motivation. Among students whose attendance was mandatory, intrinsic motivation (measured as intrinsic motivation and identified regulation) was higher among those offered little to no choice on assignments than for those offered latitude on assignments. Also among students whose attendance was mandatory, extrinsic motivation (external regulation) and amotivation were reportedly higher among students offered latitude on assignments than for those offered little to no choice on assignments. This project shows that students are intrinsically motivated, i.e., internally driven to act, and report identified regulation, i.e., perceiving outcome value, in a class when a teacher communicates similarly across course elements.

Given that our results show choice on assignments and attendance ought to be aligned if intrinsic motivation among students is desired, we infer that students feel more self-directed when they understand their teacher as providing either a student-driven experience, e.g., voluntary attendance and assignment choices, or a teacher-directed experience, e.g., mandatory attendance and no assignment choices, and not a mix of the two. Students may, to some degree, sense that they know what to expect from their teacher, they may see a predictable pattern among any teacher who conveys consistency, and they may, therefore, see themselves as in control – a central tenet of SDT (Deci & Ryan, 1985). These findings indicate that teachers who communicate a mix of policy styles may be obstructing individual initiations to participate in the class, i.e., autonomy, intrinsic motivation, and impeding positive views of value toward the class (identified regulation) among students.

Our results relative to learner empowerment indicate a strong link between a teacher's attendance policy and a student's sense of impact, meaningfulness, and competency-related empowerment. While both assignment choice and attendance policy influenced learner empowerment, mandatory attendance brought about an enhanced sense of learner empowerment among students offered little to no choices on assignments. Ironically, then, teachers who communicate a voluntary attendance policy, those who may be trying to allow students to rely on personal initiation, may in fact be impeding the motivational processes underlying student empowerment. Teachers with voluntary attendance policies may be perceived as caring less than those who take a regular "roll call," or perhaps the students themselves feel more involved overall when their teacher checks for daily attendance. In any case, future research ought to clarify how a voluntary attendance policy may create a context that is antagonistic (Ryan & Deci, 2000) to students' empowerment and its motivational underpinnings.

Of interest for researchers and practitioners are these unexpected findings relative to student choice in a classroom. Intuitively, one would imagine that freedom is a positive phenomenon in any context. Additionally, there is a wide selection of literature asserting the merits of choice-making opportunities (see for review, Iyengar & Lepper, 2000). However, under certain conditions, Iyengar and Lepper (2000) found that too much choice, in fact, can lead to negative consequences. Our findings suggest, similarly, that students' choice-making opportunities in a classroom are not necessarily going to bring about constructive effects and that, under certain conditions, some freedoms might be disempowering or demotivating for students.

Based on the findings in the present project, to maximize student motivation, educators should ensure that they are consistent in the choice-making opportunities that they offer students. If students are permitted to select or choose particular assignments, then they also should have the same freedom to elect to attend class meetings or not. In contrast, if students are expected to complete particular assignments, without the option of choosing their course activities, then students also should have equally structured

expectations regarding their class attendance. Although this study examined assignment selection and classroom attendance only, teachers can infer that the advice gleaned from these results – to maintain consistency in order to bring about positive outcomes – can be applicable to other aspects of the educational context. Opportunities for consistency in the classroom might be tied to such mandated or optional course activities as group projects, class participation, lecture notes/class journals, and out-of class experiences, e.g., special lectures or volunteer experiences. Drawing from the findings of our current study, we argue that students benefit from an ongoing sense of continuity.

Although this project makes some meaningful theoretical, methodological, and practical contributions, several limitations should be noted. First, participants were purposefully drawn from lower-division and upper-division courses and from both small-sized and large lecture-hall type classrooms to tap into the breadth of classroom experiences college students encounter. However, it is possible that students in differing class levels and diverse course sizes may have different expectations as to the level of freedom or micro-management that they anticipate from their instructor. As Biddle and Berliner (2002) have suggested, both the size of the class and the academic level of student can influence learning outcomes. Thus, it is possible that these factors could have shaped students' perceived levels of motivation and empowerment. Future scholarship, then, may wish to isolate these class-specific issues in order to uncover additional precursors to intrinsic motivation and empowerment.

Secondly, the classroom dynamic and the relationships developed within it can also influence students' feelings of empowerment and motivation to learn. Although the course syllabus communicates a great deal about a teacher's instructional style (Thompson, 2007), it is only part of the picture. Students may be given choices in smaller ways, through volunteering for in-class activities, participating in optional discussions, and the like, that may not be reflected on a course syllabus but may work to influence students' levels of motivation and empowerment. Students may also be offered autonomy and choice while being quizzed regularly or pressured in other more indirect ways than through formal syllabus-based communication. Linking information gleaned from syllabi with instructor-relevant variables, examining whole-class interactions through in-class observations, or attempting to study the same instructor offering different kinds or degrees of choice would build on our findings and offer a fuller glimpse of how intrinsic motivation and learner empowerment may be influenced by syllabus-related communication in the classroom.

Finally, the results uncovered in this project may be reflective of the shift in learning styles for today's students. Some scholars, e.g., Tschirhart & Wise, 2002; Waldeck, 2006, have noted that giving students options on assignments can confuse them and may actually be viewed as a teacher misbehavior. Tapping into the type of adult oversight these individuals encountered as younger students, e.g., that of a parent, a teacher, or a coach, and considering students' proclivities for particular environments or management styles may each provide greater insight into some of our unexpected findings.

Overall, this project makes important contributions to the understanding of SDT (Deci & Ryan, 2002) and how student motivation and empowerment in the college classroom can be best understood by first reviewing the theoretical underpinnings of these constructs. By combining scholarship from multiple fields of inquiry, we were able to offer a comparison of widely used student motivation measures to pinpoint similarities and note differences between the conceptualization and measurement of motivation as a meaningful construct. Likewise, by uncovering the interconnections between student motivation and learner empowerment, we have clarified the strong degree to which these constructs overlap. Finally, in unveiling some counter-intuitive findings regarding student choice in the college classroom and their influence on motivation and empowerment, we have offered important and practical ideas for teachers to consider in their practice. In short, this study highlights and reinforces the consequences tied to choice-making – the choices that scholars make when studying motivation and related areas, the choices that teachers make when constructing their syllabi, as well as the effects of choice-making opportunities on students – and the significance these choices have relative to research and practice.

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Project-Based Learning and Pedagogy in Teacher Preparation: Staking Out the Theoretical Mid-Ground

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In this article, we advance a model of project-based learning (PJBL) offering eight guiding principles to support a pragmatic and principled approach to teacher preparation at the undergraduate and graduate levels. We provide a template for structuring PJBL, and we include illustrative exemplars that demonstrate that the ideological mid-ground can offer a balance of content knowledge and facilitate the dispositions we value in the new generation of teacher practitioners.

The face of university and college instruction is changing from approaches traditionally associated with objectivism, behaviorism, and transmittal models of teaching (Gage, 1977) to approaches that place emphasis on active learning and the needs of students (Palmer, 1998, 1999; Stage, Muller, Kinzie & Simmons, 1998). In short, there is a distinct shift from a lecture-based approach to an open-ended process-oriented model associated with critical theory that values inquiry, reflection, negotiation of meaning, case and problem-based learning (PBL), discussion and collaboration, and self-directed learning (Barrett, 2005). This shift is visible across all faculties and programs, not only across North America but globally. In Canada, for example, McMaster University's Health Sciences programs is recognized as the forerunner of PBL as a curricular model (Haslett, 2001). McMaster began its curricular transformation to PBL as far back as 1969, and this approach has been adopted by many other post secondary institutions including our own, the University of Calgary. There is increasing momentum to adopt inquiry as an over-arching approach to learning as universities and colleges seek to prepare a generation of students who need to acquire good communication skills, creative and critical thinking skills, and a mindset for problem solving and innovation in a world that is increasingly complex and unpredictable.

This paper describes an instructional approach, project-based learning (PJBL), that we situate in the epistemological paradigm of social constructivism. This has been our major instructional approach over the last seven years in our experiences at the undergraduate and graduate levels of working in the Faculty of Education, University of Calgary, in both face-to-face and online delivery modes. Our goal is to create a space in the ideological continuum that invites our students 'in' and involves their active participation in constructing meaning, yet is structured enough to provide for guided discovery.

We begin our paper with background information about our teaching context at the University of Calgary, and especially in the Faculty of Education. Next, we provide an overview of curriculum ideologies seeking the theoretical mid-ground that informs project-based learning and pedagogy. Following, we propose eight emergent guidelines for instructional design that guide a project-based learning approach. We outline five design elements required for projects, including examples from projects we have incorporated into our courses. Finally, we provide feedback from our learners yielded via anonymous course evaluations. These comments suggest the shift to PJBL has resulted in learning outcomes beyond simply understanding of the content base of a teacher preparation program: our students have acquired the dispositions we value and promote in the next generation of teachers for the classrooms of the future.

Our Teaching and Learning Context

We work in the Division of Teacher Preparation (DTP) and the Graduate Division of Educational Research (GDER) in the Faculty of Education, University of Calgary. The former is a two-year licensing program for prospective teachers that requires a completed baccalaureate degree for admission. Students may also participate in a limited number of joint degree programs (3 + 2 years). Students arrive from all backgrounds: engineering, management, kinesiology, sciences, and humanities, to name a few. Each year, some 450 students are admitted to the program, though three times as many are denied entrance due to seat space considerations. Clearly, teaching is a popular profession today, even with its many challenges and complexities.

About a decade ago, the BEd program shifted from a four year direct entry program to a two year after-degree program, and concomitantly, the Faculty dedicated its efforts to creating an innovative program premised on three pillars: Inquiry, Learner Centeredness and Field experiences (University of Calgary, 2006). It is assumed that students who have completed a degree already and who are now somewhat older (the average age of admission is 29 years), self-disciplined, and highly motivated will also arrive with the skills for independent, self directed inquiry,

research, and critical reflection. In sum, our teacher preparation students bring discipline area knowledge, maturity, life experience, and a profound desire to touch the life of a child. They are highly motivated to participate in our program.

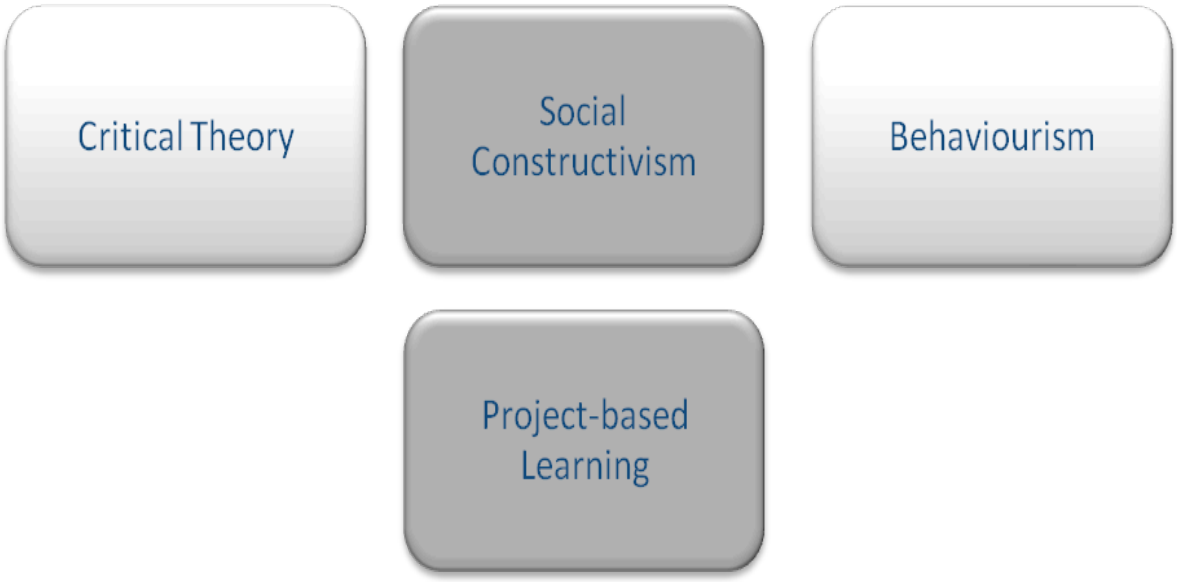
At the graduate level, the course-based Master of Education (M.Ed.) degree is by far the most heavily subscribed program in our faculty as a consequence of the demands for the professionalization of the teaching workforce. Over the last half decade, our faculty has made a major commitment to develop and offer this program online as well as in face-to-face contexts. Convenience, ease of access, and the potential to attract a global market share in the cyberspace classroom have triggered this shift. In our area of specialization, Teaching English as a Second Language (TESL), the number of teachers required to fulfill the demands of a global economy that chooses English as its shared language of communication is sobering: China alone seeks to prepare 2,000,000 teachers of English as a foreign language (EFL) for its k – 12 aged students, and clearly, the majority of these teachers will themselves be non-native speakers of English (NNS) (Center for Applied Linguistics, 2003). Locally, in an ESL context, school boards are facing rapidly increasing numbers of immigrant children in need of English language learning support, and there is urgent need for in-service professional development geared to the needs of mainstream practitioners.

As we shall see, the shift from students' typical undergraduate experiences that involved large class sizes, lecture formats, multiple choice exams, and enormous amounts of textbook reading to PJBL (including small group work, seminars, presentations) cannot be left too open-ended. Pedagogical intent and the notion of instructional design remain as the hallmarks of the more balanced approach we advocate and demonstrate in our work. In the section that follows we summarize the relevant curriculum theory to inform our PJBL framework.

Curriculum Ideology: Moving to the Mid-ground

We recruit our ideas for instructional design from the research field of curriculum theory. In this section we highlight the salient characteristics of behaviorism – an expedited theory of teaching and learning that draws on Skinnerian (Skinner, 1968) principles on the one hand and critical theory that draws on principles of humanistic clinical psychology articulated by writers and thinkers such as Rogers (1969), Fromm (1976), and Freire (1985) on the other. We find ourselves drawn to the ideological mid-ground, aligning our work along constructivist principles which we then highlight. Figure 1 below provides an overview of the curriculum terrain: from behaviorism on the right of the continuum to critical theory on the opposite left. The shaded area identifies the mid-ground and the ideological space where we locate our work.

Figure 1
Mapping Out the Ideological Continuum from Critical Theory to Behaviorism



Behaviorism is associated with the more traditional approaches to learning, with a focus on teacher input. Following Skinnerian (1968) principles of controlled and planned input, reinforcement, practice, feedback, motivation, and reward, learners' behavior is shaped toward a predetermined objective. It can be described as a highly systematic, technical, rational approach to working with students. Behaviorism enjoyed prominence in curriculum theory until the mid 1980's and is reflected in many textbooks written for teacher preparation programs up to that time (Pratt, 1980; Tyler, 1949). By the mid 1980's the forces of social change, especially in the United States, were well underway, and curriculum was about to undergo a major transformation. The Civil Rights Movement, advent of various computer technologies, the rapidly shifting demographics in the school going population as a consequence of immigration, and the change in the economy to focus less on manufacturing and more on communication and knowledge exchange in an evolving global marketplace foreshadowed the need to rethink curriculum to prepare a generation for participation in a complex society. The emphasis shifted from teacher-fronted to learner-centered approaches.

Critical theory is a post-structuralist theoretical orientation which places the learner (and learning) at the center. Critical theorists such as Giroux (1988) and Greene (1988) ground the study of curriculum in the lived experiences of those who daily encounter it. In this curriculum model, social context, process, and the quest for meaning take precedence. The fluidity of diologic, the relational, voice and identity, lived experience, and the interpreted together direct real-life problem posing that emerges from the needs of the learners. One of the most important points about problems in problem-based learning is students are not first presented with inputs of knowledge such as lectures or handouts and then apply this knowledge to a problem they are presented with later in the learning process. Collaboration, trust in the group, and creating a climate for risk-taking and interaction are valued. This model is characterized as "messy," unpredictable, and open-ended. The nature of the dialogue in PBL is a process by which people together create and recreate knowledge as "true dialogue unites subjects together in the cognition of the object that mediates between them" (Freire, 1985, p. 49).

In contrast to a behaviorist framework that seeks empirical knowledge about the world by applying scientific theory and method (Skinner, 1968) and a critical theory framework that is learner-centered and emergent, a constructivist paradigm focuses on the development of knowledge from the perspective of the active learner (Fosnot, 1996) with the guidance of a teacher or a more competent peer (Vygotsky, 1978). For social constructivists, knowledge is thought to be primarily subjective in nature and is consciously constructed and negotiated through individuals' perceptions and experiences in the social world (Dewey, 1916; von Glasersfeld, 1996; Vygotsky, 1978) where learning is considered a culturally-embedded socially supported process (Shepard, 2005). Within a social constructivist instructional framework, learners are provided opportunities to interact with their peers for the purpose of discussing, generating, and sharing knowledge. Differences of worldviews, cultural and linguistic background, knowledge, and experience will contribute to the transformation of others as they engage in social and academic dialogue (Marchenkova, 2005). Through discussion with others, it is suggested learners will begin to question and (re)organize their subjective meanings, intentions, and interpretations of the world; resolve challenges (or contradictions) to their knowledge; and reflect on connections across their individual and collective experiences (Al-Weher, 2004; Anderson & Garrison, 1998; Bates, 2005; Fosnot, 1996). Social interaction is regarded as the "driving force and prerequisite to individuals' cognitive development through internalization of ideas encountered in the sociocultural realm" (Nyikos & Hashmoto, 1997, p. 507). The view of constructivism as "an interpretive, recursive, building process by active learners interacting with the physical and social world" (Fosnot, 1996, p. 30) succinctly summarizes and frames our understandings of social constructivism and its application to teacher education.

Curriculum theorists, most notably Kilpatrick (1921) – considered the founder of project-based learning – and those who have adopted, applied, and elaborated on this approach also take a social constructivist orientation to PJBL (Barron et al., 1998; Blumenfeld, Soloway, Marx, Krajcik, Guzdial, & Palincsar, 1991). Kilpatrick refers to a project as "any unit of experience dominated by such a purpose as sets an aim for the experience, guides its process, and furnishes the drive for its vigorous prosecution" (p.287-288). Blumenfeld et al. (1991) build on Kilpatrick's definition and argue PJBL is a comprehensive teaching approach that holds potential to motivate and engage learners in tasks that support deep learning. To achieve this, carefully organized project design, inherently motivating tasks and questions, and the allowance of learners "to exercise choice and control regarding what to work on, how to work, and what products to generate" (Blumenfeld et al., 1991, p. 376) are considered critical to the learning effectiveness of projects.

Barron et al (1998) offer a set of four design principles to support project-based learning: defining learning-appropriate goals, incorporating scaffolding strategies to support learning, providing opportunities for formative self-assessment and revision, and promoting a participative classroom culture and a sense of learner agency. Learner agency is thought to be enriched through self-reflection (Bereiter & Scardamalia, 1999). In sum, a well-defined project design offers a comprehensive, flexible, and learner-centered approach that involves the development of new understandings and new skills. Barron et al. (1999) in their research of project-based learning note the importance of "doing with understanding" and the importance of learners understanding "why they are learning" (p. 306), a central tenet of a constructivist learning environment.

This represents the mid-ground we advocate for our work in teacher preparation which we elaborate in this paper through project-based learning (PJBL). We favor a pragmatic balanced approach. We identify the principles and articulate them as a set of guidelines for the instructional design of PJBL. In the section that follows, we explain the guiding principles of PJBL in greater detail.

Guiding Principles for Project-based Instructional Design

Below we identify and describe the eight guiding principles that guide and inform instructional design for project-based learning and pedagogy within our context of pre- and in-service teacher education.

The Instructor Requires Content Area Expertise and Pedagogical Competence

At the level of higher education, the instructor is responsible for determining, to a greater or lesser degree, the learning objectives, core content, enabling tasks (see below), and assessment strategies as well as setting the initial tone of the course(s). Within the context of project-based learning environments, instructors must fulfill multiple roles, among them both content area and pedagogical expert **(**Garrison & Anderson, 2003; Kaufman, 2004**).** Windschitl (1999) notes:

> Constructivist instruction, especially that which is based on design tasks or problem-solving, places high demands on the teacher's subject-matter understanding. The teacher must not only be familiar with the principles underlying a topic of study but must also be prepared for the variety of ways these principles can be explored (p. 751).

Instructional Design is Learner Centered and Flexible

Project-based learning affords "students the possibility and the motive to *work their way to the solution in their own idiosyncratic way*" (Helle et al., 2006, p. 292). In this way, the learners' prior knowledge and experience may be activated through engaging tasks and opportunities for collaboration designed to shape and direct new understandings. This is balanced, however, with a flexible instructional design; learners are granted considerable freedom to decide *what* and *how* to learn (Bates & Poole, 2003).

A Central Question(s) or Problem Focuses and Provides the Catalyst for Learning

Project-based instructional design is commonly organized around a central or essential question, a set of questions, or a problem (Barron et al., 1998; Blumenfeld et al., 1991) that directs the inquiry (Wiggins & McTighe, 1998). Kilpatrick (1921) states one kind of project is "one in which the dominating purpose is to solve a problem, to unravel and so compose some intellectual entanglement or difficulty" (p. 285). It is our view the central question(s) or problem be clearly articulated as it will act as a guide for the ensuing learning tasks and assessment strategies incorporated into the project.

Teaching and Learning Objectives are Explicit

Following from the central question or problem are the teaching and learning objectives of the project. Learning objectives are a set of statements explicitly defining the instructional aims and contextualizing key concepts within the framework of the project's goals and the supporting learning tasks. The overarching goal is to empower learners through guided engagement with the course content while also encouraging discoveries, experiences, and interpretations as they interact within the learning community. Barron et al. (1998) succinctly state the need to provide *learning-appropriate goals* is to "create a need for students to understand the how and why of a project" (p. 276). While boundaries are provided for learners in our view of PJBL in the form of learning objectives, this restraint is balanced with freedom to explore emerging learning possibilities or *liberating constraints*, a concept described by Davis, Sumara and Luce-Kapler (2000) as "the balance between freedom and restraint that creates conditions for learning and creativity" (p. 87). PJBL suggests learning objectives serve as guidelines to facilitate understanding of content-

related knowledge, but also grants considerable freedom to learners to achieve these objectives; further, through individual and collaborative study, students' learning may differ from the stated course objectives. Helle et al. (2006) suggests learners would benefit "if curriculum developers and teachers were to *invest more in the definition of goals and the congruence between stated goals and the activity students are engaged in*" (p. 307). Following from the identification and articulation of learning objectives within the course curriculum, learning tasks are developed to support learners in achieving the course goals.

Learning Tasks are Authentic and Engaging

We suggest learning tasks focus on a specific set of objectives and key concepts as well as articulate a set of outcomes for learners. Davis, Sumara and Luce-Kapler (2000) explain learning tasks must be sufficiently open to accommodate learners' interests, experiences, and knowledge while also providing organized direction to the learning process.

Learning tasks promote elements of interaction and interactivity. In both face-to-face and online courses, learners work collaboratively with their peers and the instructor to explore questions, critically analyze issues, synthesize their understandings, actively construct meaning, and apply their learnings to a practical context (Garrison & Anderson, 2003; Palloff & Pratt, 1999). Engagement with authentic learning tasks through collaborative interactivity lies at the heart of the PJBL ecology. Both pre- and in-service teachers are offered opportunity to construct meaning from personal perspective and to refine and confirm this understanding collaboratively within a community comprised of their peers and their instructor.

Instruction is Mediated and Integrated

Vygotsky (1978) introduced the idea of two developmental levels, actual and proximal. Operating in the zone of proximal development (i.e., ZPD) requires mediated instruction or scaffolding to advance learning. The proximal threshold becomes the new actual or independent level and the cycle begins anew. Barron et al. (1998) argue, in the case of public school classrooms, greater learning gains, i.e., knowledge breadth and depth, may be made by preceding project work with scaffolds that include a problem-based experience or study of contrasting cases. These authors point out that providing learners with opportunities to solve a simulated problem or identify similarities and differences between contrasting cases establishes a "level of shared knowledge" (p. 278) among the learners and prepares them for the more open-ended nature of project work.

In the context of project-based learning, we suggest tasks within each project are sequenced in a way that requires the joint efforts of the learning community, learners and the instructor included, to arrive at a solution to the proposed question or problem (Helle et al., 2006). The collaborative learning community is thought to be "composed of teachers and students transacting with the specific purposes of facilitating, constructing, and validating understanding, and of developing capabilities that will lead to future learning" (Garrison & Anderson, 2003, p. 23), where both cognitive independence and social interdependence are encouraged simultaneously (Ibid.). Collaborative learning involves "joint work on tasks, creation of shared definitions, pooling and sharing of knowledge, and creation of emergent outcomes" (Haythornthwaite, 2006, p. 12) with the purpose of creating common understandings. In the case of teacher training, this requires the advancement of professional knowledge and skills.

For pre- and in-service teachers, who often differ widely in their experiences and knowledge about teaching and learning, a project-based approach provides opportunities to develop professional expertise within a collaborative setting where gaps in learner knowledge are addressed (Helle et al., 2006). This requires that communication between and among learners and their instructor be reciprocal, consensual, and collaborative.

Promotes Critical Reflection and Higher-Order Thinking Skills

Within a constructivist paradigm, learning may be understood "as the process of using a prior interpretation to construe a new or a revised interpretation of the meaning of one's experience in order to guide future action" (Mezirow, 1996, p. 162). Blumenfeld et al. (1991) argue, "the prevalence of low-level tasks contributes to students' lack of understanding of content and process and poor attitudes toward learning and schooling" (p. 371). While the challenge of engaging and supporting learners' cognitive advancement through projects has been questioned, we suggest learning tasks be intentionally designed, sequenced, and spiraled in logical progression. This requires learners to engage with increasingly more cognitively demanding tasks. Initial tasks are designed to determine learners' current levels of understanding and then build on their background knowledge and experiences. This facilitates the learning process as learners situate

their prior knowledge within the context of the task. Increasingly more complex cognitively demanding tasks are introduced requiring learners to apply their new skills and knowledge. Further, to facilitate understanding of content-related knowledge, key concepts may be recycled, i.e., revisited. Providing opportunities to build content area knowledge through engagements with spiraled learning tasks within the project, in our estimation, facilitates increasingly higher cognitive demands moving from knowledge and comprehension through to analysis, synthesis, and evaluation (Bloom et al., 1956).

Continuous Assessment and Monitoring of Learning

Projects are an ideal vehicle for inviting students to demonstrate their understandings through a broad-based assessment approach. Assessment *for* (process of learning), *as* (learner-critical reflection) and *of* (summative) learning are integral to project-based learning. Throughout the project(s) assessment strategies, either instructor or learner initiated, connect the central question(s), learning objectives, key concepts, and knowledge gained through both individual and collaborative efforts. Barron et al. (1998) suggest "the provision of frequent opportunities for formative assessment by both students and teachers" (p. 284). While traditional forms of assessment such as quizzes may be incorporated into a project, we have found alternative forms, including self-reflection, effectively enabled learners to showcase *what they can do*. Learners within a project-based approach take an active role in their own learning and are evaluated on the production of learning artifacts that reflect the ability to apply theory to practice, for example, creating informal assessment tools for a specific teaching objective or manipulating authentic materials such as newspaper clippings following a principled approach which renders them useable for language learning purposes. Formative assessment also serves as a scaffolding strategy that promotes learning (Barron et al., 1998; Shepard, 2005), and we have found peer sharing of learning artifacts an effective tool to promote deep learning. One learner of an online graduate course e-mailed her instructor:

> I don't know if it is too late, but after re-reading some of the articles of my classmates, I realized that I had forgotten to bold my key vocabulary within the written text. I guess there were just too many things to think about as I was wrapping it up. I bolded them just now and am going to send it back to you again (Personal communication, March 27, 2005).

Learners also benefit from elaborated annotated instructor feedback (Shepard, 2005). One distance graduate-level learner commented on the effectiveness of feedback on her learning artifact in an e-mail to her instructor:

> Thank you for your feedback on my project 3 work. It seems like I made more errors than I would like to. I really want to do my best on the work of this course and I am learning a lot throughout every reading, task and project (Personal communication, February 24, 2005).

Our learners also reported they had a deeper understanding of content area knowledge when offered opportunities to revise their learning artifacts. Barron et al. (1998) created a classroom culture supportive of frequent assessment and revision and found "revision was not seen as a chore but rather as a natural component of learning and growing" (p. 284).

Assessment strategies, including rubrics, must be clearly stated and made available to the learners prior to the start of the project. While both formative and summative are vital components to project-based learning, we also integrate opportunities for learner self-reflection to support and monitor ongoing learning.

Project-Based Learning: An Example

> A quality educational experience is the dynamic integration of content and context created and facilitated by a discipline expert and pedagogically competent teacher. (Garrison & Anderson, 2003, p. 4)

Courses we teach in the MT and online MEd TESL programs at the University of Calgary are built on the guiding principles of PJBL. Our projects are learner-centered, collaborative, task-based activities that extend over a period of time, e.g. a week, month, or a semester, resulting in a final learning artifact (Donnelly & Fitzmaurice, 2005; Helle et al., 2006). The essential design elements of a project include: a project overview and rationale; a set of clearly defined learning objectives and key concepts; a list of materials and resources; a set of enabling tasks; and assessment criteria and rubrics. [See Figure 2 below].

Figure 2
Essential Design Elements of Project-Based Learning

Figure 3
Sample Project Overview from an Online Graduate-Level TESL Course

Welcome to Project 6 of your studies. This project builds on Project 5. Together these two projects will produce learning resources for a thematic unit for a group of ESL learners at an intermediate language proficiency.

The key concepts encountered in Project 5 included:

- Authentic materials are *not* designed or written for TESL purposes. They are written for native speakers of English.
- We need materials that allow our learners to access, learn, and practice the grammar and vocabulary of the target language. The materials, ideally, should also allow our learners to acquire and practice key reading strategies, namely contextual guessing and morphological analysis. (…)

In Project 6, you will be extending Project 5 with a series of newspaper and magazine articles (i.e., authentic text). You will analyze these articles for their overall appropriateness to support the development of English language proficiency and provide cultural information.

Project Overview and Rationale

The project overview provides learners with an introduction to the topic(s) of the project, situates the project within the framework of the course goals and objectives, and provides a clear explanation of the purpose of the project, i.e., rationale. Figure 3 is an excerpt from the introductory statements of one project included in the online version of the course, Designing ESL Materials, a core component of the M.Ed. TESL program:

Learning Objectives and Key Concepts

Once the project has been introduced and situated within the context of the course content, the learning

objectives and key concepts must be explicitly stated. The objectives for the sample project introduced in Figure 3 are stated in the following way:

- To use authentic materials as a basis for preparing learning resources that permit the development of English language proficiency.
- To draw on understandings developed in previous project work: the need to mediate cultural information embedded in materials, the need to make the language system salient and to permit for meaningful recycling, and the need to teach learning strategies.

The key concepts of the sample project are stated below:

> Thematic organization allows for intentional thought directed at sequencing, spiraling and integrating macro skills, i.e., reading, writing, listening, and speaking. Text often contains information that can be accessed through the use of visual representations.

Materials and Resources

Initially the instructor makes available the primary learning materials and resources. These may include relevant literature and research; multi-media resources such as websites, learning repositories, and online tools, e.g. Lextutor; and access to teachers and students in school settings. In response to learner needs and interests, the instructor will add and/or modify course content as necessary (Sims, Dobbs & Hand, 2002). Within a project-based model, however, learners are not limited to the materials instructors provide. The learners themselves will make contributions to the learning environment by sharing their experiences, knowledge, and discoveries made through their own research and study.

Enabling Tasks

Embedded within the design of projects are mediated learning tasks that provide clear directions, clarify purpose and expectations, direct learners to appropriate resources, and create learning momentum (McKenzie, 1999). Tasks also provide opportunities for collaborative learning and promote interactivity and interaction focused on authentic situations and issues pertinent to the learning objectives and key concepts guiding the project. For example, pre-service teachers in a face-to-face course were instructed to create a visual representation (a poster) of the physical layout of their classroom in the Field component of the program. [See Appendix A]. The illustration was accompanied by a written component providing analysis of the class dynamic and the culture of the classroom as a learning community that might be inferred from the physical arrangement of the room. In addition, students submitted a self-reflective piece detailing the knowledge and understanding the learner gained through the experience. As a project proceeds, learners have the opportunity to collaborate on real-world learning tasks which encourage contributions that reflect and respect their needs, interests, learning styles, and background knowledge and experiences.

Assessment Strategies

Culminating from learner engagement in the project's learning tasks is the construction of an end product or a concrete learning artifact (Blumenfeld et al., 1991). To address concerns and suggestions voiced by learners through course evaluations and through our interactions with learners, we added to the online courses, in particular, a project rubric. This rubric simply includes a checklist of the required components to be submitted, usually including learning artifacts that are already completed with instructor feedback provided, in addition to a brief set of questions and/or a description of the content-based knowledge the instructor expects will be evident in the learners' work. These questions support the learning objectives of the project. Figure 4 provides a sample rubric supporting the Project described in Figure 3.

What Our Students Have to Say: Coming Full Circle

In our interactions with learners, they consistently cite a need for scaffolded support, plentiful opportunities for practical application of their expanding professional knowledge, and a desire for directed teaching presence in the teacher education program, including evaluation rubrics. It is our position that teacher education courses adhering to a constructivist approach while promoting discussion and collaboration must provide adequate opportunities for learners to engage with course content, examine key literature and research, and access the subject expertise of the instructor. Our experience with inquiry (Cochran-Smith & Lytle, 2001), aligned with critical theory, has revealed this end of the epistemological spectrum lacks the content that pre- and in-service teacher trainees expect and require for entry into the profession and professionalization throughout their working lives. At the opposite end of the spectrum, the transmission approach provides structure, but it is unable to adapt to the needs or interests of our trainees or the local contexts in which they teach.

Learners involved with PJBL at the baccalaureate level in winter 2009 provided the following comments at semester's end by way of the formal instructor evaluation, Student Evaluation of Instructor Performance:

- "It was great [instructor name] was able to show that within an inquiry-based environment, you can still utilize traditional methods."
- "The Dual Language Project was the best way to achieve inquiry-based learning. It was tangible, hands-on, real and extremely valuable."
- "She offered a tonne of resources and websites to look into. I appreciated how she encouraged us to delve into information that we found most useful to our practice. I really enjoyed looking at websites. Learning by Design and the Lexical profiler – GREAT CLASS!"
- "The [instructor name] posed complex questions about ESL Learning, gave us tools/research, and her guidance to answer the questions. I was able to make my own conclusion about teaching ESL, because I was supported."

The comments provided here are representative of the responses commonly provided by learners completing courses taking a project-based approach to learning.

Conclusion

In sum, we have learned that our students learn best when the leap from Skinner's objectivism to Freire's conscientization allows for the safety net that good project work can provide. A constructivist-oriented educational context recognizes the prior knowledge and experiences both pre-service and in-service teachers bring to training programs (Cochran-Smith & Lytle, 2001). A more balanced epistemology, characteristic of a project-based approach, at the pre- and in-service stages of our learners' professional development, facilitates the acquisition of the knowledge, skills, competencies, and dispositions required to make the successful transition from practice to situated praxis over time.

Figure 4
Sample Project Rubric for an Online Graduate-Level TESL Course

Project 6: Mini Thematic Unit

Grade: Value: 20%

The mini thematic unit must include the following components:

1. A brief statement of the intended audience for your materials addressing age, proficiency level, learning needs and interests.
2. The teaching context in which these materials will be used. Are you constrained in any way by limited access to computers, video equipment or copying facilities?
3. Re-written text and accompanying learning tasks (Task 1).
4. Readability statistics (Task 2).
5. Analysis of the materials (Task 3)
6. Key visuals (Task 4)
7. A brief reflection on the work of creating the thematic unit.
    a. What are the most salient ideas you gained from this project?
    b. How has your understanding of materials development changed as a result of completing this project?
    c. In what ways has your understanding of language learning and teaching changed as a result of completing this project?

Comments:

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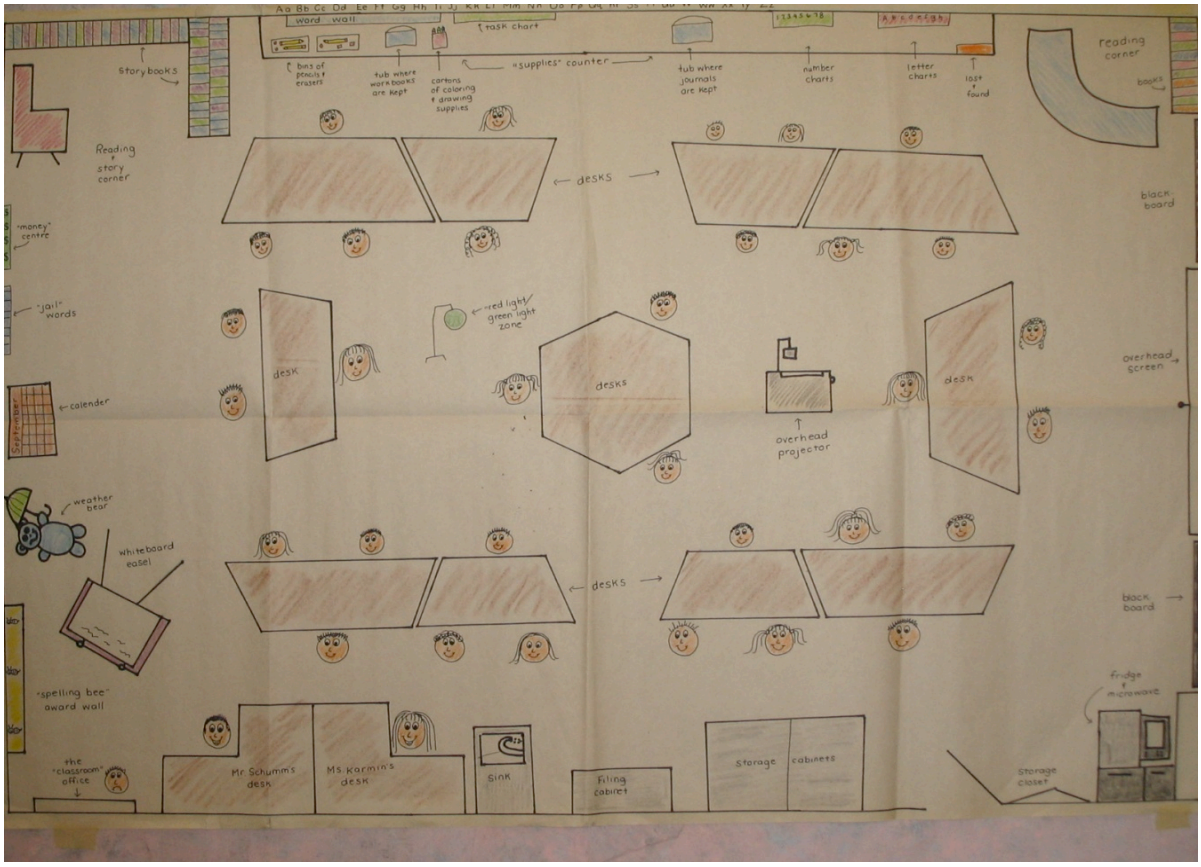
Appendix A



Enabling task 3 of an introductory project on school culture

Sample Baccalaureate-level PJBL Artifact:
Visual representation of classroom layout **Enabling Task 3:**

On a large piece of newsprint or poster paper, sketch out the layout of the class you are in. As you consider the way the desks are arranged, the position of the teacher's desk, the reading materials, storage area, display of student work, bulletin board materials, etc. etc. think about these questions:

- How does the physical lay out of the class facilitate or hinder student interaction?
- How is the class set up to help students manage, organize and take ownership for their 'stuff'?
- Is the class an inviting place for learners to come to? Explain:
- How is the class set up for free reading (A library area? A comfortable reading area?)
- Can the teacher circulate easily? Can she see everyone at once?
- Adequate black/white board space and bulletin board space? How are these used?
- Natural daylight? Good air quality?
- As you look at the layout of the class, what principles of good teaching and learning come to mind?

NOTE: This project promotes the link from theory to practice and back. Professional Seminar (ProSem) discussion that began on campus was linked to the field experiences with this structured assignment that supports making connections. This visual representation then served as a scaffold for a mini presentation and small group interactions in the following ProSem as students compared notes on the culture of the classroom to which they are assigned for the term. The enthusiasm is palpable: 'More than anything I feel EXCITED! I have had such positive experiences already. I have already learned so much. And I am looking forward to learning so much more.

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The Application of Racial Identity Development in Academic-Based Service Learning

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This preliminary study describes the transformation of students' racial attitudes and multicultural skills. A grounded theory approach was conducted to identify common themes from reflections of 19 students enrolled in a semester-long diversity service-learning course. The results indicate that students reformulate attitudes about racism and institutional discrimination through their own racial identity development from the beginning to the end of the semester. In addition, pre-test and post-test surveys were used to refine and expand the major themes about student attitudes and skills. The survey results indicate that students develop a greater interest in working with culturally diverse service recipients; acquire a deeper understanding of economic and educational conditions that impact the community; and gain multicultural awareness, knowledge, and skills by the end of the term. The combination of data from the quantitative and qualitative measures indicates that academic-based service learning (ABSL) is a useful pedagogy for teaching students multicultural skills.

Over the past decade, institutions of higher education (IHE) have incorporated academic-based service learning (ABSL) courses in liberal arts curricula as a way to help students learn the course concepts; understand the conditions that lead to racial, economic, and social disparities; and become productive citizens in a global society, but only when these are explicit course objectives and outcomes (Jordan, 2007; Quaye & Harper, 2007). Academic-based service learning is a pedagogical approach in which students connect the course content to the service context through reflection and discussion (Eyler & Giles, 1999). ABSL is often viewed as a viable means to teach undergraduate students about the complexities of race, culture, and class (Sperling, 2007).

Investigations on ABSL have noted improvements in students' diversity attitudes that result from service experiences with recipients (Brody & Wright, 2004; Hess, Lanig, & Vaughan, 2007). Scholars suggest that ABSL provides students with an opportunity for informal interracial contact with recipients who differ from them in race and class at placement sites located in culturally diverse communities, and these interactions allow them to rethink assumptions and reformulate attitudes about diverse recipients (Brody & Wright, 2004; Quaye & Harper, 2007), In contrast, others propose that students retain their stereotypical attitudes and beliefs after engaging in interracial interactions with recipients who reinforce their prejudicial attitudes or participating in service experiences that do not negate their cognitive biases (Bell, Horn, & Roxas, 2007; Dunlap, Scoggin, Green, & Davi, 2007). Failure to find ABSL effects on students' diversity attitudes may reflect a limitation in the course content (Moely, McFarland, Miron, Mercer, & Illustre, 2002). ABSL courses that do not include race, class, or culture content will not challenge students to think about how race and class influence their interactions with recipients; therefore, service experiences may reinforce the "power dynamic" between White students and diverse recipients (Moely et al., 2002, p. 24). ABSL may be a useful pedagogy to teach students multicultural skills, i.e., awareness, attitudes, knowledge, skills, but only if the race, class, and culture concepts are an integral part of the course and students are required to think critically about the connection among power, privilege, and oppression in both the class and service context (Baldwin et al., 2007; Sperling, 2007). The purpose of this preliminary study is to determine if students improve their multicultural skills after participation in a diversity course that utilizes service learning as the primary pedagogical strategy, and to explain the possible change of skills through the racial identity development paradigm.

Racial Identity Development Models

Cross (1991) developed a five-stage model that describes the psychological process associated with Black racial identity development. Each stage is characterized by racial identity attitudes toward Black/White reference groups, self-concept issues, and cognitive-affective processes. Helms (1990) reformulated Cross's model to suggest each stage be considered a cognitive template that individuals use to organize racial information. Helms (1990) proposed White racial identity development occurs through six stages in which individuals move from a colorblind view of race to a less racist perspective. The six stages are contact, disintegration, reintegration, pseudo-independence, immersion-emersion, and autonomy. In the contact stage, the person is oblivious to racial issues

and adopts a colorblind view. Service learners have a naïve view of race and are resistant to think of themselves in racial terms, e.g., *I was taught not to see race and to treat everyone in the manner that I expect to be treated*. In the disintegration stage, the person becomes aware of the social implications of race on a personal level. Service-learners begin to think of themselves in racial terms and recognize White or socioeconomic privilege, e.g., *The teacher refuses to let Black children go to the bathroom, but she allows White children go to the bathroom*. In the reintegration stage, the person understands, but is resistant to accept, Whites are responsible for racism. Service-learners are resistant to acknowledge that White or socioeconomic privilege contributes to racism, e.g*., After comparing my elementary school to the service placement, I realized that the resources my school had was a result from race and class privilege*. In the pseudo-independence stage, the person understands the unfair advantages of growing up White and the disadvantages of growing up Black in the United States. Service learners adopt liberal views in which they perceive programs such as affirmative action or special education as ways to improve racial or educational disparities, e.g., *I plan on continuing to tutor the children after this course because I feel inspired to make a difference in this school*. In the immersion-emersion stage, the person searches for a personal meaning of racism and the ways in which one benefits. Service learners acquire a deeper understanding of racism, e.g., *I thought I was open-minded until this course. This course made me aware of my 'isms' and taught me how to change them*. In the autonomy stage, the person develops a positive, less-racist self-concept. Service learners develop a positive racial identity in which they embrace their Whiteness, recognize the connection between privilege and oppression, and engage in activities to combat racism, e.g., *I plan on teaching in this district. I now feel that I am competent to work in a diverse classroom and understand how my race influences interactions with the children after taking this course.*

The scholarship on racial identity development theory has led to advances in counseling and education (Ponterotto & Mallinckrodt, 2007). In fact, racial identity development is considered an integral component of multicultural training in graduate counseling and undergraduate psychology programs (Ottavi, Pope-Davis, & Dings, 1994; Mio Barker, & Tumambing, 2009). The White racial identity development theory (Helms, 1990) is one of the most widely used models in the field of racial and ethnic identity, and despite scientific advances in theory and measurement related to this paradigm, additional research is necessary to clarify conceptualizations of the developmental aspects of racial-ethnic identity constructs (Ponterotto & Park-Taylor, 2007; Quintana, 2007; Worrell, Cross, & Vandiver, 2001). Mercer and Cunningham (2003) challenge the conceptualization of the White racial identity model because of inconsistent findings on racial identity development and cultural competence. For instance, some researchers suggest that only advanced stages of racial identity development – i.e., disintegration, reintegration, and autonomy – are associated with multicultural awareness and knowledge (Vinson & Neimeyer, 2003; Middleton, Stadler, Simpson, Guo, Brown, Crow, Schuck, Alemu, & Lazarte, 2005), while other scholars propose that all stages of racial identity development are related to increased cultural competence (Helms & Carter, 1991; Ottavi, Pope-Davis, & Dings, 1994). It is plausible that the White students develop multicultural awareness, knowledge, and skills without taking personal responsibility for the way in which White privilege contributes to racism, i.e., reintegration stage (Vinson & Neimeyer, 2003; Middleton et al., 2005); therefore, qualitative inquiries that focus on the processes associated with racial identity development are crucial to understanding how students interpret racial information in their relationships with others who differ in race and ethnicity from them when immersed in diverse settings. Racial identity development models may explain the changes in students' attitudes and skills before, during, and after service, thus contributing to new information about ABSL. This study was guided by three questions:

1. What and how do students learn through participation in ABSL? What do they learn about diversity?
2. How are the racial identity development models applicable to student development and learning?
3. Do students change their attitudes and skills by the end of term as indicated by increases in awareness of racial privilege, institutional discrimination, and racism?

Methods

Participants

College students from a private teaching university in a northern metropolitan area who were enrolled in a multicultural psychology service-learning course completed a survey about their course and service experiences as a course assignment. Data were gathered from 19 students at the beginning and end of the course during the fall semester of the 2007-2008 academic year, with a retention rate of 100% and an item-response rate of 84%. Most students identified themselves as White (74%) and female (73%). The

remaining group of students identified themselves as Black (26%) and male (27%); therefore, the majority of participants in this study were White females. The mean age of students was 20 years (SD = 1.34), and the mean GPA reported by students was in the

"B-" range. Fifty-two percent of students were psychology majors, while the remaining group of students (48%) included business, English, and nursing majors. Students worked as tutors (41%), mentors (34%), and aides/assistants (25%) at either a local public school (48%) or a community program (52%).

Course Content

The multicultural psychology course is a three-credit course intended to prepare students to work with children, adolescents, and adults in diverse settings. This class requires students to participate in 10 hours of service learning at either a public school or a community program beyond in-class time (50 minutes, 3 times per week, 15 weeks). The first class begins with a discussion of student concerns related to this class, guidelines for this course, and a general lecture on multiculturalism. The next two classes consist of an orientation on service-learning activities, e.g., mentoring, tutoring, by guest speakers representing the placement sites. Students are matched with a placement site by the end of the third class and spend approximately one-hour per week after each class period engaging in tutoring or mentoring activities as a way to fulfill the service-learning requirement. Students tutor or mentor children who differ in race, class, and culture in a school or program located in an urban public school district that consistently ranks low on standardized assessment performance indicators (Pennsylvania Department of Education, 2002). In addition, students are required to answer structured reflection questions prior to participating in service, after each day of service, and following the completion of service. The structured reflection questions require students to analyze their thoughts and feelings about service experiences, connect the service context to the class content, and evaluate how their cognitions did or did not change throughout the semester (Simons, 2008). The rest of the course is devoted to lecture, reflective and experiential activities, and discussion. Lectures and discussions correspond to assigned readings. Students are required to read *The Psychology of Prejudice* by Nelson (2006), *White Privilege* by Rothenberg (2008), and *Why are All the Black Kids Sitting Together in the Cafeteria?* by Tatum (1997). Experiential activities (for example, crossing-the-line, and backward-forward), talking circles (as lead discussant or participatory group member), and video-clips (for example, *People Like Us* or *Blue Eyed*) are used to stimulate reflection and discussion. Students are also required to complete three additional assignments: a multicultural observation paper, a movie critique of a diversity film, and an intercultural interview paper. The multicultural observation is an immersion experience. Students attend an activity associated with a culture or ethnic group that is distinctively different from them. For example, some students attend a church service other than their own, dine at a restaurant that serves ethnic food, or go to a part of the community or city to which they have never been. They then write a short description about what they did, how it felt while they were doing it, and what they learned. The multicultural critique assignment requires students to watch a diversity film (for example, *Crash* or *Mississippi Burning*), apply diversity theories to explain the main theme of the movie, and describe what they did or did not learn in terms of racial identity development and multicultural competence (for example, awareness, knowledge, & skills). The intercultural interview paper requires students to develop an interview on any topic related to multicultural psychology (for instance, classism, ageism, racism), interview two individuals who differ in one cultural characteristic (for example, age, race, religion, sexuality, nationality, education, gender, or socioeconomic status), and compare and contrast their responses. Students integrate theory and research to explain the main findings from the interviews. The course ends with a reflective discussion on how student concerns about taking this class had changed throughout the semester.

Measures

A total of six measures with 129 questions were embedded in the pre-test and a total of seven measures with 136 questions were included in the post-test. It was more parsimonious to include multiple measures with a significant number of items rather than one or two questionnaires with a few items in the survey in order to conduct a comprehensive assessment on the 10 course outcomes. The primary course objectives were to foster students' multicultural – e.g., race & diversity – awareness, attitudes, knowledge, and skills. The CASQ, CoBRAS, and Pro-Black and Anti-Black measures were used to measure attitude change, and the MAKSS and QDI were used to measure skill development. The secondary course objectives were to enhance students' racial/ethnic identity development through participation in an ABSL course. The racial identity attitude scales and the open-ended reflection questions were used to examine student identity development and to evaluate their views of service learning.

A Demographic Questionnaire, developed by the researchers, was used to gather information on gender, race, age, GPA, and area of study. *The Civic Attitudes and Skills Questionnaire (CASQ)*, developed by Moely,

Mercer, Ilustre, Miron, and McFarland (2002), assessed civic attitudes and skills. The CASQ, an 84-item self-report questionnaire, yields scores on six scales: 1. Civic Action (respondents evaluate their intentions to become involved in the future in some community service); 2. Interpersonal and Problem-Solving Skills (respondents evaluate their ability to listen, work cooperatively, communicate, make friends, take the role of the other, think logically and analytically, and solve problems); 3. Political Awareness (respondents evaluate their awareness of local and national events and political issues); 4. Leadership Skills (respondents evaluate their ability to lead); 5. Social Justice Attitudes (respondents rate their agreement with items expressing attitudes concerning the causes of poverty and misfortune and how social problems can be solved); and 6. Diversity Attitudes (respondents describe their attitudes toward diversity and their interest in relating to culturally different people). The CASQ is one of the most commonly cited measures in the service-learning literature, although it has a moderate range of consistency. Internal consistencies for each scale reported by Moely et al. (2002) ranged from .69 to .88, and test-retest reliabilities for each scale ranged from .56 to .81. The diversity and social justice subscales were used in this study.

The Color-Blind Racial Attitude Scale (CoBRAS*)*, developed by Neville, Lilly, Duran, Lee, and Browne (2000), assessed contemporary racial attitudes. The CoBRAS, a 20-item self-report measure, yields scores on three scales: 1. Unawareness of Racial Privilege (respondents evaluate their lack of awareness of White racial privilege); 2. Unawareness of Institutional Discrimination (respondents evaluate their lack of awareness of racial issues associated with social policies, affirmative action, and discrimination against White people); and 3. Unawareness of Blatant Racial Issues (respondents evaluate their lack of awareness of blatant racial problems in the United States). Item scores are added together to produce three subscale scores. Cronbach's coefficient alpha for each scale ranged from .86 to .88 (Neville, Lilly, Duran, Lee, & Browne, 2000).

The Multicultural Awareness-Knowledge-Skills Survey (MAKSS), developed by D'Andrea, Daniels, and Heck (1991) assessed multicultural competence. The MAKSS, a 60-item self-report measure, yields scores on three scales: 1. Awareness (respondents examine their multicultural awareness); 2. Knowledge (respondents assess their multicultural knowledge); and 3. Skills (respondents evaluate their multicultural counseling skills). Item scores are added together to produce three subscales. Cronbach's coefficient alpha for each scale ranged from .75 to .96. The awareness and knowledge subscales were used in this study.

The Pro-Black and Anti-Black Scale, developed by Katz and Hass (1988), measured positive and negative components of people's contemporary racial attitudes. The Pro-/Anti-Black scale, a 20-item self-report measure, yields scores on two subscales: 1. The Anti-Black scale (respondents indicate higher prejudicial attitudes towards Blacks); and 2. The Pro-Black scale (respondents indicate less prejudicial attitudes toward Blacks). Items are added together to produce two separate subscale scores. Intercorrelations ranged from .16 to .52 (Katz & Hass, 1988), and Cronbach's coefficient alpha ranged from .75 to .84 (Plant & Devine, 1998).

Reflection Items*,* designed by the researchers, were used to inquire about advantages and disadvantages of ABSL. The seven open-ended questions were: 1. Describe what you gained from service-learning; 2. Explain how service learning helped you understand the course content; 3. Explain how service learning helped you make career decisions; 4. Describe how your beliefs, attitudes, views, and feelings changed throughout the semester; 5. Describe how this service-learning experience was similar to and different from your other service-learning experiences; 6. Describe how diversity was addressed in this course compared to other courses; and 7. Describe the value of ABSL.

The White Racial Identity Attitude Scale, Revised (WRIAS) and the Black Racial Identity Attitude Scale (BRIAS), developed by Helms and Carter (1991), measured race-related developmental schemas. The WRIAS, a 60-item self-report measure, yields six scores on six subscales: 1. Contact (respondents evaluate their lack of awareness of their own racial-group membership); 2. Disintegration (respondents evaluate their ambivalent awareness of the implication of race for members of other racial groups); 3. Reintegration (respondents appraise their active and passive endorsement of White superiority and Black inferiority); 4. Pseudeo-Independence (respondents evaluate the degree of their intellectualized acceptance of one's Whiteness and quasi-recognition of the sociopolitical implications of racial differences); 5. Immersion-Emersion (respondents assess their proactive and self-initiated development of their positive White identity); and 6. Autonomy (respondents appraise their positive White identity orientation). Items are added together to produce six subscale scores. Cronbach's coefficient alpha for each scale ranged from .53 to .82 (Helms & Carter, 1991).

The BRIAS, a 60-item self-report measure, yields scores on four subscales:

> Conformity (respondents evaluate their denial or lack of awareness of the personal relevance of societal racial dynamics);

Table 1
Means and Standard Deviations for Racial Identity Altitudes

Variable	M	SD	Schema Profile
White Racial Identity Attitude Scale			
Contact	30.50	3.96	High
Disintegration	23.16	3.51	Low
Reintegration	19.08	4.03	Very Low
Pseudo-Independence	33.83	4.66	High
Immersion/Emersion	32.16	2.79	High
Autonomy	36.16	2.79	High
Black Racial Identity Attitude Scale			
Conformity	34.16	2.21	High
Dissonance	31.50	3.39	High
Immersion/Resistance	38.50	3.78	High
Internalization	28.16	4.20	Low

Note. Higher scores indicate stronger levels of racial identity

Dissonance (respondents assess their degree of confusion or disorientation when racial dynamics are in consciousness or awareness);

Immersion (respondents appraise their physical and psychological withdrawal from their racial/ethnic groups);

Emersion (respondents assess the degree of joy and contentment in their own groups); and 5.

Internalization (respondents evaluate their positive own-group racial identification with capacity to appreciate the positive aspects of Whites). Items are added together to produce five subscale scores. Cronbach's coefficient alpha for each scale ranged from .41 to .74 (Helms & Carter, 1991. The racial identity attitude scales were used as reliability checks for student journals.

The Quick Discrimination Index (QDI), developed Ponterotto, Potere, and Johansen (2002), measured intercultural sensitivity skills. The QDI, a 30-item self-report measure, yields four scale scores: 1. Total Scale Score (respondents evaluate their overall sensitivity, awareness, and receptivity to cultural diversity and gender equality); 2. Cognitive (respondents assess their attitudes toward racial diversity); 3. Affective (respondents appraise their attitudes toward more personal contact or closeness with racial diversity); and 4. Women Equity (respondents evaluate their attitudes toward women's equity). Item scores are added together to produce a total scale score and three subscale scores. Cronbach's coefficient alpha for each scale ranged from .65 to .88. The total scale was used in this study.

Design and Procedure

A grounded theory design with qualitative and quantitative measures was used to explain student attitude formation and skill development through racial identity development in an ABSL course over the semester (Creswell, 2005). Qualitative and quantitative data are collected at the same time, and the qualitative findings are merged with the quantitative results to understand the transformation of student attitudes and skills. The quantitative results are used to refine, explain, and extend the qualitative findings.

All students completed an informed consent form and answered structured reflection questions prior to participating in service, after each day of service, and following the completion of service. The structured reflection questions required students to analyze their thoughts and feelings about service experiences, connect the service context to the class content, and evaluate how their cognitions did or did not change throughout the semester (Simons, 2008). Students also completed a survey measuring multicultural attitudes and skills, placed it in a coded, confidential envelope and gave it directly to the researcher. Surveys took about 45 minutes to complete. Students were required to complete the survey again post-service, i.e., after completing 10 hours of service. In addition, students participated in a discussion on racial-cultural identity development during a class period in the middle of the semester. White students completed the WRIAS, and Black students completed the BRIAS. Table 1 shows the means and standard deviations for students' racial identity attitude profiles. Each questionnaire took approximately 10 minutes to complete.

Results

Qualitative Analyses

Two sources of information, i.e., student journals, reflection responses, underwent an item-level analysis through which thematic patterns were identified and coded using grounded theory techniques (Creswell, 2005). Data from 19 student journals and reflections

Table 2
Major Themes and Learning Processes

Timeframe	Major Themes	%	Learning Process	%
Pre-service	Resistance to discuss Race in Class	100	Emotional	94
	Racial Awareness	88		
	Preconceived Thoughts	65		
During-Service	Diversity Knowledge	94	Social (Interpersonal & Intrapersonal)	92
	Self-Knowledge	94		
	New Racial/Diversity Attitudes	88		
	Ambivalent Racial Attitudes associated with Oppression and Privilege	88		
	Racial Differences	88		
	Racial Similarities	88		
	Tolerance	50		
	Diversity Awareness	82		
	Comprehension of and Appreciation for the Service Context	82		
	Racial Privilege	77		
	Community Connections	76		
Post-service	Discuss Racial Issues	100	Cognitive	64
	Multicultural Knowledge	94		
	Multicultural Awareness	88		
	Multicultural Attitudes/Change in Racial Precognitions	88		
	Multicultural Skills	82		
	Prejudice Reduction	76		

were compared and analyzed using open, selective, and axial coding procedures to construct a conceptual framework. Open coding consisted of categorizing and naming the data according to the theoretical concepts of service learning (Eyler & Giles, 1999) and multicultural competence (Howard-Hamilton, 2000), while selective coding consisted of analyzing the data according to cognitive, emotional, and social learning (Gardner, 1999; Salovey, Brackett, & Mayer, 2004). Student reflections were coded as emotional learning when they reflected an expression of feeling, and they were coded as cognitive learning when they reflected a thought or judgment. Student reflections were coded as social learning, e.g., intrapersonal, interpersonal, when they indicated discriminate feelings for guiding behavior or understanding the behavior of others (Gardner, 1999; Salovey, et al., 2004). Coders counted the number of responses for each learning process and major theme and divided them by the number of student journals and reflections to obtain the percentages for each category. Major themes and learning processes were further compared using the constant comparative method to group themes across time over the semester. Table 2 outlines the major themes and learning processes grouped into pre-service, during-service, and post-service patterns. Axial coding consisted of systematically analyzing the data using topical codes based on racial identity development (RID) models (Cross, 1991; Helms, 1990). Coders counted the number of responses for each RID category and divided them by the number of student journals to obtain the percentage for each category. Students' racial identity attitude profiles served as a reliability check for topical codes derived from RID models. RID categories were further compared using the constant comparative method, so that data was grouped into pre-service, during-service, and post-service patterns as shown in Table 3. Diversity attitudes and multicultural skills were identified as learning outcomes, while social and emotional learning were detected as the learning processes that describe what and how students learn through their own racial identity development in an ABSL course from pre-service to post-service as shown Table 4.

Quantitative Analyses

A paired t-test was conducted on Anti-/Pro-Black, CASQ, CoBRAS, MAKSS, and QDI scores to measure differences in students' multicultural attitudes and skills. Students improved their interest in working with diverse recipients ($t = -3.53$, $p<.01$), understanding of social justice issues ($t = -3.60$, $p<.01$), and multicultural awareness ($t = -3.17$, $p<.01$) and knowledge ($t = -4.26$, $p<.001$) by the end of the semester as shown in Table 5.

Discussion

Diversity is a buzzword that often is associated with mission statements, learning objectives, and strategic plans of higher education institutions in the United States. Educators often debate about which

Table 3
Racial Identity Development

Timeframe	%	Stages	Typical Expressions/Perceptions
Pre Service	65	Contact	I do not see color, I only see people; All kids are the same; I am afraid to discuss racism, sexism, and classism in class because they are controversial topics and I do not want to offend anyone; I am concerned about working in the City since I was told not to venture very far off campus; I was the only White person in the classroom and learned what it is like to be a minority.
During-Service	88	Disintegration	I felt sick to my stomach because I realized that I was overextending myself to the White children at the placement; I never thought about my race and its implications until this class; I think race is something that most White people do not think about; The teacher refuses to let Black children go to the bathroom but she lets the White children go to the bathroom.
	82	Reintegration	I did not comprehend oppression until I saw it firsthand at the placement; I gained a better understanding about how the school system operates and attribute the lack of enforcement of policies and the limited supplies to racial and socioeconomic privileges; The way this school operates and its lack of textbooks and outdated computers would never have been tolerated in my White, middle-class, suburban school; Besides our skin color I cannot delude myself by thinking we have anything else in common.
	82	Psuedo-Independence	I was offended when children asked me if I was White because of the way I spoke and dressed; My initial impression was to get this assignment over as soon as possible; I learned that the children's perceptions are a result from racial, economic, and educational inequities in this community; I no longer feel a disconnection with the people from Chester; I feel a connection to the students and plan to continue to work with them after this course; I feel inspired to make a difference in this school.
	88	Immersion/ Emersion	The best way to learn about diversity is to experience it; Most of us in this class have never experienced racial or educational oppression because of the privileges associated with our White, middle-class backgrounds; The service experiences not only made me aware of our 'isms' but it humanized the diversity content; I was brought up to be colorblind, but I have learned that if I remain colorblind I am contributing to the ignorance that promotes racism; I am no longer afraid to acknowledge racial differences; Service-learning helped me understand my own ethnic identity.
Post Service	80	Autonomy	I was afraid to 'cross the bridge' to go from the University into the City because of the stereotypes I heard from parents and peers; I learned that by not speaking up when someone is stereotyping is just as bad as the person speaking; I am no longer afraid to confront people who stereotype; I am not longer afraid to cross the bridge; I am ashamed to admit how ignorant I was at the beginning of this course - my stereotypes were reduced after becoming aware of them; I learned that you do not need to be from a diverse community to understand it; I feel more competent to teach in a culturally-diverse classroom.

pedagogical method is most effective for infusing diversity content into the liberal arts curriculum. The current study contributes to new information about ABSL courses that include race, culture, and class content, specifically on how this teaching method assists students in the acquisition of multicultural skills through their own racial identity development.

The first goal of this study was to detect what and how students learn from participation in an ABSL course. Student reflections illustrate their acquisition of their multicultural awareness, knowledge, and skills through their own racial identity development (RID) from pre-service to post-service, which is congruent with racial identity development models (Cross, 1991; Helms, 1990). Helms (1990) describes the contact stage of racial identity development as an individual's colorblind view of race. In pre-service, almost all students were resistant to talk about race in class, had preconceived notions about working in a culturally diverse community, and described their early visits at the placement as a culture shock or eye-opening experience. Most students engaged in emotional learning to describe racial awareness associated with their reluctance to participate in racial discussions in class and their preconceptions about working with service recipients in the community; their resistance and preconceptions represent the contact stage of RID. Two student comments convey emotional learning associated with resistance of the contact stage of RID:

> Not only was I afraid to discuss racism, sexism, and classism in class because they are controversial topics and I did not want to offend anyone, but I was also concerned about working in the City since I was told not to venture very far off campus. After I participated in service and was the only White person in the classroom, I realized that my fears were associated with my stereotypes and if I did not engage in class discussions about them then my attitudes would interfere with my work with the children.

Table 4
Racial Identity Development, Major Themes, and Learning Processes

Timeframe	Stages	Themes	Learning Processes
Pre-service	Contact	Resistance to discuss Race in Class	Emotional
		Preconceived Thoughts	
		Racial Awareness	
During-Service	Disintegration	Diversity Awareness	Social
		Diversity Knowledge	
		Racial Privilege	
	Reintegration	Racial Similarities	
		Racial Differences	
		Ambivalent Attitudes about Privilege and Oppression	
	Psuedo-Independence	Community Connections	
		New Racial/Diversity Attitudes	
	Immersion/ Emersion	Self-Knowledge	
		Comprehension of and Appreciation for the Service Context	
		Tolerance	
Post-service	Autonomy	Discuss Racial Issues	Emotional
		Multicultural Attitudes/Change in Racial Precognitions	Cognitive
		Multicultural Awareness	
		Knowledge	
		Skills	
		Prejudice Reduction	

Table 5
Pre-test and Post-test Mean Scores and Standard Deviations on Racial Attitudes and Multicultural Skills

	Pre-test		Post-test			
Measure	M	SD	M	SD	df	t
CASQ						
Social justice	27.66	3.43	30.60	2.84	14	-3.60**
Diversity	17.46	2.77	19.80	2.17	14	-3.53**
CoBRAS						
Unawareness of racial privilege	24.92	4.35	25.50	5.66	14	-.36
Unawareness of institutional discrimination	25.93	5.52	21.43	5.52	16	3.77**
Unawareness of blatant racial issues	15.25	4.49	11.37	3.72	16	3.41**
Anti/Pro-Black Attitudes						
Anti-Black	-.66	6.38	-1.91	6.76	12	.63
Pro-Black	5.00	8.64	10.91	6.60	12	-3.49**
QDI	94.09	21.84	107.63	15.12	11	-3.49**
MKASS						
Awareness	14.25	2.23	16.37	1.58	16	-3.17**
Knowledge	23.15	3.36	28.68	3.38	16	-4.26***

Note. ***p<.001, **<.01.

> I'm not sure what I am getting into with this class, it could either be fun or a nightmare. I have never worked with diverse children and I am afraid they will reject me, because of my race, class, and gender.

Helms (1990) proposes that contact between Blacks and Whites influences Whites' racial identity development. Students engaged in interpersonal and intrapersonal, i.e., social, learning to describe how they moved through the disintegration, reintegration, pseudo-independence, and immersion/emersion stages during service. Helms (1990) suggests that interracial contact forces Whites to think about themselves in racial terms and to recognize the social implications of their race in the disintegration stage. Most students indicated that their interactions with recipients contributed to their diversity awareness and knowledge. More than half of them reported how applying the diversity content to the service context made them aware of their racial privilege; their awareness of diversity and racial privilege represents the disintegration stage of RID. Two student reflections illustrate racial and economic privilege:

> After reading the 'White Privilege' assignment in the Rothenberg text and reflecting on my service experiences, I felt sick to my stomach because I realized that I was overextending myself to the White children at the placement. I have learned that my behavior is a result from my racial privilege. I never thought about my race and its implications until this class. I think this is something that most White people do not think about.

> When I look in the mirror, I do not see the color of my skin. This service experience was an eye-opener because it forced me to think about what it means to be a Black, upper-middle class male. Making these privileges visible is the first step in understanding and changing how privilege contributes to inequities.

Helms (1990) postulates that continual contact between Whites and Blacks causes Whites to experience cognitive dissonance. Whites experience ambivalence about racial privilege as perpetuating racism in the reintegration stage. Most students gained a deeper understanding of racial privilege. In fact, most students made comparisons of the similarities to, and differences from, their educational experiences to those of recipients to describe how they learned about the connection between privilege and oppression. Students exhibited ambivalent positive and negative racial attitudes in their descriptions of privilege and oppression, and these differences may have been exacerbated by the degree of contact they had with service recipients (Boyle-Baise, 2002); their ambivalent attitudes about the connection between privilege and oppression represent the reintegration stage of RID. Two student comments illustrate the connection between privilege and oppression:

> Although I learned about racial and social injustices in class, I did not comprehend it until I saw it firsthand at the placement. I gained a better understanding about how the school system operates and attribute the lack of enforcement of policies and the limited supplies to racial and socioeconomic privileges. The way this school operates and its lack of textbooks and outdated computers would never have been tolerated in my White, middle-class, suburban school.

> As a White student, I can add to McIntosh's list of privileges that I can walk into the school and will not get questioned by the security guard."

Helms (1990) suggests that the quality of interpersonal interactions between Whites and Blacks provides Whites with opportunities to resolve their cognitive dissonance felt by their recognition of the unfair advantages of growing up White in the United States. Whites adopt liberal attitudes about programs to improve racial disparities as a way to resolve their cognitive dissonance in the pseudo-independence stage. More than half of the students describe forming relationships with recipients and/or making connections to the community, and most students reported developing new attitudes about both recipients and the city through their participation in ABSL; their community connections and formation of new attitudes represent the pseudo-independence stage of RID. Two student comments convey community connection and the development of new attitudes:

> I forged relationships with the children with whom I was paired to work at the placement even though I was offended as a Black female when they asked me if I was White because of the way I spoke and dressed. My initial impression was to get this assignment over as soon as possible. However, through my relationships with them, I learned that their perceptions of me were a result from racial, economic, and educational inequities in this community. I plan to continue to work with the children beyond the course because I know I can make a difference in their lives.

> The tutoring program is a great way to connect the University to the community. However, I wonder if a White school would accept Black tutors the same way this Black school accepts White tutors.

Helms (1990) suggests that the context of interpersonal interactions between Whites and Blacks allows Whites to develop tolerance through their deeper understanding of racism and ways in which they benefit in the immersion-emersion stage. Most students described how their relationships with recipients at the placement provided them with an opportunity to acquire knowledge about their own culture/ethnic/racial identity development, understand the service and/or community context, and develop tolerance toward cultural differences; their tolerance represents the immersion-emersion stage of RID. Two student comments illustrate tolerance:

> The best way to learn about diversity is to experience it. I never experienced racial or educational oppression because of the privileges associated with my White, middle-class background. The service experience not only made me aware of my 'isms' but it humanized the diversity content. For example, I was raised to be colorblind, but I learned that if I remain colorblind then I am contributing to the ignorance that promotes racism.

> After we watched the Blue-Eyed film in class, I wrote down my questions for my intercultural interview paper on interracial relationships. My mother noticed my questions and told me that it was inappropriate to ask such questions. I informed her that if I did not ask these questions then I was perpetuating the cycle of oppression by maintaining a colorblind view.

Helms (1990) proposes that both the context and the quality of continual interpersonal interactions between Whites and Blacks contribute to Whites' development of a positive, less-racist identity in which they engage in activities that promote equality in the autonomy stage. In post-service, most students described how their fears about discussing racial issues in class, and their preconceived notions about working in a diverse environment had diminished. Most students also made notations about the acquisition of multicultural awareness, knowledge, and skills, and more than half of them provided examples illustrating prejudice reduction attitudes. Students engaged in emotional learning to describe how their fears or concerns had diminished, and they engaged in cognitive learning to explain the acquisition of their multicultural skills and formation of prejudice reduction attitudes; their multicultural skills and prejudice reduction attitudes represent the autonomy stage of RID. Two student notations convey multicultural skills and prejudice reduction attitudes:

> I was afraid to 'cross the bridge' to go from the University into the City because of the stereotypes I heard from parents and peers. I learned that by not speaking up when someone is stereotyping is just as bad as the person speaking. I am no longer afraid to confront people who stereotype, nor am I afraid to cross the bridge.

> The fear I had about discussing race in class has vanished. The course not only empowered me to have a voice, but it also taught me to unlearn the racism and other 'isms' I was taught and endured.

Student reflections illustrate changes in their cognitive, emotional, and behavioral processes associated with racial identity development. Although we acknowledge that there is probably social desirability and good subject effects associated with student reflections, their responses are congruent with previous research that found racial identity attitudes are related to higher levels of multicultural competence (Ottavi, Pope-Davis, & Dings, 1994). Exposure to diversity content that is tailored to the racial and ethnic context of the course and field may influence the way in which students interpret racial information in their interpersonal interactions with others who differ from them, thus contributing to the development of their racial identity and appreciation for culturally competent practices.

The second goal was to measure differences in students' multicultural attitudes and skills. Students made improvements in their social justice, diversity, and pro-Black attitudes; increased their awareness of institutional discrimination and racism; and acquired multicultural awareness and knowledge and intercultural sensitivity skills from the beginning to the end of the semester. These findings indicate that students were less prejudiced and more aware of both racism and institutional discrimination after participation in ABSL. Students also developed a greater interest in working with culturally-diverse service recipients and a deeper understanding of recipients' misfortunes, and they acquired multicultural awareness, knowledge, and skills by the end of the term, which is consistent with previous studies that found students acquire cultural competence through experiential- and community-based work (D'Andrea, Daniels, & Heck, 1991; Gushue & Constantine, 2007).

The final goal was to describe the similarities in racial identity development between the qualitative and quantitative data. Students developed multicultural skills associated with racial identity development congruent with RID paradigms (Cross, 1991; Helms, 1990). High scores on the contact, pseudo-independence, immersion/emersion, and autonomy subscales of the White Racial Identity Attitude Scale

(WRIAS) suggest that White students transform their colorblind views to a less racist perspective in which they embrace their Whiteness, recognize the connection between privilege and oppression, and engage in activities that promote justice and fairness, all of which are congruent with the cognitive, affective, and behavior descriptions of student interactions with recipients in their journal reflections. Low scores on the disintegration and reintegration subscales of the WRIAS are also consistent with student descriptions of White privilege in their journal reflections and previous research on RID (Mercer & Cunningham, 2003; Vinson & Neimeyer, 2003). Moreover, high scores on the conformity, dissonance, and immersion/resistance subscales of the Black Racial Identity Attitude Scale (BRIAS) indicate that Black students lack and acquire an awareness of societal racial dynamics, as well as that they psychologically withdraw from, and find contentment in, their own racial group. Low scores on the internalization subscale of the BRIAS suggests that students exhibit resistance to their own-group racial identification or internalization of the Black culture, consistent with the lack of observed student notations about involvement in Black organizations on campus in their journal reflections and previous research on non-White graduate students (Vinson & Neimeyer, 2003). Taken together, these findings suggest that both Black and White students transform their racial identity by acquiring an awareness of their race and a deeper understanding of racism, congruent with contemporary research (Ponterotto & Park-Taylor, 2007; Worrell, Cross, Vandiver, 2001) and which is incongruent with historical research on RID theory (Cross, 1991; Helms, 1991). In addition, Black and White students echoed similar sentiments in their illustrations of multicultural awareness, attitudes, knowledge, and skills which are consistent with their survey reports. Students increased their awareness of racism and institutional discrimination; made improvements in their attitudes about working with culturally-diverse recipients and understanding of the racial and economic disparities in the community; and gain multicultural awareness, knowledge, and intercultural skills through participation in ABSL. The consistency of qualitative and quantitative data indicates that students acquire multicultural skills through their own racial identity development in an ABSL course from pre-service to post-service.

Overall, the findings from this study support the use of ABSL for teaching students multicultural skills. Student attitude formation and skill development are difficult and complex processes to transform; however, they do change their racial precognitions and acquire multicultural skills, but only after they are required to directly connect the course content to the service context (Bell et al., 2007). Exposure to diversity in the course content and the service context are keys to improving student development and learning.

Although our findings contribute to the research on ABSL, we accept the reality that our limited sample size renders it questionable at best to generalize these and other findings of this study beyond the sample surveyed. The student population in this study was demographically homogenous. Student participants were predominantly White and female, came from middle-class backgrounds, and usually were the first generation to attend a four-year college. There probably are internal validity limitations associated with service activities with recipients at our placement sites. Students worked with African American and Latino children who score below the basic level of proficiency on state assessment indicators in an elementary public school or a community-based organization located in an urban, low-income neighborhood (Pennsylvania Department of Education, 2002). The uniqueness of the service experiences makes replication difficult. In addition, the use of multiple data sources does not prevent participant bias in written materials. There is also the potential for testing and social desirability effects to be associated with participant responses that were collected with self-report surveys, journals, and reflections at different points in time.

A multi-method qualitative and quantitative approach with larger samples of male and female students is needed to generalize and expand on the findings from the present study. Additional work should aim to identify key components of ABSL that assist students in their development of racial identity and cultural competence. Comparisons of course activities and assignments in different ABSL courses are needed to understand the influence from the course content on student development. More work is also necessary to understand the influence from the service context on student attitude formation and skill development. Studies that compare service programs are needed to identify if the type of service activity, location of service projects, and amount of service participation make a difference on student development and learning. Additional efforts that include both quantitative and qualitative data will be crucial if research related to racial identity development in ABSL is to demonstrate maturity.

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Mission Possible: Using Near-World Scenarios to Prepare Graduates for the Professions

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A recent UK survey found many graduates unprepared for employment while employers placed greater value on transferable, employability skills rather than on specific ones. Increased student entry into professional-oriented programs, and subsequent pressures on work placements, have educators looking to alternative ways of providing safe, reproducible, authentic work experience, (Eland et al. 2010).Scenario-based learning (SBL), founded on the valuing of contextual knowledge, may provide one strategy for getting students closer to the realities of their intended profession through guided reflection on learning experiences designed to supplement rather than replace work placements. This paper has three main aims: The first is to clarify scenario-based learning as a learning strategy. The second is to note why and how some university teachers use it to prepare students for the professions. The final aim is to illuminate some ways by which teachers might optimize the learning potential to foster and sustain professional development.

Four years ago the Institute of Directors (UK) found that most university graduates were unprepared for employment and also that transferable, employability skills were more valued than specific skills by prospective employers, (cited in Eland, Hill, Lawton, Morton and Popovic, 2010). Given the recent downturns in the global economy, it is unlikely this picture has changed. Widening participation in higher education and increased entry into professional-oriented programs have placed heavy pressures on available work placements for professional courses. The mission for many educators is to find alternative experiences to prepare graduates in "a safe, reproducible, and authentic way" (Eland et al. 2010, para 5).

Scenario-based learning (SBL), founded on situated learning theory and the valuing of contextual knowledge, may provide one useful means for getting students closer to the realities of their intended profession through the construction and deconstruction of authentic learning experiences. This is not to suggest that scenario approaches substitute work placements, but rather they supplement and enrich them. Indeed, experiences met in real settings invariably inform the simulated scenario content, dilemmas and tasks. Scenario-based learning processes usually incorporate the simulation of true-to-life tasks with realistic challenges similar to those found in the workplace. SBL is one of a number of simulated learning designs.

Within a scenario-based learning framework, students, as potential professionals, are presented with a scenario descriptor, or set of realistic circumstances. This is accompanied by one or more focus questions and/or dilemmas designed to pursue particular lines of inquiry and fulfil specific learning intentions along possible pathways. Students often assume specific roles, and/or at least consider perspectives that will allow them to explore the scenario from a range of vantage points. Through the crafting of the scenario and the teacher's discerning choice of focus questions, students may demonstrate a skill/ procedure, pursue a problem, explore an issue, and/or speculate on knowledge (Errington, 2010).

Learning is ideally scaffolded through guided observation, dialogue, teamwork, leadership opportunities, problem solving/ setting, issues exploration, deliberation, and reflection. A scenario-based learning process invites students, as would-be professionals, *into* the circumstances that determine problems, issues, and speculations. Students are encouraged to take ownership of their 'lived' experience (Miller and Nambiar-Greenwood, 2010).

The likely success of the teacher's mission to prepare graduates using scenario-based learning depends upon a range of factors, in particular: the teacher's knowledge of the profession and students; an ability to clearly articulate achievable goals; a theoretical and practical understanding of scenario-based learning, including the judicious choice of scenario options to achieve goals; appropriate scenario delivery; sufficient resources; and knowledge of how practice may be evaluated, optimized, and sustained.

Given the above, this paper has three main aims: The first is to clarify the nature of scenario-based learning, encompassing a knowledge of SBL *per se*, and its relationship to the professions. The second is to note how and why some university teachers prepare students for the professions using SBL, including the pursuit of specific learning goals/intentions in line with particular scenario options. The final aim is to outline some ways by which teachers might optimize the learning potential of scenarios to foster and sustain professional development.

The Nature of Scenario-Based Learning

The word "scenario" derives its meaning from the Italian Commedia dell'arte as something pinned to the

back of the play scenery/backdrop to indicate to the actors the entrances, exits, actions, and the overall plot of the play. In modern parlance, the term scenario has gained broader currency – being applied to almost any instance of human activity or situation. Within higher education, the term "scenario-based learning" refers to any pedagogical approach that involves an intentional use of scenarios to bring about desired learning intentions (Errington, 2005, p.12).

Lamos and Parrish (1999) add that "scenario-based learning" is based on context or situations and social frameworks" (p.1), and according to Carroll (1999), "scenarios (may) exemplify particular themes and concerns in work and activity", (p.7). Collectively a scenario-based approach to learning is carried out in social (read "professional") contexts, and scenarios have properties that may be exploited to achieve appropriate outcomes for aspiring graduates.

In terms of how helpful scenarios can be in deconstructing professionally-oriented learning experiences, Stewart (2003) refers to scenarios as "essential slices of reality" (p.83). These 'slices' can be examined as they are, or in some modified form. Scenarios can be located anywhere in time (past, present, future) and in any simulated work space, e.g., classroom, laboratory, hospital ward, courtroom, air traffic control tower. The fact that scenarios may be examined in minute detail, from a range of perspectives, indicates their potential in having students experience professional settings as problematic spaces.

Van der Heijden (2002) adds that a "scenario approach aims to help students become more skilful in dealing with uncertainty" (p.123). Some students find dealing with uncertainty is an uncomfortable experience, particularly when put on the spot and required to arrive at "correct" answers quickly (Miller et al, 2003). However, this very uncertainty can also render scenario-based learning some of its motivational appeal. Life *per se* has no clear boundaries; it is often "messy," ill-defined with uncertain outcomes.

According to Naidu (2008) the task of students faced with any scenario dilemma is to "deal with the repercussions of the precipitating and related events efficiently" (p.5). This proactive aspect of the work is essential to any profession's success in dealing with its clients in an effective manner. Here scenarios mimic the pressures of the workplace: Kindley (2002) asserts that "reality is *the* ultimate learning situation" (p.1). However, as reality can only be "guesstimated" using SBL, the term "*near*"-world, rather than real-world scenarios is used here. Here is a scenario example chosen because of its nearness to the real world. It was presented to a group of students aspiring to be health professionals:

> A male patient has been admitted to Ward 9 during the night. He speaks little if any English, refuses to be physically examined, and seems to be complaining about his throat. His tongue is covered in black fur and he has vomited twice. What are the underlying problems here? Why?

The scenario is designed to engage aspiring health professionals in a problem-based learning format where there is no clear singular problem inviting one simple solution. Establishing the nature of the problem(s) or issue itself is a first priority: Is this scenario a predominantly cultural issue? A simple matter of diagnosing the symptoms? These questions and others will drive the pursuit of the problem, and ultimately students will arrive at one or many solutions.

Within the scenario learning process, students will generate tentative hypotheses about the problem(s) along with ways to help the patient through exercising their emerging role. The process involves identifying what they know already about the problem/patient, determining what they need to know to move forward, and finding the ways by which they will pursue and integrate subsequent this missing knowledge. Students often work in teams and present their findings to the class who constitute a collegial audience. Participants and audience then evaluate and reflect on the process from a range of personal/professional perspectives.

There is a clear overlap between problem-based learning *per se* and problem-based scenarios. Scenarios can add to the realism of potentially abstract problems. The patient's problem(s) in Ward 9 might appear abstract if delivered to students as a simple set of observable facts. This detachment might well continue up to the point where, in their role as intending health professionals, they have to deal with the patient's realistic circumstances either individually or as part of a healthcare team. The patient may be "real," played by an actor or presented virtually (Henderson, 2010).

The term "You Are... the doctor, nurse etc." demands commitment particularly when the scenario circumstances appear real and certain tasks have to be identified/carried out if the simulated patient is to survive. The more real the patient appears to be, the more committed students will be in their response to this patient's needs (Henderson, 2010).

Not all scenarios are problem-based. Some simply require students to demonstrate what they know already by way of reproducing set procedures and facts, (skills-based scenarios). Students may explore concerns underpinning the discipline/profession (issues-based scenarios) and/or deliberate on past/future events supported by evidence (speculative-based scenarios). One or more scenario options may be combined to map and deliver a rich set of simulated professional experiences for future graduates. (See Errington 2010 for further discussion of scenario options.).

Scenarios may be delivered synchronously via brief or lengthy descriptors supported by quasi-professional documentation, e.g., fictitious medical records, law briefs, school reports, case notes. Wikis, sequential Powerpoint slides, audio files, clips on You Tube, (Eland et al. 2010), interactive web pages (Sorin, 2010), and email scenario descriptors may be explored face-to-face and/or asynchronously online. Digitized video incorporating subject and context (Eland et al. 2010; Fleischmann and Daniel, 2010), "real" interviews, online role-play (Davenport and Baron, 2010), and interactive case studies (Nickson, 2010) may also contribute greatly to the realism of the context, problem, issue, or speculation under scrutiny.

Eland et al. (2010) further point out that when scenario materials are embedded into the curriculum, they may provide enormous value and support in the development of graduate attributes, enabling students to explore professionally-oriented issues not readily accessible in conventional lectures and tutorials. (See http://www.bcu.ac.uk/futureproof for examples of these resources).

Why Some Educators Use Near-World Scenarios

Many of the reasons why educators use scenario-based learning to prepare their graduates have been alluded to already. However, here are some more reasons why university teachers use SBL to prepare their graduates for the professions; they form the basis for the creation and articulation of learning goals.

To Deliver Substantive Subject Content

Scenarios are commonly used to deliver substantive subject content. Clearly scenarios will not be employed if discipline content is not facilitated. However, in practice, scenarios are best used for having students explore, rather than simply replicate, the repositories of knowledge belonging to the discipline. "Content" will incorporate key themes, specific issues, competencies, and professional concepts idiosyncratic to the profession. Scenario learning can fail if and when the amount of subject matter, albeit "useful," overwhelms the scenario, and subsequently the student, with too much detail.

To Help Students Develop Their Professional Identity

The dual concept of student as both learner and would-be professional is an important one: connecting both are notions of "personal and professional identity." The literature reveals that scenarios are used variously in contributing to the formation of professional identities: business managers, teachers, nurses, doctors, fire-fighters, surgeons, veterinary practitioners, lawyers, and many others.

Van der Heijden (2002) states that "the significance of scenario thinking lies in its ability to overcome thinking limitations by developing multiple futures" (p.2). It is crucial that aspiring professionals are able to envision and explore alternative futures – to develop the kind of flexibility needed to tackle events and issues from a professional/ multi- perspective. Students enter a scenario, assume appropriate roles and perspectives, and take up similar challenges to those present in the professional workplace. Participation in this process necessarily constitutes identity construction, not only in terms of who these aspiring students are in developing as a lawyer or nurse, but also in respect of what kind of lawyer or nurse they are aspiring to be. Scenarios further allow a questioning of "identity" (roles, responsibilities, assumptions), where students are afforded opportunities to challenge conventional wisdom, historic ways of thinking and operating, and long held assumptions about important issues (Fahey and Randall, 1998, p.5).

Scenarios can facilitate other significant aspects of identity formation: in particular, a proactive deployment in learning and knowledge construction, involving a growing ability for students to interact with all kinds of situations and people within the quasi-professional setting. Scenarios provide opportunities for the formation and integration of personal with professional identity as exemplified in nursing (Miller et al, 2003) and social policy (Murray 2003;2009), among other examples.

To Achieve Graduate Attributes for Students and Employers

The scenario-based learning process can potentially incorporate many of the graduate attributes made explicit in the mission statements of institutions across Australia and elsewhere, namely: communication skills, gain of a global perspective, competence in information literacy, lifelong learning, problem-solving, social responsibility, and teamwork. Specific scenarios may be designed to embed particular graduate attributes. For example, law students experience communications skills/set procedures required in courtroom settings (Holm, 2010); work as a team to deal with a case that is not clear cut (teamwork); explore/debate court rulings regarding euthanasia (aspects of social/individual responsibility); and/or deliberate on possible changes in international law (global perspectives).

To Introduce Students to the Culture of the Workplace

Some teachers use scenarios to introduce students to the professions with attendant values, membership, etiquette, language, expectations, and notions of collective identity. Here beliefs, possibly different from one's own, may be encountered/ transacted within

scenarios, along with 'appropriate' (ethical) attitudes and behavior. Lave and Wenger (1991) note that "being able to speak the vocabulary and tell the stories of a culture of practice is fundamental to learning" (quoted in Herrington and Oliver, 1995, p.6). Scenarios can provide exploratory snapshots of the culture, partial "stories" of the culture's past, present, and possible future. Members of the culture constitute "communities of practice" (Orey and Nelson, 1994) in which students acquaint themselves with the cultural norms and practices of the profession in order to survive and prosper. As Naidu (2010) points out, scenarios may provide the basis on which the knowledge and procedures of the professional culture are acquired (Naidu, 2010).

To Promote Situated, 'Authentic' Work-Based Learning

Naidu (2010) adds that scenario-based learning is a practical expression of situated learning which is based on the fundamental assumption that knowledge cannot be known and fully understood independent of its context. The emergent, scenario-based learning, "occurs as a component of authentic activities that are common to the community of practice in which the learner is involved" (Orey and Nelson, 1994, p.5). Students are encouraged to behave, make decisions, communicate, and draw conclusions in ways close to those found in the workplace. This process represents a shift in emphasis from the simple transmission of disciplinary knowledge to a focus on the experience of learners within authentic learning contexts (Brown, Collins and Duguid, 1989; Naidu 2010).

Brown, Collins and Duguid (1989) and Lave and Wenger (1991) point out that contextual learning is necessarily acquired within an authentic context in pursuit of authentic tasks. Such tasks can be motivating if students value exploring scenarios that approximate professional, near-world contexts (Woo, Herrington, Agostinho and Reeves, 2007). Authentic learning is more likely to occur when it replicates the kinds of social organizations/groupings present within the setting: For example, students as would-be managers collaborate on a project where team spirit is highly valued and sought after by employers. The direct relation to the real world necessitates that scenarios must not only be authentic in replicating aspects of the professional setting, but also robust and relevant (Brock 2003).

Brown, Collins and Duguid (1989) add that learner assessment becomes authentic also when it takes the form of ordinary practice in the culture so that students engage in those kinds of routine assessment practices found in the professional setting. For example, law students may be assessed on their ability to write a coherent brief, medical students to write a report, or disaster education students to prepare a risk management action plan to deal with a specific crisis.

Authentic forms of assessment need conceptualizing to encourage and sustain students' critical thinking. Some university teachers happily promote authentic learning practice but falter when insisting on using standard "university assessment," e.g., examinations, essays, written assignments, instead of using authentic, contextualized assessment.

Degrees of authenticity and relevance perceived within the scenario may well depend on students' perceptions of the teacher's "professional" currency and his or her familiarity with the professional culture. In response to this concern for "currency," many higher education institutions engage in partnerships, seeking professional input on university courses from members of professional bodies/registration groups whose members currently practice within the local and/or national community.

To Have Students Practice Professional Teamwork

Lave and Wenger (1991) state that if learning is to be successful it needs more than social interaction; it necessitates meaningful collaboration, the kind of vital team-based work required in most professions. Lamos and Parrish (1999) affirm that successful scenario-based learning operates within positive social frameworks so that meaningful (task/goal-driven) collaborations become possible. For teams to work successfully, it is important that teachers and students maintain an atmosphere conducive to learning: one in which students do not feel threatened or exposed and feel able to proffer alternative opinions and solutions (Errington 2005).

To Deliver "Realism" as per the Professional Workplace

Some educators employ scenarios to generate realism by replicating professional contexts as closely as possible. By pursuing problems in a realistic way, based on "genuine" issues (ones where outcomes have not been predetermined) and/or by speculating on human events, scenarios can bring a breath of life into the curriculum. Students have to think on their feet; there is no set script, and dialogue can be unpredictable. Students may take one or more stands on an issue, be required to formulate an opinion, and through participation, recognize vested interests surrounding issues particularly their own.

To Provide Cognitive Motivation

Miller (1980) and Parkin (1998) assert that scenarios contain similar ingredients to good stories in that they incorporate characters (roles/ perspectives), an element of conflict (e.g. a problem to be solved), and a resolution (achievement of learning outcomes). However, unlike stories, scenarios are usually presented

"incomplete." These stories only become 'whole' when students engage with them. Their incompleteness can be cognitively motivating or threatening (Miller, Smailes, Stark, Street and Watson. 2003, p.107) as students grapple with ill-defined problems and "*find* as well as *solve* problems" (Herrington and Oliver, 1995, p.4).

To Facilitate Multiple Perspectives on One or More Issues

Teachers also employ scenarios to have students explore multiple perspectives on one or more issues. Role perspectives can reveal vested interests and render deep level learning through a need to understand and empathize with a range of human agencies. Students often have to defend and justify their positioning on issues, ideally integrating personal and professional role-taking perspectives. Feelings as well as thoughts may be called into play here (Pernice, 2003).

How Scenario Success Might Be Optimized

Having identified some significant characteristics of near-world scenarios and noted why some educators use them to prepare their graduates, the final task is to outline ways by which their use might be optimized if desired results are to be achieved.

Learning through scenario engagement might be maximized by teachers: (i) positioning themselves in specific ways to achieve particular learning intentions; (ii) adopting a Brechtian approach to teaching and learning; (iii) exploiting the dramatic qualities of scenarios; (iv) creating appropriate distance between students and scenario; and (v) by crafting the scenario descriptor to meet specific graduate needs.

By Teachers Positioning Themselves in Specific Ways

There is little in the SBL literature about the positions teachers might adopt within a scenario learning process and how their respective stance might optimize or minimize student learning. What kinds of positions might teachers adopt to optimize learning? Here are three possible positions:

First as *participant only* - the teacher adopts a role within the scenario in order to observe and guide the action from within whether using discussion, debate or role-play to scaffold the learning. For example, by assuming the role of project manager with management students, the teacher chairs a meeting where he or she encourages students to contribute to the decision-making process of the company in order to ensure its survival. Within this teacher-in-role stance, the teacher may act as devil's advocate or challenger to some of the assumptions/ decisions made by students.

Second, as an *observer-mentor* - the teacher monitors student interaction/investigation from the "outside," and he or she notes progress and gives feedback to students as the exploration of the scenarios unfold. The role of the teacher is to observe, provide external feedback when needed, move the scenario onward in a timely fashion, and add new information if and when required.

A third position is that of *participant-observer* - the teacher assumes and then surrenders a role within the scenario when and where necessary. For example, the teacher hands over the chairing of the meeting to his/her business students, and then "departs." In reality, the teacher continues to observe the meeting from the sidelines and provides feedback later to the students regarding their part in the meeting, (Errington 2005).

Adopting a Brechtian Approach to Teaching and Learning

Some proponents of scenario-based learning approaches would have students "suspend their disbelief" in the quasi-reality of the scenario, through a process of "immersion" (Herrington and Oliver, 1995). Other authors favor a more Brechtian approach where the participatory student audience is encouraged by the teacher to detach themselves from scenario events by engaging in critical reflection at appropriate moments of the scenario process. By so doing, students as aspiring professionals are likely to "benefit from knowing how they are shaped by, and come to shape, the social construction of the drama (scenario) itself" (Errington 1992). Thus students' current understandings of the professional workplace, and their prospective place within it, are revealed and opened to scrutiny.

Brecht states that, "when something seems the most obvious thing in the world, it means that any attempt to understand the world has been given up" (Willett, 1964, p.71, quoted in Errington, 1992, p.43). Critical reflection facilitates such deliberation. Students will gain from an increased knowledge of how the profession works (the practical) and why it works as it does (the socio-political).

Exploring the Dramatic Dramatic Qualities of Scenarios

For scenarios to appear "real," they must necessarily appeal to the "dramatic imagination" (Courtney, 1980). This is no contradiction, for without the imaginative element scenarios are likely to be stilted, simplistic, and appearing fixed in time and space. However, through the manipulation of scenario action, storyline, journey, plot, conflict,

climax, and resolution, the circumstances in which would-be professionals find themselves can appear more real and be explored in a similarly realistic manner. Without human actors, or sufficient "life," students are likely to become bored and/or treat the scenario as irrelevant compared to the real, dynamic world.

Scenarios contain two important dramatic qualities: time and space: In respect of time, teachers may focus students on the past, present or future. Alternatively, they can have students travel in time. They are used to envision how things came to be as they are (e.g. forensic science, scientific speculation present to past), how things are now (and why), and how those same things might evolve in future, e.g., market speculation, present to future. It is also possible to move from one time zone to another.

The notion of "space" may refer to a particular location. Locations can be changed in the wink of an eye – from the court brief in prison, to committee room, to the courtroom, and all within minutes. Similarly, hard to reach locations (geographically isolated) may also be simulated as in the re-creation of potential/actual disaster sites (Aitken, 2010).

Creating Appropriate Distance Between Students and the Scenario

The teacher's use of language can determine the psychological distance maintained between student and scenario. Students are positioned, near to, or far from, the scenario by the teacher's choice of words. Far positioning is achieved when teachers employ future or past-conditional tenses: "What would you do if so and so happens?" or "What might you have done if …?" Consideration of the scenario is likely to be at a hypothetical level, demanding little emotional/cognitive commitment on the part of students.

Near positioning is achieved when the teacher employs the present tense, as in the following example with pre-service teachers:

> You've been appointed to your first full time teaching job at Bailey State School. You are about to enter your new classroom for the first time... How are you feeling? What can you see? What are you doing? Why?

By using the present tense, the distance between pre-service teacher and classroom context is lessened, and possibly commitment will be heightened. In the above example, this is as close as students are likely to get to the shared situation without actually stepping foot in the classroom.

By Crafting the Scenario Descriptor and its Delivery

Scenarios descriptors are often expressed as a set of circumstances. These may be based on real life experiences, stem from an imagined situation, or both. The scenario descriptor may center on an individual's role within the profession, on a process, on a problem, and/or on an issue. Scenarios may flow across disciplinary boundaries and serve to highlight the complexity of a given situation.

Delivered well, scenarios can help students achieve a sense of "being there." It is reasonable to assume that the more quasi-professional events students experience and (hopefully) enjoy, the more flexible they are likely to be in adjusting to the real demands of their chosen profession.

The crafting process involves the selection of appropriate roles/characters able to deliver the learning points. Added to this, the construction of the scenario descriptor, its plot, its perceived authenticity (when benchmarked against the real world), opportunities for decision-making, and the selection of well chosen (not stereotypical) characters, are all essential ingredients for optimizing scenario learning success. These and other important elements mentioned earlier combine to encourage students as aspiring professionals to "be there" in the scenario. Once there, the important work of developing students as professionals may begin.

Conclusion

This paper promotes the idea that near-world scenarios, delivered and explored with appropriate support, can provide an excellent vehicle for assisting students, as intending professionals, to acquire the kinds of contextual knowledge that employers welcome in the professional workplace. One big advantage of SBL as a viable educational strategy for preparing graduates is its resemblance to professional practice (Naidu 2010), and its subsequent potential in providing rich practical experience beyond the conventional lecture or tutorial.

The paper concludes that the mission to harness SBL in the service of graduate preparation is possible provided that the scenario-based learning has a clearly delineated pedagogical context and an informed teacher intent on preparing graduates for the professions. The learning process is likely to be optimized for students when the role of the teacher is made explicit; when students are encouraged to see the scenario from the "outside" and, by so doing, come to understand better their role in the social construction of professional identity.

Scenarios possess certain inherent qualities that can be harnessed to motivate students in specific ways. For example, the teacher as an implicit director in the scenario learning process, holds the power to adjust the

distance between learner and scenario via an appropriate choice of scenario descriptors and the language used in their delivery.

Overall, this paper has advanced a number of conceptual, cultural, personal, and sociological factors that make scenario-based learning a useful addition to the toolkit used to prepare students as professionals.

Finally, Van der Heijden (2002) reminds us that "People are natural scenario planners; it is how we make sense of the world and how we decide upon which source of action to take in everyday life" (p.117).

Although scenario planning is hardly new, how teachers plan, deliver, and evaluate its use impacts enormously on their ability to achieve the key mission of preparing graduates for the professions.

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Student-Centered Learning in Higher Education

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In her book, *Learner-Centered Teaching*, Maryellen Weimer contrasts the practices of teacher-centered college teaching and student-centered college teaching in terms of (1) the balance of power in the classroom, (2) the function of the course content, (3) the role of the teacher versus the role of the student, (4) the responsibility of learning, (5) the purpose and processes of evaluation. She then gives some suggestions on how to implement the learner-centered approach. Using Weimer's five specifications, it has been possible to identify from the pedagogical literature several examples where college teachers are seeking to move toward more student-centered classrooms. This essay reports on innovations used by teachers across the academic and professional spectrum, as well as on their evaluations of their successes.

This essay presents some classroom innovations carried out by various college instructors using the context of Maryellen Weimer's *Learner-Centered Teaching* (2002.) The objective of Weimer's book was to show how the principles discussed in Stephen Brookfield's *Becoming a Critically Reflective Teacher* (1995) can be applied in actual classroom settings. Weimer's working thesis is that classrooms at the college/university level are extremely instructor-centered and that this situation works against students becoming successful, mature learners. She says that many instructors recognize this and try to make changes in the direction of more student-centeredness, even though their level of awareness of the problem varies from those who know what the specific problem areas are to those who simply have a sense that all is not right in the educational process. Weimer identifies five areas where the teacher-centeredness of the classroom is clearly seen: the balance of power, the function of content, the role of the teacher, the responsibility of learning, and the purpose and processes of evaluation. For each area she outlines the evidence and describes examples of alternative approaches for creating student-centered classrooms. Although in the literature or in usage the concept is not always clearly used with consistent meaning (Paris and Combs, 2006), the common concern is to adjust teaching activities in ways that can enhance student learning. There is growing interest in student-centered learning in higher education, and many universities provide on-line resources for their professors at their websites. Weimer's thesis that moving toward learner-centered teaching will lead to greater success for students and increased job satisfaction for teachers is supported in the pedagogical literature: there is recognition that the affective and cognitive domains interact to determine classroom effectiveness. That several college teachers are moving in the direction of learner-centered teaching is evidenced from the examples described in this essay.

The Balance of Power

Weimer (2002) makes the observation, supported by experiences from her own classes, that for the most part decisions about the course are made by the instructor and that this is exactly what students want and expect. She uses the course outline as an example, asking rhetorical questions about who determines the content, the schedule, the conditions for learning, the attendance policies, and the evaluation process. She states that the very language used to communicate this information is in the form of heavy-handed directives which make clear that the teacher is in charge. She describes the students in today's colleges and universities as anxious and tentative rather than empowered, confident and self-motivated, and she recommends that professors begin sharing power with students from the start by, for example, providing them with a list of assignments from which they choose a specified number that they will do.

Tyma's (2009) experience teaching a media literacy class aptly illustrates the shifting of the decision-making in a class to empower the students. On the first day of classes when he posed the question of what they wanted out of the course he was met with stares from the five incredulous students. He was determined that they would be actively involved in the creation of the course, even as he carried out his responsibilities to the university as course manager and evaluator of student achievement. Their first assignment was to return the next class prepared to share ideas on how the class would proceed. At the following class meeting he presented three options, and after discussion one was voted for adoption. One student dropped the course before the next class, and still another before the second week of the semester, and so the three remaining students set about designing the course. The ideas did originate with the instructor, and it was he who identified an external resource person, but by inviting their input he involved them in deciding how the course would be conducted: projects

which would encapsulate the course content and fulfill the course objectives, the format and timetable for course activities, an electronic delivery medium for sharing work and communicating with each other, and the assessment activities and evaluation criteria. It was decided that the students' roles would be primary as project experts while Tyma's would be the advisor for the project, even as he retained ultimate responsibility for monitoring the students and guiding them toward success in meeting the objectives of the course. Thus, while shifting a great deal of power over to the students, Tyma reserved enough to guarantee the integrity of the course.

Maintaining a "subordinate" role in which he functioned as "catalyst," advisor, or facilitator and letting the students be in charge was a challenge to Tyma, a novice college instructor, especially as the students sometimes seemed anxious to cede their power to him and let him make decisions. This is also a challenge to many experienced educators who, according to Estes (2004) and Liu et al. (2006), although claiming to value student-centered learning, were inconsistent in their practices. As Tyma's students carried out their assigned roles many desirable outcomes, which would not have been achieved with the teacher maintaining the traditional position of power, were achieved: each student gained experience functioning both as liaison and as leader; the class took the initiative in suggesting adjustments when it was felt necessary; and they successfully completed a project which benefited a community group.

The Function of Content

The need to "cover" the content of the course has led, according to Weimer, to a neglect of ensuring that the course objectives are being met. It has also led to erroneously equating a good course with a rigorous course, rather than a course in which students learn. In consequence, when faced with an unmanageable amount of course content, students resort to memorization rather than conceptualization, using a "binge and purge" approach to examinations. In such an environment the successful student is the one who has mastered the ability to reproduce information required by the teacher, too often at the lower levels of knowledge. Weimer (2002) appeals to college instructors to "use" course content, not just as an end in itself, but as a means of helping students learn how to learn. The skills to be developed include study skills, time management, the ability to express oneself orally and in writing, and computational skills. She emphasizes that the guidance of the professor is needed to help students use the course concepts to acquire skills of critical thinking and problem-solving. The slower pace required for active-learning strategies will allow for constructive interaction with the subject matter, producing students who are more mature and self-regulating learners with sophisticated learning skills. The result will be classrooms filled with enthusiastic students and teaching faculty who experience a high degree of job satisfaction.

Brown (2008) describes two student-centered learning models in music education: Comprehensive Musicianship through Performance (CMP) in which, after choosing a piece to be learned, the student investigates everything there is to know the piece, adding to the knowledge of both students and teachers; in another, Arts PROPEL, students are guided step by step toward higher-level learning as they interact metacognitively with the course content. In a course which delivered content both face-to-face and on-line, Cornelius & Gordon (2008) found that student-centered learning was facilitated by flexibility in content delivery and study strategies, and individual student learning needs were accommodated. Teachers who wish to incorporate some web-based learning activities into their courses have access to several commercial course management systems (Deroma & Nida, 2004). In today's society, the implications of globalization, for the United States and world-wide, require life-long learners who are flexible problem solvers and who can select, organize, and use information appropriately in new situations (Pinto & Sales, 2008). Walker (2009) credited a structured case study that required undergraduate students to research and analyze contemporary policy issues over an extended time with helping them meet the course objectives of not only learning policy theory but also developing the skills needed to successfully analyze and apply policy theory. The goal of all these innovations is to produce "self-sufficient, independent, creative thinkers who appreciate and value the subject" (Brown, 2008).

The Role of the Teacher

Students are the center of the educational enterprise, and their cognitive and affective learning experiences should guide all decisions as to what is done and how. Most of the learning activities for the class are traditionally carried out by the instructor: choosing and organizing the content, interpreting and applying the concepts, and evaluating student learning, while the students' efforts are focused on recording the information. Weimer (2002) makes the point that in the student-centered classroom the roles of teacher and student of necessity change, so that the teacher changes from the "sage on the stage" to the "guide on the side" who views the students not as empty vessels to be filled with knowledge but as seekers to be guided along their intellectual developmental journey. Other metaphors she adopts describe the teacher as midwife, coach, and

maestro. Working against this shift in role are the expectations of the students, who rely on the teacher to make all the decisions, as well as the pedagogical literature which, she says, is preoccupied with teaching over learning, almost exclusively focusing attention on what the teacher should do. Weimer states unequivocally that students learn by doing, and so involving them in the learning activities promotes learning. For example, students become part of the presentation and learn from each other when they respond to instructor invitation to give examples, applications, and summaries, and they experience learning when they take part in problem-solving sessions. In-class activities which involve students provide faculty with opportunities to help guide them in clarifying their understanding and in assimilating the subject matter in meaningful ways.

Baxter and Gray (2001) concur that for effective learning it is desirable to move toward a model in which students are actively engaged in the learning process. No longer is the student expected to be a passive absorber of information; instead, the teacher acts as a facilitator and does not need to be an expert in the particular content (Tärnvik, 2007). Examples reported in the literature span a wide variety of disciplines, and they include peer-learning activities such as having students prepare and teach a five-minute lesson on grammar to their peers rather than simply engage in debates or read from provided material (Oldenburg, 2005). Remedial students were more successful in developing mathematical skills when taught by cooperative methods which involved peer interaction and relating the principles with other disciplines rather than by traditional teaching methods (Cantone, 2001). Student learning and conceptual understanding were significantly greater when a large upper-division biology class was made more interactive by introducing student participation and cooperative problem-solving into the lectures (Knight & Woods, 2005). Salter et al (2009) guided faculty in redesigning their course to give students and instructors new roles in which students would be more actively engaged and not just be lectured to by the instructors. In planning classroom activities, the focus was on identifying the tasks students needed to do in order to learn the material rather than on the tasks teachers needed to do in order to prepare the class presentation. The students engaged in dialogue, which had the potential to challenge beliefs and produce conceptual changes. Such a learner-centered approach was found to be especially effective when multicultural issues were examined (Mahendra et al., 2005) since the students were able to benefit from the wide variety of perspectives present. These approaches transformed the classrooms from teacher-centered to learner-centered.

The Responsibility for Learning

As Weimer (2002) points out, the responsibility for learning naturally shifts to the student in a learner-centered setting. Neither students nor teachers are adept at making this shift. However, the onus is on the faculty to redesign and conduct the course in a way that requires students to hold up their end of the educational contract. Faculty should follow through on consequences instead of making adjustments to accommodate students' failure to accomplish agreed-upon expectations of the course. She criticizes rules as external motivators which do not pique students' curiosity or create mature, responsible learners who are intellectually curious or motivated to delve deeper into the subject or related issues. She describes today's students as "unable to function without structure and imposed control" and having "little or no commitment to learning." Their concern is, overridingly, to get a good grade, and when this does not occur the blame is placed with the teacher. Accompanying this has been an increase in incivility toward both teacher and peers.

Learner-centered methods of content delivery allow students the opportunity to control their learning since they require students to take responsibility for their learning by being actively involved in the learning process rather than simply passively receiving information from a lecture (Slunt & Giancario, 2004). Kennedy (2009) found that after participation in a debate, positive rating of the experience as an instructional strategy increased from approximately 75% to about 85%, including among students who were initially reticent to participate; interestingly, both before and after the debate male students showed a stronger preference for debate over female students. In some cases, student-centered methods are incorporated into traditional delivery formats, for example concept checks which require chemistry students to prepare in advance and then get concept clarification in class (Slunt & Giancario, 2004) and problem-based learning (PBL) which, although not universally accepted (Tärnvik, 2007), aims to "align the contents and assessments of the subject with the student's learning needs" (Chung & Chow, 2004). Other methods which utilize technology include We!Design, educational software which gives students the opportunity to mature as learners by helping them to enhance familiar abilities like note-taking and then progress to higher cognitive levels such as analysis (Triantafyllakos et al., 2008) and Just-In-Time teaching (Novack, 1999-2006), an approach originally developed for undergraduate physics courses and which has been extended to a wide range of science and non-science disciplines, making it possible for the instructor to plan class presentations based on student responses to warm-up exercises done on-line. The flexible learning format of Cornelius &

Gordon (2008) blends on-line and face-to-face learning, giving students opportunity to determine their own time and place of learning. Instructors can also give students control over their learning in practical courses using a research-led learning (RLL) approach which allowed students in an undergraduate physiology practical course to develop investigative skills in stages by learning experimental design in the first semester and then learning in the second semester how to apply them to produce a publishable research paper (Kemm & Dantas, 2007). Perry et al (2005) found that students were most successful in completing college when they had high academic control and took appropriate actions to avoid failure.

The Purpose and Processes of Evaluation

A central concern of learner-centered teaching is learning, and so evaluation in the student-centered classroom is not just to generate grades but, more importantly, to promote learning (Weimer, 2002). This means that the processes used will also change. Course objectives and learning goals will be clearly stated, and students will be taught to assess their own work and that of their peers by asking critical questions in a constructive manner. They will be given many opportunities to practice the theoretical and practical skills they are expected to learn and perform. Strategies like these, Weimer (2002) insists, will diminish test anxiety and reduce the temptation to cheat.

It is an accepted pedagogical premise that the evaluation methods are determined by the objectives and practices employed, and the extent to which the course objectives are fulfilled should also be evaluated (Cornelius & Gordon, 2008). This includes the traditional evaluation of learning: Knight and Wood (2005) found that frequent in-class assessment successfully promoted and improved learning in a large upper-division developmental biology class; evaluation by Lu et al. (2007) of the use of wireless internet for student-centered learning indicated significant positive effects on pedagogical, technological, and cultural learning; Kemm and Dantas (2007) found that use of an audience response system and e-learning in a physiology practical course accommodated many learning styles and enhanced student interest and engagement, resulting in better performance on written reports and examinations. In evaluating a history class that used a student-centered learning approach, the problems encountered by both students and teachers were examined with a view to improving the course design (Brush & Saye, 2000). Chung & Chow (2004) report that although Chinese students studying in Britain found problem-based learning to be a more effective learning experience, they were uncomfortable with the idea of challenging the lecturers. Kain (2003) recommends that student attitudes toward, and readiness for, particular approaches should also be evaluated, and in general, learner-centered teaching approaches were found to produce positive results, such as increased student satisfaction (Kemm & Dantas, 2007) and motivation (Chung & Chow, 2004; Triantafyllakos et al., 2008). Field-based instruction was found to enrich students' understanding and facilitate retention in introductory as well as upper level textile courses (Kozar & Marcketti, 2008). Being involved in projects which benefited the community, such as establishing a pediatric outpatient clinic (Ibrahim, et al., 2006) or a speech and language therapy clinic (Baxter & Gray, 2001) enhanced the knowledge of medical students and therapists-in-training, respectively. The after-school media literacy program designed by Tyma's (2009) class filled a need identified by the off-campus community and provided intrinsic motivation for the students to create a satisfactory product.

A variety of tools are used to assess and evaluate different aspects of student-centered teaching and learning. For example, Turkish teacher candidates' teaching behaviors were evaluated using Learner-Centered Micro-Teaching (LCMT) (Kilic, 2010) and Turkish in-service teachers' instructional beliefs about student-centered education were evaluated using an inventory which measured educational objectives, content, teaching strategies, and instructional assessment (Isikoglu, 2009). To evaluate the effectiveness of teaching basic nursing skills in the learning laboratory using student-centered approaches, compared with traditional teaching methods, an experimental design with repeated measures, supplemented by qualitative and questionnaire data, was employed (Jeffries et al., 2002). Other instruments have been developed to assess student perceptions and satisfaction (Shu-Hui & Smith, 2008), some with associated validity and reliability levels (Crick & McCombs, 2006), and some discipline-specific, such as for English (Crick & McCombs, 2006), music (Brown, 2008), physics and chemistry (Grove & Bretz, 2007). Feedback from a variety of activities, which included in-class pair discussion, cooperative learning, computer-assisted instruction, guided inquiry and projects, was explicitly used to give chemistry students learning opportunities (Brooks et al., 2005). The findings in each case allowed for evaluation of its effectiveness.

Conclusion

A positive response to student concerns can result in a classroom that is even more student-centered (Chung & Chow, 2004). The preceding review of the pedagogical literature indicates that many college

teachers believe that a student-centered classroom provides a more effective learning environment and are making efforts toward this end. In these reports students tended to respond positively to the changes introduced, and the teachers considered themselves successful in their quest to create more learner-centered classrooms while achieving their course objectives. Maryellen Weimer (2002) acknowledges that making such a transition will meet with resistance from students, teachers, and administrators, and she includes a chapter on "Responding to Resistance."

It is the aim of this essay to inspire more college teachers to become student-centered in their teaching methods, and teachers who wish to put into practice the ideas elucidated by each of Weimer's criteria will find that the pedagogical literature is a rich body of helpful and practical resources.

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Overhauling Technical Handouts for Active Student Participation: A Model for Improving Lecture Efficiency and Increasing Attendance

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This instructional paper is intended to provide an alternative approach to developing lecture materials, including handouts and PowerPoint slides, successfully developed over several years. The principal objective is to aid in the bridging of traditional "chalk and talk" lecture approaches with more active learning techniques, especially in more technically-oriented disciplines that employ data or require carefully structured graphs or mathematical manipulation. Using several examples, the paper shows how scarce lecture time can be used more efficiently, thus freeing up students to focus on higher order cognitive issues. Such an approach lends itself to more active-centered techniques. It also improves the incentives for students to attend lectures. The approach is time consuming in its initial development, but arguably pays for itself over the long run.

Recently developed technologies of all kinds are making their way into the modern classroom. For example, document cameras have become more sophisticated and versatile than traditional overhead projectors, "smart" whiteboards allow for more spontaneous interaction with any sort of projected material, and the recording of lectures for remote viewing has become commonplace. Students communicate increasingly via online systems (e.g., Blackboard and the like), while audience response systems, such as "I>Clicker", allow even large numbers of students to provide instant feedback and answer questions in real time (see, e.g., Lucas, 2009; or Meedzan & Fisher, 2009). "SMART Podium" (formerly known as the "Sympodium") is a hardware and software system that allows the instructor to actually write over any material on a computer screen, such as a PowerPoint slide, using an electronic stylus or "interactive pen" (see, e.g., Strong & Kidney, 2004; Shafer, Simon & Liemer, 2003). Also, even though the practice is hardly widespread, computer algebra systems, such as *Maple* or *Mathematica*, are beginning to find their way into lectures (see, e.g., Raymond, Raymond & McCrickard, 2008).

While the utilization of these most recent technologies is growing in the classroom, they are hardly a panacea for all that ails traditional instruction. First, the true efficacy of these technologies on comprehension and learning are, as of yet, little studied. Second, regardless of the allure of the modern (Here is where this paper may be mistakenly characterized as "reactionary".); there will always be a place for traditional modes of delivery in the classroom. Indeed, some material will undoubtedly always require some version of "lecture-style" instruction, which is to say students attend lectures in which instructors *show* how some routine is performed, or *guide* the learning process. To suggest otherwise would seem to deny that teachers have anything to teach.

This view hardly rejects the usefulness of new delivery modes. In fact, the most productive approach is presumably one that sees these new modes as potentially complementary to traditional ones, or vice versa. One approach does not have to be the enemy of the other: the present author has productively incorporated a number of technological advancements into the classroom and enjoyed doing it. The departure point of this paper, simply put, suggests aspects of the "old" forms of instruction are not likely to disappear anytime soon (see, i.e., Becker, 1997, p. 1361). In fact, the overriding objective is to help make the "old technology" more effective and to bridge some gaps between the old and the new.

This paper focuses on a technique for improving the effectiveness with which a lecture can be delivered, as well as the effectiveness with which students might retain lecture material, particularly in the context of more technical matter. In addition to making lectures more efficient, the approach also increases the incentives for students to attend class *and* to participate. In other words, this approach integrates more active learning with aspects of the traditional lecture.

The proposed method is an improvement on an older mode of lecture delivery, that mode being lecture handout notes or downloadable PowerPoint slides that students print off and bring to lectures. The technique is applicable to both lecture handouts that are distributed by the instructor (and used in conjunction with overhead projectors), and to PowerPoint slides. The discussion will, however, tend to focus on lecture handouts rather than making constant and cumbersome references to both modalities throughout the paper. I will return to specific suggestions for PowerPoint later in the paper.

Active Learning

The very term "active learning" suggests effective learning is more than just "showing up" for a lecture.

To be engaged in active learning, "They must read, write, discuss, or be engaged in solving problems. Most important, to be actively involved, students must engage in such higher-order thinking tasks as analysis, synthesis, and evaluation. … [S]trategies promoting active learning [can therefore] be defined as instructional activities involving students in doing things and thinking about what they are doing" (Bonwell & Eison, 1991: 1). While it is not always clear exactly what is being measured when comparing active learning outcomes to traditional ones (Prince, 2004), there seems to be reasonably strong evidence that certain active learning techniques improve learning outcomes (see, e.g., McKeachie, Pintrich, Lin & Smith, 1986; Ruhl, Hughes & Schloss, 1987; Hake, 1998; Redish, Saul & Steinberg, 1997; Laws, Sokoloff & Thornton, 1999; Bransford, Brown & Cocking, 2000).

Following his review of the learning literature, Saunders (1998), for example, recommends standard lectures be augmented with rapid feedback. This latter point is consistent with a key finding in effective teaching: addressing student misconceptions early and often (Bransford et al., 2000). Other techniques that Saunders suggests improve the learning process include visual aids and exercises that emphasize interpretation and application over memorization.

In addition to bridging the gap between more traditional lectures and active learning, the current paper argues that the techniques proposed below are particularly effective across a number of the suggested measures, above. By its very nature, the proposed approach is visual, in the sense that it depends upon lecture handouts that are visually displayed via a projector, as per Saunders' suggestion (1998). But the approach also demands active student participation with this visual modality: students are highly unlikely to absorb this material by sitting passively. The approach is also designed to provide immediate feedback to students and therefore accomplish the goal of quickly mediating student misconceptions. This task is accomplished because of the increased clarity of the lecture material and because the process lends itself to active student engagement. Finally, one of the key aspects of the technique centers on freeing students' minds from tedious transcription of material, especially in demanding technical lectures, so they can use class time more effectively for higher-order thinking and contemplation in real time. The claim, concerning the effectiveness of the proposed techniques, is also consistent with Saunders' (1998) argument that students effectively absorb new material best when they are clear about learning expectations and when that material is linked to already-learned material.

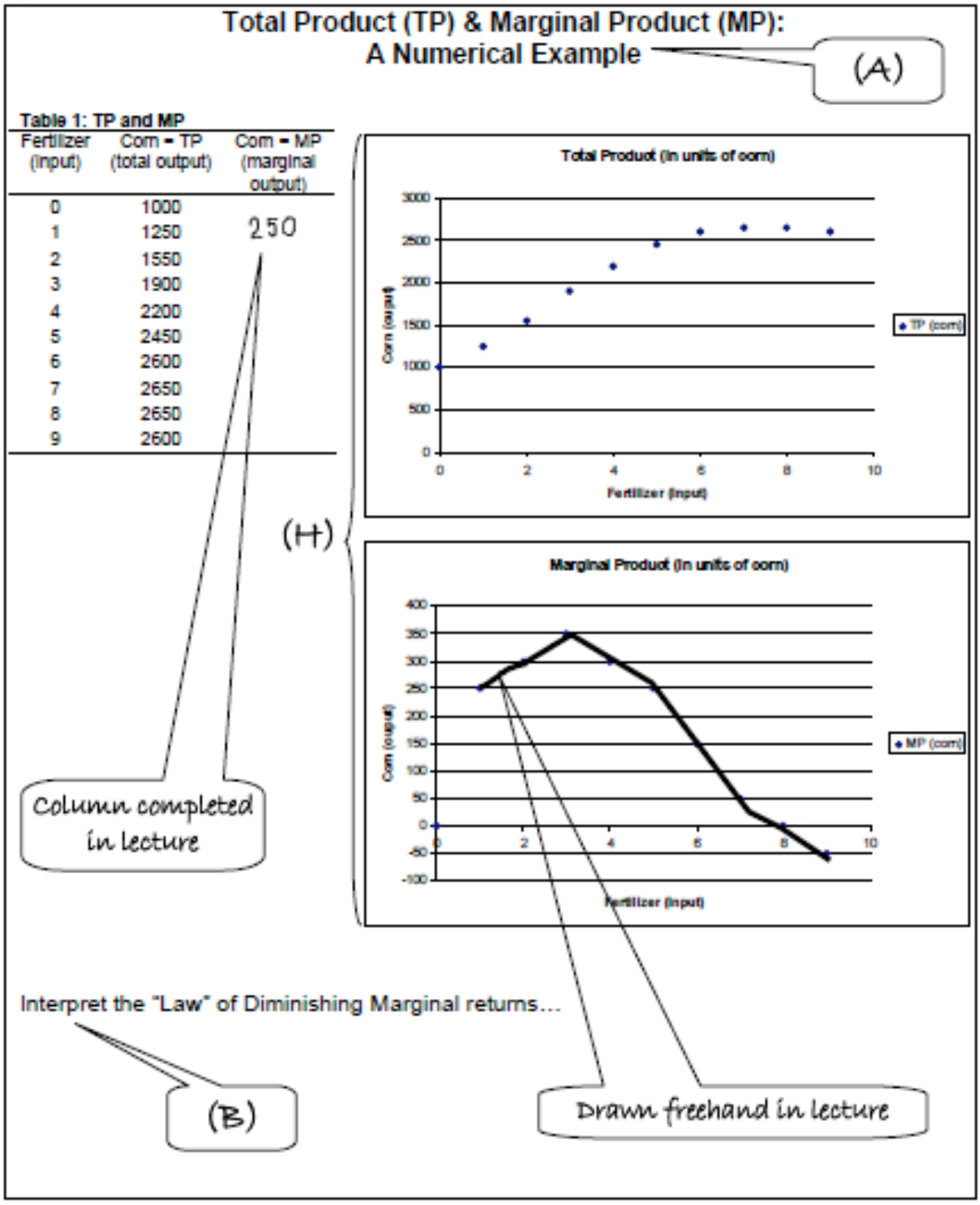
The Theme: Traditional Lecture Handouts

Lecture handouts are quite obviously useful for classroom instruction: they aid students' comprehension of visually or technically complicated material, whether it be graphs, tables, or formulae, and they can aid students' ability to organize lecture material. The problem with lecture notes (and PowerPoint slides), made available prior to lecture is that they can too easily become a *substitute* for the lecture itself (Cohn, Cohn & Bradley, 1995). This substitution means that any careful conceptual evolution throughout the lecture is largely futile because the details of the lecture are laid out for students to peruse. Such a lecture can be compared usefully to the presentation (conference or otherwise) in which audience members have a copy of the paper that the presenter simply reads aloud. Invariably, audience members glance across the paper at a quicker rate than the presenter can read it. After only a few minutes into the reading, the typical audience member knows how the presentation will both develop and conclude. Similarly, one hears student complaints that such and such instructor "just reads the handouts" or "just reads through the PowerPoints." Of course, this is not the worst of it: at least the complaining students are attending class. Lecture notes and PowerPoints used in this manner create precisely the wrong incentives for participation. Students have every reason to skip classes, because, as Cohn et al. (1995) have shown, traditional lecture notes are a perfectly good substitute for the lectures themselves.

The Variation

The simple (but not necessarily easy) variation on the lecture notes theme is one I have been developing for a number of years. I use lecture aids, but in a profoundly altered state from the ones commonly used. I take care to omit all of the most critical details that will be completed throughout the lecture itself. In other words, these handouts (or PowerPoint slides) offer the main contours of the lecture, thus assisting students in the organization of the material, both in real lecture time and after the lecture is long completed. However, these lecture notes do not give away any of the important conceptual solutions, developments, or surprises that might be employed to keep the lecture interesting. By explicitly not including many of the details of how a topic evolves, the material can be carefully developed by the instructor, step-by-step in real time. Such a process encourages student questions as the instructor physically, and mentally, works through concepts and problems (assuming spontaneous questions are allowed).

Figure 1
Data Table as Source for Graph



In many technical fields like economics, there can be a considerable amount of algebra, data, graphing and use of tables. Each of these tools can take significant time to transmit from instructor to student. Simply setting up the problem, or providing background data for the problem of focus, tends to absorb precious time. A simple example is the use of data – frequently listed in table form – that will be used to perform some specific function, or to provide material for graphing. Writing out the data itself is likely to be a completely superfluous task, in intellectual terms, and is therefore wasteful of both the instructor's time and students' time. The transcribing of such data by students, while not as "passive" as sitting in the classroom with arms folded, is hardly what comes to mind when we think of "active" participation or the development of higher order cognitive skills.

This situation provides an excellent illustration of the usefulness of handouts that include tables of the relevant data. The instructor spends no time dictating the data, and students spend no time writing out the data. Many graphs present the same issues. It can be very tedious and inefficient to set up every graph that might be used in an economic lecture from scratch, including the axes, units of measurement, and particularly scale, for example. Indeed, it is likely that some of the most important obstacles to students' comprehension of technical economic material is the difficulty of correctly organizing graphs and the like (Cohn & Cohn, 1994). Frequently, they set up their graphs and initial equations incorrectly from the start, which can lead to a cascade of confusion, not only in the lecture itself, but also when they return to the material later to study. Even when they do set up technical material correctly, it consumes valuable class time. In sum, attention to an array of niggling, non-critical, technical details consumes scarce time that is better spent on student-instructor communication or the development of more complex intellectual skills.

Several figures illustrate a number of the points discussed (see Figures 1 through 4). The handouts typically include major headings of the topics to be covered, and frequently include new terms and concepts, but usually without definitions (see points *A* and *B* in Figure 1). This gives the instructor the opportunity to develop the definitions as the concepts evolve throughout the lecture (see point *C* in Figure 2).

Consistent with the objective of reducing tedious transcription, it is also useful, on occasion, to provide lengthier definitions (see point *D* in Figure 2). When it comes to algebra and formulae, a list of variables and their definitions can be provided (see point *E* in Figure 3). Moreover, the provision of an initial equation assures not only that the problem is set up correctly with appropriate syntax, etc., but also that class attention is properly focused (see point *F* in Figure 3). Enough open space should be left on the page for the students to complete any solutions or problems that are worked through in real time (see point *G* in Figure 3).

When it comes to graphs specifically, providing at least the starting axes – and additional details as necessary – will allow the class to move immediately to the lecture point at hand (see point *H* in Figure 1 and the graphs in Figures 2 and 4). This permits the instructor to work through the solution using a duplicate overhead slide (or PowerPoint slide), which reproduces the same initial axes, etc., from the students' handout. If the class is examining the properties of a particular curve, such as the interpretation of its slope, or the graphical properties of some algebraic expression, it is able to move immediately to that objective (see point *I* in Figure 2). If there is a particular diagram that gets increasingly complicated, several versions of it can be provided in various states of development that, in each successive diagram, the instructor can concentrate on the specific nuance (in Figure 4, see the transition from panel 1's "Exchange in an Edgeworth Box" to panel 2's "Efficiency in Exchange"). This technique avoids the need to heap too much technical detail on any one graph, which can make such a graph nearly impossible for students to interpret later.

Back to PowerPoint

Coming back specifically to PowerPoint, its popularity is indisputable. Indeed, it has become uncommon to pass large lecture halls where PowerPoint is *not* being used. Many large publishers are including PowerPoint lecture slides as part of their instructor resources. They tend to be visually appealing and they certainly can cut down on the amount of time needed for lecture preparation.

The problem is their effectiveness is questionable. Ahmed (1998) conducted a study in which a lecture was delivered to two groups of students, one in which traditional overheads were used, the other in which a colorful PowerPoint presentation was used. Data analysis indicated little difference in test scores between the two groups of students. "The study suggests that technology is not a magic bullet, and what is most important in the classroom is a good teacher" (p. 5). Bartsche & Cobern (2003) challenge the idea that students prefer more technologically advanced modes of lecture delivery. Their study examined "expanded" PowerPoint presentations, which include not only text, but pictures, sounds, and text appearing in different ways. They found "there is no significant difference between the three groups," i.e., transparencies versus "basic" PowerPoint versus "expanded" PowerPoint, in how much students liked the lecture (p. 81). They conclude it is often "administrators [who] are pushing for instructors to use

Figure 2
The Organization of Concepts with Reference to a Graph

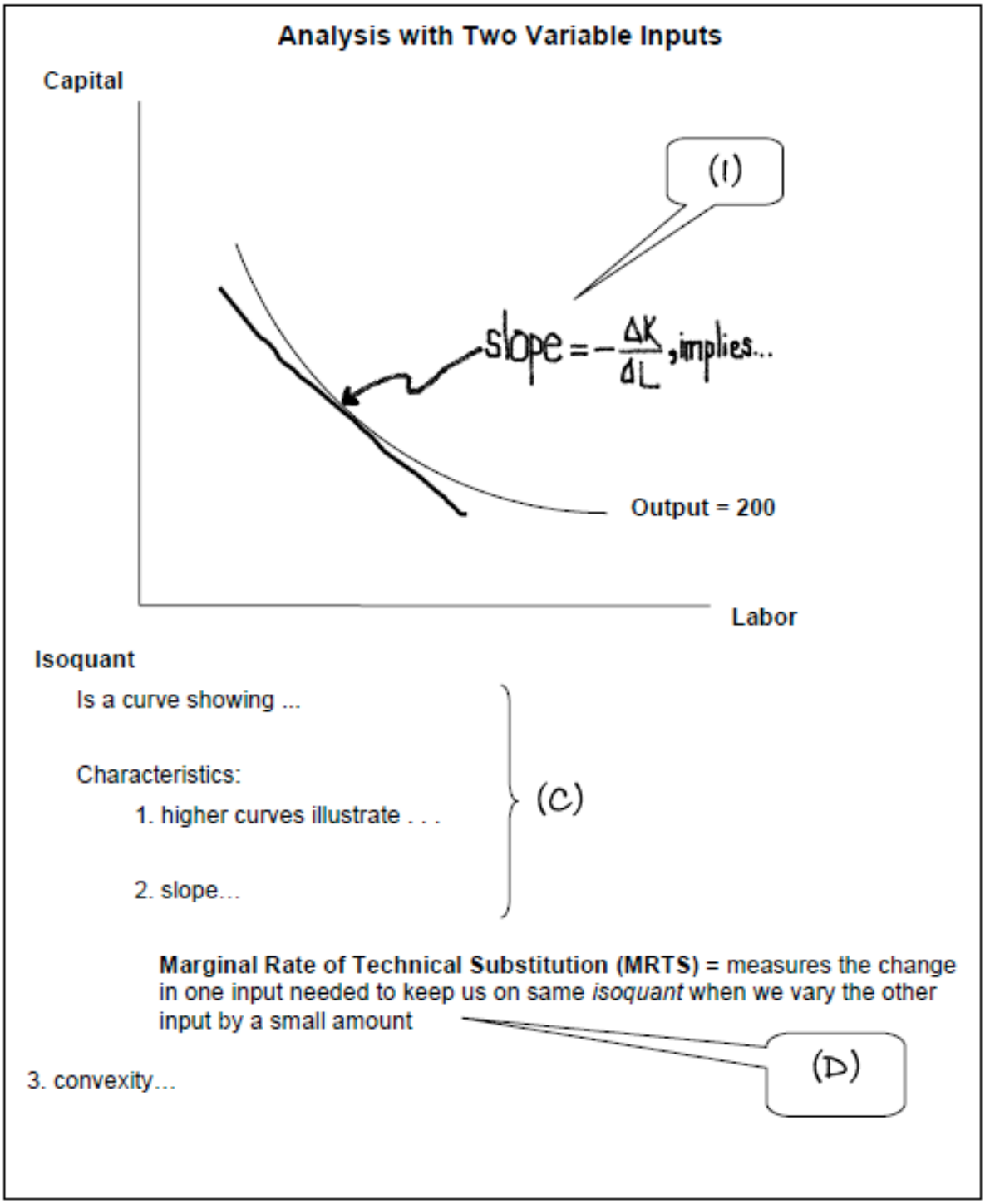


Figure 3
Starting Equation Listed with Variable Definitions

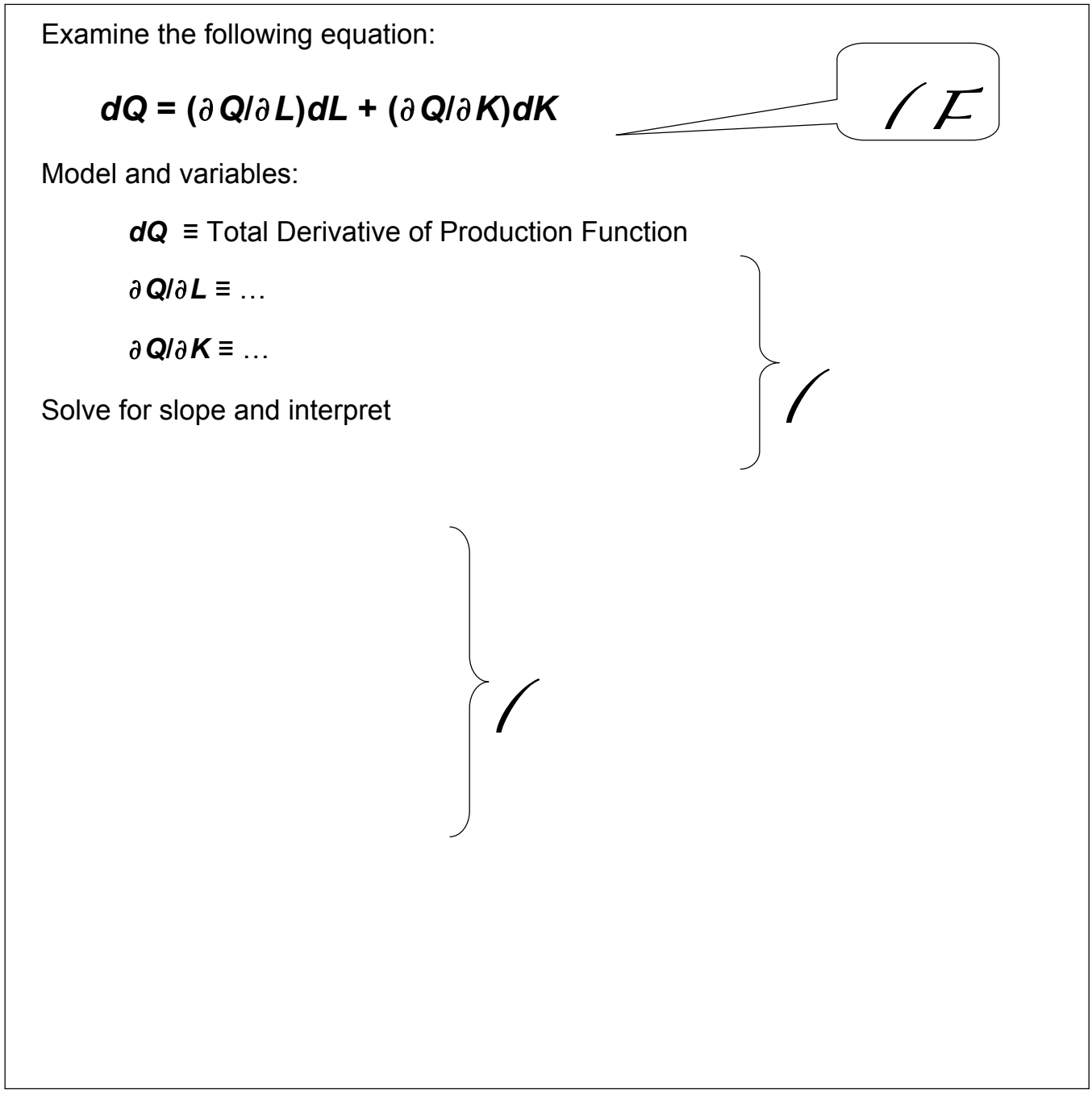
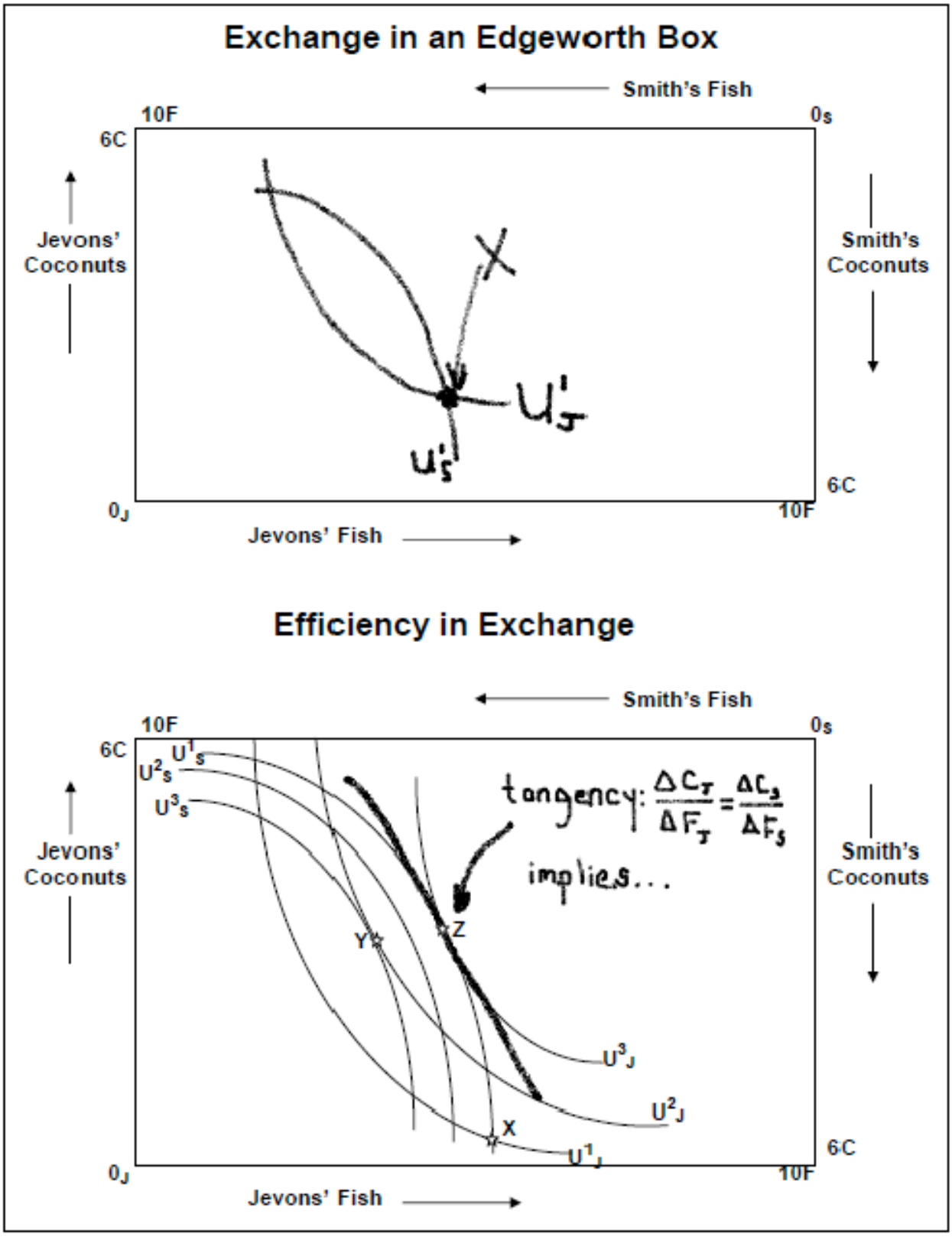


Figure 4


Exchange in an Edgeworth Box
Smith's Fish
10F
0S
6C
Jevons' Coconuts
Smith's Coconuts
X
U'J
U'S
0J
10F
6C
Jevons' Fish
Efficiency in Exchange
Smith's Fish
10F
0S
6C
U1S
U2S
U3S
tangency: ΔCJ/ΔFJ = ΔCS/ΔFS
implies...
Jevons' Coconuts
Smith's Coconuts
Y
Z
U3J
U2J
X
U1J
0J
10F
6C
Jevons' Fish

this kind of technology" (p. 78). Bartlett, Cheng & Strough (2000) found that student performance decreased when instructors switched from transparencies to PowerPoint.

The argument here is traditional PowerPoints have suffered from many of the same ills that have beset traditional lecture handouts. Moreover, the "canned" slides that come from the publishers tend to be "clunky": there is usually too much material per slide and an excessive number of slides per chapter. There are frequently small annoyances that can equate to large pedagogical issues, such as a lack of "click to appear" lines of text: as noted above, showing *all* the material on each slide at once is likely to have the audience reading well ahead of the instructor's pace, thus defeating any intention the instructor may have to methodically "develop" concepts. In the case of economics, PowerPoints are often not well paired to the technical development of the material, which is to say the slides often present already-completed graphs that are exact reproductions of those found in the textbook. In other cases, they provide the final algebraic solution to some problem without including any intermediate steps in obtaining the solution. Naturally, this precludes any "building up" of the material, piece-by-piece, in a way that allows students to focus on each step of the solution process. Again, the "active" part of the learning process is – due to the nature of such prepared slides – nearly impossible to foster in such a framework.

While there is some progress being made in this area, these slides are still not nearly as nuanced as they need to be for the appropriate pedagogical presentation of the material. In sum, PowerPoint poses all the same problems noted above: the instructor essentially reads the material, which leads to student passivity and boredom. There is, moreover, little reason to even attend lectures if the complete lecture slides are made available.

Fortunately, the approach to lecture handouts, suggested above, is equally applicable to PowerPoint. Using the same guiding principles, instructors can delete enormous amounts of material or hide the "punch line" in the students' downloadable version of the slides, only to have it appear in the overhead lecture version. Instructors should, of course, fix text to "appear on click," so the entire slide is not visible all at once. With some practice in PowerPoint tools and in Microsoft's drawing tools, it is also possible to pare down the initial presentation of graphs (i.e., the axes, etc.), in the student version, so the process of developing the graph can take place in real time along with the instructor. This way, the complexities of the graph are developed in the context of the lecture itself.

For algebraic solutions, it is often necessary to provide the initial problem set-up, as suggested earlier, and return to the whiteboard to work out the intermediate steps in detail. These can also be included in the overhead, i.e., instructor's version of the PowerPoint slides while leaving them out of the student handout versions, if they are not too onerous to reproduce electronically. However, simply clicking through lines of algebra in PowerPoint neglects something fundamental in technical topics: students often need to see, in detail, how someone more expert than they are works through the various nuances of particular problems. Indeed, instructors are forever telling students they need to "show their work." Students need to see instructors showing *their* work, thereby conveying the subtle but important point that *process* is critical to learning, not simply results. This real-time solving of mathematical problems (and other technical material), by its nature, begs students to ask questions about this or that step throughout the process. This approach can therefore bridge more traditional delivery systems with active learning, especially if the instructor constantly prompts students to answer questions along the way, such as, "Can you walk me through the next step in the process?" or "What would we do next, and why?"

And New Technology…

A quite useful technological advancement is the "SMART Podium," which, as noted above, allows the instructor to hand write over any material on a computer screen, such as a PowerPoint slide, using an interactive pen. The instructor is therefore able to provide the initial problem in, say, PowerPoint – exactly as suggested above in the context of handouts – *and* work through successive intermediate steps on the computer, by hand, in real time. All of the instructor's notation around the initial equation or graph is displayed on the projector for students to follow. The final result, which combines the original slide and the in-class handwriting, can then be saved to a file for later reference or distribution to students. In sum, PowerPoint can indeed be adapted to better fit the pedagogical demands of the classroom, but it may require a few more technical skills, especially in the case of presenting technical material.

The Benefits

As noted above, the point of the proposed approach is to improve the efficiency of scarce lecture time. Besides cutting down on menial transcription during the lecture itself, these notes actually maintain students' interest by providing them with the organization of a specific lecture, including the topics that will be covered; this gives them a "roadmap" for the lecture

and thus allows them to orient themselves at any point during the lecture without knowing the answers before the instructor has even gotten to the questions. In addition, the students end up with something akin to a neatly-organized workbook that is completed as the semester progresses. Such a workbook aids in their organization of the entire semester's material and, as a result, their studying. My own students have overwhelmingly appreciated the approach and have registered their satisfaction on teaching evaluations over a number of years and across several universities.

The second point of this approach is to reduce the incentive for students to skip class. A very important feature of these lecture handouts is they are useless without coming to class. Because upwards of 80% or 90% of the material is presented *in the classroom*, obtaining the handouts cannot serve as a substitute for the lecture itself. Indeed, as Becker (1997) suggests, "Note taking and graph drawing are stepping stones to activities that require student involvement. If nothing else, they forced students to attend class, assuming class notes are not available elsewhere" (1997, 1362). The point is in economics classes, and presumably in many other technically-oriented ones, the typical student is unlikely to get the experience and instruction necessary in activities like graph drawing on their own by simply reading the book (or obtaining traditional all-inclusive lecture handouts for that matter). The proposed approach to lecture handouts encourages students to attend class by making the classroom instruction of these topics easier, more accurate, and potentially more enjoyable.

Third, this method implicates students as active participants in the lecture. The nature of these handouts compels them to take part in the delivery of the learning unit. By providing a roadmap for the lecture, the approach allows students to anticipate the direction of the topic without being handed the final solutions or pedagogical punch lines. Unlike the traditional lecture, their ability to anticipate developments encourages them to participate more actively in the process of delivering the lecture – at a minimum, intellectually. Naturally, the instructor can incorporate an array of other active learning strategies, such as a dialogue method or a problem-based method, to further encourage this participation. Such a process helps to avoid the problem, in many traditional settings, that students are necessarily one step (or more) *behind* the instructor at all times. Instead, an aspect of the topic is delivered and, with the aid of these carefully targeted handouts, students apply the various pieces of knowledge to arrive at the next step in the conclusion, which the handout prompts. The process is carefully choreographed so students can feel as though they are a step ahead of the instructor instead of waiting passively for the next piece of information to be handed to them. The method is obviously more demanding of students since, it forces them to stay with the instructor as he or she progress through the material, but this is precisely what active learning requires.

Finally, this approach forces the instructor to spend more time, at least initially, carefully organizing lectures. This requirement is undoubtedly obvious, but it is worth articulating the fact that it demands close attention to the material that will be displayed for students versus the material that will be left for the classroom process. As a result, these handouts produce highly structured outlines for class meetings, which, incidentally, conform to one of the principal characteristics of active learning: that students absorb new material best when learning expectations are clear and when that material is linked to previously-covered material (Saunders, 1998).

In wrapping up this section, it is worth noting that while this paper has referred to these lecture aids as "handouts," it is almost wholly unnecessary to physically hand out anything anymore. Given the convenience and efficiency of the Internet, it is easy to make these outlines available on course web pages (or Blackboard) prior to lectures. Students know they are responsible for downloading and printing the material themselves, and they also understand that lectures are structured around the handouts. In fact, students typically find they depend on these abridged handouts even more than on other modes of lecture because so much of the material is built around them. This close dependence on the handouts can actually increase students' responsibility for their classroom activities, as they have to come to class having downloaded the day's material, or suffer the consequences of running behind the rest of the class. Indeed, it is my impression, purely anecdotally, that students are more organized in the classes in which these handouts are used than in those in which they are not. Incidentally, because students are responsible for printing their handouts, the technique has the added advantage of reducing what used to be an expense for the university in terms of photocopying and paper.

The Costs

This approach is clearly not without costs. It is admittedly time consuming, particularly in the initial preparation of the material. In the case of PowerPoint, it is obviously much more cumbersome than simply pulling textbook PowerPoints "out of the box." Because of the initial costliness of preparing these handouts or PowerPoints, this approach is more likely to appeal to instructors where high quality teaching is both expected and valued. Where quality of teaching is not appreciated, its *start up* costs are likely to prove too burdensome for instructors.

However, while start up costs are high, lecture prep is actually less time-consuming in subsequent course offerings. Indeed, these handouts have the benefit of providing an excellent template for successive classes, and while the material can be refined over time, the alterations tend to become less dramatic (and time consuming) in later iterations. While it would be difficult to calculate precisely, it may well be this approach is actually less costly in terms of overall lecture preparation, when considered over several years of teaching a particular course.

Conclusion

This paper was intended to provide an alternative approach to developing lecture materials, including handouts and PowerPoint slides, that has been successfully utilized over a number of years of teaching. Using a number of specific examples, the paper showed how scarce lecture time can be used more efficiently, while simultaneously creating incentives for students to attend lectures. It was argued that by making lectures easier to follow, and classroom tasks less tedious, these lecture aids create incentives for students to actually attend class more often. It also creates incentives for students to actively participate in the development of the lecture itself for a number of reasons. The gains from this approach are likely to be greatest in technical disciplines requiring a reasonable amount of carefully structured graphs and mathematical manipulation. The approach is time consuming in its initial development, but can pay substantial dividends over successive terms.

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Teaching Evaluation: A Student-Run Consulting Firm

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Applied Research Consultants (ARC) is a graduate student run consulting firm that provides experience to students in evaluation and consultation. An overview of this program has been compiled in order to serve as a model of a graduate training practicum that could be applied to similar programs or aid in the development of such programs. Key performance aspects are described in detail to assist in implementation by departments in various higher education programs.

Teaching Evaluation: A Student Run Consulting Firm

A consulting practicum for graduate students is rare in advanced education, but it is highly needed in order to develop students into professionals in the field of evaluation (Belli, 2001; Morris, 1992; Trevisan, 2002). According to Shadish, Cook, and Leviton, we can evaluate the effectiveness and efficiency of anything, "including evaluation itself" (1991, p. 19). Graduate students need the opportunity to participate in evaluative work to be able to gain valuable knowledge and real-life experience. Cole (1995) claims there is a need for improvement in instructional teaching with respect to research methodology, and this could be improved by involving students in a practicum that gives them the hands on experience they need.

There are similarities and differences between research and evaluation. Russ-Eft and Preskill (2001) identified commonalities in multiple definitions of evaluation. Evaluation is a systematic planned activity involving the collection of data regarding societal issues in general and, more specifically, individual programs for the purpose of direct use in enhancing knowledge and decision making, as opposed to general research that examines questions that are not necessarily applied to programs. Russ-Eft and Preskill list three core differences between research and evaluation: evaluation is 1) initiated for a different purpose, 2) conducted for a different audience and addresses clients' needs, and 3) communicated in a different way.

A strong training in systematic research methods, data management, and statistical techniques provides a skill base for conducting evaluation. However, research methods alone do not constitute the total skills needed to conduct evaluations. Training in evaluation requires a well-built base of research methodology combined with an understanding of the differences between research and evaluation. Practical experience is needed to master tailoring research to answer client based questions, to understand the reality of program evaluation feasibility, and to communicate results to decision makers.

Experiential practicum in evaluation is necessary, and universities need to seek out additional ways to educate students in research and consulting (Chelimsky, 1997; Dallimore & Souza, 2002). Consulting is the communication process an evaluator takes with his or her clients, such as meeting with organizational leaders to get their interpretation of the program and its problems, and dissemination of evaluative information. Evaluators tend to adopt different forms of consulting practices based on their theoretical background and experiences (Shadish et al., 1991).

This paper reviews a student run consulting firm, Applied Research Consultants (ARC), in order to demonstrate how to incorporate an evaluation practicum in a higher education setting.

ARC directly involves students in the process of evaluation in a mentor supported environment. Evaluations from beginning to end are conducted by students, but all projects, from simple data collection to multi-year assignments, are subjected to quality control through departmental faculty as well as advanced students in the program. The main goal behind the program is providing experience to Master's and Ph.D. students in planning, managing, and conducting applied research and evaluation while using consulting practices. The aim of this paper, therefore, is to provide instructors and university department heads with a basic structure that could be utilized in order to implement similar practica.

Evident Practices

Dallimore and Souza (2002) presented a class design model that looks at teaching evaluation and consulting to graduate students with the emphasis on enhancing students' experiential learning. However, this design was made for a single-semester course, which is typically seen in student evaluation training. Typically such "advanced training" rarely lasts beyond the semester, and students in these programs generally

do not work from beginning to end on a project (Belli, 2001; Trevisan, 2004). Therefore, the time spent on evaluation training needs to be increased in order to encompass the skills necessary to be successful in this type of work.

Training graduate students with consulting experience tends to focus on conducting and interpreting statistical analyses or planning research designs. These training assignments generally do not provide instruction on measurement theories, construction of measures, or presentations at workshops (Belli, 2001). Further, previous research has pointed out areas where current graduate student evaluation practicum is weak (for a review of programs see Trevisan, 2004). While authors (Belli, 2001; Chelimsky, 1997; Morris, 2002; Preskill, 2000) have stressed the importance of practical experiences in training evaluation, Trevisan (2004) found only a few programs offering practical experience beyond single semester class projects.

The key components in teaching evaluation are theory, methodology, conceptualization, and practical experience (Levin-Rozalis & Rosenstein, 2003), and ARC facilitates the learning of all four of these components while also providing the additional practical experience recommended in the literature for advanced student training. For example, on any one project students consult with clients; develop a contract and budget; develop methodologies and measures; implement the study; gather, analyze, and interpret data; and present the information in written and oral reports. Previous research has pointed to the necessity of keeping the basic research design in mind when training graduate students in evaluation (Dallimore & Souza, 2002; Preskill, 2000). The typical progression in research methodology begins with problem identification through data collection, analysis, interpretation, and translation. The ARC program generally uses this type of progression while implementing research, but research design is not always necessary. For example, if a client seeks assistance after the data have already been collected, which frequently occurs (Belli, 2001; Nadler & Cundiff, 2000), the study is past the need for methodological design. To fully understand ARC and its effectiveness as an educational tool with the goal of increasing the knowledge base in graduate student practica, it is important to define the ARC practicum and represent how it works.

Structure of ARC

ARC is a graduate student run consulting firm, located in Southern Illinois University's Psychology Department. ARC's goals are supported by practical experience with clients and report writing, the most often mentioned "gaps" between expectations in evaluative occupations and applicant skills when recruiters are hiring new evaluators (Dewey, Montrosse, Schroeter, Sullins, & Mattox, 2006). ARC's students are composed of graduate students in Applied Psychology; however, the program's structure could be extended to a variety of educational programs such as management, workforce education, or educational psychology. In fact, any program interested in investigating the effectiveness and efficacy of different programs, services, products, or organizations could use ARC as a model to develop an intensive program that would enhance students' skills and development in research and evaluation.

ARC provides many services to its customers such as measurement development, data collection and analysis, report writing, interviewing, and focus group assessments. These processes are all a part of program evaluation (Shadish et al., 1991). However, the evaluation's focus differs drastically depending on the needs of the clients. For instance, ARC has served as evaluator on a large grant in which students developed a needs assessment, created a logic model depicting the program, developed trainings, and created a research agenda that offered informative outcomes of the program. ARC has also served as a guide for a private company to become a research institution by providing key information about research intuitions and developing models to depict the strengths and weaknesses of the organization. These are just two examples of the types of work ARC has conducted in recent years, and there are many types of jobs and clients that are included in ARC's repertoire. Programs that are developed based on a model such as ARC should be encouraged to seek out clients both from inside and outside of the academic community.

What makes ARC's design different from other programs is that the students participate in the course for over two full years, which enhances experience by allowing them to follow projects extending across multiple semesters. This process is important in evaluation training, since "real world" consulting jobs tend to take anywhere from three months to many years. Students who are training for such work need to be able to work with clients and on a project for as long as the job entails.

ARC's Class

While the work in ARC is conducted by graduate students, they are supervised by a director who is traditionally a tenured professor at the university with other faculty serving as resources on an as-needed basis. The daily lives of the ARC associates are fragmented and have few stable patterns of work or activities. The "class" of ARC, led by the director,

meets for two hours weekly to keep everyone in the program up-to-date with projects and business related matters. Discussions range from simple administrative matters to thorough and complex think-tank sessions on methodology, theory, and client relations.

Students learn through assigned readings that cover evaluation concepts and through experiencing problems that come up while working with clients, such as communication issues.

Solving problems in a group meeting is a rare procedure of evaluation training. Most evaluation practica tend to solve problems by one-on-one meetings with faculty (Belli, 2001). However, presenting problems in a group setting allows for students to learn about the issues other members are facing and for students to give each other advice.

ARC Projects

Projects are also disseminated at class meetings where contact with prospective clients is arranged and given to a senior associate charged with leading the project. Once projects are assigned to an associate, the student assumes responsibility for project completion. The choice of leader for a project depends of the type of project and student availability. Typically projects are matched with students who have the skills and the experience to assess and manage the situation. Consideration of students' substantive interests is also assessed when assigning projects; while student input is an important factor in project leader choices the final decision lies with the faculty director.

The project leader has a team of associates who either volunteer to be on the project or are assigned to the project by the director. Volunteering usually occurs when students have interest in the project's area or they are interested in the methodological procedures that are being used for that project. For example, a student may be interested in working on an evaluation being conducted for a local hospital due to interest in the health field. Likewise, some students would volunteer for a project involving focus groups if they were interested in gaining experience in qualitative data collection procedures. While students are granted latitude in determining what projects they are on, the faculty director monitors the process to ensure each project is adequately staffed and each student gains experiences as needed.

The project leader then instructs his or her team on how to administer the evaluation by passing out assignments to the associates on the team and coordinating their efforts. The evaluation may involve developing a survey that would be used to conduct research on the evaluand or the object being evaluated. For instance, various measures may be devised to ascertain the effectiveness of a new program that is directed at reducing childhood obesity. The leader may start construction of the survey by consulting with a client (usually directors of the programs or organizations), then team members would meet together in order to ensure the quality and thoroughness of the measure being developed. The team would also assist the project leader in constructing the survey to formats acceptable for mailing and/or on-line distribution. Projects go through different stages for each evaluation, since every evaluation is unique.

Tri-level Involvement

ARC is constructed based on three levels of student involvement. The first level is a shadowing period which allows students to directly observe the practices of the program without having the responsibility of working on projects. Experiential training often stops at this level of involvement in evaluation programs, which includes role playing, observing faculty conducting evaluations, and participating in class projects (Trevisan, 2004). ARC's second level of student involvement has students working as associates on projects and receiving guidance and instruction from senior associates in the program. Assistance from senior members is considered to be a vertical practicum, with advanced students training novice students. Intuitional knowledge is retained by processes and lessons learned that are passed down through the vertical practicum. The vertical practicum enables learning to be facilitated in the program and insures that time is not lost due to the relearning of simpler processes such as on-line survey development and database management. The vertical practicum promotes teaching students about leadership and organization; for more information on this subject see Nadler and Cundiff (2009).

The third and final level of ARC is where the program extends beyond a traditional training practicum in evaluation. Students, having completed the first two levels, then work as senior associates who are in charge of entire evaluation and consulting assignments as project leaders. At this level, student involvement includes all aspects of starting up, working on, and completing a consulting project. This can include, but is not limited to: contacting and meeting with clients, writing budgets and contracts, devising appropriate methodologies, collecting data, analyzing data, and writing and distributing reports. Once again, all of these activities are conducted within a safety net offered by faculty oversight.

The Students

There are usually 10-12 student associates in ARC per semester. These students are charged with running the organization. The position as an associate is usually

the first professional working experience for many of these students. For instance, some come into the program right out of their undergraduate careers, and they have reported being a little awed and fearful of the tasks before them. These students begin at the first level during the second semester of their Ph.D. program by shadowing projects. Since new students generally report anxiety about the level of responsibility and commitment that the program requires of them, it is important therefore to introduce students to such a practicum with care.

Other students have had some previous experience working in consulting or have advanced degrees which assist them in the process of entering into the program. The applied graduate program, of which ARC is an active part, balances each year's cohort with students straight out of undergraduate school with students having research or practical experience in evaluation. Both groups of students taken together create a dynamic evaluation group that is grounded in an applied research culture.

The Place

The ARC lab is a designated area where associates have 24 hour access to learn, teach, and conduct evaluations. The lab consists of a computer room, a conference room, a library, and a break room. There is a server dedicated to up-to-date technological programs that assist and protect the evaluators' work. Tasks such as compiling data, analyzing research, and gathering information across the country should be easily conducted with the resources located in these types of labs.

Supplies in the lab are readily available to the students and have been acquired over the 25 years that ARC has been running. Time in these types of programs is necessary to accumulate resources. Most resources are within reasonable price ranges, so start up costs should not be feared. Typically, what is needed to begin is space to work and hold meetings, computer and printer access, an internet server, statistical software, and guidance from faculty. Most of these resources will already be available in existing faculty graduate or undergraduate research labs. However, it is important to give such a program the feeling of being an independent firm, therefore setting dedicated space for training should be a priority. Additionally, research on consulting practica has found that usually programs such as these should have one to three invested faculty members to assist students with the practicum experience (Belli, 2001).

Generating Resources

Resources are an immediate concern for faculty and administrators whom are considering implementation of a practicum that requires a full scale lab. However, such programs can be self-sustaining by primarily focusing on providing training for the students and not on income generation (Belli, 2001). In ARC, for instance, the income generated from the associates' work can all be invested back into the program. ARC charges $40.00 per student work hour, with typical total project fees ranging from $500 to $5,000. ARC's fees are at the lower extreme of evaluation rates (Jarosewich, 2006), providing clients with an alternative to costly evaluation firms. ARC works internally within the university and with local businesses, and it usually brings in between $35,000 to $55,000 a year.

Generally the students involved in ARC decide, by a democratic voting process, how the income of the firm is spent. However, most of the income goes towards keeping the basic necessities of the organization running, such as having office and technology support and buying equipment. The profits from the business then go towards sending the students to an annual evaluation conference held by the American Evaluation Association (AEA), which is thought of as one of the more important aspects of the program by the students.

An internal grant funded by ARC is also available to students, whereby they are able to receive funding for professional development. This is another aspect of ARC that is unique when compared to other training practica: students actually work to bring money into the program and profits can directly benefit their personal research.

Process

ARC associates handle a variety of different types of research and evaluation procedures. In other words, the program specializes in survey design (paper and on-line) and dissemination, market research, program evaluation (general), focus group facilitation, in-depth interviews (cognitive and semi-structured), needs assessments, job analyses, performance appraisals, and personnel training, to name a few. However, job type (consultation and/or evaluation) typically depends on what clients need; therefore, students utilize their education from classes and prior ARC experience to facilitate quality work at half the price of competitors. The use of classroom knowledge in evaluation has its benefits, and the practice students gain from the consulting and evaluation tend to "reinforce theoretical material taught in core research course(s)" (Cole, 1995, p. 159).

Conclusion

Through a consulting/training practicum, ARC has the structure to support itself while providing appropriate evaluation experience to students. The way the program functions is fitting for academic institutions interested in educating graduate students,

whether at the master's or doctoral level, in consulting and evaluation. This review was intended to serve as a guide to fellow educators interested in effectively training graduate students in the evaluation field. Some issues have been documented on negative reactions towards such programs within university settings, such as departments receiving lower financial support due to less reported research hours from faculty who are devoted to directing the programs or issues involving ethical review boards (Beck & Kosnik, 2002). These concerns do not outweigh the positive effects of such programs though, exemplified in the amount of experience gained by the students and faculty involved.

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Investigating Peer Review as an Intentional Learning Strategy to Foster Collaborative Knowledge-Building in Students of Instructional Design

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Peer review has been advocated for as an intentional strategy to support the knowledge and skill attainment of adult learners preparing for professional practice, including those students preparing for instructional design and technology practice. The purposes of this article are to discuss the practical application of peer review as an instructional strategy by articulating its use in both face-to-face and online Instructional Design courses and to formulate directions for future research on the use of peer review in instructional practice. Findings from a literature review of student-to-student peer review and the authors' experiences with the use of peer review in Instructional Design courses are used to foster a discussion that interweaves both important scholarly and practical elements.

Citing Mills and Cottell (1998), Bangert (2001) observed that several professional organizations, including those affiliated with such diverse professions as accounting and teaching, endorse "instructional strategies, that promote active learning, complex problem solving, experiential approaches, group work, and innovative uses of technology" (p. 77). Current national standards for educational technology demonstrate that these aims are relevant for students of instructional design and technology. Specifically, the National Educational Technology Standards and Performance Indicators for Students (ISTE, 2007) promote communication and collaboration, critical thinking, problem solving, decision-making, and digital citizenship, the last of which includes a positive attitude toward using technology that supports collaboration.

One instructional strategy in alignment with such professional standards is student-to-student peer review of course-related work. For the purposes of this discussion peer review refers to "the structuring of a process to allow peers to review each other's professional processes and/or products with the goal of improving such processes or products" (Woolf & Quinn, 2001, p. 22). Peer review is a learning strategy situated at the highest level of Bloom's taxonomy of learning in the cognitive domain (Bloom, Krathwohl, & Masia, 1956). Therefore, it is an attractive goal for educators, particularly those facilitating the learning of adults preparing for professional careers requiring the analytic and evaluative skills associated with problem-solving, and certainly in fields such as teaching and instructional design and technology. Peer review is well aligned with the concept of formative evaluation (Dick, Carey, & Carey, 2009) and, therefore, fits especially well within the context of an Instructional Design (ID) course, where formative evaluation is an important concept and skill for students to master. Incorporating peer review of course-related project work in an Instructional Design course reinforces the accreditation standards developed by the Association for Educational Communications and Technology (AECT, 2001) and the National Council for Accreditation of Teacher Education concerning formative evaluation. Peer review supports the concept of practice and its ongoing development as taking place within a situated and authentic context that supports a community of shared goals, artifacts, and interactions (Brown, Collins, & Duguid, 1989; Wenger, 1998), as well as the constructivist notion of shared knowledge-building through experience (von Glasersfeld, 1995). Peer review as an instructional strategy also aligns with the priorities identified by research on professional groups, group work, and group learning by fostering interpersonal skills in the marketing classroom (Chapman & van Auken, 2001) as well as shared creativity and reflection in the geographical information systems classroom (Livingstone & Lynch, 2000). In fact, peer scaffolding is identified not only as a viable alternative to instructor-scaffolded activities (Lai & Law, 2006), but also as a vital element to the collaborative group learning experience (Dalgarno, 2001; Towns, Kreke, & Fields, 2000).

The purposes of this article are to discuss the practical application of peer review as an instructional strategy in both face-to-face and online Instructional Design courses, and to formulate directions for research on the use of peer review. Findings from a literature review of student-to-student peer review and the authors' experiences with the use of peer review in Instructional Design courses will be used to initiate and foster the discussion.

Conceptual Context

A review of the literature on peer review as an instructional strategy offers the following insights. First, findings reveal that peer review benefits students by helping them to: identify good practice and be more

critical (Davies, 2000; Harris, 2006), strengthen self-regulation behaviors in order to provide constructive feedback on peer assignments (Ku & Lohr, 2003), Ozogul, Olina, & Sullivan, 2008), develop critical thinking skills (Li & Steckelberg, 2004), articulate design decisions in a professional context (Casey, Branvold, & Cargille, 1996), and comprehend the problem-solving and formative nature of professional practice, including instructional design practice (Woolf & Quinn, 2001). Second, peer review benefits instructors in that it may reduce the time required to evaluate complex assignments (Bangert, 2001; Ozogul, et al., 2008), thus potentially providing more time to offer higher level consultative guidance. Third, best practices in peer review suggest that instructors should provide clear criteria for peer feedback to avoid superficial feedback (Ku & Lohr, 2003), train students on evaluation processes (Ozogul & Sullivan, 2009), and use blind review to reduce bias (Li & Steckelberg, 2004; Ozogul, et al., 2008). Fourth, challenges to peer review include: fostering a work context that feels safe and familiar enough for peers to become and remain engaged in productive ways and providing enough guidance and structure for peers to maintain their focus on desired processes and outputs (Woolf & Quinn, 2001).

The next section will provide two examples from the current practice of two IDT instructors at different higher education institutions. The first example details the use of peer review in a face-to-face instructional design course. The second scenario describes its use in an online instructional design course. Although the professional context for each course is the same, peer review, as reflected in the literature review of its benefits, is relevant to other professional disciplines requiring group problem solving. In fact, Topping (1998) analyzed the use of peer assessment in group work across such varied disciplines as math modeling, business administration, speech communications, psychology, microclimatology, and engineering design. Further, in their meta-analysis of peer assessment in higher education, Falchikov and Goldfinch (2000) found that "peer assessment can be successful in any discipline area and at any level" (p. 317).

Peer Review in a Face-to-Face Instructional Design Course

The first author has been using peer review in an instructional design and other IDT and teacher education courses since 2002. Over that time, the peer review strategy has evolved in scope, structure, and depth based on student responses to the process, literature findings, as well as instructor reflections on practice. This section will describe the nature of peer review as of the Fall 2009 instructional design course experience at a large research university in the southeastern United States.

The Principles of Instructional Design course is a required course for all Instructional Design and Technology (IDT) majors. Residential masters and doctoral students complete this foundational ID course face-to-face in the fall of their first year in the program. The course enrollment averages fifteen students, many of whom are international students, most of whom do not have formal instructional design training or experience, and a few of whom come from other disciplines such as educational psychology, engineering education, and agricultural education. The course meets face-to-face for three hours per week for fifteen weeks.

Students are introduced to the concept of peer review as a practical means for engaging in instructional design work during the second class meeting. The instructor discusses the concept, presents a generic process for completing peer review, and solicits input on common "rules of engagement" when it comes to providing feedback. After reading about and discussing instructional goals, they complete a brief in-class assignment during which each student drafts an instructional goal related to an identified ID project and provides it to a fellow student for review. Each student provides written feedback according to the criteria given for sound instructional goals and debriefs his/her partner that same night in class.

This first peer review assignment is meant to be simple, structured, and monitored by the instructor in order for students to experience low-threat practice with peer review as well as have an opportunity to get to know one another better. Students are debriefed about the peer review experience and reminded that they will use peer review in varied forms throughout the rest of the semester. Students are somewhat shy about providing feedback to one another during this first peer review assignment. The assignment's simplicity, structure, and rules of engagement appear to ease this anxiety. The face-to-face setting is advantageous in that the instructor can closely monitor students' reactions and experiences, providing guidance and encouragement as needed.

By week three, students are grouped into teams of three to four and assigned one real-world instructional design project to work on for the rest of the semester. The goal for each team is to develop an instructional unit that meets the identified needs of the project. Each week, students work through an iterative process whereby they read about a new ID core concept, e.g. learner analysis, content analysis, etc., outside of class and receive instruction on that concept in class to draw out critical elements, explore examples, and practice application of the concept. Then, in their teams, they draft the relevant portion of the instructional design for their team project, submitting it for peer review by

members of another team the following week during class. The structure of these weekly formative reviews is less formal, although concept-relevant rubrics are provided as an additional means of support for knowledge and skill development. The challenge for the instructor is to encourage students to refer back to their support materials in conducting these reviews, as well as to mitigate any conflicts that may arise. Students respond positively to these reviews, noting that they often benefit from perspectives outside of the team as well as see things in the work of other teams that they can bring back to their teams to improve the work to-date.

A final, more formal and extensive, graded peer review occurs over weeks 12 and 13 of the semester. By this time, each project team has a complete draft of their instructional unit that has been subject to the weekly formative evaluations. At week 12, the team submits one full copy of their unit, via a project web site, to three to four individual peer reviewers chosen by the instructor. Each peer reviewer is provided with instructions and rubrics for completing the review and has one week's time to complete the review outside of class and provide electronic copy back to the authoring team and the instructor. By this time, students are comfortable with one another, with peer review, and with the nature of the projects. They comment regularly that this more extensive peer review is one of the most valuable assignments in the course, forcing them to re-engage with core principles and concepts explored during the semester at a deeper level in order to provide useful ID feedback to another team on a project that they understand themselves has become "near and dear" to the team. During the week 13 class period, the instructor debriefs students on their experiences with this assignment, asking them to reflect on what the authoring team members gained from the review in terms of improving their instructional designs and what the peer reviewers gained in terms of ID knowledge and skill development.

The intent going forward is to continue peer review in this course and conduct research to investigate the role of peer review in a face-to-face instructional design course. Anticipated outcomes of the research include reporting impact on student learning and providing guidelines for the effective application of peer review in the development of instructional design and other professionals-in-training who must engage in group problem construction, collaboration, and resolution as part of professional practice.

Peer Review in an Online Instructional Design Course

The second author used a structured peer reviewing process for an assignment in his two sections of an online Instructional Design course during the fall of 2009. The class is part of an online M.Ed. program in Instructional Technology offered through a regional comprehensive university in the southeastern United States. The students were enrolled in a course titled Instructional Design. Each section had an enrollment of 25 students, and the students were distributed widely across a large state in the southeastern United States. Most of the students were practicing K-12 educators. The course was offered in a completely asynchronous format.

As part of the class, a learner analysis paper was assigned during the fourth week of the 15-week semester. Students in the course were required to complete a detailed learner analysis and were provided with assignment details and the scoring rubric. The students were given 13 days to complete the assignment. Part of the assignment included participation in a blind peer review process, which consisted of two steps, prior to submitting the paper to the instructor for evaluation. Individuals posted their learner analysis papers (step 1) and provided feedback to one other student's posting (step 2).

Eight days were scheduled for the students to write their papers and post them for review. The students posted their papers to an anonymous discussion forum in the course management system. Students were asked to include a pseudonym in the subject line of their posting, and to communicate the pseudonym to the instructor using email. Two days were allotted for the review element of the peer review process. Students were instructed to select one paper to read and on which to provide feedback in the discussion forum. The identity of the reviewers was not available to the students receiving feedback. The instructor suggested that the scoring rubric for the assignment be used to structure the feedback. Additionally, students were directed to be "critical and constructive, but polite."

At the conclusion of the peer reviewing experience, students were instructed to revise their papers based on the peer reviewer feedback and to include a section at the end of the paper explaining the changes initiated by the peer reviewing process. Three days were scheduled after the review period for revisions and final submission of the assignment.

The practice described here is part of an emerging research program aimed at investigating the use of peer review in online Instructional Design courses. The general focus of the research program is to develop a set of empirically grounded best practices for using peer review in online instructional design courses. Feedback from this pilot project indicates that students appreciated the process and the opportunity to learn from their classmates using peer review. The instructor was not overburdened with logistical or technical matters facilitating the process. A next step is to study

whether or not the peer reviewing process improves the quality of the work submitted by the students.

Concluding Remarks and Directions for Research

Peer review as an instructional strategy for developing instructional design and technology professionals has the potential not only to support professional standards but also to address ongoing concerns regarding the inadequate preparation of instructional design and technology professionals. Peer review can support the need for instructional design students to understand real-world instructional design practice as non-linear, complex, and demanding cross-functional collaborative problem-solving and management skills (Brill, Bishop, & Walker, 2006; Casey, et al., 1996; Woolf & Quinn, 2001). Similar concerns articulated by other disciplines can be addressed with peer review as well (Maleki, 2009; Queeney, 1996).

Our review of the literature draws out some important benefits of peer review as a promising higher education pedagogy, particularly for those adult students being mentored into a new profession that demands collaborative problem posing, reflection, and resolution. Peer review has been shown to promote the recognition of good practice as well as critical and constructive collaborative dialogue. The cases presented here suggest that peer review can been integrated into the higher education classroom effectively and can benefit from intentional literature-based strategies such as clear feedback criteria and blind review, but they only do so anecdotally. Thus, our next steps are to conduct empirical research in both face-to-face and online settings to investigate learning outcomes and instructional strategies. Our research plans respond to the advocacy of scholars and practitioners for more research and models to better understand peer review as an intentional learning strategy for adult learners (Casey, et al., 1996; Falchikov & Goldfinch, 2000; Woolf & Quinn, 2001). Ongoing scholarship among higher education professionals offers an important venue for dialogue about peer review as an opportunity for advancing instructional practice, research, and better professional preparation for real-world practice.

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A Pedagogy of Blending Theory with Community-Based Research

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Blending activity theory and community-based research educational applications describes the praxis achieved through the initial design, development, implementation, and assessment of one research methods course as a pedagogy to enhance and improve the outcomes of civic and community engagement for the university, its students, and the community. The results from this approach were validated by using the DEAL model of reflection. The findings indicate significant heightened awareness in students' attitudes, knowledge, and engagement in their community through the use of this combination of activity theory and CBR. Through this pedagogical approach, undergraduate researchers were able to access and apply tested qualitative theory, conduct activities, and use reflective assessment tools.

In their monograph, *The Role of Service Learning in Educational Reform*, Bhaerman, Cordell, and Gomez (1998) cited Perrone (1993), who wrote, " Society faces an assortment of problems: a youth culture that has few connections to 'civic life,' feeling among youth of having no vital place in society, deteriorating communities, and an increased pessimism about the future" (p.8). In the 17 years since Perrone's observation, communities and faculty are seeing a marked increase in interest among university administrators to engage within their communities. Fritz and Roberts (2006) observed "service learning enjoys increased popularity in institutions of higher education due to concerns related to *decreased civic participation."*

In fact, civic life has become part and parcel of the missions of an increasing number of American colleges and universities (Strand, Marullo, Cutforth, Stoecker, Donohue, 2003). In an article written by four undergraduates – Wills, Peresie, Waldref, and Stockman (2003) – and published in the *Michigan Journal of Community Service Learning*, the authors observe that over the last decade, universities across the country have increasingly recognized that ideologically- and financially-committed institutional support for community engagement pedagogy is necessary to improve the synergy between a university and its community (p.36). Moreover, a critically important element and pedagogical tool of this movement toward civic engagement in higher education is community-based research.

Community Partner - Blueroof Technologies

Blueroof Technologies is a 501(c)3 charitable corporation developing a comprehensive program for the McKeesport, Pennsylvania, area to become a leader in the use of Senior Smart Technology for senior citizens, facilitating their use of this technology to help in their daily living. Senior Smart Technology focuses on information technology such as computer systems to educate, monitor, and optimize the lives of senior citizens. Each senior citizen participating in the Blueroof Technologies program was identified as a Blueroof Research Associate (BRA).

Purpose

In order to develop a more effective civic and community engagement program, a research methods course was enhanced and modified to incorporate activity theory blended with CBR to develop a praxis for implementing this pedagogical approach. The purpose of this instructional research narrative is to examine and discuss the impact of this pedagogical qualitative methodology and the application of the praxis for blending activity theory and community-based research (CBR) within one undergraduate research classroom in order to determine the effect on the outcome of civic and community engagement projects. Both cultural-historical activity theory and community-based research allow individuals to test ideas drawn from a particular praxis structure brought into the public domain. When individuals understand praxis as "narrative-informed action," they engage knowingly in a complex construct of informational, historical, and material conditions (Arnett, 2001).

Objectives

Within the general purposes outlined above, the primary objectives of this instructional narrative are:

1. To demonstrate the use of this pedagogical approach to bring together academic research through a collaborative effort with community residents to produce knowledge;
2. To engage all involved in a co-learning process; and,

3. To provide feedback and observations about the perspectives of the students, the faculty member, and the community partner.

Couto's article "Review Essay - Community-based Research: Celebration and Concern" provides methods and review of further evidence for the three objectives stated above to be considered as "canons" for best practices (p. 69).

Community-based Research Principles

For the purpose of this instructional essay, community-based research is defined as the pedagogy of applying course-based "qualitative" research through a proactive collaboration among students and members of the community (Strand, Marullo, Cutforth, Stoecker, Donohue, 2003). And, additionally, Couto (2003) makes reference to the *Handbook of Action Research* (Reason & Bradbury, 2001), and cites Stringer's (1999) point "that if we cannot as yet agree on a single name..whatever the nuances among terms, there is coherence." Stringer criteria for community-based research:

- Brings academic researchers into collaborative residents and leaders to produce knowledge;
- Engages all involved in co-learning process;
- Takes a systemic perspective;
- Builds community groups' capacity to conduct needed changes; challenges the existing canons of disciplinary research and pedagogical practice; and
- Balances research and action (p.5)

Therefore the definition for community-based research in this instructional essay is based on the criteria provided by Strand, Marullo, Cutforth, Stoecker, Donohue, and Stringer, which is a combination of activity-collaborative inquiry, critical analysis, and social action.

Activity Theory Principles

The volume of work assembled and presented by Daniels & Gutierrez (2009) and devoted to learning and expanding research of activity theory, includes a number of articles, opening with the definition, by Sannino, Daniels, and Gutierrez, of "activity theory… as a practice-based theory that is grounded in practice both theoretically and concretely." For scholars, activity theory offers an analysis of development within practical social activities. "Activities organize our lives. In activities, humans develop their skills, personalities, and consciousness. Through activities, we also transform our social conditions, resolve contradictions, generate new cultural artifacts, and create new forms of life and the self" (p.1). Activity theory today attracts more interest globally than ever before (Daniels & Gutierrez, 2009, citing Sannino, Daniels, and Gutierrez).

Daniels and Gutierrez' (2009) collection on activity theory mentioned earlier, includes Engestrom's article, " The Future of Activity Theory: A Rough Draft," which points to objects that are concerns; they are generators and foci of attention, motivation, effort, and meaning. "Through their activities, people constantly change and create new objects. The new objects are often not intentional products of a single activity but unintended consequences of multiple activities" (p.303). Furthermore, activity theory is a practice-based and is historical and future –oriented. Sannino, Daniels, and Gutierrez (Daniels & Gutierrez, 2009) argue that there are methodological issues that distinguish an activity theory approach from traditional approaches to research:

Activity theory involves the researcher throughout the course of the development, stagnation, or regression of the activities under scrutiny, as well as in the activities of the research subjects. The deep involvement in everyday human life is a crucial resource of activity theory (p.3).

The actual nature of the activity is the core of activity theory (See Figure1). The two activity systems – (1) the classroom and (2) Blueroof Technology – explore the "shared object" in this narrative: the Blueroof Research Associate. The *Tools* represent the view of communication and shared developmental space with workplaces; *Outcomes* are learning/methods to analyze the Blueroof Technology BRA interests in technology and students' degrees; the *Division of labor* includes Blueroof Technology, BRA, students, faculty, and administrators; *Community partners* include people in the workplace; and finally *Rules* include a curriculum mastery of needs analysis and methods.

According to Adler and Heckscher (2006), as cited in Daniels, Edwards, Engestrom, Gallagher, & Ludvigsen's work *Activity Theory in Practice* (2010), students explore the community as based on a "shared object" and value, the participants' ability to contribute to that value, their mutual trust in each other's capability to contribute, and the emergent non-zero outcomes of the collaboration (p.23). The essential elements of such collaboration is a new activity structure, in which the object of the teacher's activity is not student learning but on the evolving student relationship with the object of the activity on which the training and accepting technology is focused. The collaborative development of BRA training and accepting technology into their daily lives was seen as the "shared object" and value to which Blueroof Technology, the faculty member, and the students could contribute in collaboration that would potentially lead to a positive outcome that none of the research collaborators could estimate.

Figure 1
Blue Roof Senior Research Associates

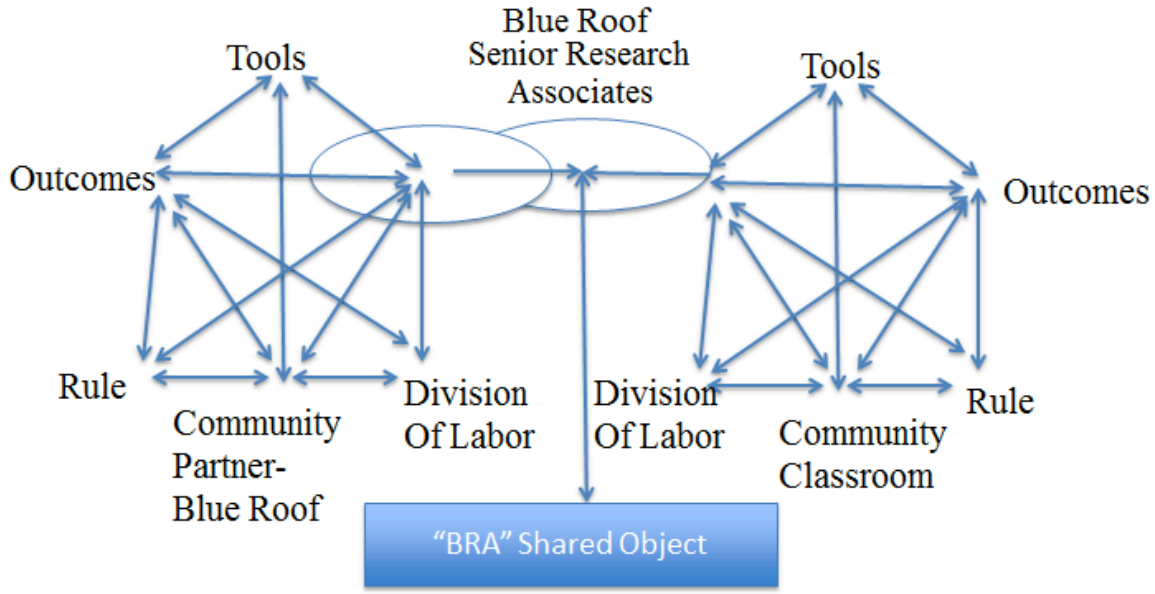


Figure 1. Two activity systems with a "shared object"
Adapted from Daniels, Edwards, Engestrom, Gallagher and Ludvigsen (2010)

Pedagogy

In the subject curriculum design, per the premise of this narrative, the activity theory for the communication research methods course required students to identify a population within their community in which they could effect change through a communication instrument/ object. The general goals for the communication research methods course were to link activity theory with community-based research and increase students skills through activity theory by introducing them to the scientific discovery process, to infuse problem solving and deductive reasoning, to give them the opportunity to uncover knowledge they already have, and to have them discover more about the community around them (Yuretich, Khan, Leckie, Clement, (2001). To enhance the introduction to these activity theory goals to the students, a number of in-class exercises were developed and incorporated as a regular feature of classroom activities. These exercises were designed to help students think like researchers. Over 10 of these activities have been developed and span many topics related to qualitative inquiry. Demonstrative examples to underscore the importance of the subjects covered by these exercises were posted on the course-related web site designed by the faculty member and reference librarian, "Conducting & Writing Formal Research" located on the Web at http://www.libraries.psu.edu/ mckeesport/formal.htm. The ultimate objectives for conducting active research according to scholars Hocking, Stacks, and McDermott (2003), is to provide:

- An introduction to social scientific thinking as it applies to human communication;
- Awareness of ethical issues associated with conducting research with human participants;
- Exposure to the major empirical research methods, particularly surveys, field studies, and experiments;
- The opportunity to learn and apply some of the statistical techniques which are important to interpret fully accurately the results of communication research;
- Exposure to writing a final research report; and most importantly,
- An emphasis on information processing and independent critical thinking as the ultimate goal (p.xviii).

Brown points out that to be successful in communicating these objectives teachers need to identify – and encourage their students to develop – good research habits (2005). This concise format and enumeration of these concepts are well supported by *Communication Research* (Hocking, Stacks and McDermott, 2003), the publication which has been chosen as the textbook for the course since it supports some of these points in the construction of the proposal,

while others are applied with activity theory during the performance of the community-based research.

Course Meetings

This research methods class is scheduled as a fifteen week course that meets once a week at the client's facility: Blueroof Technologies. Initially, during these three hour class sessions, one session introduces the course requirements and procedures. Next, two classes focused on personal dimension and civic dimension through articulated learning. Students were required to keep a journal weekly based on the "DEAL Model" of reflection (Ash, Clayton, & Moses, 2004). (See Figure 2)

The following five classes were used for face-to-face lectures that describe the theory that must be applied in order to do formal research. The remaining class sessions were used by students to engage in activity theory and community-based research. Students were expected also to spend additional hours beyond class sessions to meet with community partners Blueroof Technologies and Blueroof Research Associates.

The students undertook the essential research approach to working with their community partners Blueroof Technologies and Blueroof Research Associates and first determined an identified need. Several conferences with the faculty member, students, and program director of Blueroof Technologies revealed a critical need for formal research to develop information and to help identify Blueroof Research Associates who would accept technology into their lives and teach others through peer-to-peer learning to use this technology. As a requirement for the research methods class, this information had to be developed through a qualitative research process in order to provide a reliable basis for determining which of their Blueroof Research Associates would be likely to have sustainability in their use of technology.

Students employed the praxis of blending activity theory and CBR to complete their research project. First the students were required to write an annotated bibliography and literature review, and they researched the appropriate qualitative research method to apply to the process of designing a solution for filling the need of their client. The qualitative research methodology chosen and employed by the students included a participant survey (N=50 BRA) based on the Technology Acceptance Model (TAM), Prekumar, and Bhattacherjee, (2006), which was followed up with interviews and 3 taped focus groups using a web page evaluation checklist designed by the University of California, Berkeley (Barker, 2004). In addition, the focus group interviews were used to gather descriptive data in the subjects' own words so that the students could develop insights on how subjects interpret some piece of the world (Bogdan and Biklen, 1998, p.115). The students provided feedback and observations from the survey tool (TAM) and focus groups of Blueroof Research Associates. The students worked with Blueroof Associates in developing their report for purposes of clarity, access to BRA, and directions for formatting a formal report. However, students were also required to write a 15-25 page research paper due at the end of the semester. Their papers showed the impact of their understanding of research and the importance of community outreach, and they will discussed below.

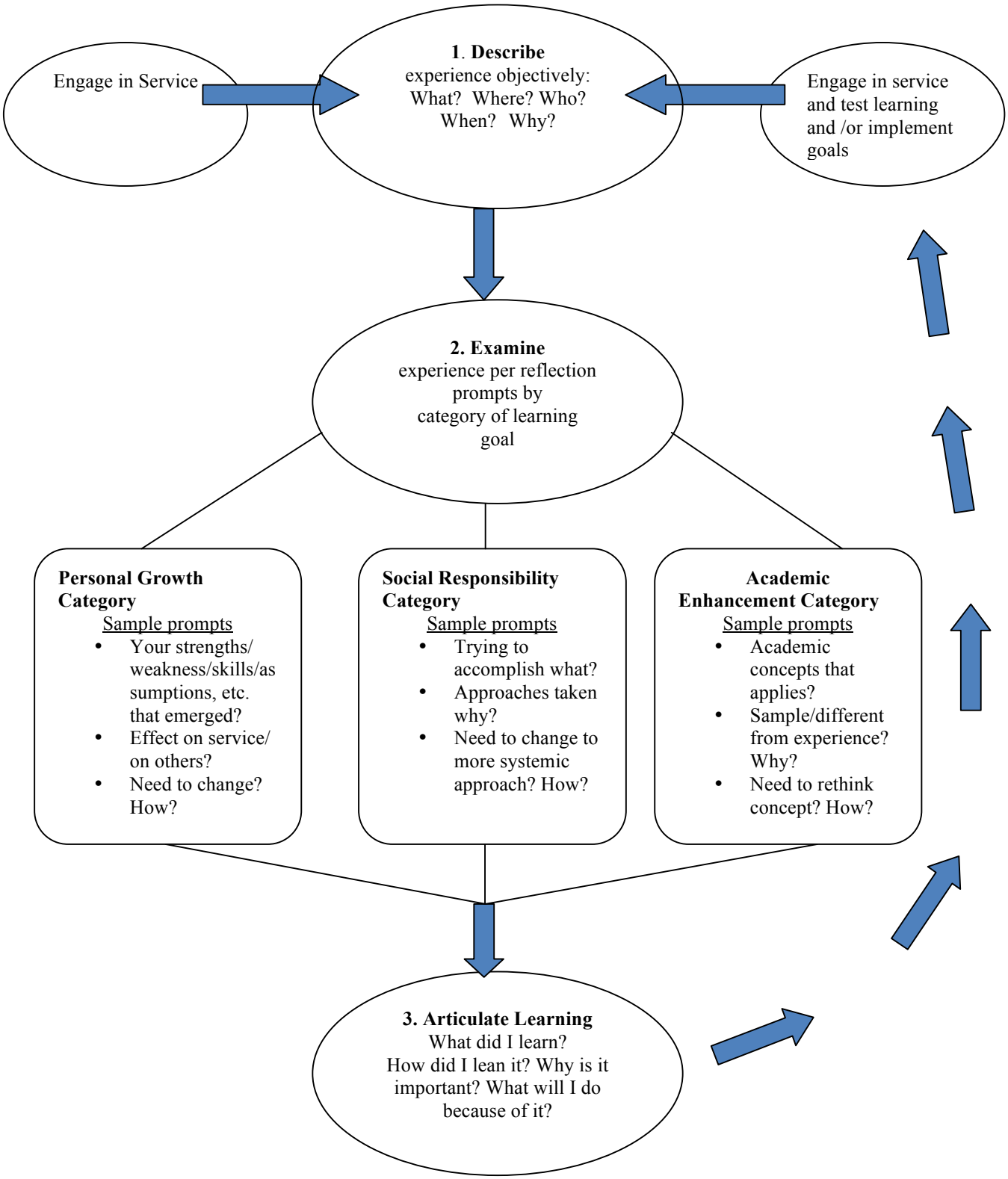
Summary of Students' Findings

The survey tool TAM used in the students' study was selected for both its validity and for its reliability when measuring technology acceptance. With respect to technology enhancing their lives, 81% of the BRA respondents indicated that it would enhance life ; 74% of the participants reported that it was time to learn to use the technology; but there was an interesting finding: only 16% (8) of those who responded revealed that they would adapt to change and continue to use technology if given the opportunity. The students revealed their findings to Blueroof Technologies with a formal presentation. The Penn State University - Greater Allegheny students' information helped to identify eight (8) Blueroof Research Associates who would accept technology into their lives, and, through a peer-to-peer learning model, would teach others. The result was the establishment of the "Follow Me Home" project. Combined with the students' qualitative research and quantitative research from University of Pittsburgh and Carnegie Mellon University Blueroof Technologies has provided a personal laptop computer to 10 Blueroof Research Associates and are "following them home" to see how they engage with the technology. The students also presented their research at the International Society for Exploring Teaching and Learning (ISETL) conference in October 2008 at Las Vegas, Nevada.

Research Method

The methodology for this instructional article is qualitative in nature since it reports the experiences and impressions of students in a university research methods course. Bogdan and Bicklen (1992), in *Qualitative Research of Education*, noted that "dependence on qualitative methods for studying various educational issues is growing" (p. ix). The "DEAL Model" for critical reflection is used to identify the qualitatively different ways in which

Figure 2
Schematic Overview of the "DEAL Model"
Adapted from Ash and Clayton (2004)



students experienced such aspects of civic and community engagement and to assess the quality of their learning and whether they were meeting the learning objectives for the research course (Adapted from Ash, and Clayton, 2004) (See figure 2). Ash and Clayton point out that when structuring reflection mechanisms they must include these three general phases:

- Description (objectively) of an Experience.
- Analysis in accordance with relevant categories of learning.
- Articulation of Learning outcomes.

When engaged in academic analysis, students examine their experiences in light of specific course concepts, exploring similarities and differences between theory and practice (p.140). Because educators very so widely in their approaches to the teaching-learning process, a qualitative method is especially appropriate since it allows a researcher to consider such variations from an appropriate scholarly perspective. All studies were approved by the University Office of the Use of Human Subjects. Figure 2, "Deal Model", was adapted from Ash and Clayton from "The Articulated Learning: An Approach to Guided Reflection and Assessment".

Results

Today, community-based research is a "promising activity," one that is collaborative, change-oriented, and engaging to faculty members, students, and community members in projects that address a community-identified need. Researchers agree that nothing is truer about our universities than the fact that collaborative environments – which foster mutual respect among administrators, teachers and students – are essential to quality education (Brown, 2003, p.28).

Undergraduate students must have guidelines to connect their experience to the active learning. By connecting one's experiences to course material and challenging beliefs, the better one understands one's own narrative and the more reflective one's actions can be. Moreover, Fritz and Roberts report service learning has roots in John Dewey's educational philosophy, but has typically grown inductively, from experience and implementation of best practices (2006, p.1). The field of communication's natural connection to service learning has resulted in a number of applications and offers potential for philosophical grounding and theory development through an understanding of praxis: theory-informed action and reflection. The following are six excerpts from several different students journals using the DEAL approach. They are student reflections: description, analysis, articulation, and learning outcomes which indicate significant heightened awareness in students' attitudes, knowledge, and engagement in their community through the blended learning format: the combination of activity theory community-based research and reflection:

> The only thing necessary for the triumph of evil is for good men to do nothing." This world is full of good men and women. Sometimes all it takes is a push in the right direction. Other times inspiration can be found in the strangest of places. I found it at Blueroof Technologies and through our community-based research course. But, where ever you may find inspiration remember this; civility costs nothing and gives everything. All it takes to better this world are small acts of kindness. We don't require people devote their entire lives for a cause. What we need more importantly is for everyone to simply give a little. Everyone doing something is far better than only a couple doing a lot. It's time we stop putting off what we can do tomorrow and get it done today. Sometimes all it takes is one university course to point this out- give a helping hand.
>
> At a time where people are looking out for only themselves we should be focused on looking out for each other. For me as a student about to graduate the meaning of civic and community engagement is not just an opportunity rising at our campus, it's an idea and principal that should be challenged and embraced by all. Through active research I learned that civility is not a state of mind but rather words put into action. The idea is right there for everyone to see. Community Engagement means to engage in your community by offering your support and time.
>
> Kant postulated, 'What are the aims which at the same time are duties? They are perfecting of ourselves, and the happiness of others.' While this concept may seem dated by contemporary standards, it embodies a philosophy to which I attempt to adhere. And I believe civic and community engagement, with its inherent vitality, tolerance, and effectiveness, could be an appropriate vehicle to achieve this goal for every individual.
>
> I feel this research course and community-based research experience, was just a tiny step in comparison to the many efforts devoted by tons of other citizens who truly incorporate civic and community engagement into their daily life. However, I learned a great deal about American society. And what I learned from it refreshed my view of the relationship between our individual self

> and the Blueroof Research Associates we involved. The real civic and community engagement, thinking carefully, should be spontaneous, automatic, and free of any self-interest. I feel each and every one of us has an obligation and commitment to work on behalf of those people who through ignorance, poverty, or circumstances beyond their control, are unable to communicate - speak out because they lack communication reach. We should use our joint efforts to make their voices heard.
>
> We live in an interconnected, global society. We are all connected to each other and to the world around us through many factors—environmental, social, and economic, just to name a few. It is important for all of us as citizens of the world to be, at the very least, aware and informed about what is going on in the world around us. As members of an academic community here at Penn State Greater Allegheny, we were given the opportunity to go beyond basic awareness of issues through active involvement in the community and scholarly discussion, research, and reflection.

The general goals for the communication research methods course were met: the faculty member was successful in integrating research skills with activity theory by introducing them to the scientific discovery process, infuse problem solving and deductive reasoning, give them the opportunity to uncover knowledge they already have, and have them discover more about the community around them. The full effect and application of activity theory and CBR have on student learning outcomes can be found throughout the students reflection paragraphs. Additionally, the students' reflections showed that activity theory is not just a rich learning approach for community engagement purposes but a powerful framework for understanding how learners are cultural and historical agents embedded within, and constituted by, socially-structured relationships and tool-mediated activity. It is this cultural and historical understanding that makes this activity theory and community-based research stand out from other learning frameworks.

The most consistent and desirable outcomes for institutions wishing to strengthen and enhance civic and community engagement programs can be realized by supporting the implementation of curricula which blends activity theory and CBR, thus evolving its campus culture through civic and community outreach. Course design within programs specifically focused on outcomes involving civic and community engagement projects and employing interactive learning for students should include these considerations:

- A strong strategic plan which blends the use of activity theory and CBR for teaching methods.
- A central focus on curriculum design to augment consistency and clarity.
- The "DEAL Model for Critical Reflection" which describes a reflection framework that pushes students toward personal growth, civic engagement, critical thinking, and interpretations of complex issues.
- Staff support, such as a coordinator who can meet face-to-face with faculty from any department incorporating courses for the program.
- Administrative support for faculty members, e.g. training, assessment tools, project funding, course release time, equipment, and software.
- Additional financial support for faculty and students, e.g., travel, conference fees, professional organizational fees.

The proper approach to outreach is one that helps to create a positive environment for faculty, and one that uses a combination of resources which will result in a culture that is fully engaged in civic and community engagement, and one that enhances teaching and learning outcomes. Combining activity theory and CBR is a transformative approach to uniting the three traditional academic missions of teaching, research, and service. This practical illustration for students of problems and the relationship to theoretical problem solving and the incorporation of qualitative research in the curriculum of the degree programs at Penn State University creates a vital link between the students' ability to understand the necessary techniques and protocols in the conduct of the successful practice in their disciplines, as well as their ability to apply those techniques and protocols with skill and precision.

Responsibility for Learning and Conclusion

This instructional research narrative reflects on, and contributes to, the discussions of activity theory and CBR as a powerful praxis within a research curriculum. Praxis is the practical application of theory, or, according to Arnett and Arneson (1999), theory-informed action. Fritz and Roberts (2006) agree: research methods education is a powerful tool when it is focused on engagement of praxis grounded in theory. The metaphor for praxis is that one engages the world in which one lives (Arnett, 2001). Praxis – in, of, and about activity theory, community-based research, and civic and community engagement service learning – is of increasing interest to scholars.

Mortimer Adler (1942) asserts that the function of theory is to describe and explain facts, and the function of practice is to decide what to do about them. When one engages in theory-informed action, one engages the world in which one lives through the theories learned in the classroom. As activity theory drives application, students engage the richness of the community-based research through their field of study, research methods. In addition Daniels and Gutierrez (2009) agree that activity theory relies on establishing a "praxis" bridge between theory and practice. In the research methods classroom, civic and community engagement, as well as public scholarship, offer new defining moments for applied research methods pedagogy.

Magolda (1999) further explained in her article "Powerful Partnership: A Shared Responsibility for Learning":

> Rich learning experiences and environments require and enable students to make connections…through opportunities to relate their own experience and knowledge to materials being learned;…and through pedagogies emphasizing critical analysis of conflicting views and demanding that students make defensible judgments about and demonstrate linkages among bodies of knowledge. (p.3)

Magolda emphasizes that the narrative of self-authorship is impossible unless students are able to connect learning with their lived experiences; self-authorship requires making meaning of one's own experience. Fritz and Roberts (2006) note that the field of communications has been increasingly involved in service learning over the last decade (Oster-Aaland, Sellnow, Nelson, & Pearson, 2004), and it has momentum as having a "natural connection or partnership" (Applegate & Morreale, 1999, p.xii) to this engaged educational endeavor. Fritz and Roberts cite O'Hara (2001), who acknowledges the discipline of communications:

> [T]hose in our discipline are in an excellent position to lead the academy in embracing the responsibility both to help students develop a strong ethical commitment to sustaining a democratic society and to-show students how they can use education to support their commitment [by]teaching students the ethical use of communities to promote positive social change is at the heart of our discipline (p.264).

When faculty integrate community engagement into their courses, they are advancing O'Hara's premise. Keyton (2001), in her article describing integrating service learning in curriculum accomplishes two objectives for students. First, they have the opportunity to learn the theoretical knowledge they are taught in the classroom, and second, they have the opportunity to learn about needs of their community and how their individual and collective action can satisfy those needs (p.201). Furthermore, the integration of these two objectives distinguishes service learning from other instructional approaches. As activity theory drives application, students engage the richness of the community-based research through their field of study - research methods. Those faculty members who are interested in how to use activity theory blended with community-based research as a course delivery approach can consider the ideas presented throughout this essay as a guide to helping them to begin to integrate these two theories into their existing or future courses, most specifically, research methods courses. Community-based research is a process of hard work on both sides of the table, yet an effective way to engage faculty, community partners and students in and out of the classroom. Creating a course based on the goals and objectives of activity theory and community-based research, as well as synthesizing and applying these theories to new situations, has the potential to enhance learning.

Moreover, an effective curriculum for educating students with a focus on teaching activity theory blended with community-based research does all of this. In the course of their involvement with Blueroof Technology and weekly classroom exercises the students developed a stronger capacity to think on their feet, they extended multigenerational communication reach, and they provided the capacity to think critically and analytically. More importantly, they gained the knowledge and skills to be prepared for taking on the challenges of active citizenship in a participatory democracy.

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Nurturing Critical Thinking and Academic Freedom in the 21st Century University

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Critical thinking and academic freedom are enduring tenets of the liberal ethos of higher education. However, whereas the former is normally considered as a learning process for students, the latter tends to be understood as a licence for the professoriate. If understood as rights and responsibilities pertaining to teachers and learners alike, the terms of inquiry and expression may be conflated within a single conceptual framework, serving not only the needs of the higher education community, but the progress of wider society. Referring to academic climates on both sides of the Atlantic, this paper argues that universities are failing to cultivate debate on contemporary issues, as the learning environment is stifled by ideological rectitude. The author appeals for a reinvigoration of critical thinking and academic freedom in higher education.

Educationalists have long maintained that the purpose of teaching extends beyond imparting fact and theory. Rather than passively accepting received wisdom, students are encouraged to think for themselves. This pedagogic principle can be traced back to the academy of classic Greece; fourth century philosopher Augustine of Hippo rejected the notion that pupils should merely learn whatever their teacher thinks. In the Humboldtian tradition, the modern university is a citadel of free inquiry, but it faces major challenges in maintaining this role. Firstly, utilitarianism dictates that universities deliver graduates versed in the knowledge and skills relevant to the current needs of society. With vast material for students to acquire, tuition inevitably gravitates toward lower order cognition through didactic methods, thus precluding the nurture of a creative and critical disposition. Definitions of critical thinking vary, but it is generally considered to entail a doubting attitude and an ability to scrutinize ideas and assumptions through reasoned argument. According to Paul (1992), critical thinking is not simply a benefit of higher education, but the overarching aim; for Lipman (1991), it is crucial to the survival of a rational, democratic society. Similar arguments have been made in defence of its cousin, academic freedom. However, such intellectual latitude faces a second threat, in the form of ideological bias. This paper considers the socio-political culture of the university and how free expression is being curtailed.

Academic Culture and Bias

A common observation in the popular media is that the corridors of academe are pervaded by a "liberal intelligentsia." The origins of this socio-political consensus can be approximated to the *Zeitgeist* of the 1960s, when a restless, youthful society rejected traditional mores and hierarchy. In American universities, a backlash from Senator McCarthy's "witch-hunt" for communist professors in the 1950s led to the ascent of a liberal-Left culture in the Kennedy-Johnson years. Radical students and lecturers saw the university as the base for Marxist revolution; in their uncompromising ideology, liberal education was a *bourgeoise* luxury of the capitalist system. Anti-Establishment fervour gained momentum in the 1968 riots by French students and demonstrations by their American counterparts against the Vietnam War. Immersed in protests and emancipatory causes, the campus propagated an egalitarian, social conscience in the educated classes. Many alumni would abandon their Trotskyite flirtations on graduating, but each contributed to an ideological legacy.

Idealism is the prerogative of youth. Yet students are not universally disposed to a questioning attitude. Many take a strategic approach to study, motivated by results rather than the opportunity to challenge the epistemological foundations of their subject. Young minds, as totalitarian states have exploited, may be ripe for indoctrination. In the USA, conservative critics claim that universities are engaged in politicization. The pendulum may swing, but the default position of American academe is unashamedly to the left of the spectrum, attracting polemics such as Ben Shapiro's *Brainwashed: How Universities Indoctrinate America's Youth* (2004). Such concerns led right-wing activist David Horowitz to found the pressure group Students for Academic Freedom (2006), which promotes "intellectual diversity" in teaching, research and appointment at American universities. Recently, internet campaigns have been waged against radical teachers, drawing counter-attacks from an academic mainstream quick to raise the spectre of McCarthyism, e.g., Cole, 2005.

To investigate alleged political propaganda, Neil Gross and Solon Simmons (2006) conducted a telephone survey of a thousand randomly selected American adults, with a representative profile of age,

gender, educational attainment, and political affiliation. Asked to name the biggest issues facing American universities, cost of tuition was identified by 80% of the sample, binge-drinking by 17%, lowering educational standards by 10%, and political bias by only 8%. However, when asked specifically about the latter, 38% agreed with the statement that this was "a very serious problem." Positive responses varied from 27% of Democrat voters to 49% of Republicans. Overall, 68% believed that academe favors those who display a liberal-left mindset, while almost two-thirds of respondents believed that academic institutions spend too much time on political issues. If true, what impact might this have on the higher education journey?

Bias is not inherently detrimental to learning. Hickey and Brecher (1990) argued that wherever coursework deals with values, neutrality is impossible. The teacher's views in subjects such as economics, sociology, history, and politics are more likely be detrimental if concealed rather than made explicit. Indeed, Hickey and Brecher saw bias as fundamental to the process of education; students should be encouraged to form, articulate, and defend their own position on relevant issues, "to cultivate a critical and reflective autonomy" (p. 308). Cogent argument thus replaces crude polemic. However, the authors failed to acknowledge the impact of lecturer partiality on the curriculum. Describing their politics course, Marxist ideas clearly dominated, and this was something they seemed keen to preserve:

> The tutor has a responsibility to be biased in the interests of good teaching. It is properly immaterial to the degree's Board of Study whether that bias exhibits a sympathy for structuralist or humanist or analytical Marxism, for Leninism or for Stalinism, or for Marxism as such against anti-Marxism. Indeed it would be entirely proper, were an adequately qualified and practised tutor to be available, for that bias to be unashamedly anti-Marxist, from a liberal or libertarian perspective (p310).

In a recent editorial promoting academic freedom, Jennifer Holberg and Marcy Taylor (2009) justifiably denounced intimidating actions of "anti-liberal" campaigners at American universities, but saw no contradiction in urging police investigation of the distributors of pamphlets warning of *jihad* activity on campus. Rather than displaying balance toward controversy, pursuance of "approved" causes is welcomed, while perceived reactionary views are suppressed. For example, the literature on research methodology is replete with feminist attacks on the prevailing scientific paradigm (Severiens & ten Daam, 1998); by contrast, right-of-center arguments have limited outlet, whatever their resonance with public opinion. Arguably, higher education has an important role in challenging lay prejudices, but intellectualism remote from societal discourse may be disparaged as smug or lacking in common sense. Such sentiment was observed in American society by Richard Hofstadter (1963), writing at a time when universities were becoming a bastion of liberal orthodoxy. Today, political bias has become so entrenched in academe that a "conservative intellectual" might be regarded as an oxymoron. Greater irony may be found in liberal hegemony.

Ideological Assumptions

The current predicament of freedom of expression in the university must be understood in relation to a prevailing socio-political outlook. This is commonly hyphenated as a combination of "liberal" and "left": the former espousing liberty and opportunity, with the latter instrumentalist, placing faith in state intervention. Compromise between these overlapping yet distinct paradigms is apparent in two cherished principles in higher education. Firstly, there is egaliatarianism. While most people working in academe would support an abstract goal of fairness, significant differences arise in interpretation. As Steven Pinker (2002) explained, one model – equality of opportunity – is diametrically opposed to the other – equality of outcome. Ability and aspiration are not equally distributed, nor are rewards. Indeed, a pure meritocracy, in which life chances are determined by talent alone, would create great disparity, as in Michael Young's (1961) dystopian vision. For outcome egalitarians, social justice entails compensating for naturalistic or discriminatory imbalances in society. As the focus has shifted from individual to collective outcomes, identity politics has become the vehicle for change.

At the core of this issue is the nature-nurture debate. In the 1970s sociobiologist E.O. Wilson was castigated for claiming that human character and culture are subject to natural selection. He had contravened the doctrine of *tabula rasa*, whereby nothing in mind or behavior is inherited (Pinker 2002). An illustration of "blank slate" ideology is in the West End musical *The Blood Brothers.* A single mother in a Liverpool slum, pregnant with twins, earns cash as a maid for an affluent but sadly infertile lady, and they make a deal. The boy raised in the rough public housing estate becomes a petty criminal, while his adopted brother in the genteel suburbs goes to grammar school and earns a place at Cambridge. The message of this romantic fable is that life chances are entirely derived from experience. Denial of hereditary passage ignores scientific evidence (Watson, 2004), and it is ironic that while educationalists ridicule creationism, they

maintain the empirically refuted seventeenth century conjecture of John Locke.

In Britain, unlike the mixed state and private provision in the USA, the university system is publicly funded, and a core strategy of government apparatchiks is the expansion of university education into the lower socio-economic strata. While many academic leaders accept a degree of affirmative action, doubts are surfacing. Vice-chancellor of Cambridge University Alison Richard used her speech at the 2008 UK Universities conference to attack social engineering of admissions, arguing that the primary concern of the university is not equality but excellence (*The Times,* 2008, September 10). Amidst alleged "dumbing down" of educational standards, students need assurance that it is their aptitude and application being assessed, not their appeal to redistributive justice. Collectivist intervention thwarts the primary focus of teaching: the individual student, each unique in attributes and potential. As the great libertarian John Milton (1667) penned in *Paradise Lost*, "if not equal all…all equally free."

A corollary of identity politics is multiculturalism. In an increasingly diverse society, Kantian universal fairness has been abandoned in favor of the postmodern creed of relativism. Imposition of Western ideas on other belief systems is avoided, but in fear of causing offence, cultural sensitivity has led to tolerance of beliefs and activities that confront established causes such as the emancipation of women. Feminists, partly due to cultural sensitivity but also perhaps fear, have been reticent in responding to this existential threat. Absurdities of liberal-left paradox were highlighted in commentator Nick Cohen's damning indictment *What's Left* (2007); for example, gay rights are promoted, but so too are the religious beliefs of groups categorically opposed to homosexuality. Without logical coherence, moral pluralism creates a bewildering fog for students in which the easiest approach is to uncritically accept all "otherness," while the *ancien régime* is attacked at will.

While attitudes and beliefs undoubtedly vary across the higher education workforce, the culture of the university, as in any occupational setting, emerges subtly through an interaction between the characteristics of people it attracts and the nature of the job. Political views are not overt recruitment criteria, but candidates at odds with prevailing ideology might best keep their views to themselves or seek employment elsewhere. Consequently, academe may not reflect the attitudinal diversity of wider society. To allege an Orwellian control of knowledge would be excessive, but arguably the revolutionary wave of the 1960s and 1970s has forged a new Establishment, keen to preserve its moral authority. Social historian Fred Siegel (1993) remarked that whereas intellectuals once spoke truth to power, they now speak power to truth.

Censorship in Action

Recent incidents have provided ample evidence for ideological censorship, with some eminent academic figures silenced. One casualty was Harvard president Lawrence Summers (now courted by President Barack Obama), who suggested that the gender imbalance in professorial positions in mathematics and science is due to differences in predilection. Students reacted by passing a vote of no confidence in his position (*New York Times* 2005, March 16). In the UK, the prestigious Royal Society demoted its director of education Michael Reiss for suggesting that schools present beliefs conflicting with the theory of evolution (*Science,* 2008, October 13). James Watson, a Nobel Prize-winner for discovering the structure of DNA, was forced to abandon a lecture at Oxford University after a furor arose from his remarks on affirmative action for racial equality (*The Independent,* 2007, October 20). The "dreaming spires" also witnessed the Oxford Students Action for Refugees attempting to remove Professor David Coleman from his post, protestors having confused his interest in eugenics with Nazi racial supremacy (*Daily Mail,* 2007, March 8). Clearly, there are words that cannot be spoken, debates that cannot be held, in the supposed fortresses of free speech.

Political policing transpires in the activities of the associations for lecturers and students. A common theme, within a general loathing of Judeo-Christian heritage, is the vilification of Israel as a global symbol of Western oppression. A recent controversy in Britain was sparked by a narrow vote by the Association of University Teachers to boycott collaboration with Israeli scholars, due to their government's treatment of Palestinians. In response, a group of twenty-one Nobel prizewinners wrote to liberal-Left newspaper *The Guardian* (2005, May 24): -

> There is nothing more intrinsic to the academic spirit than the free exchange of ideas. Academic freedom has never been the property of a few and must not be manipulated by them. Therefore, mixing science with politics, and limiting academic freedom by boycotts, is wrong. We, scholars from various disciplines who have devoted our academic lives to the advancement of humankind, express our unequivocal support for the separation of science from politics. The Nobel prizes we were honoured to receive were granted without the slightest consideration of nationality, ethnicity, religion or gender. Any deviation from this principle should not be allowed. Supporting a boycott will undermine these principles. It is our hope that academic reasoning will overcome political rhetoric.

The union relented, having incurred the wrath of the popular press and criticism by Prime Minister Tony Blair, but soon after, a similar boycott was approved by the University & College Union (2007, September 28), the biggest lecturers' union in the UK. The UCU accused universities of being complicit in alleged human right abuses of Palestinians. While sparing such piety towards tyrannical regimes elsewhere, the union sought a policy of "non-co-operation" with Israel, including a publication ban, and refusal to attend conferences in the state or to participate in Israeli-sponsored research (*Daily Telegraph,* 2007, June 2). General secretary Sally Hunt later declared, following legal advice, that the action would not proceed, as it would contravene anti-discrimination law (UCU website, 2007). However, the message from union membership was disconcerting to Jewish students in Britain facing an increase in anti-Semitism, and to whom rhetoric of "celebrating diversity" seems hollow (Union of Jewish Students, www.ujs-online.co.uk).

Censorship by students is a growing trend. Throughout British universities, the National Union for Students (NUS) vigorously maintains a "No Platform" campaign to prevent an audience for groups or individuals who they do not like. Speakers contravening an inflexible tranche of opinions have been subjected to *ad hominem* attack, but extreme labels such as "fascist" are diluted when aimed, not at followers of the far-Right, but at scientists reporting inconvenient research findings. Physical violence has been threatened by those who believe they are fighting fascism, when unwittingly enacting it themselves. Facing the likelihood of reactionary backlash, it is perhaps not surprising that universities play safe over whom they invite to the lectern.

Institutional Policy on Academic Freedom

The formal organization has the ultimate sanction of disciplinary action against any member of staff seen as bringing their institute into disrepute. In reality, few scholars are dismissed for indiscrete oratory. Nonetheless, there are powerful disincentives for stepping outside the confines of accepted ideology. Fear of social isolation or a juddering career halt may be enough to induce self-censorship in those of unconventional opinion. Responding to perceived constraints imposed by universities on free speech, a British professor, Dennis Hayes, founded the campaign Academics for Academic Freedom (www.afaf.org.uk), inviting academic workers to sign the following statement:

> (1) that academics, both inside and outside the classroom, have unrestricted liberty to question and test received wisdom and to put forward controversial and unpopular opinions, whether or not these are deemed offensive
>
> (2) that academic institutions have no right to curb the exercise of this freedom by members of their staff, or to use it as grounds for disciplinary action or dismissal.

According to Hayes, academic freedom is absolute. Free speech cannot be granted selectively, or it is not free speech at all. In Britain, this principle is enshrined in the Education Reform Act (Department of Education, 1988), which states that "academic staff have freedom within the law to question and test received wisdom and put forward new ideas and controversial or unpopular opinions without placing themselves in jeopardy of losing their jobs." Protection of academic freedom has not reached Constitutional Amendment in the USA; accepted policy is based on a *Statement of Principle on Academic Freedom and Tenure* by the American Association of University Professors (AAUP) and the Association of American Colleges in 1940. According to this statement, teachers should be permitted to discuss and publish controversial ideas within the confines of their subject. It balances such rights with responsibilities to their employer, students, and the wider community (AAUP, 1990, clause 3):

> University teachers are citizens, members of a learned profession, and officers of an educational institution. When they speak or write as citizens, they should be free from institutional censorship or discipline, but their special position in the community imposes special obligations. As scholars and educational officers, they should remember that the public may judge their profession and their institution by utterances. Hence they should at all times be accurate, exercise appropriate restraint, show respect for the opinion of others, and make every effort to indicate that they are not speaking for the institution.

In 1970 the AAUP issued an Interpretive Comment on the statement (AAUP, 1990), but despite some helpful emphasis and clarifications, there remains room for interpretation of what might be considered legitimate. Academic freedom is a nebulous concept, but Barnett (1990, p136) offered this definition: "Academic pursuits, carried out in academic settings, by academic persons, should be ultimately directed by these persons.

If the scope of academic freedom is narrowed to formal areas of expertise, should letters from lecturers to newspapers on extracurricular issues such as nuclear energy or Palestine be addressed with the name of their institution? Perhaps this is appropriate if the writer

reflects faculty norms? A statement by the American Council of Education (2005) advised that "the validity of academic ideas, theories, arguments and views should be measured against the intellectual standards of relevant academic and professional disciplines." Marginal views, however defensible, might not be tolerated by the sort of universities that Kors and Silverglate (1998) accused of imposing a pernicious cult of political correctness. Meanwhile, Fessel (2006) identified another indirect means of institutional control. Student evaluation has been introduced throughout academe, and while few educators would deny its merit, it potentially provides ammunition for dispensing with "poorly performing" staff. Debate may prove costly in a minefield of the readily offended. Stancato (2000) observed an increasing reluctance of faculty to facilitate discussion on sensitive yet core issues; according to Fessel (2006, p53), "hardly any campus has been left untouched by this trend toward suppressing the very controversial issues that can promote critical thinking."

Implications for Teaching

In the idealism of the universities founded in early nineteenth century Germany, knowledge was to be acquired through Hegelian dialectic. This culture of *Lernfreiheit* declined with the expansion of technical knowledge, and reliance on debate as the primary instrument for learning would be fanciful today. Yet the principle of critical learning remains relevant. Ronald Barnett, in his *Idea of Higher Education* (1990, p203), identified the following processes as fundamental to the student's progress in higher education:

1. A deep understanding of knowledge claims
2. A radical critique of those knowledge claims
3. A developing competence to conduct that critique in the company of others
4. Involvement in determining the shape and direction of that critique
5. Self-reflection
6. Opportunity to engage in a process of open dialogue

Critical thinking has been described as more of an aspiration than a method (Browne & Freeman, 2000). Its nurture relies on the relationship between lecturer and student, with the former as mentor in an ongoing process of discovery. Socratic questioning may be used to pursue the basis and support for an argument, its conflict with alternative stances, and its implications (Paul, 1992). The teacher might usefully play the role of "devil's advocate." The author recalls from psychiatric nurse training a visiting lecturer asserting that prison or any form of incarceration have no place in a civilized society. Although unable at the time to articulate a satisfactory response, this challenge to the student group's assumptions stimulated deeper thought on why society deprives certain individuals of their liberty, and the rational trinity of public safety, punishment, and rehabilitation. This example demonstrates the benefit of critical engagement in a topic. As described by Entwhistle (1988), whereas surface learning entails filtering of course material into facts to be memorized for examination, deep learning is to understand a concept within its wider context, leading to a richer, enduring cognizance.

By traversing the arbitrarily drawn boundaries of knowledge, critical thinking ultimately empowers students not only in their subject but in "the university of life." In the problem-based learning model (Kwan, 2009), the teacher acts as facilitator of group work to tackle real world issues through discussion, thereby enhancing critical reasoning and problem-solving skills. Of current prominence in the literature on critical thinking is transformative learning. In a rapidly changing world, it is important not only to prepare students to become autonomous citizens, but also to be tolerant and inclusive. As Mezirow (1997) stated: "We have a strong tendency to reject ideas that fail to fit our preconceptions, labelling those ideas as unworthy of consideration – aberrations, nonsense, irrelevant, weird, or mistaken" (p5). In the transformative approach, students are encouraged to become aware of their assumptions and to think critically about their cultural frame of reference. However, while enlightened students may readily doubt the ethnocentrism and conservative values of older generations, are they also prepared to scrutinize other world views? The idea that criticism of a cultural stance is only permissible from within that culture is a relativist *cul-de-sac*.

The ascendancy of the constructionist paradigm in pedagogy and social sciences is a profoundly humanistic riposte to scientific determinism, but the phenomenological ontology of multiple truths could lead to critical laziness. If students remain in their comfort zone, the extremist escapes scrutiny by peers, while the mindlessly tolerant does not learn how to reason against radical or prejudiced ideas. Barnett (1990 p205) asserted: "The emancipatory conception of higher education is ultimately founded on the right to criticise, and on the right to dissent even from the idea itself." Therefore, no religious, ethical or political idea is beyond critique. As Lee (2006, p202) remarked: "It is not much of an overstatement to say that an unexamined belief is not worth having." Debating contentious issues enriches learning, because students begin to generate principles from conflicting ideas. It is only human to find some views upsetting, but attempting to understand why people hold disagreeable beliefs is more constructive than pressing the mute

button. Otherwise, an opportunity for personal and intellectual growth is wasted.

Just as one may confront another person's views, one must be prepared to receive criticism. Some may find this intimidating, but critical thinking relates to an argument - not the person presenting that argument. As ten Dam and Volman (2004) stated, not all students flourish in adversarial debate. To avoid critical thinking being misconstrued as a destructive process, they urged a more inclusive process of collective interpretation. Lee (2006) urged teachers to not only embrace freedom of expression, but to actively enable students to work through issues, supporting those who take risks and who receive criticism. An important aspect of critical thinking is self-reflection (Halpern, 1999). Participants in debate should be guided in reviewing their contribution and impact on others, thereby learning to show discretion, and to present their case in a way that stimulates rather than alienates the audience. While being challenged may help the absolutist to soften his or her stance, easily offended individuals should be helped to understand the place of free speech in wider society, and the immortal rationale of Voltaire (1694-1778), "I disapprove of what you say, but I will defend to the death your right to say it."

Conclusions

Academic freedom and critical thinking are interrelated components of the academic mission of liberal inquiry and debate. They entail rights and responsibilities, and are shaped not so much by policy but by the attitude and conduct of all who study and teach in higher education. As Barnett (1990) argued, academic freedom should be expanded from its narrow definition of staff immunity from censorship towards a universal mandate to present and to criticize ideas. Equally, the concept of critical thinking may be broadened from a stage of learning to an ongoing scrutiny of theoretical assumptions, with students and teachers alike recognizing the fallibility of knowledge. This reconceptualization may be seen as liberating, egalitarian, and culturally inclusive.

It is ironic that while many developing countries are now embracing free speech (Altbach, 2001), commitment in the West may be faltering, as societal discourse is sanitized by political correctness. Janet Collett, biologist at Sussex University, claimed that "sharp critical thinking and fostering independence are no longer the hallmarks of British university education" (*Sunday Times*, 2009, March 8). Yet the tradition of creative and critical learning remains an attraction for Western universities competing in a global market. Societies of drilled acquiescence do not offer a launch-pad for individuals seeking to push back the frontiers of knowledge. Moreover, the flow of foreign students brings mutual benefit. Multicultural diversity offers a rich tapestry of differing perspectives and insights, particularly in the humanities, where interpretations and values are in perpetual flux. Epistemological entropy can be seen as an opportunity or a threat in academe. Universities would do well to embrace critical thinking and debate as a means of navigating uncertainty and competing moralities. A clear message appeared in a statement by the Association of American Colleges & Universities (2006, January 6), titled *Focus Less on Political Views of Faculty and More on Teaching Students to Make Informed Judgments in the Face of Conflicting Views*.

Teachers are less likely to encourage free expression by students if deprived of this right themselves. As power shifts from a relatively independent professoriate to politically astute administrators, academic freedom is rarely on the agenda. Fessel (2006) urged universities to issue clear statements affirming their commitment to academic freedom and controversial debate. As Knight and Trowler (2000) argued, teachers and students need room to take chances in a climate of mutual respect. Expression should be governed not by taboo or disciplinary measures but by social consequence, as the maverick realizes that he must compromise to avoid isolation. Tolerance has limits, but should extend to reasoned argument, however challenging to faculty norms or the general socio-political paradigm of higher education. Reflecting on a career in scientific academe, James Watson (2007) looked forward to political correctness being left to the politicians. The university does not exist in a vacuum, but to remain a seat of intellectual integrity, it must cherish and defend its hard-won freedom.

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