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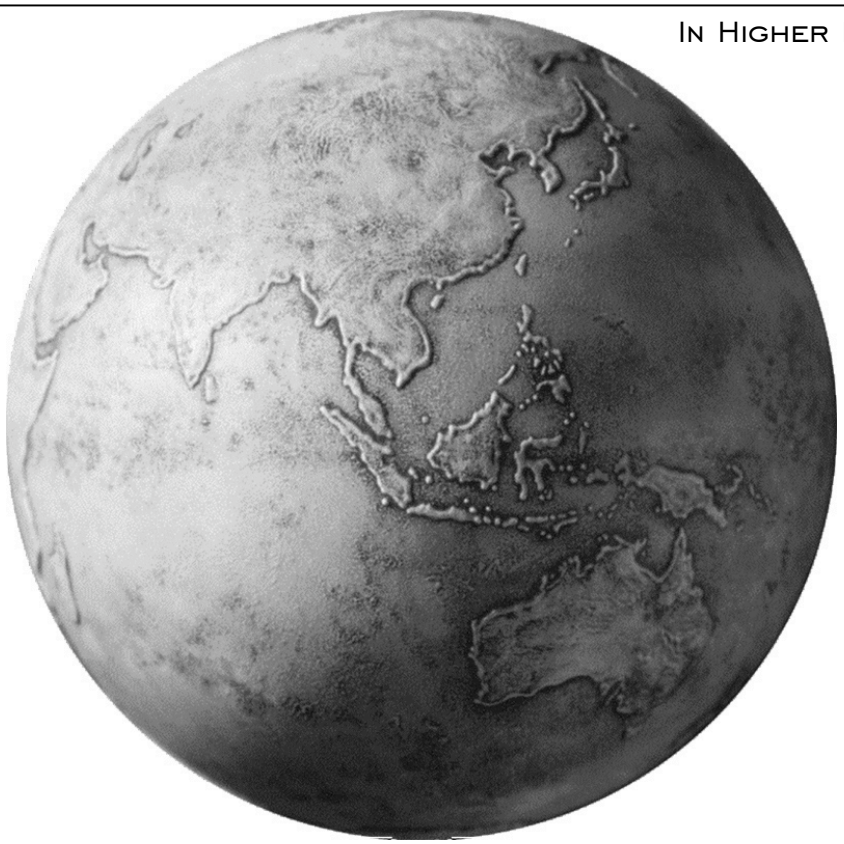

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GENERAL ISSUE

Research Articles

Instructional Articles

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The Effect of Varied Cognitive Strategies Used to Complement Animated Instruction in Facilitating Achievement of Higher Order Learning Objectives

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The purpose of this study was to investigate the effects of advance organizers and audio narrations used to complement animated instruction on tests measuring different educational objectives. One hundred forty-one participants were randomly assigned to five treatment groups, received their respective instructional presentation and completed four criterion measures. No statistically significant differences in achievement were found among the five treatment groups on each of the criterion measures indicating that the type of cognitive strategies employed to complement animation did not instigate deeper levels of information processing and were not effective in facilitating higher order learning outcomes. These results raised concerns about the usefulness of prior research related to advance organizers and audio narrations when the objective is to complement animated instruction to facilitate higher order learning objectives.

Recent advances in instructional technology have stimulated research interest toward looking at the effect of various techniques on computer-based instructional (CBI) development. Among all advances, animation has drawn much research attention due to its appealing nature and dynamic representation, of which few other means of instructional delivery can accommodate. Park and Gittelman (1992) defined animation as "artificially generated movements of pictures or graphics in computer displays, resulting in apparent motion" (p. 27). A major function of animation is to focus learners' attention by employing special effects either to highlight the importance of a topic or to demonstrate the beginning or ending of a section. Animation also has the potential to provide feedback in various forms that may be both entertaining and motivating to learners striving for a correct response. The most powerful and direct application of animation is to use it to present instructional materials that are dynamic in nature, too abstract to understand or physically invisible, such as the flow of blood in a human heart or concepts in physics (Dwyer, 1994; Kaiser, Proffitt, & Anderson, 1985).

Previous research on animated instruction has not been encouraging. Wilson and Dwyer (2001) in their study investigating the effect of dynamic visuals on students' achievement of specific types of educational objectives determined that animation failed to optimize achievement of the more complex types of learning outcomes. Lin, Chen, and Dwyer (2006) compared the effects of static visuals versus computer-generated animation on learners' comprehension and retention of a content-based lesson in a computer-based learning environment for learning English as a Foreign Language (EFL). The results indicated that the animation group outperformed the static visuals group in only one of the four tests. Overall, some studies showed significant positive effects of animation on learning (Alesandrini & Rigney, 1981; Kaiser, Proffitt, & Anderson, 1985; Rieber, 1989; Rieber & Boyce, 1990), while other studies showed no significant effects (Caraballo, 1985; King, 1975; Moore, Nawrocki, & Simutis, 1979; Reed, 1985; Rieber & Hannafin, 1988).

Although prevailing findings regarding animation studies have been inconclusive, instructional designers as well as researchers continue to investigate the causes that might contribute to the lack of effect of animation. Owens and Dwyer (2005) indicated that learners may have failed to focus on critical aspects of the animation and therefore were not able to effectively interact with the animation and fully benefit from it. It seems plausible, then, that some types of cognitive strategies are necessary to accompany animated instruction and to scaffold students when they are learning from animated instruction. In a study conducted by Munyofu et al. (2006) looking at the effect of chunking as a cognitive strategy to complement animation, students receiving the complex chunking treatment significantly outperformed their counterparts receiving animation alone indicating chunking was an effective instructional strategy to complement animated instruction designed to facilitate higher level learning outcomes. Lin, Ching, Ke, and Dwyer (2006) conducted a meta-analysis to examine the relative effectiveness of varied enhancement strategies used to complement animated instruction on different educational objectives. The results of this meta-analysis indicate that when enhancements are used to complement animated instruction they can have either a positive or negative effect depending on the type of enhancement and the type of learning objective to be facilitated. The enhancements themselves may have distracted participants' attention from the critical information designed to be imparted by the animation, thereby reducing their effectiveness. These results would indicate that further research should concentrate on the

design of enhancements that ensure that more intense interaction occurs between the content and the learner and that this interaction be assessed in terms of its effectiveness in facilitating achievement of different types of educational objectives. The purpose of the study was to investigate the effectiveness of two types of advance organizers and narrations used as enhancement strategies to reinforce students' learning from animated instruction.

Theoretical Framework/Literature Review

Three theories that are particularly important and relevant to instructional visual design as commonly cited in the literature are: (a) cognitive theory of multimedia learning, (b) cognitive load theory (CLT), and (c) dual coding theory. These theories all draw on research findings from cognitive science and are based on how human beings process information and, in particular, how the components of human memory process information.

Foundations of Animated Instruction

Mayer (1994) developed the cognitive theory of multimedia learning, a generative theory, to provide design principles for multimedia instructional materials. This theory draws upon several additional theories and extension of these theories, including Wittrock's generative theory (1990) and by extension Mayer (1984, 1993) and Sternberg (1985); and Paivio's dual coding theory (1986) as well as its extensions by Baddeley (1992), Mayer (1992, 1993) and Schnotz (1993). The basic tenet of the cognitive theory of multimedia learning is that learners are active knowledge constructors who are involved in a meaningful learning process. A meaningful process occurs when learners consciously select information from presented stimuli, organize information into coherent representations, and then make efforts to integrate new information with other or existing information (Mayer, 2001).

Reducing working memory load in learners is necessary to facilitate the encoding and storing of information in a learning process (Baddeley, 1992; Sweller, 1988). Dual coding theory supports this cognitive information-processing and assumes the existence of two separate information processing systems: (a) the verbal system that is comprised of words, and whose strength lies in its sequentially ordered hierarchy; and (b) a non-verbal system whose strength lies in its synchronous hierarchy (Clark & Paivio, 1991; Sadowski & Paivio, 2001). All information is assumed to be processed in a cognitive system composed of a visual system that processes visual information and a verbal system that processes verbal information.

Mayer and his colleagues found that the effect of dual coding was enhanced when the verbal and visual information was presented concurrently with the animation rather than before or after it (Mayer & Anderson, 1992; Mayer & Sims, 1994). Placing supporting text near the animation it is meant to support is known as the contiguity principle (Clark & Mayer, 2003). Moreover, placing printed words next to the animation they are supporting can reduce the split-attention effect (Clark & Mayer, 2003).

While animation helped to reduce cognitive load it was not reduced as much as it could be because both text and animation have to pass through the same (the visual) sensory channel (Mousavi, 1995; Chandler & Sweller, 1992). This meant that students were forced to shift their attention between the text and the animation while going through the pattern recognition and selective perception processes. Miller (1956) referred to the limitation of the sensory register as our "channel capacity" (pp. 85). Channel capacity is the maximum amount of information we can hold in our sensory memory at any given point in time.

When animation is supported by a spoken explanation, as opposed to a textual explanation, cognitive load is further reduced. This time the reduction comes through the way that information passes from the environment through sensory memory and into working memory (Chandler & Sweller, 1992; Paivio, 1986; Penney, 1989).

Mann (1995), in a study testing student's ability to construct a solution to an educational problem, used spoken information that highlighted or detailed static or moving visuals, in a computer-based lesson to more effectively use students' channel capacity in sensory memory. Mann found that students were able to recall a greater amount of critical detail when concurrent spoken information was used.

Using written text or spoken text that closely matches the animation it supports without extraneous details is also an important factor for success. In a study on reducing the cognitive load in lesson summaries, Mayer (1996), using a lesson on the process of lightning formation, found that students receiving concise lesson summaries that included both visual and verbal information, performed best on verbal recall and problem solving tests. Similarly, Moreno and Mayer (2002) found that extraneous details hurt student performance when using the lesson on the process of lightning formation.

Advance Organizers

Advance organizers are appropriately relevant and inclusive in nature and are used to accomplish progressive differentiation in the subject matter by "using a hierarchical series of organizers, each

organizer preceding its corresponding unit of detailed, differentiated material" (Ausubel, 1968, p. 82). At least two advantages accompany the construction and use of advance organizers for new material. First, the advance organizer creates a subsumer that would give the learners a general overview of the new material, and second, the advance organizer creates cognitive connections between established knowledge and new material in terms of relevant concepts and therefore enhances the "familiarity and learnability of new material" (Ausubel, 1968, p.82).

Research has suggested that student achievement can be facilitated by the use of advance organizers (Hirumi & Bowers, 1991) because advance organizers are "designed to have [a] specific effect on how readers deal with upcoming text" and that they "set up a context for encoding" (Corkill, Glover, Bruning & Krug, 1988, p. 304). A tremendous amount of studies have been undertaken to investigate the use of advance organizers in the classroom. Stone (1983) in her meta-analysis of 29 advance organizer studies conducted between 1970 and 1980. The results of this analysis suggested that generalized advance organizers facilitated factual learning. Specifically, the results indicated that lower effect sizes were associated with written and abstract advance organizers, while higher effect sizes were associated with non-subsuming advance organizers. Finally, Stone (1983) determined that low-ability and low-knowledge learners did not benefit from the use of advance organizers.

Statement of the Problem

The purpose of this study was to examine the instructional effectiveness of cognitive strategies; that is, two types of advance organizers (descriptive and questions) and two types of narrations (descriptive and questions) used to complement animated instruction in facilitating student achievement of different educational objectives. The purpose of the cognitive strategies employed in this study was to focus participants' attention, increase their depth of information processing, and enhance interactivity between instructional material and learners so as to facilitate achievement. The researchers were especially interested in investigating whether advance organizers and audio narrations of different types are effective in facilitating achievement of higher order learning outcomes. Higher order learning outcomes here refer to learners' ability to apply concepts and rules and engage in problem solving after receiving the instruction embedded with advance organizer and narration cognitive strategies.

Methodology

Two Pilot Studies

Two pilot studies were conducted to identify where participants were experiencing difficulty in learning within the instructional unit so that enhancement strategies could be embedded. Item analysis was conducted on scores of the criterion measures to determine exactly where in the instructional material participants experienced difficulty. The item analysis was conducted by awarding one (1) point to an item for each student when it was answered correctly and zero (0) to an item for each student when it was answered incorrectly. Item difficulty was then determined by dividing the total point for each question by the number of pilot study participants. Thus, an item that had a difficulty level of .40 would indicate that 40% of the participants answered the item correctly. For the purpose of this research, any item with a difficulty level below .60 was targeted for instructional support. Both pilot studies used the same criterion measures as was used in the formal study.

The first pilot study. The purpose of the first pilot study was to identify the areas within the instructional unit that learners had experienced difficulty in order to determine the positioning of the animation to improve achievement. The instructional material used in this study contained a 2,000-word physiology unit focusing on the human heart, its parts, locations, and functions during the diastolic and systolic phases (Dwyer & Lamberski, 1977). The instructional script was accompanied by 20 static visuals of the human heart.

Participants for the first pilot study were 12 undergraduate information system technology majors participating for course credit. Data were gathered in a one-shot study conducted in a multimedia computer lab. The results of the first pilot study suggested that a total of 25 out of 80 items have difficult indexes lower than .60. These items were identified as areas that students experienced learning difficulties and were ideal positions for animated instruction that may be embedded to improve learning. To be specific, the distribution of difficult items was five (5) in the drawing test, one (1) in the identification test, ten (10) in the terminology test and nine (9) in the comprehension test.

The second pilot study. The purpose of the second pilot study was to identify the area of instructional module that produced difficulties to learners even after animation was embedded into the instructional unit. The results of the study, via item analysis, would be used as indications where further enhancement strategies, two types of advance organizers and narration, could be embedded to optimize learning. For the purpose of the second pilot study, material used in

the first pilot study was enhanced with 8 animated sequences that addressed the 25 difficult items identified in the first pilot study. The original 20 instructional frames were thus expanded to 27 instructional frames containing 13 animated sequences. It has to be noted that the amount of content contained in the original 20 frames used in the first pilot study had to be adjusted so that a single animation sequence did not deliver too much information in a single frame.

Participants of the second pilot study were 44 undergraduate business management majors participating for course credit. The results of the second pilot study suggested that a total of 24 out of the 25 items identified in the first pilot study still remained difficult even after animated sequences were developed to enhance comprehension. These items were again identified as areas that students have experienced learning difficulties and provided ideal positions that enhancement strategies, advance organizers and narrations, could be inserted to improve learning. To be specific, the distribution of difficult items was five in the drawing test; none in the identification test, nine in the terminology test and ten in the comprehension test. Table 1 summarizes the items identified as difficult with corresponding difficulty level obtained from two pilot studies.

Development of Computer-Based Instruction Module

The instructional content used in the formal study was based on the result of the second pilot study. The computer-based instruction contained 27 instructional frames in which 13 frames contained animated sequences. To further describe the instructional material used for the present study, the instructional content contained a 2,000-word reading passage related to the function of the human heart – its parts, blood cycle and pressure during both the diastolic and systolic phases. Specifically, the material was divided into six units: (a) the four layers of the heart, (b) the

TABLE 1
Items Identified as Difficult with Difficulty Index from Two Pilot Studies

Item No.	First pilot	Second pilot
Drawing Test		
No.6	.58	.50
No.8	.54	.46
No.11	.48	.34
No.12	.30	.45
No.18	.53	.57
Identification test		
No.8	.34	.78
Terminology Test		
No.1	.33	.49
No.5	.56	.56
No.8	.45	.50
No.9	.56	.58
No.10	.57	.58
No.11	.34	.45
No.13	.45	.50
No.14	.35	.45
No.18	.54	.50
Comprehension Test		
No.2	.54	.57
No.4	.42	.48
No.5	.30	.47
No.6	.35	.48
No.14	.45	.58
No. 15	.57	.41
No.16	.48	.48
No.17	.41	.50
No.18	.20	.52
No.20	.29	.57

heart's structure, (c) the veins and arteries of the heart, (d) the valves of the heart, (e) the blood flow through the heart, and (f) the phases of the heart cycle. The material was developed based on the principles of instructional consistency and congruency paradigm (Dwyer, 1994). In other words, the material is presented in an increasingly complex and difficult sequence. Therefore, participants must acquire basic facts and simple concepts presented in earlier sections of the instructional material to be able to comprehend later portions of the material that delivered more complex and difficult information. Additionally, a portion of the animated instructional unit was designed in a programmed unit format. That is, four quizzes containing 5 practice questions each were embedded after the first four frames that primarily delivered factual knowledge and simple content. Participants were asked to answer the questions based on the material just presented. If students' scores were satisfactory, 90% correct, they were able to move on to the next part of the lesson, which is more complex and concerns higher level of learning outcomes. If the score was unsatisfactory they were brought back to the beginning of that series of content.

The insertion of a programmed unit in the instructional unit was to address the concern that Mayer and Sim (1994) raised. In their study that investigated the effect of animation and narration on transfer learning for both high and low spatial ability students, they found that learners with more domain/subject knowledge were better able to retrieve familiar knowledge from their long-term memory and to be able to "build connections between retrieved system and the system described in words" (p. 391). The employment of programmed instruction in our study ensured that both inexperienced and experienced learners were equipped with perquisite knowledge and thus able to benefit from animated instruction.

Treatment Descriptions

The following section describes the individual treatment materials used in the present study. The computer-based instructional material described above was used as the base material and was the treatment received by the control group.

Descriptive advance organizers. Descriptive advance organizers were inserted prior to twelve selective frames that covered the 24 difficult items identified from the second pilot study. In total, 18 advance organizers were designed and distributed prior to the 12 frames. Occasionally, several advance organizers had to be developed and embedded prior to some of the 12 frames that contained more difficult items. Each descriptive advance organizer was accompanied by a static visual that depicted important information to be encountered in the next frame. The most important concept/key word was highlighted in red and was presented as a descriptive statement. Figure 1 presents a screenshot of a descriptive advance organizer followed by an animated frame (see Figure 2) that was designed to enhance understanding. Figure 3 presents the screenshot of an on-going animated sequence while it was playing.

Question advance organizer. Questions advance organizers were inserted prior to the same 12 instructional frames as were the descriptive advance organizers. Each question advance organizer was accompanied by a static visual which was exactly the same as the one used in the descriptive advance organizers. The question organizer was presented as a question with four or five possible answer choices. The correct choice was shown after 15 seconds. This timeframe was determined based on a pilot study with 5 undergraduate students. Figure 4 provides a screenshot of a question advance organizer.

Descriptive oral narration. Two types of oral narrations, descriptive and question oral narrations, were embedded in the 12 instructional frames that contained material that were difficult based on the results of the second pilot study. The descriptive oral narration provided audio support for animation and was presented in the form of simple declarative sentences. It should be noted that the two types of advance organizers were embedded prior to the difficult frames, whereas the oral narrations were concurrent with the instructional frames. For example, for a frame that an animation sequence was designed to show that the ventricles are the thickest walled chambers of the heart, the student, when he/she selected the "play" button would see the animation and simultaneously heard a statement that said, "The ventricles are the thickest walled chambers of the heart."

Question oral narration. Question oral narrations accompanied the same animated sequences as the descriptive oral narration group. However, the audio support was delivered in a question and answer format. Continuing the example above regarding the ventricles, a student receiving this treatment would hear, "What are the thickest walled chambers of the heart?", while the animation was playing. After a short pause, students hear the answer, "The ventricles are the thickest walled chambers of the heart." The same voice was used in both treatment groups and the speed at which the animation was played was adjusted to fit the length of the audio support. Table 2 presents a summary of each frame embedded with a specific treatment

Criterion Measures

Achievement was measured via four criterion tests developed to accompany the instructional unit: drawing

FIGURE 1
Screenshot of a Descriptive Advance Organizer

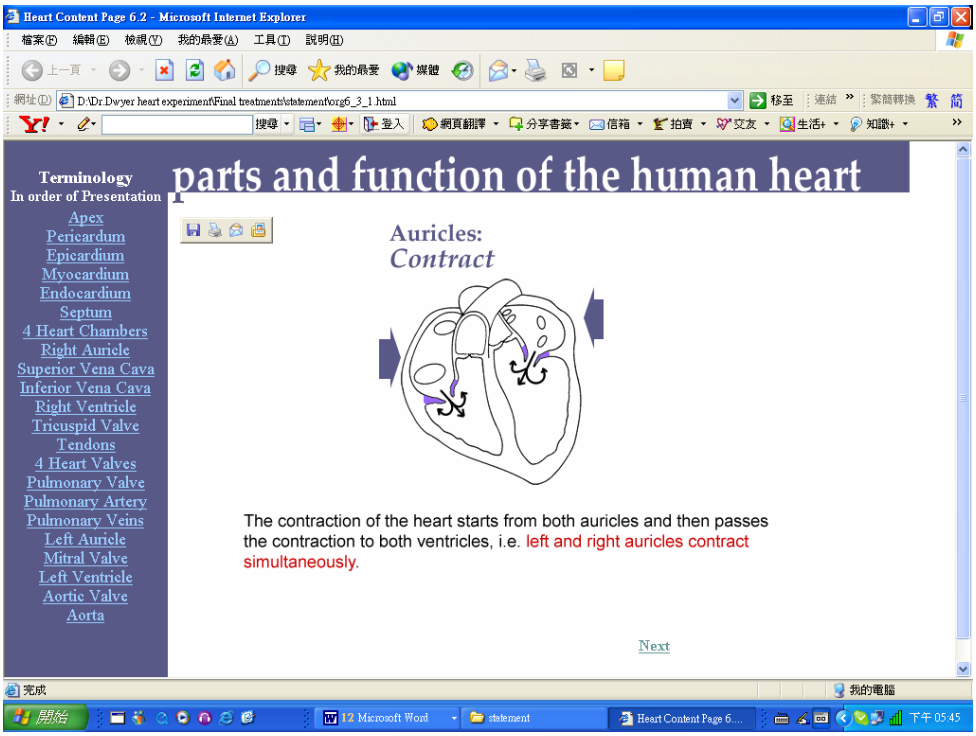

FIGURE 2
Screenshot of an Animation Sequence

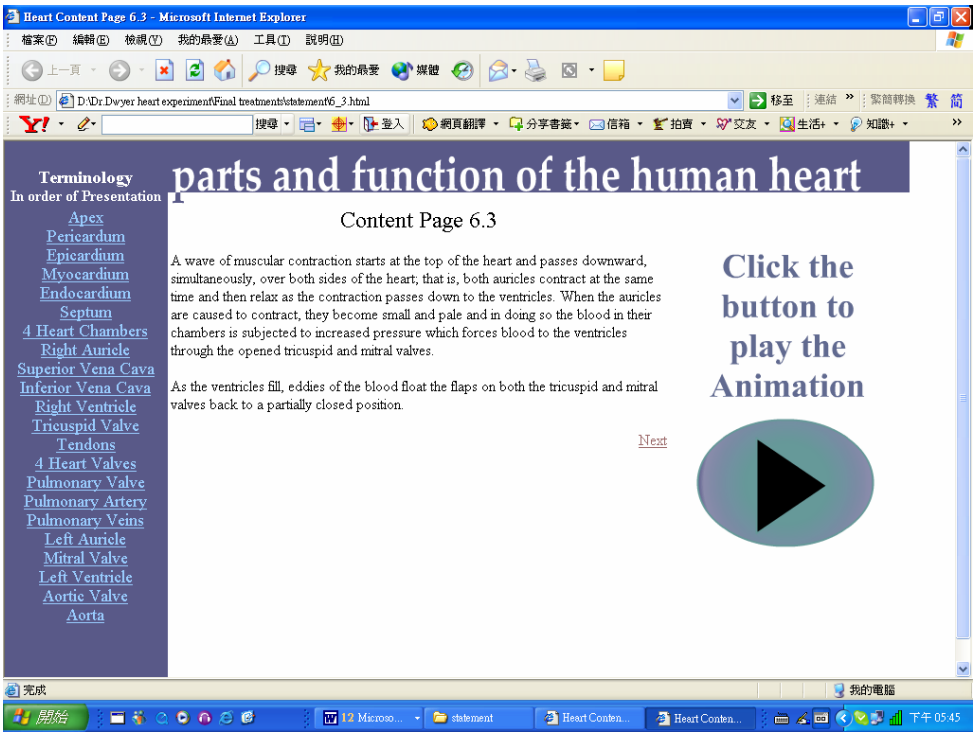

FIGURE 3
Screenshot of Animation on Display

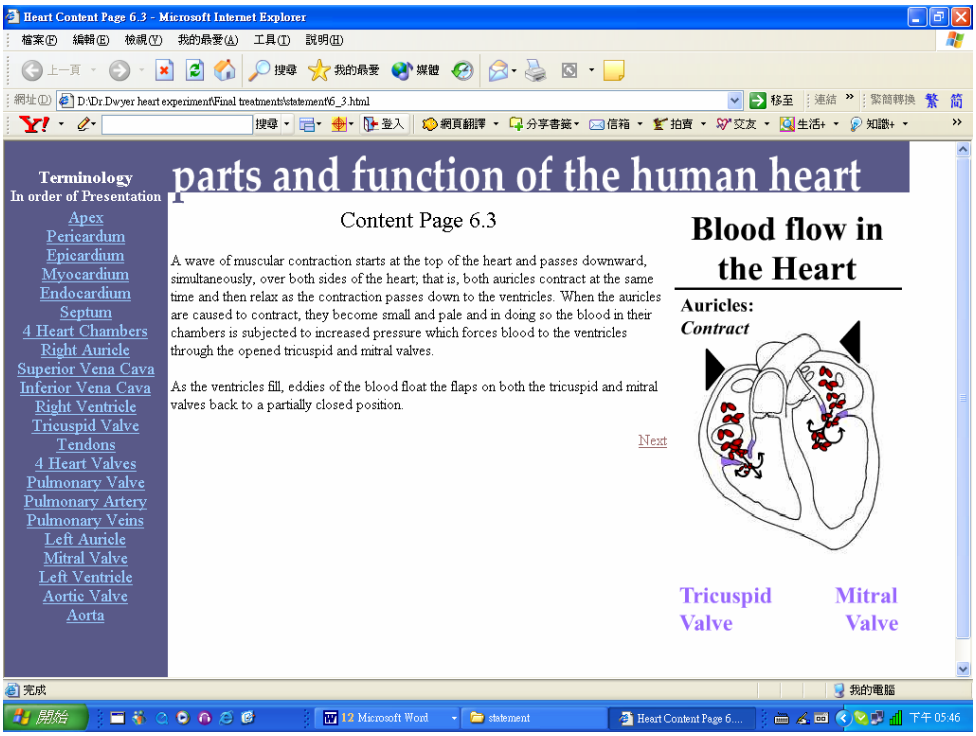

FIGURE 4
Screenshot of a Question Advance Organizer

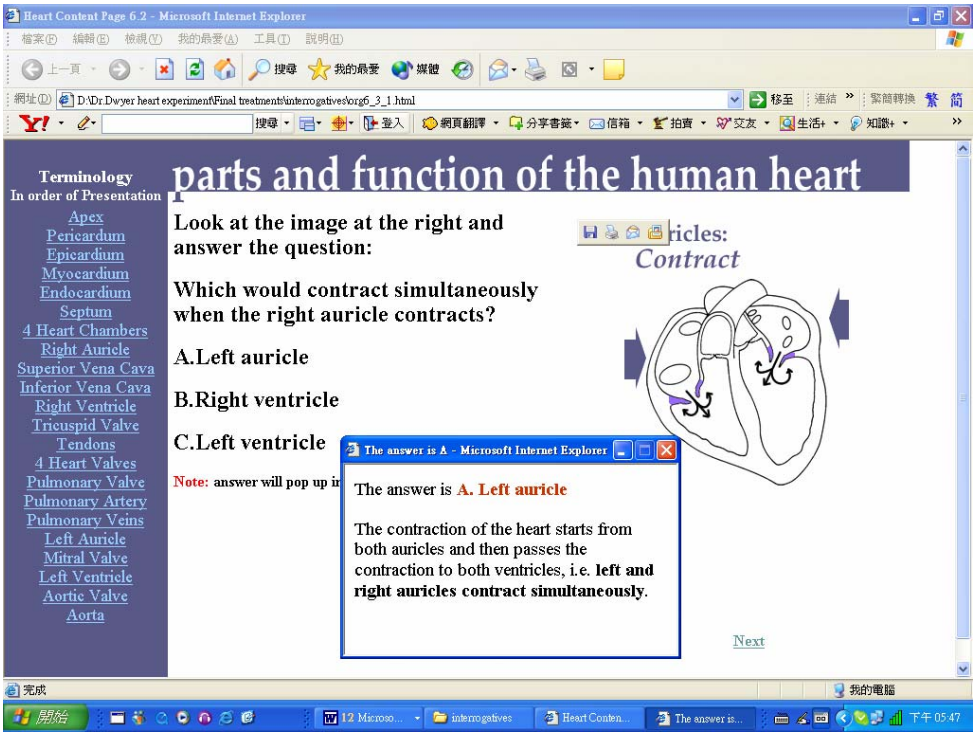

TABLE 2
Summary of Instructional Frames with Treatments

Frame	Content[1]	Treatment[2]	Frame	Content	Treatment	Frame	Content	Treatment
1	1.1		10	4.1		19	6.3	A/N/O
2	1.2	A/N/O	11	4.2		20	6.4	A/N/O
3	2.1		12	4.3		21	6.5	A/N/O
4	2.2	A/N/O	13	4.4		22	6.6	A/N/O
5	2.3		14	5.1	A/N/O	23	6.7	
6	3.1	A/N/O	15	5.2		24	6.8	A/N/O
7	3.2		16	5.3	A/N/O	25	6.9	A/N/O
8	3.3		17	6.1		26	6.10	A/N/O
9	3.4		18	6.2		27	6.11	

[1] Title for each unit: Unit 1. Four layers of the heart; Unit 2. The heart's structure; Unit 3. Veins and arteries; Unit 4. Valves of the heart; Unit .5 Blood flow through the heart; Unit 6. The phases of the heart cycle.
[2] A = animation displayed in this frame; N = narrations embedded in this frame; O = advance organizers embedded *prior to* this frame

test, identification test, terminology test, and comprehension test. Each test, except for the drawing test that asked students to draw a human heart, consisted of 20 multiple-choice questions. The maximum score for each test was 20. All of the tests, except for the drawing test, were provided online and were completed by participants after they finished the instructional module.

Drawing test (KR-20 = 0.70). The drawing test measured participants' conceptual understanding of the instructional unit as well as their ability to reproduce the parts of the heart in their appropriate context. Participants were asked to draw a simple line diagram of the human heart on a blank piece of paper in which 20 parts of the heart needed to be included and identified in the diagram that they drew. The quality of the drawing did not affect the test score since correct positioning of the 20 parts of the heart was the only criterion of assessment. Since the test scoring required human judgment, multiple raters were asked to assess the tests. The raters were two doctoral students with a major in instructional systems. Raters were given instruction on scoring procedure and were trained to score 100 drawing tests used in previous studies. The raters were not asked to score the drawing tests for this study until they reached a designated inter-rater reliability of .90 by scoring tests from previous studies. The inter-rater reliability of the drawing test for this study was .92. Achievement on this test represented participants' understanding of factual/verbal knowledge of the instructional material and mastery of this learning objective corresponds to a lower-level learning outcome.

Identification test (KR-20 = 0.67). Participants were provided with a diagram of the human heart, that had 20 numbered arrows pointing to specific parts of a human heart. Participants were asked to select from the alternatives the correct alternative that corresponds to the numbered part of the human heart. The test evaluated participants' ability to identify facts or positions of the parts of the human heart. Achievement on the identification test indicated participants' ability to recognize instructional stimuli and to make discriminations among them. This test measured lower-level learning outcome.

Terminology test (KR-20 = 0.84). The terminology test consisted of 20 multiple-choice items measuring knowledge of specific facts about the human heart. The knowledge measured in this test can be categorized as verbal information considered as prerequisite to participants' acquisition of higher-order knowledge, such as concepts, rule/procedures, and comprehension.

Comprehension test (KR-20 = 0.76). The comprehension test consisted of 20 multiple-choice questions designed to measure participants' knowledge of the functions of the human heart during both diastolic and systolic phases. Participants needed to demonstrate their understanding of how a specific part of the heart functions simultaneously while relative parts are functioning. For example, one of the questions in the comprehension test asked, "When the tricuspid and mitral valves are forced shut, in what position is the pulmonary valve?" To be able to answer this question correctly, participants need to first demonstrate their correct understanding of the position of the tricuspid and mitral valves (facts), and secondly, comprehend the diastolic process of the human heart during which tricuspid and mitral valves are shut (process/procedures), to be able to understand the relative position of pulmonary valve in the process. The test required participants to fully comprehend the facts, concepts, and procedures related to the parts of the human heart and its function and therefore, it measured a higher-level learning outcome.

Composite score (KR-20 =0.92). Scores of the four criterion tests were combined to form a composite score. This score measured participants' total comprehension

of the material contained in the instructional module. The maximum composite score is 80.

Participants

Participants included 141 undergraduate students enrolled in a university on the east coast. The participants were recruited from a subject pool that involved majors of business, education, visual arts and instructional technology. Participants with a major in physiology were excluded from the study to eliminate a possible confounding factor that these participants may already have a higher level of prior knowledge related to the instructional material.

Participants were freshmen and sophomores at the time of study and were recruited from a Survey of Management class. They voluntarily participated in the study and were given extra credit by their instructor for their participation. Data on participants' gender and age were not collected since these are not variables of interest in the study. In addition, participants were not required to have pre-requisite knowledge to be able to benefit from the intervention as the instructional module is comprehensive, covering different levels of knowledge from simple to complex. Any existing prior knowledge differences were controlled thought the random assignment of participants to groups.

Procedure

Employing a posttest-only control group design, the study was conducted in a multimedia lab. The computers in the lab were equipped with two speakers, headphones and the necessary software was installed beforehand in order to run the animation and specific treatment conditions. Participants were randomly assigned to one of the five treatment groups. The researcher first introduced the study, its process and approximate duration before participants were asked to log on a website in which each specific treatment was located. Each treatment was preceded with an instructional page that described the content of the instructional unit, the use of navigation buttons and treatment condition. For the Animated Instruction only (AI) treatment group, the control group, participants were asked to read the text located on the left side of each screen and then click a button to play the accompanying animation sequence. Participants could view the animation as many times as needed before proceeding to next frame. For the Descriptive Advance Organizer + Animated Instruction treatment group (DAO), participants were encouraged to look at the static visual on the right of the screen and relate it to a descriptive statement that depicted the visual. Participants selected the "Next" button to proceed to the next frame. For the Question Advance Organizer + Animated Instruction (QAO) treatment group, participants were advised to view a static visual on the right side of the screen and read the corresponding question. Participants then chose an appropriate answer in their mind and waited for the correct answer to show up in a pop-up window after 15 seconds. Participants then closed the window and selected "Next" to go to the next frame.

The Descriptive Narration + Animated Instruction (DN) and Question Narration + Animated Instruction (QN) groups were asked to test the headphones and adjust the volume before they started the study. Participants in the (DN) group were encouraged to listen carefully to the narration while watching the animation. Participants in the (QN) group, in addition to listening carefully to the questions, were advised to think about the answers before the narrator provided answers.

Subsequently, three criterion tests (i.e., the identification test, the terminology test, and the comprehension test) were embedded in the online instructional module. The exception, the drawing test, was given on a piece of paper. Participants were instructed to raise their hands and asked for the drawing test when they finished the first 2 units of the lesson. Completed drawing tests were collected before participants proceeded to unit 3. Participants took the remaining three tests after they completed the entire instructional module.

Results

Four analyses of variance (ANOVA) were conducted across the five treatment groups, one for each of the four criterion measures. Since advance organizers (i.e., DAO and QAO) and narrations (i.e., DN and QN) were only positioned on specific frames in the instruction to facilitate student achievement, only those specific 24 test items that aligned with those specific frames were included in the ANOVA analyses. These 24 test items were distributed across three of the criterion measures such that 5 items aligned with questions on the Drawing test, 9 items aligned with questions on the Terminology test, and 10 items aligned with questions on the Comprehension test. None of these test items align with the Identification test, thus the Identification test in not included in any further analyses. Table 3 presents the means and standard deviations obtained by participants in each treatment on each criterion measure.

The results of the ANOVAs indicated that no statistically significant differences existed in achievement for any of the criterion measures: Drawing test, $F(4,136) = 1.92$, $p > .05$; Terminology test, $F(4,136) = .80$, $p > .05$; Comprehension test $F(4,136) = 1.71$, $p > .05$; Composite score $F(4,136) = 1.50$, $p > .05$.

TABLE 3
Means and (Standard Deviations) for Each Treatment [b] on Each Criterion Test

Criterion Test [a]	AI (n = 29)	DAO (n = 27)	QAO (n = 29)	DN (n = 30)	QN (n = 26)
Drawing	3.28 (1.60)	3.22 (1.05)	3.62 (1.21)	2.97 (1.45)	3.85 (1.19)
Terminology	4.14 (2.49)	4.56 (2.41)	5.17 (2.11)	4.93 (2.24)	4.73 (2.54)
Comprehension	4.38 (1.64)	4.85 (1.99)	5.62 (2.04)	4.60 (2.01)	4.69 (2.07)
Composite score	11.79 (4.38)	12.63 (4.72)	14.41 (4.22)	12.50 (4.39)	13.27 (3.85)

[a] Maximum scores: Drawing test = 5; Terminology test = 9; Comprehension test = 10; Composite test = 24.
[b] AI: Animation only (control group); DAO: descriptive advance organizer plus animation; QAO: question advance organizer plus animation; DN: descriptive narration plus animation; QN: question advance organizer plus animation.

Discussion and Conclusion

This study was designed to investigate the instructional effectiveness of different kinds of advance organizers and narrations as complements to animated instruction. A number of pilot studies were conducted to design and position the advanced organizer and narration strategies precisely where student were experiencing difficulty in comprehending the information presented in the animation. No significant differences in achievement were expected on the Drawing test since the programmed instruction was designed to provide competency of the factual and simple conceptual content. Competency in these two areas was considered prerequisite if participants were to be able to profit from the subsequent strategies and achieve at the higher order learning levels. No significant difference in achievement on the Terminology and Comprehension tests was unexpected since the advance organizer and narration strategies used in this study have been effectively used in print material and in face-to-face instructional environments (Alvermann, 1981; Barron & Schwartz, 1984; Corkcill, Glover, Bruning & Krug, 1988; Herron, York, Cole & Linden, 1998; Kang, 1997, Kirkman & Shaw, 1997). Both strategies used were intended to organize instructional content such that the participants' cognitive structures could more easily subsume the most important concepts. The anchoring function of both descriptive statements and questions were to direct participants' attention towards the more specific, attention-demanding segments in the animated instruction.

One plausible explanation for the results may be that the advance organizer and narration strategies, originally designed to reduce cognitive load, were actually increasing cognitive load. In this study, instructional content was presented as text as well as visuals. Dual coding theory (Paivio, 1986) suggests that simultaneous processing of verbal and visual information results in deeper information processing since the same information is processed twice, and the possibility of it being retained is increased. However, in our study, the addition of advance organizers and narration may have required extra working memory capacity, which may have competed with the space and processing originally used to engage the instructional content. The use of narration to accompany animation has drawn much research attention recently. The results from a series of studies (Mayer & Anderson, 1992; Mayer & Sims, 1994; Moreno & Mayer, 1999; Moreno & Mayer, 2000; Mayer & Heiser, 2001) suggest the positive use of narration with animated instruction.

The types of narration used in our study were selective in nature, in that we did not use narration to explain the full animation but only used narration to explain those aspects of animation where participants experienced difficulties in comprehending the information being presented. The ineffectiveness of the advance organizers may be explained in that the nature of the advance organizers used in this study were quite different from previous studies which summarize or preview entire upcoming material using printed text or graphics alone (Alvermann, 1981; Barron & Schwartz, 1984; Corkill, Glover, Bruning & Krug, 1988; Herron, York, Cole & Linden, 1998; Kirkman & Shaw, 1997).

The advance organizers used in our study were selective in nature as were the narrations. Each organizer summarized only part of instructional material and was positioned immediately prior to that part of the material using either a question or a statement with a visual. This type of design may have interfered with the processing flow of learners since their comprehension may have been interrupted by the intermediate advance organizer. In addition, a great deal of research has suggested that advance organizers can only facilitate or enhance learners' retention or recall of text material when the organizers are actively processed (Corkill et al., 1988; Dinnel & Glover, 1985). The results of our study may indicate that advance organizers in our study failed to elicit the necessary processing.

The lack of significant difference in achievement between the control group and the experimental groups receiving either descriptive narration or question narration indicated that the use of animation

or animation with narration may be problematic for teaching concepts and rules/principles. These results contrast to prior studies whose results indicated that animation supported with narration was effective at teaching facts and problem-solving skills (Mayer & Anderson, 1991; Mayer & Anderson, 1992; Mayer, Fennell, Farmer, & Campbell, 2004). With factual knowledge being a prerequisite for learning concepts and rules/principles, and rules/principle knowledge being a prerequisite for problem solving learning, it was anticipated that animation supported by narration would have been effective at teaching concepts and rules/principles. However, the results did not support this hypothesis. Specifically, in the question narration treatment condition, although a question was asked, no expectation of a response was expected from participants since the answer was given by the system automatically. In addition, there was a very short pause between the question asked and the corresponding answer provided. This short pause may have deprived participants the opportunity of interacting with the animation to determine the answer. With responses automatically given to a prompted question, participants may have been rendered passive learners. In addition, the quality of narration may also have impacted student achievement (Mayer et al., 2004). Mayer's study found that participants learn better when narration was in conversational style rather than in formal style. The narration used in this study may be regarded as more formal in nature.

In summary, the results of this study suggest that the effects of advance organizers and narrations designed to facilitate higher order learning objectives from animated instruction were not significant in terms of student achievement. These findings raised significant concerns when generalizing the results obtained from prior research related to the effectiveness of advance organizers and narrations when the intent is to complement animated instruction designed to facilitate higher order learning outcomes.

References

Alesandrini, K. L., & Rigney, J. (1981). Pictorial presentation and review strategies in science learning. *Journal of Research in Science Teaching, 18*, 465-474.

Alvermann, D. (1981). The compensatory effect of graphic organizers in the learning and retention of meaningful verbal material. *Journal of Educational Research, 75*, 44-48.

Ausubel, D. P. (1968). *Educational psychology: A cognitive view*. New York: Holt, Rinehart & Winston.

Baddeley, J. R. (1992). Working memory. *Science, 255*, 556-559.

Barron, A. E. (1993). The effectiveness of digital audio in computer-based training. *Journal of Research on Computing in Education, 25*(3), 277-290.

Barron, R. F., & Schwartz, R. M. (1984). Traditional postorganizers: A spatial learning strategy. In C. D. Holley & D. F. Dansereau (Eds.), *Spatial learning strategies: Techniques, applications, and related issues* (pp. 275–289). Orlando, FL: Academic Press

Caraballo, A. (1985). *An experimental study to investigate the effects of computer animation on the understanding and retention of selected levels of learning outcomes*. Unpublished doctoral dissertation, The Pennsylvania State University.

Chandler, P., & Sweller, J. (1992). The split-attention effect as a factor in the design of instruction. *British Journal of Educational Psychology, 62*, 233-246.

Clark, J. M., & Paivio, A. (1991). Dual coding theory in education. *Educational Psychology Review, 3*, 149-210.

Clark, R., C., & Mayer, R. E. (2003). *E-learning and the science of instruction*. San Francisco, CA: John Wiley & Sons.

Corkill, A. J., Glover, J. A., Bruning, R. H., & Krug, D. (1988). Advance organizers: Retrieval context hypotheses. *Journal of Educational Psychology, 80* (3), 304-311

Dinnel, D., & Glover, J. A. (1985). Advance organizers: Encoding manipulations. *Journal of Educational Psychology, 77*, 514-521.

Dwyer, F. M., & Lamberski, R. (1977). The human heart: Parts of the heart, circulation of blood and cycle of blood pressure. US: Published Privately.

Dwyer, F. M. (1994). One dimension of visual research: A paradigm and its implication. In D. Moore & F. M. Dwyer (Eds.), *Visual learning: A spectrum of visual learning* (pp. 383-401). NJ: Educational Technology Publications.

Herron, C., York, H., Cole, S. P., & Linden, P. (1998). A comparison study of student retention of foreign language video: Declarative versus interrogative advance organizer. *The Modern Language Journal, 82*(2), 237-247.

Hirumi, A., & Bowers, D. R. (1991). Enhancing motivation and acquisitions of coordinate concepts by using concept trees. *Journal of Educational Research, 84*(5), 273-279.

Kaiser, M., Proffitt, D., & Anderson, K. (1985). Judgments of natural and anomalous trajectories in the presence and absence of motion. *Journal of Experimental Psychology: Learning, Memory and Cognition, 11*, 795-803.

Kang, S. H. (1997). The effects of using an advance organizer on students' learning in a computer

simulation environment. *Journal of Educational Technology Systems, 25* (1), 57-65.

King, W. A. (1975). *A comparison of three combinations of text and graphics for concept learning*. San Diego, CA: Navy Personnel Research and Development Center.

Kirkman, G., & Shaw, E. L. (1997). *Effects of an oral advanced organizer on immediate and delayed retention.* Paper presented at the 26th Annual Meeting of Mid-South Education Research Association (MSERA), Memphis, TN.

Lin, H., Chen, T., & Dwyer, F. M. (2006). Effects of static visuals and computer-generated animations in facilitating immediate and delayed achievement in the EFL classroom. *Foreign Language Annals, 39*(2). 203-219.

Lin, H., Ching, Y-H., Ke, F., & Dwyer, F. (in press). Effectiveness of various enhancement strategies to complement animated instruction: A meta-analytic assessment, *Journal of Educational Technology* Systems.

Mann, B. L. (1995). Focusing attention with temporal sound. *Journal of Research on Computing in Education, 27*(4), 402-425.

Mayer, R. (1984). Aids to prose comprehension. *Educational Psychologist, 19*, 30-42.

Mayer, R. E. (1992). Cognition and instruction: Their historic meeting within educational psychology. *Journal of Educational Psychology, 84* (4), 405-412.

Mayer, R. E. (1993). Comprehension of graphics in text: An overview. *Learning and Instruction, 3*, 239-246.

Mayer, R. E. (1994). Visual aids to knowledge construction: Building mental representations from pictures and words. In W. Schnotz & W. Khlhavy (Eds.), *Comprehension of graphic* (pp. 125-138). Amsterdam: Elsevier science.

Mayer, R. E. (1996). When less is more: Meaningful learning from visual and verbal summaries of science textbook lessons. *Journal of Educational Psychology, 88*(1), 64-73.

Mayer, R. E., & Anderson, R. (1991). Animations need narrations: An experimental test of a dual-coding hypothesis. *Journal of Educational Psychology, 83*(4), 484-490.

Mayer, R. E., & Anderson, R. B. (1992). The instructive animation: Helping students build connections between words and pictures in multimedia learning. *Journal of Educational Psychology, 84*(4), 444-452.

Mayer, R. E., & Sims, V. K. (1994). For whom is a picture worth a thousand words? Extensions of a dual-coding theory of multimedia learning. *Journal of Educational Psychology, 86*(3), 389-401.

Mayer, R. E., & Heiser, J. (2001). Cognitive Constraints On Multimedia Learning: When Presenting More Material Results In Less Understanding. *Journal of Educational Psychology, 93*(1), 187-198.

Mayer, R. E., Fennell, S., Farmer, L., & Campbell, J. (2004). A personalization effect in multimedia learning: Students learn better when words are in conversational style rather than formal style. *Journal of Educational Psychology, 96*(2), 389-395.

Miller, G. A. (1956). The magical number seven plus or minus two: Some limits on our capacity for processing information. *Psychological Review, 63,* 81-97.

Moore, M., Naworcki, L., & Simutis, Z. (1979). *The instructional effectiveness of three levels of graphics displays for computer-assisted instruction*. Arlington, VA: Army Research Institute for the Behavior and Social Sciences.

Moreno, R., & Mayer, R. E. (1999). Cognitive principles of multimedia learning: The role of modality and contiguity. *Journal of Educational Psychology, 91*, 358-368.

Moreno, R., & Mayer, R. E. (2000). A coherence effect in multimedia learning: The case for minimizing irrelevant sounds in the design of multimedia instructional messages. *Journal of Educational Psychology, 97*, 117-125.

Moreno, J., & Mayer, R. E. (2002). Verbal redundancy in multimedia learning. *Journal of Educational Psychology, 94*(1), 156-163.

Mousavi, J. (1995). Reducing cognitive load by mixing auditory and visual presentation modes. *Journal of Educational Psychology, 87*(2), 319-334.

Munyofu, M., Swain, W., Ausman, B., Lin, H., Kidwai, K. & Dwyer, F. (in press). Effect of different chunking strategies in complementing animated instruction. *Learning, Media & Technology*.

Owens, R., & Dwyer, F. M. (2005). The effect of varied cueing strategies in complementing animated visual imagery in facilitating achievement of different educational objectives. *International Journal of Instructional Media, 32*(4), 373-384.

Paivio, A. (1986). *Mental representation: A dual coding approach*. Oxford, England: Oxford University Press.

Park, O. C., & Gittelman, S. S. (1992). Selective use of animation and feedback in computer-based instruction. *Educational Technology Research and Development, 40*(4*), 27-38.*

Penney, C. G. (1989). Modality effects and the structure of short-term verbal memory. *Memory and Cognition, 17*, 398-422.

Reed, S. K. (1985). Effects of computer graphics on improving estimates to algebra word problems. *Journal of Educational Psychology, 77*(3), 285-298.

Rieber, L. (1989). The effects of computer-animated elaboration strategies on factual and application

learning in an elementary science lesson. *Journal of Educational Computing Research, 5*(4), 431-444.

Rieber, L., & Boyce, M. (1990). The effects of computer animation on adult learning and retrieval tasks. *Journal of Computer-based Instruction, 17*, 46-52.

Rieber, L., & Hannafin, M. J. (1988). The effects of textual and animated orienting activities and practice on learning from computer-based instruction. *Computers in the Schools, 5*, 77-89.

Schnotz, W. (1993). On the relation between dual coding and mental models in graphics comprehension. *Learning and Instruction, 3*, 247-249.

Sadowski, M., & Paivio, A. (2001). *Imagery and text: A dual coding theory of reading and writing*. Mahwah, NJ: Lawrence Erlbaum Associates.

Sternberg, R. J. (1985). Beyond IQ: A triarchic theory of human intelligence. Cambridge: Cambridge University Press.

Stone, C. L. (1983). A meta-analysis of advance organizer studies. *Journal of Experimental Education, 51*(4), 194-199.

Sweller, J. (1988). Cognitive load during problem solving: Effects on learning. *Cognitive Science, 12*, 257-285.

Wilson, F., & Dwyer, F. M. (2001). Effect of time and level of visual enhancements in facilitating student achievement of different educational objectives. International Journal of Instructional Media, 28, 159-167.

Wittrock, M. C. (1990). Generating processes of comprehension. *Educational Psychologist, 24*(4), 345-376.

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Virtual Mentoring in Higher Education: Teacher Education and Cyber-Connections

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This study explored the benefits and limitations of mentoring relationships between pre-service and practicing K-12 teachers. Thirteen pre-service education students at a university in the southeastern United States and 17 practicing teachers from four states participated. The student participants were in their senior year in a teacher education program, during the semester just previous to their student teaching experience. Pre- and post-surveys, email exchanges and student email reflections were utilized to gather data concerning the effectiveness of the project. Results indicated that online mentoring was overall a highly positive experience that provided the student participants unique and practical insight into the field of teaching. The experience was not without problems however, as student participants voiced concern with the procedure for obtaining mentors, timely responses from some mentors and the degree to which their questions were addressed in some cases.

The possibilities associated with electronic mentoring programs in higher education are exciting and unprecedented. Electronic mentoring allows for the establishment of a mentor/mentee relationship that is time and place independent. The benefits of electronic mentoring can be experienced by every higher education student, regardless of subject area or career field. Although this study focuses on the benefits of electronic mentoring to students in teacher education programs, the model is easily modified to accommodate college students in a variety of subject areas.

Education students often complain that their professors are out of touch with what is happening in K-12 (kindergarten through 12th grade) schools and yearn for more practical advice about what teaching and a teacher's typical day is really like as well as information from practicing teachers concerning specific content area issues to include pedagogy (Clowes, 1997). Many education students have only sporadic contact during their teacher education programs with veteran teachers until student teaching. This project arose out of a need expressed by senior level education students at one southeastern United States University for more contact with practicing K-12 teachers in order to establish a firmer connection between educational theory and practice.

Mentoring New Teachers

Although schools are busy places, filled with students, educators, administrators and activity, teachers often spend their days surrounded primarily by students and isolated from colleagues. Many teachers describe early professional time as lonely. This isolation has been a causal factor in many teacher identified professional struggles (Achilles & Gaines, 1991; Martin & McGrevin, 1990; Moran, 1990; Smith & Scott, 1990). In fact, national (United States) surveys have revealed that the lack of a collaborative school climate is one of the major reasons many teachers choose to leave the teaching profession within their first five years of employment (Southeast Center for Teaching Quality, 2004). Cookson (2005) likens the organization of schools to an egg-crate; the compartmentalization of classrooms and subjects often make professional collaborations difficult. The issue of isolation is particularly problematic for beginning/novice teachers as it is during the early stages of one's teaching career that support systems are most critical. If beginning teachers do not receive support from colleagues, mentors, and administrators, many opt to leave the profession (Schlichte, Yssel, & Merbler, 2005). One solution to the problematic scenario of the isolated beginning teacher is the establishment of a mentor/mentoree relationship between the novice and veteran teacher (for purposes of this study, a veteran teacher is one with at least two years of teaching experience) (Schlichte, Yssel, & Merbler, 2005). According to Seabrooks, Kenney, and LaMontagne (2000) "mentoring is a nurturing process in which an experienced teacher, usually skilled in a specific area, serves as a role model to teach, encourage, counsel, and/or befriend a novice or less-skilled teacher" (p. 222). Research indicates that the mentor not only aids the beginning teacher with instructional challenges and paperwork hurdles, but he or she also often provides emotional support in the form of encouragement, empathy and compassion (Delgado, 1999; Rowley, 1999). According to Ganser (1999) and Anderson and Shannon (1988), an effective mentor in the educational setting provides the novice teacher with counseling, sponsoring, friendship, encouragement, and teaching advice. Ultimately, the presence or absence of a professional tutor/mentor/friend can make a powerful impact on the success or failure of a beginning teacher.

Numerous studies espouse the positive benefits of mentor/mentee relationships among first-year and practicing teachers (Chubbuck, Clift, Allard, & Quinlan, 2001; Council for Exceptional Children, 1997; Meyer, 1999; Reiman, Bostick, Lassiter, & Cooper, 1995). A mentor can observe a new teacher's teaching, and provide feedback and friendship, which are essential for professional growth (Cookson, 2005). Not only are mentored beginning teachers more confident, they are also supported in "exploring, sharing, reflecting and refining their knowledge and skills about teaching" (Seabrooks, et al, 2000, p. 222). Furthermore, Deshler, Ellis and Lenz (1996) maintain that collaborative teachers are more effective educators than those who are practicing from more segregated perspectives (from perspectives in which teaching is for the most part a solitary profession, with little or no interaction/collaboration with other teachers). Certainly the literature provides a plethora of evidence to support the merit of pursuing such beneficial new teacher/veteran teacher professional relationships.

Mentoring Pre-Service Teachers

Because the benefits of mentoring relationships to beginning teachers have been firmly established in the literature (Chubbuck, Clift, Allard, & Quinlan, 2001; Council for Exceptional Children, 1997; Meyer, 1999; Reiman, Bostick, Lassiter, & Cooper, 1995), we could then surmise that the establishment of a mentoring relationship prior to the initial hiring of the beginning teacher would also prove to be highly beneficial to the pre-service teacher and would lay the foundation for the desire to continue such a relationship into the first year of teaching and beyond. The literature however, is deficient in studies that explore the value of establishing mentor/mentee relationships between pre-service and practicing teachers. Perhaps this is because the pre-service teacher not yet student teaching does not have the consistent contact with a school necessary to allow the establishment of such a relationship. Pre-service education students often have only sporadic contact with practicing teachers as they fulfill brief practicum and observation requirements as components of their teacher education programs (prior to student teaching) and many education professors have been out of the K-12 arena for a number of years. Since the benefits of instituting mentor/mentee relationships between beginning and practicing teachers have been fully documented in the literature (Chubbuck, Clift, Allard, & Quinlan, 2001; Meyer, 1999; Reiman, Bostick, Lassiter, & Cooper, 1995). such relationships might also prove beneficial for our teacher education students. Electronic mentoring is one method by which this might be accomplished.

Electronic Mentoring in Higher Education

The move toward electronic mentoring is higher education has not been rapid, but promising examples of such initiatives have been reported in the literature (Freedman, 1992; Muller, 1997; Single & Muller, 2001). Since 1997, according to Single and Muller (2001), over 1700 women students of engineering and science have positively benefited from a structured e-mentoring program known as MentorNet in place at 36 U.S. colleges and universities. These women are electronically paired with individuals who are industry professionals in the students' desired technical or scientific career areas. Summative evaluation of the MentorNet program indicates that as a result of being mentored, women participants have increased their awareness of career opportunities and knowledge of their fields (Single and Muller, 2001). Waycross College in Georgia, has implemented an electronic mentoring program (hosted by Valdosta State University) for matriculating minority students. Computers are provided for the student participants, who are linked with faculty for various mentoring activities. In addition, according to Harris (1995), undergraduate geology students at the University of Illinois (Urbana- Champaign) electronically mentor pre-college teachers and students as a requirement for their History of Life course. Graduate music education students at Arizona State University are electronically linked with music professionals around the world. These music students and mentors discuss pertinent issues related to the music profession. These issues then become topics of discussion in the on-campus music education course (Bush, 1998).

Students are not the only individuals involved in higher education to benefit from electronic mentoring relationships. Mihkelson (1997), at the University of Tasmania in Australia, reports of a successful mentoring initiative at that institution designed to enhance the research skills of junior faculty. Junior and senior faculty pairs were designated and after an initial meeting, communicated via email, teleconferencing and videoconferencing. Junior faculty (mentees) were able to submit research proposals and manuscript drafts to senior faculty (mentors) for feedback, edits, and corrections. Another innovative virtual mentoring program is in place at Florida Community College in Jacksonville, Florida. This initiative allows for the virtual mentoring of adjunct faculty by full-time faculty. The mentors serve as liaisons between adjunct faculty and administrators; share resources, relevant professional information and opportunities; and answer questions concerning pedagogy (http://www.distancelearning.org/).

Electronic Mentoring of Pre-Service Teachers

Many practicing teachers would likely choose to participate in a traditional mentoring relationship with pre-service teachers but are so pressed for time that they are unable to do so. A traditional face-to-face mentoring relationship is place dependent. This would be particularly problematic for pre-service teachers because it would require them to drive to the mentor teachers' schools numerous times, thus making the experience very time-consuming. In fact, according to Noe (1988), time and space constraints are the most often cited reasons for mentoring relationship failures. Because electronic mentoring is asynchronous, it allows much greater timing flexibility. It is also place independent, meaning that pre-service and practicing teachers could participate in a relationship regardless of geographical location. This would be especially beneficial to pre-service teachers in relatively rural or isolated areas who do not have access to a large pool of practicing teachers (Harrington, 1999). It could also expose pre-service teachers to a potentially larger number of practicing teachers with expertise in their grade levels/subject areas. Another advantage of electronic mentoring over traditional mentoring according to Single and Muller (1999) is that "communicating using email allows for the construction of thoughtfully written messages without the pressure of immediately responding, such as in communicating orally" (p. 237).

In the fall (August-December) semester of 2005, an electronic mentoring project was initiated between pre-service education students in their senior year of the teacher education program and practicing K-12 teachers across the country. This mentoring relationship was established at the previously mentioned university in the southeastern United States**.** The goals of this project included the following:

- The pairing of a pre-service teacher with an experienced, practicing teacher in his/her desired subject/grade level.
- The provision of a support source (mentor) for the pre-service teacher (mentee).
- The provision of opportunities for pre-service teachers to engage in conversation about. pedagogical issues in his/her content area with a practicing teacher in that same content area.
- To aid in the development of reflective practice on the part of pre-service teachers.

Methodology

Participants

Student participants in this pilot study included 12 pre-service teachers enrolled in an upper level education course in a metropolitan university in the southeastern United States. Of the 12 pre-service teachers participating, eight were seeking secondary school licensure and four were seeking K-12 licensure in either art, music, or physical education. Four of the pre-service teacher participants were female, eight were male, and all were seniors in the teacher education program.

Mentor participants included 17 (some student participants had more than one mentor) experienced teachers located in ten different school systems in Tennessee, Kentucky, Georgia, and Florida. Eight of the mentors were female and nine were male. Years of teaching experience reported among mentor teachers ranged from two to thirty years with an average of fourteen years. Four mentor teachers held Bachelor's Degrees in Education, ten held Master's Degrees in Education, and three held Educational Specialist Degrees. All mentor teachers held current certification in the areas in which they were teaching at the time of this study and all mentors were teaching in the same subject area and/or grade level in which their mentees were hoping to eventually teach.

Procedure

Once the project description, expectations and goals were provided to the student participants, they were asked to respond to a pre-reflection survey. This survey elicited their feelings about the project in general, what they expected to learn as a result of participating in the project, and their speculations concerning possible problems during the project.

Student participants were then given the task of locating their mentors using Education World's database of US schools, a list of pre-selected teachers known to the instructor, or teachers known to the students who indicated their willingness to participate in the study. Selected mentors must have met the following criteria: (a) be in the same subject and/or grade level areas as the pre-service teacher, (b) hold valid certification in that area, and (c) have at least two years of teaching experience.

Students were provided a sample letter of introduction to use as a guide when making initial contacts with prospective teachers. In the initial contact letter they were instructed to introduce themselves and

their career goals, explain the reason for the contact (goals of the activity), obtain biographical information of the mentors and ask if the teachers would be willing to participate in an electronic mentoring relationship that would last for six week and would entail twice weekly conversational exchanges. The biographical information requested of potential teacher participants included their names, job titles, subjects taught, grade levels taught, school names and locations, number of years teaching, and degree(s) held. Each student then presented this information to the instructor for official approval and following a brief seminar on email etiquette students were given permission to begin.

Although students were provided a list of possible discussion topics to guide their conversations/interviews with their mentors, they were not required to adhere to only those topics, making the interview semi-structured in nature. Possible discussion topics provided to students included socialization issues (e.g., overt and covert school routines, extra duties such as bus and lunch duty, student and faculty conduct, interaction with other teachers), assessment and reporting concerns (e.g., developing assessment practices, parental and student feedback, paperwork organization, parent conferences), classroom management and discipline issues (e.g., behavior management strategies, handling student violence, bomb threats and lockdowns, special needs students), curriculum and resource materials (e.g., attending conferences, locating resources and support materials), time management (e.g., dealing with grading, lesson plans, meetings), teaching strategies, certification and legal issues (e.g., teacher contract concerns, certification), and issues surrounding special needs students (e.g., inclusive classrooms, IEP, modification). Students were advised to prioritize their list of discussion topics according to what areas were most important to them, as the six-weeks duration of the project was limited and would likely not allow for the discussion of every issue.

When replying to mentor responses, student participants were asked not to start a new document, but rather to click on the reply button so that a running document might be maintained. This was required so that both mentors and student participants could easily scroll back to previously asked and answered questions and comments. This was especially beneficial when student participants wished to pursue a previously discussed topic further or wanted to clear up an ambiguous issue.

Following each email conversational/interview exchange, student participants were required to complete a reflection journal entry in which they were to respond to the following questions:

1. Did the mentor adequately respond to your questions? Elaborate.
2. What surprised you, if anything, about his/her responses?
3. What information, suggestions, ideas, etc. did your mentor provide that were particularly helpful to you?
4. Based on your questions and your mentor's responses in this particular exchange, where would you like to see the discussion go in the next interaction? What follow-up questions do you intend to pose?

During the course of the project, student participants submitted copies of each email conversation electronically to the professor as they occurred thus allowing the professor to monitor the conversations for professionalism. Students also printed out hard copies of the email exchanges and inserted them into their electronic mentoring journals along with their subsequent reflective pieces. At the culmination of the project, students completed a post-reflection piece similar to the pre-reflection and submitted their journals for grading.

Data Analysis

The first phase of data collection involved its organization. Each time students and mentors completed a conversational exchange, student participants emailed a copy of the exchange to the researcher (during the six-week project, the 29 participants exchanged 293 e-mail messages). The researcher then read and re-read the data, made some notes pertaining to the information, and performed minor editing as suggested by Marshall and Rossman (1999). The next phase of data analysis involved the generation of categories, themes and patterns. Guba (1978) states, "as categories of meanings emerge, the researcher searches for those that have internal convergence and external divergence" (as cited in Marshall & Rossman, 1999, p. 154). Included in this analysis phase, was a period in which the data were reduced. Cohen, Kahn, and Steeves (2000) state,

> This step in data analysis involves some decision making on the part of the researcher concerning what is relevant and what is not….The researcher can reorganize the interviews to place together discussions of the same topic, eliminate digressions that are clearly off track, and simplify the spoken language of the informants without changing the unique character of it. (p. 76)

Once the work of generating categories, themes and patterns from the collected data was initially complete, the researcher then began to code those categories, themes and patterns for key words (Marshall & Rossman, 1999). A color-coding process was used to mark passages in the identified categories and themes that emerged from the email exchanges and pre and post reflection pieces.

Themes Across Student Participants' Pre-Reflections

What follows is a synopsis of the themes identified across the responses for each question within the pre-reflective component of the project.

How do you feel about this project? Nine respondents indicated positive feelings about the project while four participants indicated that they were nervous or hesitant about the project.

What do you expect to learn from this interaction? Ten respondents indicated the desire to learn teaching tips concerning classroom management issues, being an effective teacher, varying instructional strategies, connecting units and preparing lesson plans. Five participants hoped to learn about what being a teacher is "really like." (How much time is spent grading papers at home, how many extra duties teachers are expected to perform, how long a typical day lasts, what a typical day entails.) Eight participants were hoping to learn specific advice that would be useful to them as new/beginning teachers. And, three were seeking specific information pertaining to teaching their particular subjects such as how to manage an art budget, how to put music theory into practice, and how much work is involved in coaching football.

What possible problems could arise? Nine participants voiced the concern that their mentor teachers might not respond to emails in a timely fashion, thus delaying the completion of the project. Three indicated concerns about finding mentor teachers willing to participate. Two student participants indicated apprehension about finding mentors who meted the criteria necessary to participate in the project. Four voiced concerns that mentor teachers might not sufficiently answer questions posed to them. Two indicated apprehension that technical problems could interfere with the completion of the project. And finally single participants indicated the following concerns: mentor bailing out, mentor not liking student, lack of time to prepare for emails and possibly significant philosophical differences between student and mentor.

Prioritization of Pre-Service Teachers' Concerns and Emerging Discussion Topics

One of the directives given to student participants at the outset of the project was to prioritize their concerns so that the issues of greatest concern to them would be addressed earliest in the email exchanges. The possible discussion topics provided to the students were generally adhered to although other more content specific issues were also consistently identified across conversations. Appendix A is a summation of identified concerns discussed during the project and an analysis of the priority levels of these concerns as reported by the pre-service teacher participants. Some teachers listed more than one concern at a particular ranking level. Because the length of exchanges varied among participants, some students were able to address numerous issues while others could only address a few during the course of the project. Qualitative data analysis revealed eleven general categories of issues (themes) discussed within the email exchanges and forty-five subcategory issues. The total numbers of pre-service teacher participants indicating each major category and subcategory issue as a concern is provided in Appendix A.

Data analysis revealed the major issues student participants most wanted to discuss with their mentors included assessment, organization/paperwork concerns, and time management. Specifically, students were most concerned with issues pertaining to specific content areas (e.g., mathematics, art and music), how to obtain necessary classroom materials and resources, and the establishment of classroom rules and procedures. Students also repeatedly asked their mentors questions such as what a typical day is like for them as teachers, and how much work they take home each night.

Themes Across Student Participants' Post-Reflections

What follows is a synopsis of the themes identified across the responses for each question within the post-reflective component of the project. Two students did not respond to the first question and several students had more than one response for questions two through four.

Did this project meet your expectations? Why or why not? Most student participants (ten out of twelve) were pleased with the project and stated that they believed the project either met or exceeded their expectations. Specific comments included the following: "This experience has not only provided me with answers to my questions, but also with invaluable communication tools that will come in handy to me when I start teaching;" It was really good to get a sense of what teaching is like and all the issues that exist in the profession. I feel like I got to address several questions I have had about teaching music and this has been a really good forum in which to do that;" "My mentor was honest about what she has found has and has not worked in her classroom and gave me several good tips for teaching and classroom management."

Two students indicated that the problems associated with finding and keeping a reliable mentor meant that their expectations for the project were not met. One student stated, "I had a very difficult time locating a mentor and then that person just stopped writing…with this project I felt a bit helpless."

What did you learn from your mentor that was particularly beneficial to you? All participants indicated that they learned information pertaining to the education profession that was beneficial to them. Beneficial information learned included advice provided concerning classroom management/behavior, suggestions provided to them concerning teaching in their specific content areas, and assessment advice provided by their mentors. One participant stated, "I learned how to deal with school violence and insubordination." Another stated, "I learned a lot about what teaching is really like." Some mentors provided their mentees with useful documents such as course syllabi, concept maps, lesson plans and units. Other mentors were most helpful in that they reduced their mentees' apprehensiveness about teaching.

What was problematic, if anything, about the project? While not all student participants identified problems with the assignment, difficulty locating mentors, the untimely and shallow responses of some mentors, and the length of time involved in the completion of the project were issues identified by some student participants as problematic. One student stated, "It was hard because sometimes my mentor wouldn't write back for a week or so and you don't want to send another one and be rude, but you kind of need her to respond."

What suggestions could you offer to improve this project? Suggestions for improvement included the suggestion that email exchanges be changed from two per week to one per week and that the professor compile a list of individuals ahead of time who would be willing to serve as mentors. Student comments regarding suggested improvements included the following: "The biggest improvement I think that could be made is locating teachers who are willing to participate. One suggestion would be either to get a system down where you have a pool of teachers for students to choose from, or let the students choose teachers they already know," and "The only suggestion I would make for this project is to require only one email exchange per week."

Discussion

Significant selections of conversational content for each major area of discussion (e.g., assessment, organization/paperwork concerns, and time management) are included in the following section, as well as dialogues regarding how to obtain necessary classroom materials and resources and the establishment of classroom rules and procedures.

Assessment Issues

Beginning with the issue of assessment, many pre-service teachers indicated concern about how to assess inclusion students in the regular education classroom. Several themes emerged in the responses the mentor teachers provided in regard to assessment of special education students. These responses included modifications during testing for special education students such as reading the test aloud, providing extra time for test completion, redirecting questions, shortening assignments, and breaking down larger assessments into smaller, more manageable parts. Other suggestions included collaborative group work, individualized attention, the use of summarizers and graphic organizers.

Other pre-service teachers voiced concerns about assessment in general in their particular content areas. Again, these identified concerns also appeared to be a major source of anxiety for new teachers across the world, as Meister and Melnick (2003) has identified assessment as one of the top four primary concerns. Themes that emerged from the responses of mentor teachers on assessment included the use of rubrics for assignments so that grading is fair and consistent and students learn up front what they will be graded on. Mentors also stressed the importance of providing students with a multitude of assessment opportunities so that students have ample opportunities to demonstrate what they have learned and improve their grades. Another theme that emerged was the significance of giving prompt feedback on all student assessments.

Paperwork Concerns

Another high-priority issue of concern for the student participants was the need to develop effective strategies to address the large volume of paperwork they will be faced with as teachers. This is also an international concern of beginning teachers and ranks in the top six areas of concern for new teachers (Meister & Melnick, 2003). A wide variety of strategies for dealing with the paperwork/organizational issues were shared by the participating practicing teachers. The themes that emerged from the mentor teacher participants concerning paperwork and organizational issues included: determining a routine in which students distribute materials or pass in papers to eliminate confusion and chaos, dealing with paperwork daily (not allowing it to pile up), using clearly labeled folders to store lesson plans in a coherent filing

system, and using a file box or cabinet and filing system to keep track of paperwork.

Time Management/Typical Day

Time management issues also rated highly on student participants' concern lists. They were particularly concerned with the amount of time required to adequately plan for lessons, how much work is typically taken home each day, and what a typical day is like for teachers. Descriptions of typical days teaching from participating mentors ranged from particularly negative and stressful to extremely positive. One high school math teacher, with 15 years of experience, reflected upon the time required to meet teaching requirements:

A typical day in education is ALWAYS a rat race. From the time the school day starts until you leave you are flat out getting it. Sometimes it is difficult to find time to do basic things such as go to the bathroom, eat lunch without working, and make a simple phone call. I get to school 45 minutes before school starts and stay usually an hour to 2 hours everyday after school. I seldom ever take any work home with me anymore. You pick what is most important and do that first and keep repeating the process. But a lot of the time you can't do all you are responsible for doing. You do the best you can in the time you have.

On a more positive note, an elementary physical education teacher with 5 years of teaching experience shared her typical day:

> I just want to start off by saying, I love my job! I get to school at 7:15 in the morning wearing gym shorts and tennis shoes. I'm the envy of every teacher wearing dress clothes and dress shoes every day. I assist in the car loop every morning from 7:40-8:00, making sure to greet the students as they are dropped off. From 8:00-8:40 I have my planning time. My first class starts at 8:40…lunch from 11:35-12:05. My final class ends at 2:15 and I then go back to the car loop and assist with dismissal until all the children are picked up. I then go back to my office and answer emails, phone calls, or whatever else needs to happen. Our day ends at 3:15. I normally don't take much work home with me. It really depends on what I am working on. Sometimes, I would rather take some work home and be able to visit with my family, fix dinner, or do some laundry while I am working on school "stuff."

A high school literature teacher with 21 years of experience described her typical day:

> A typical day is very busy; I hate to say it but it is also very stressful. This week I have morning duty, which means that I have to be here at 7:00 am to stand in the Student Center and greet students…I teach three classes of American Literature, then I have Journalism I, planning, and Journalism II. Yesterday we had a faculty meeting after school. Then I stayed and worked until 7:00 pm. I have more of those kinds of days than I don't. In fact, last week I got home about 5:30 and my husband said, "Gee honey, you're home early today."

The issue of time management was also a major concern (ranking second to classroom management) in a study conducted by Meister and Jenks (2000). The student participants in this study were particularly curious about what a typical day as a teacher is like and were very pleased with the candid responses shared by the mentor teachers. All of the students felt that they had a much better insight into the practical daily life of a teacher as a result of this project.

Obtaining Necessary Classroom Materials

A subcategory issue repeatedly voiced as a concern by student participants was that of the locating and obtaining the necessary materials needed to effectively teach a particular content area. The problematic issue of insufficient teaching supplies and materials was one of the top eight issues of concern to all teachers, internationally, according to Mesiter and Melnick (2003). Mentors participating in this study reiterated budgetary constraints as deterrents from adequate preparation as far as the ability to obtain needed supplies and equipment. No teacher mentioned being allowed more than $100.00 per year to spend on needed classroom equipment and supplies and many admitted that they regularly dip into their own funds to supplement the instructional needs of their classrooms and taking the amount spent as a tax deduction.

Classroom Rules and Procedures

Another issue of concern for students was classroom management, the desire to understand how to create an effective set of classroom rules and procedures. This is not surprising international teachers ranked classroom discipline as the number one issue of concern (Meister & Melnick, 2003). Mentor teachers provided a multiplicity of information regarding this topic. Themes that emerged included the necessity of developing and posting a set of classroom rules that is succinct and the importance of implementing and consistently enforcing those rules right away and not

deviating from them throughout the school year. Other themes that emerged included the caution to only be a teacher to students, not a friend and to document every discipline event. A great deal of additional guidance was provided concerning the significant subcategory issues identified by the student participants.

Conclusion

Problems and Questions

Since electronic mentoring is in its infancy there is little assessment in the literature that has identified best practices associated with it. During the course of the project, numerous issues arose that were problematic. These issues primarily revolved around mentor recruitment and retention and pair matching concerns.

Recruiting electronic mentors needs to be modified and increased as one of the primary difficulties with this project was the attainment of mentors willing to participate in the endeavor. Developing a website for the program could strengthen the recruitment efforts. A website could allow for the attainment, completion and submission of online applications and prospective student participants' relevant demographic information, including the students' academic programs and career goals, could be posted for potential mentors.

Difficulties also arose with getting some mentors to see the project through to its completion. Perhaps a more focused outline of project requirements for electronic mentors would be beneficial in addressing this problem. An investigation into the motivation of volunteer mentors could also be helpful (Single, Jaffe, & Schwartz, 1999) as well as the formation of an incentive program for mentor participants.

How the matching process possibly influences the mentoring outcomes is another area of needed exploration. Do age and gender differences among student and mentor participants influence conversations? Do less experienced teacher mentors, with 2-5 years of experience, provide similar quality of responses as more experienced teachers? These are research questions that need to be addressed to allow for more effective recruitment and pairing procedures (Single, Jaffe, & Schwartz, 1999). Formative data collection could also help provide some answers. For example, one could examine how pairs bonded via self-reflections and short surveys "thus establishing predictors of good mentoring and good mentors" (Single, Jaffe, and Schwartz, 1999, p. 245).

In this study, no allowance was made for the training or coaching of mentors as incentives and stipends were not available. Therefore, the project's success depended greatly on the conscientious levels of the volunteer mentors. Although the student participants were pleased with the overall performance of the mentors, the project itself could only benefit from a more structured venture in which mentors are brought together for or receive training electronically prior to the inception of the endeavor. Training could include information on successfully assessing and responding to the needs of the student participants (Single, Jaffe, & Schwartz, 1999). Coaching would entail ongoing training that occurs throughout the project and could include discussion board and email communication. In either case, an incentive for the mentor participants would ensure a greater commitment to the completion of the project.

And finally, as with any course required assignment or project, there is always a danger that the student participants saw this project as just another component of one course's requirements that had to be completed for success (extrinsic) instead of focusing on the art of teaching/pedagogy in a significant, authentic fashion (intrinsic). Indeed, that did seem to be the case at the outset of the project, but at the culmination of the study, the student participants seemed genuinely enthused about what had transpired.

Positive Implications for Teacher Education

Because the project was embedded within an electronic format, it provided student participants with a rich "field experience" without the usual barriers of transportation, illness and schedule complications that might prevent college students from participating fully if this project had entailed traditional face-to-face mentoring. Because email is asynchronous, student and mentor participants were able to participate in the project whenever time permitted them to do so.

Despite some mechanical issues pertaining to the process itself, the student participants indicated that online professional mentoring relationships between pre and in-service teachers were an effective means of providing support to education students in issues pertaining to socialization, learning environments, assessment/evaluation and paperwork, classroom management/discipline, curriculum/resource materials, time management, teaching strategies, certification and legal concerns, special needs students, new teachers, and specific content areas. Many of these areas of concern have been identified in the literature as problematic for new teachers, sometimes directly resulting in their exodus from the profession (Single, Jaffe, & Schwartz, 1999). Therefore, it could be very significant that these pre-service teachers have been provided the opportunity to receive valuable information regarding these complex issues before obtaining their first teaching positions. As previously mentioned, it has already been established that virtual mentoring has been successful in other educational contexts. Therefore, it is not surprising that this proves

to also be a positive experience when an online mentoring relationship is established between pre- and in-service teachers.

Positive Implications for Higher Education

The advantages of electronic mentoring for higher education students and faculty are multifaceted. Many colleges and universities have extremely large enrollments, making it difficult for faculty to manage face-to-face relationships with a large number of students. With the removal of time and place constraints, electronic mentoring could allow faculty and students increased opportunities to connect with one another. As indicated previously, new and inexperienced faculty electronically paired with senior faculty, have an immediate forum in which to engage in dialogue and receive professional guidance on issues ranging from pedagogy to service to research. In addition, students paired with employed professionals in their career areas via an electronic initiative can obtain valuable professional information and guidance, regardless of geographical location of the students and professionals. Junior and senior students could also be paired with freshmen to aid with high-school to college transitional issues; students needing help in a particular subject area could be tutored by other students identified as proficient in that area; students nearing the end of their programs of study could mentor those just beginning (in the same area); experienced graduate assistants could be paired with those considering assistantships; student researchers could be paired with faculty conducting similar research, etc. In summary, electronic mentoring is a relatively unexplored phenomenon but one which promises to add new dimension and opportunity to both faculty and students in higher education.

References

Achilles, C. M., & Gaines, P. (1991). *Collegial groups in school improvement: Project SIGN*. Chicago: American Educational Research Association. (ERIC Document Reproduction Service No. ED 332 300)

Anderson, E.M., & Shannon, A. (1988), Toward a conceptualization of mentoring, *Journal of Teacher Education, 39*(1), 38-42.

Bush, J. (1998). *Promoting electronic reflective practice*. Paper presented at Fifth International Technological Directions in Music Learning Conference, San Antonio TX.

Chubbuck, S. M., Clift, R. T., Allard, J., & Quinlan, J. (2001). Playing it safe as a novice teacher: Implications for programs for new teachers. *Journal of Teacher Education, 52*, 365-376.

Clowes, G. (1997). Survey: Education teachers out of touch with real world. *School Reform News*. Retrieved April 13, 2006, from: http://www.heartland.org/Article.cfm?artId=13665

Cohen, M., Kahn, D., & Steeves, R. (2000). *Hermeneutic Phenomenological Research: A Practical Guide for Nurse Researchers*. Thousand Oaks, CA: Sage Publications.

Cookson, P.W., Jr. (2005). The challenge of isolation. *Teaching Pre K-8, 36*(2), 14.

Council for Exceptional Children. (1997). Guidelines for developing a mentorship program for beginning special education teachers. *Teaching Exceptional Children, 29*(6), 19-21.

Delgado, M. (1999). Lifesaving 101: How a veteran teacher can help a beginner. *Educational Leadership, 56*(8), 27-29.

Deshler, D., Ellis, E. & Lenz, B. (1996). *Teaching Adolescents with Learning Disabilities: Strategies and Methods* (2nd ed.). Denver, CO: Love Publishing.

Freedman, M. (1992). *The kindness of strangers: Reflections on the mentoring movement.* Philadelphia, PA: Public/Private Ventures.

Ganser, T. (1999). Coach, safety net, compass, sculptor: How many mentors describe mentoring? *Contemporary Education, 70*, 42-43.

Harrington, A. (1999). *E-Mentoring: The advantages and disadvantages of using email to support distance mentoring*. Retrieved November 14, 2005, from European Social Fund Web site: http:// www.mentorsforum.co.uk/cOL1/discover.htm

Harris. J.(1995). Mining the Internet. *The Computing Teacher, 22*(6).

Marshall, C. & Rossman, G. (1999), *Designing Qualitative Research*. Thousand Oaks, CA: Sage Publications.

Martin, K., & McGrevin, C. (1990). Making mathematics happen. *Educational Leadership, May*, 20-22.

Meister, D., & Melnick, S. (2003). National new teacher study: Beginning teachers' concerns. *Action in Teacher Education, 24*(4), 87-94.

Meyer, T. (1999). Conversational learning: The role of talk in a novice teacher learning community. Unpublished master's thesis, Stanford University.

Mihkelson, A. (1997). *A model of research mentoring for higher education – An overview*. (ERIC Document Reproduction Service No. ED418661).

Moran, S. W. (1990). Schools and the beginning teacher. *Phi Delta Kappan, 72*(3), 210-213.

Muller, C.B. (1997). *The potential of industrial "e-mentoring" as a retention strategy for women in science and engineering*. Paper presented at the Proceedings of the Annual Frontiers in Education Conference, New Orleans.

Noe, R. A. (1988). An investigation of the determinants of successful assigned mentoring relationships. *Personnel Psychology, 41*, 457-479.

Reiman, A. J., Bostick, D., Lassiter, J., & Cooper, J. (1995). Counselor- and teacher-led support groups for beginning teachers: A cognitive-developmental perspective. *Elementary School Guidance and Counseling, 30*, 105-117.

Schlichte, J., Yssel, N., & Merbler, J. (2005). Pathway to burnout: Case studies in teacher isolation and alienation. *Preventing School Failure, 50*(1), 34-40.

Seabrooks, J. J., Kenney, S., & LaMontagne, M. (2000). Collaboration and Virtual Mentoring: Building relationships between pre-service and in-service special education teachers. *Journal of Information Technology for Teacher Education, 9*(2), 219-236.

Single, P.B., Jaffe, A., & Schwartz. R. (1999). Evaluating programs for recruiting and retaining community faculty. *Family Medicine, 31*(2), 114-121.

Single, P. B., & Muller, C. B. (1999, April). *Electronic Mentoring: Issues to Advance Research and Practice.* Paper presented at the International Mentoring Association Conference, Atlanta, GA.

Single, P.B., & Muller, C.B. (2001). When email and mentoring unite: The implementation of a nationwide electronic mentoring program. In L.K. Stromei (Ed.), *Creating Mentoring and Coaching Programs.* Alexandria, VA: American Society for Training and Development in Action Series.

Smith, S. C., & Scott, J. J. (1990). *The collaborative school: A work environment for effective instruction* (Report No. ISBN-0-86552-092-5). Reston, VA: National Association of Secondary School Principals. (ERIC Document Reproduction Service No. ED316918)

Southeast Center for Teaching Quality (2004). *Teaching working conditions are student working conditions.* (ERIC Document Reproduction Service No. ED 485954). University of North Carolina: Author.

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Appendix A

Identified Concerns: Categories, Subcategories, and Rankings (n=12)

MAJOR ISSUE CATEGORIES	ISSUE SUBCATEGORIES	RANKINGS															
SOCIALIZATION		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15+	Total
	Overt and covert school routines					1											1
	Handling assemblies, fire drills, etc.	1					1										2
	Extra duties	3						2	1								6
	High risk students		2	1					1								4
	Interaction with other teachers		2			1											3
	Support for new teachers			1	1												2
	Student inappropriate male/female contact	1		1													2
	TOTAL SOCIALIZATION																**20**
POSITIVE LEARNING ENVIRONMENT	Necessary conditions				2												2
	Cooperative Learning							1		1	1						3
	TOTAL POSITIVE LEARNING ENVIRONMENT																**5**
ASSESSMENT / EVALUATION and PAPERWORK ISSUES	Used to inform next steps															2	2
	Developing range of practices						1	1					1			2	5
	Grading policies, etc.					3	1										4
	Student and parental feedback							1								1	2
	Parent conferences				1		2		1					1		1	6
	Handling paperwork	1					1	1		1							4
	Report Cards										1						1
	TOTAL ASSESSMENT / EVALUATION and PAPERWORK ISSUES																**24**
CLASSROOM MANAGEMENT / DISCIPLINE	Classroom rules and procedures		2	1			2				2	1		1			9
	Behavioral strategies		1													1	2
	Student violence							1								1	2
	Reward systems			1												1	2
	Student disrespect/insubordination	1		1		1		1					1		1		6
	Lockdowns, bomb threats, etc.															1	1
	TOTAL CLASSROOM MANAGEMENT/DISC.																**22**
CURRICULUM / RESOURCE MATERIALS	Obtaining needed materials			1	1	1		1		1		1			1	2	9
	Access to literature and professional materials															3	3
	Attending conferences															3	3
	Writing grants			1												1	1
	TOTAL CURRICULAR / RESOURCES																**16**

TIME MANAGEMENT	Typical day		1	1	1		1		1		1					1	7
	Amount of work taken home				3	2		1	1			1				1	9
	Types of daily lesson plans required					1	1		1		1					1	5
	Length and structure of daily lesson plan						1			1				1		1	4
	TOTAL TIME MANAGEMENT																**25**
TEACHING STRATEGIES	Recognizing learner differences					2											2
	Repertoire of teaching strategies				1							1		1		1	4
	Student motivation															1	1
	TOTAL TEACHING STRATEGIES																**7**
CERTIFICATION AND LEGAL ISSUES	Maintaining current certification						2	1							1		4
	Summers								1							1	2
	Teacher contract issues									1						1	2
	Teacher professional insurance										1					2	2
	Professional organizations										1	1	1			3	6
	Teacher observations								1								1
	TOTAL CERT / LEGAL																**17**
SPECIAL NEEDS STUDENTS	Inclusive classroom issues									1			1	1	1		4
	Special education meetings and documentation						1							1			2
	Accommodations/Modifications							1			1		1		1		4
	TOTAL SPECIAL NEEDS																**10**
ISSUES PERTAINING TO NEW TEACHERS	Challenges faced	1															1
	Interview issues												1				1
	Teacher created materials				1												1
	TOTAL NEW TEACHER																**3**
ISSUES PERTAINING TO SPECIFIC CONTENT AREAS		4	3	2	2	2				1	1	2	1				18

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How Do Faculty Experience and Respond to Classroom Conflict?

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We present descriptive data about the nature and correlates of classroom conflict using a national sample of 226 faculty members. We differentiated two different types of conflict, inattentive versus hostile, in our survey. Levels of conflict were not associated with instructors' demographic traits or characteristics of their courses, but were related to professors' choice of teaching methods, their demeanor, and how they responded to challenging situations. We also found that those conflict management techniques that address the relationship between faculty and students were most effective in reducing conflict.

Boice (2000) asserted "no experience of new faculty as teachers, in my observation, is so dramatic and traumatizing as facing unruly, uninvolved students" (p. 81). In fact, interpersonal conflicts in college classrooms are common, disruptive, and significantly affect how faculty and students feel about a particular course. Some forms of conflict are hostile and overt (Goss, 1999). Students may disparage the instructor, argue with classmates, or actively dispute course requirements and their grades. Other conflicts stem from students' inattentiveness and appear more passive, such as students arriving chronically late to class, engaging in side conversations, or acting apathetic and bored (Appleby, 1990; Kearney & Plax, 1992).

Despite its importance, remarkably few investigators have explored this critical topic from an empirical perspective. As such, we gathered descriptive data about the nature and correlates of classroom conflict using a national sample of psychology faculty for this study. We also investigated the different techniques that instructors used to prevent or reduce conflict and assessed the effectiveness of each.

Representative Research on Conflict

Foundational Research on Personal Conflict

Current understanding about the origins of and remedies for classroom conflict is generally derived from social psychological research regarding personal conflict. This literature suggests that many interpersonal conflicts stem from competing interests between people (Sherif, 1966), perceived injustices in which individuals feel that the benefits they derive from a situation are not proportional to their effort and work (Greenberg, 1986), and misperceptions about another person's intentions (Allred, 2000). Conflicts are compounded by ambiguous communication, a failure to consider a different perspective, and an autocratic approach to exercising power (Coleman, 2000; Krauss & Morsella, 2000). Researchers in social psychology have also described effective ways to resolve conflict at the individual and group levels. These strategies include using open communication to acknowledge and validate each other's position, identifying common interests and goals, and having mutual participation in solving the problem (Deutsch, 2000; Schulz & Pruitt, 1978).

Conflict in College Classrooms

In his qualitative examination of incivility in the college classroom, Boice (1996, 2000) described conflict as the product of an escalating interplay between instructors' and students' misbehaviors. Boice found that faculty contributed to classroom conflict by seeming cold and uncaring, arriving late to class, disparaging students, presenting material too rapidly, and surprising students in terms of testing or grading practices. He similarly reported that students fueled classroom incivility by conversing loudly during class, speaking sarcastically, taunting classmates, and arriving late to class or leaving early in a disruptive manner. Finally, Boice found that students and faculty tended to blame each other as the primary contributor to hostility.

A converging line of research has examined the importance of professors' immediacy as a determinant of the emotional climate of the college classroom (Wilson & Taylor, 2001). Immediacy refers to those verbal and nonverbal communications that outwardly manifest instructors' care for students, for example, instructors' expressions of interest in the lives of students, remembering students' names, and communicating availability. Examples of physical immediacy include eye contact, open body posture, smiling, and respectful listening (Kearney & Plax, 1992; Wilson & Taylor). Levels of immediacy are directly related to students' motivation and inversely associated with students' disruptiveness (McCroskey & Richmond, 1992).

Researchers have also explored classroom conflict from students' perspective. Using data gathered from undergraduates, Tantleff-Dunn, Dunn, and Gokee

(2002) reported that student-faculty conflict most often occurred with regard to grade disputes, unfair exam content or scoring, disagreements regarding the validity of students' excuses, professors' interpersonal conduct, and perceived teaching deficits. Respondents suggested that faculty often handled conflict in ways that dissatisfied students (e.g., acting defensively, retaliating, humiliating the student, denying the problem).

The majority of the literature on classroom conflict offers strategies to prevent or reduce disruptions. These writings provide helpful advice but are seldom informed by empirical evidence. For instance, Amada (1994) recommended administrative procedures for coping with disruptive students (e.g., documenting inappropriate behaviors, referring students for counseling, mobilizing campus security personnel). Other authors described ways to use comprehensive problem-solving procedures to manage classroom conflict (Holton, 1998; Kuhlenschmidt & Layne, 1999). These methods include broaching conflicts as soon as possible, choosing an appropriate time and place for discussions, clearly defining the problem, brainstorming solutions, and implementing a plan of action. Many effective methods to prevent or reduce conflict underscore the importance of maintaining positive working alliances with students (Tiberius & Billson, 1991). Specifically, faculty members foster working alliances when they build rapport with their students, develop shared instructional goals, and resolve disputes by involving students in discussions that convey respect and empathy (cf. Buskist & Saville, 2004; Tiberius & Flak, 1999).

Aim of the Current Investigation

To extend knowledge in this area, our study empirically assessed (a) whether inattentive conflict can be differentiated from hostile conflict, (b) whether characteristics of courses and instructors' demographic traits related to classroom conflict, (c) whether instructors' preparation and expression of care toward students correlated with levels of classroom conflict, and (d) the extent to which instructors used different conflict management strategies and the perceived effectiveness of each technique.

Method

Participants and Procedure

We mailed our survey to a random sample of 1,000 members of the American Psychological Association (APA) who indicated on their membership applications that teaching was their primary occupation. Two hundred and twenty-six psychology faculty members (109 men, 117 women) completed and returned the instrument. Participants reported their racial and ethnic backgrounds as European American (84.5%), African American (5.4%), Hispanic American (2.7%), Asian American (1.4%), or Other/Mixed heritage (4.5%). The mean age was 51 years (SD = 10.8).

Almost all respondents had their doctorate (98.7%) and had considerable teaching experience (M = 20.0 years, SD = 10.8). The majority held full-time appointments (88.6%) in a range of higher education settings, including research-oriented universities (23.2%), comprehensive universities (34.5%), liberal arts colleges (33.2%), and community colleges (9.1%). About half of our participants (54.7%) indicated that they had completed some form of training in college teaching during their careers.

Measure

Participants anonymously completed a 71-item questionnaire that assessed (a) demographic characteristics; (b) characteristics of the course in which they experienced the greatest amount of classroom conflict; (c) the frequency of 17 conflictual behaviors, as rated on a 4-point scale; (d) their perceived success in managing each conflictual behavior, as rated on a 4-point scale; (e) how often they demonstrated seven uncaring or unprepared behaviors; (f) the strategies that they used to manage classroom conflict, given a list of 15 commonly identified techniques; and (g) the perceived success of each conflict resolution technique used, as rated on a 4-point scale.

Given the lack of relevant well-developed measures, we generated survey items based on information from the literature. More specifically, we derived our series of conflictual behaviors from Boice's (1996) list of common forms of classroom incivility and Appleby's (1990) description of disruptive student behaviors. Boice's list of faculty actions that promote classroom incivility formed the foundation of our items assessing instructors' uncaring behavior and unpreparedness. Finally, we measured a range of conflict management techniques. This list included those that focused on the working alliance between faculty and students (based on Tiberius & Flak, 1999) as well as other commonly used, pragmatic strategies that are not relationally-minded (cf. Indiana University Center for Survey Research, 2000).

Our survey instrument expressly asked respondents to answer all questions in reference to a single course that they recently taught in which they experienced a high level of classroom conflict. Our restricted focus on instructors' experiences in the context of one class is consistent with other researchers' measurement strategies (e.g., Boice, 1996; Indiana University Center

for Survey Research, 2000; Tantleff-Dunn et al., 2002). Moreover, professors would presumably have more vivid memories of a particularly troublesome class, which facilitated their ability to answer our behaviorally anchored questionnaire.

To reduce our data and create scales, we conducted two sets of factor analyses on individual items. We also chose this approach to determine the underlying structure and patterns among the various items used to evaluate classroom conflict and its correlates.

First, we submitted the 17 items assessing different conflictual behaviors to a factor analysis with Varimax rotation. Two factors reliably emerged from this analysis that accounted for 43% of the total variance. The first factor measured *inattentive conflict* (eigenvalue = 3.79). Six items had factor loadings of .40 or higher: students arriving late or leaving early (.71), being inattentive or displaying little interest (.69), being absent from important classes (.68), coming unprepared for class (.67), sleeping during class (.64), and talking inappropriately during class (.52). The second factor (eigenvalue = 1.37) measured *hostile conflict* and consisted of five items: students protesting your assignments (.73), complaining about exams (.71), arguing with you (.69), complaining about your teaching style (.45), and eating or drinking noisily (.43). This analysis allowed us to create four scales by using the standardized regression residuals: overall level of inattentive conflict, perceived overall success in managing inattentive conflict, overall level of hostile conflict, and perceived overall success in managing hostile conflict.

We conducted another factor analysis with Varimax rotation using the seven items that focused on instructor behaviors. Two factors reliably emerged from this analysis that accounted for 41% of the total variance. The first factor reflected *faculty unpreparedness* (eigenvalue = 1.74) and consisted of four items with factor loadings of .40 or higher: I was unprepared for class (.68), I arrived late to class (.64), I surprised students with tests or their grades (.59), and I included material that was too advanced for the course (.43). The second factor (eigenvalue = 1.14) measured professors' *uncaring demeanor* and included three items: I appeared distant or uncaring (.73), I delivered rapidly paced lectures that students had difficulty following (.72), and I made remarks or comments that students perceived as offensive (.52).

Results

Descriptive Data Regarding Conflict-Laden Classes

Most participants (79.3%) indicated that their most recent, conflict-laden course was an undergraduate-level class with an average enrollment of 37 students (*SD* = 42). Faculty indicated that they primarily lectured in this class (58.3% of class time devoted to lecturing) rather than using discussion or active learning techniques (26.1% and 15.6% of class time, respectively).

Correlates of Classroom Conflict

We next assessed whether course characteristics and instructor demographic traits related to levels of conflict. We conducted a series of *t* tests and bivariate correlations to determine whether the number of enrolled students, course level, or use of various pedagogical methods related to hostile or inattentive conflict (see Tables 1 and 2).

Although class size was unrelated to conflict, instructors reported that undergraduate-level classes had higher levels of inattentive conflict than graduate courses. In addition, the use of lecture correlated directly with inattentive classroom conflict. On the other hand, using discussion or active learning related inversely with inattentive classroom conflict.

We also explored whether faculty characteristics correlated with the likelihood of experiencing problems in the classroom. We analyzed the relation between instructors' gender, race, age, years teaching, full-time versus part-time status, and completing a course in college teaching with inattentive and hostile conflict; however, no significant findings emerged in any of these analyses. In addition, we examined whether faculty members' uncaring behaviors or unpreparedness related to classroom disruptions. Instructors who endorsed uncaring behaviors experienced higher levels of hostile conflict.

Management of Conflict

Our final set of analyses focused on the extent to which faculty believed that they successfully managed conflict and the particular techniques they used to accomplish this goal. Toward this end, we examined instructors' preferred conflict management strategies as well as their perceived effectiveness. Table 3 lists the tactics that respondents used to control conflict after it occurred. Many instructors stated that they dealt with conflict by communicating respect, interest, and warmth to students; addressing the students outside of class; focusing on students' feelings and expressing empathy; and clarifying the goals and agenda for the course to ensure that students found them meaningful. Conversely, instructors eschewed more administrative conflict management strategies (e.g., dropping a student from the class, reporting the student to a university administrator).

In general, faculty rated their most frequently used techniques as most successful. Strategies such as

TABLE 1
Associations Between Categorical Instructor and Course Variables with Types of Conflict

		Inattentive conflict[a]			Hostile conflict[a]		
Variable	*n*	*M*	*SD*	*t*	*M*	*SD*	*t*
Level of course				30.66**			1.08
Undergraduate	176	.16	.92		-.04	.95	
Graduate	43	-.71	.98		.14	1.15	
Instructor's gender				.43			.33
Male	108	-.05	.97		-.04	.88	
Female	117	.04	1.03		.04	1.10	
Instructor's race				.31			2.64
White	190	.01	.96		-.06	.95	
Person of color	31	-.10	1.26		.25	1.18	
Status				1.66			.36
Full-time faculty	194	-.02	1.02		-.01	1.01	
Part-time faculty	25	.25	.84		.11	1.04	
Pedagogy course				.67			1.18
Yes	122	.06	1.07		.07	1.07	
No	100	-.05	.90		-.08	.90	

[a]Standardized variable.
**$p < .01$.

TABLE 2
Associations Between Instructor and Course Variables with Types of Conflict

Variable	Inattentive conflict	Hostile conflict
Class size	.13	-.01
Percent lecture	.21**	-.03
Percent discussion	-.15*	-.02
Percent active learning	-.15*	.05
Instructor's age	.00	-.02
Years teaching	.00	-.04
Instructor uncaring behavior	.11	.30**
Instructor unpreparedness	.01	.05

Note. *n*'s range between 212 and 225 because of missing data.
*$p < .05$. **$p < .01$.

communicating respect, clarifying course goals, involving students in solving the problem, and encouraging a sense of classroom community received the highest effectiveness scores when individually rated. As a complementary way to assess the extent to which each management strategy reduced levels of conflict, we correlated instructors' use of these 15 techniques with instructors' aggregated ratings of their perceived success in reducing inattentive and hostile conflict (see Table 3, columns 4 and 5). We found the strongest correlations between the use of alliance-enhancing strategies and conflict reduction. These associations were greater for the effective management of inattentive rather than hostile disruptions. In general, though, the degree to which faculty members perceived that they successfully managed inattentive conflict was strongly associated with their perceived ability to reduce hostile conflict, $r(191) = .53$, $p < .01$.

Discussion

Our results provide important additions to the literature in terms of understanding college-level classroom conflict. First, we empirically differentiated between two types of classroom disruptions: inattentive and hostile forms of conflict. These results supported the distinctions described by Appleby (1990) and others, which had not been verified to date. We found that these two forms of classroom disruption were associated with different precipitating factors.

Second, we found that the amount of conflict that faculty reported was actually unrelated to many characteristics of courses or instructors. Perhaps most surprising was the lack of differences occurring as a function of professors' demographic characteristics (i.e., race, gender, age, and years of teaching), which contradict the findings of some other writers (e.g., Harlow, 2003). Previous research has documented that

TABLE 3
Conflict Management Strategies Used by Instructors: Frequency, Perceived Effectiveness, and Correlations with Types of Conflict

Strategy employed	Percentage employing the strategy	Mean success of the strategy [a]	Success managing inattentive conflict [b,c]	Success managing hostile conflict [b,d]
Communicated respect, interest, and warmth toward the student	78.8	2.45 (.67)	.24**	.19**
Addressed the student(s) outside of class	74.3	2.25 (.83)	.07	.03
Focused on feelings and empathized	65.5	2.22 (.77)	.18**	.06
Clarified goals and agenda for course; ensured meaningful goals	64.6	2.38 (.71)	.13*	-.09
Ignored the problem	61.5	1.21 (.91)	-.29**	-.09
Considered how your behavior contributed to the problem	58.4	1.96 (.85)	.13*	-.01
Encouraged classroom community	54.0	2.25 (.76)	.15*	.12
Addressed student in front of class	53.1	1.72 (1.01)	.04	.04
Consulted with a colleague	47.8	1.83 (.86)	.07	-.10
Involved students in solving the problem	43.4	2.34 (.82)	.23**	.05
Changed course requirements/deadlines	35.4	1.81 (1.06)	-.01	-.15*
Reported behavior to university official	27.9	.76 (1.03)	.08	-.05
Changed your teaching style	27.0	1.69 (.90)	.08	-.02
Changed grading criteria	18.1	.98 (1.11)	.00	-.08
Dropped student from class	11.9	.96 (1.26)	.10	-.03

[a] Mean and standard deviation presented. Scores on a 4 point scale (0 = *not at all successful*; 3 = *very successful*). [b]Bivariate correlation between use of strategy and perceived success in managing type of conflict. [c]$n = 223$. [d]$n = 193$.
*$p < .05$. **$p < .01$.

students tend to challenge the authority of female professors and faculty of color more often than they do when interacting with white male faculty. This trend is evident when students question the legitimacy of female and minority professors or require them to justify their teaching methods and defend their knowledge or opinions (Moore, 1996; Turner & Myers, 2000). Such challenges from students recapitulate broader teaching struggles experienced by many women and minority faculty in academia, including disproportionately teaching large, undergraduate sections and the additional mentoring responsibilities that they often shoulder (Aguirre, 2000).

The disparity between our findings and others' may be related to the fact we used a quantitative approach, whereas previous studies have generally relied on qualitative methods. Similarly, the inappropriate challenges to authority that are disproportionately experienced by female and minority faculty members may not be synonymous with classroom conflict as we defined it in this investigation. However, past studies have documented certain similar experiences that occur across the lines of faculty race, gender, and age. For instance, student ratings of instructor effectiveness are generally equivalent across all demographic groups (Marsh & Roche, 1997). In addition, most female and minority faculty members do not report discriminatory treatment from their students in the classroom (Bronstein & Farnsworth, 1998).

On the other hand, we found conflict to be associated with instructors' choice of teaching methods, their demeanor, and how they responded to challenging situations. The precise pattern of associations depended on the type of conflict. Hostile conflict related to whether faculty expressed care towards students, communicated respect, behaved sensitively, and remained warm and engaged. Inattentive conflict was associated with a greater number of factors. More

specifically, instructors' use of interactive teaching techniques, such as discussion and active learning in lieu of lecture, related to fewer inattentive disruptions. In addition, instructors who conveyed respect, focused on students' feelings, ensured meaningful class goals, engaged in critical self-examination, and involved students when resolving disagreements had fewer inattentive conflicts as well.

In general, we found the most effective strategies to reduce conflict involved enhancing working alliances with students. Professors draw on the working alliance by attending to the emotional bonds that exist in the classroom, promoting a common sense of purpose when teaching, and treating students respectfully despite disagreements. Each of these components may have a role in improving the emotional climate in the classroom. Moreover, the steps involved in forging working alliances overlap with many of the best practices of effective undergraduate instruction (e.g., promoting contact between students and faculty, developing reciprocity and cooperation among students, and using active learning; cf. Chickering & Gamson, 1991).

Professors most often used conflict management strategies that they also rated as successful (e.g., most faculty reported using the technique of communicating respect toward students; this strategy also received the highest success rating). However, involving students in solving problems may be an underused technique, given its lower reported frequency of implementation in comparison to its high success ratings. Other conflict management strategies may actually have an undesirable effect. For instance, ignoring problems (a strategy used by 61.5% of our respondents) was related to poorer outcomes despite its common use. Similarly, changing course requirements and deadlines was associated with greater student hostility. Perhaps instructors acquiesce and ignore problems when they lack the time needed to resolve or grapple with problems at hand.

Several avenues exist for continued exploration of this topic. First, we asked faculty to focus on their most recent conflict-laden class and to describe their own and their students' behavior in this one context. This measurement approach provided respondents with a concrete point of reference and indexed the severity of conflict in that setting. An alternative approach would involve assessing conflict that individual faculty members experience across the different classes that they teach. Perhaps faculty characteristics, such as gender or race, have significant associations with the pervasiveness or breadth of student-faculty conflict rather than with its intensity.

Second, future research can simultaneously consider the intersection between gender, race, and age in terms of the incidence of classroom conflict. For instance, Harlow (2003) suggested that young, African American women in particular have their authority challenged more often than other groups. Quantitative investigations can examine the significance of relevant interaction effects (gender x race or age x gender), providing that researchers use sufficiently large and demographically representative samples of faculty participants.

Third, we relied exclusively on faculty assessment of all variables in our study. Our approach lacked a control for social desirability and contained shared method variance. Thus, our findings could be skewed because of favorable self-presentation or the magnitude of the reported associations may be spuriously inflated. As such, other investigators can verify our findings by obtaining complementary data from students and faculty in a single study.

Finally, changes in levels of classroom conflict can be explored longitudinally. From a practical standpoint, professors are generally most interested in whether the implementation of the techniques that we described reduce the scope of conflict that they personally endure. Future research can expressly explore this question by obtaining baseline data regarding the frequency and intensity of classroom conflict for individual professors, then teaching them relevant strategies to prevent and reduce student disruptions, and ultimately re-assessing conflict levels to detect whether changes have occurred. This research design can determine the extent to which professors' conflict management strategies are amenable to modification, whether these changes produce desired effects, and how long they last following professional development efforts.

References

Allred, K. G. (2000). Anger and retaliation in conflict: The role of attribution. In M. Deutsch & P. T. Coleman (Eds.), *The handbook of conflict resolution: Theory and practice* (pp. 236-255). San Francisco: Jossey-Bass.

Aguirre, A., Jr. (2000). *Women and minority faculty in the academic workplace: Recruitment, retention, and academic culture.* San Francisco: Jossey-Bass.

Amada, G. (1994). *Coping with the disruptive college student: A practical manual.* Asheville, NC: College Administration Publications.

Appleby, D. C. (1990). Faculty and student perceptions of irritating behaviors in the college classroom. *Journal of Staff, Program, and Organization Development, 8,* 41-46.

Boice, B. (1996). Classroom incivilities. *Research in Higher Education, 37,* 453-486.

Boice, R. (2000). *Advice for new faculty members: Nihil nimus.* Boston: Allyn and Bacon.

Bronstein, P., & Farnsworth, L. (1998). Gender differences in faculty experiences of interpersonal climate and processes for advancement. *Research in Higher Education, 39,* 557-585.

Buskist, W., & Saville, B. K. (2004). Rapport-building: Creating positive emotional contexts for enhancing teaching and learning. In B. Perlman, L. I. McCann, & S. H. McFadden (Eds.), *Lessons learned: Practical advice for the teaching of psychology* (Vol. 2, pp. 149-155). Washington, DC: American Psychological Society.

Chickering, A. W., & Gamson, Z. F. (Eds.). (1991). *Applying the seven principles for good practice in undergraduate education.* San Francisco: Jossey-Bass.

Coleman, P. T. (2000). Power and conflict. In M. Deutsch & P. T. Coleman (Eds.), *The handbook of conflict resolution: Theory and practice* (pp. 108-130). San Francisco: Jossey-Bass.

Deutsch, M. (2000). Cooperation and competition. In M. Deutsch & P. T. Coleman (Eds.), *The handbook of conflict resolution: Theory and practice* (pp. 21-40). San Francisco: Jossey-Bass.

Goss, S. S. (1999). Dealing with problem students in the classroom. In B. Perlman, L. I. McCann, & S. H. McFadden (Eds.), *Lessons learned: Practical advice for the teaching of psychology* (Vol. 1, pp. 209-212). Washington, DC: American Psychological Society.

Greenberg, J. (1986). Differential intolerance for inequity from organizational and individual agents. *Journal of Applied Social Psychology, 16,* 191-196.

Harlow, R. (2003). "Race doesn't matter, but …": The effect of race on professors' experiences and emotion management in the undergraduate college classroom. *Social Psychology Quarterly, 66,* 348-363.

Holton, S. A. (1998). Academic mortar to mend the cracks: The Holton model for conflict management. In S. A. Holton (Ed.), *Mending the cracks in the ivory tower: Strategies for conflict management in higher education* (pp. 221-238). Bolton, MA: Anker.

Indiana University Center for Survey Research. (2000). *Survey on academic incivility at Indiana University.* Bloomington, IN: Author.

Kearney, P., & Plax, T. G. (1992). Student resistance to control. In V. P. Richmond & J. C. McCroskey (Eds.), *Power in the classroom: Communication, control, and concern* (pp. 85-100). Hillsdale, NJ: Erlbaum.

Krauss, R. M., & Morsella, E. (2000). Communication and conflict. In M. Deutsch & P. T. Coleman (Eds.), *The handbook of conflict resolution: Theory and practice* (pp. 131-143). San Francisco: Jossey-Bass.

Kuhlenschmidt, S. L., & Layne, L. E. (1999). Strategies for dealing with difficult behavior. In S. M. Richardson (Ed.), *Promoting civility: A teaching challenge* (pp. 45-57). San Francisco: Jossey-Bass.

Marsh, H. W., & Roche, L. A. (1997). Making student evaluations of teaching effectiveness effective: The critical issues of validity, bias, and utility. *American Psychologist, 52,* 1187-1197.

McCroskey, J. C., & Richmond, V. P. (1992). Increasing teacher influence through immediacy. In V. P. Richmond & J. C. McCroskey (Eds.), *Power in the classroom: Communication, control, and concern* (pp. 101-119). Hillsdale, NJ: Erlbaum.

Moore, V. A. (1996). Inappropriate challenges to professorial authority. *Teaching Sociology, 24,* 202-206.

Schulz, J. W., & Pruitt, D. G. (1978). The effects of mutual concern on joint welfare. *Journal of Experimental Social Psychology, 14,* 480-492.

Sherif, M. (1966). *In common predicament: Social psychology of intergroup conflict and cooperation.* Boston: Houghton Mifflin.

Tantleff-Dunn, S., Dunn, M. E., & Gokee, J. L. (2002). Understanding faculty-student conflict: Student perceptions of precipitating events and faculty responses. *Teaching of Psychology, 29,* 197-202.

Tiberius, R. G., & Billson, J. M. (1991). The social context of teaching and learning. In R. J. Menges & M. D. Svinicki (Eds.), *College teaching: From theory to practice* (pp. 67-86). San Francisco: Jossey-Bass.

Tiberius, R. G., & Flak, E. (1999). Incivility in dyadic teaching and learning. In S. M. Richardson (Ed.), *Promoting civility: A teaching challenge* (pp. 3-12). San Francisco: Jossey-Bass.

Turner, C. S. V., & Myers, S. L., Jr. (2000). *Faculty of color in academe: Bittersweet success.* Needham Heights, MA: Allyn and Bacon.

Wilson, J. H., & Taylor, K. W. (2001). Professor immediacy as behaviors associated with liking students. *Teaching of Psychology, 28,* 136-138.

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Walking the Talk: The Complexities of Teaching about Teaching

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Teaching a course entitled *Introduction to Theories of Education* requires that one practice what one is preaching. We describe an attempt to organize and provide undergraduates enrolled in an introductory course of 300+ students, with a viable, yet more collaborative and "product-based" alternative to the familiar lecture and test format. This qualitative study considers various forms of feedback that were elicited from both students and the course teaching assistants regarding the learning outcomes facilitated or hindered by this alternative format. Our analysis offers insight into some important ways the particular learning activities promoted in this course design intersect with larger institutional norms that infuse organizations (like universities) with social value, and how students negotiate the university experience. Findings suggest that "good students" spend considerable energy learning to conform to what they believe to be their instructors' expectations, often at the expense of learning-with-understanding. However, learning-with-understanding may also be encumbered by the ambiguity or uncertainty that accompanies the removal of clear and explicit expectations. Tentative suggestions are offered explaining why and how some students gained proficiency in goal-formation and metacognition while simultaneously overcoming a sense of ambiguity or uncertainty.

This paper describes and evaluates an attempt to enact pedagogical principles grounded in a neo-Vygotskian framework in an undergraduate level course at a major research university in the United States. The course, *Introduction to Theories of Education*, is one of three courses in a series required of undergraduates who decide to minor in education at this university. The course may also serve to fulfill the university's General Education requirements. Offered once each year, the course typically attracts a large number of undergraduate students (300+) from across all disciplinary majors and class years, many of whom are at least considering a career in teaching.

The paper begins with a consideration of evolving approaches to pedagogic practice in public education. A discussion of arguments for an alternative to the didactic lecture-style format of large undergraduate introductory courses then follows. We discuss how school routines, roles, and identities are historically sustained by broad institutional forces that shape several sectors of public life in the United States. Large lecture classes in undergraduate study are no exception. We continue with an explication of the alternative course design we created in place of the didactic lecture format, and of the neo-Vygotskian rationale guiding that design process. Next, a brief description of the methods used to assess the students' response to various aspects of the course is followed by the findings of our analysis of the responses. The paper concludes with a discussion of: students' experience of the course as an interruption or contradiction in their institutional careers as "good students"; the ways in which such interruptions serve as "occasions for sensemaking" (Weick, 1995); and the sensemaking strategies that students employed when faced with institutional interruptions.

Epistemological Trajectories

Institutional forces are ubiquitous in public life, and especially in the American educational system. Here, *institutionalization* is conceptualized as a process that serves, over time, to structure or organize macro-level systems of social interaction and conduct: the rules, regulations, implicit norms and taken-for-granted definitions that shape activities in organized environments. Generally, institutional theory examines the interdependent relations between formal organizations and the wider cultural-historical environment. In particular, this perspective emphasizes the ways in which the activities of an organization are legitimated, and thus stabilized or routinized, by their adherence to prominent and public ideological values (Scott, 2001). An institutional perspective considers how organized activities may be structured by dominant, normative ideologies, although these infused norms may not directly support the *technical* goals of the organization, or the needs of individual patrons. In turn, organizations structure norms that inform patterns of interpersonal interaction and position participants in different roles, such as "teacher", " good student" or "bad student". Contrasting different models of institutionalization, Selznick (Selznick, 1957) predicts that organizations, such as factories, with less ambiguous products or outcomes and more precisely defined goals (where these are supported by a clear division of labor and consistent task based, means-ends operating sequences – sequences that organizational theorists refer to as the "technical core") are less likely to become subject to institutional forces than organizations with multiple and ambiguous goals and outcomes, such as educational organizations, that are served by a complex, interdependent, and changing

"technical core." According to Scott (Scott, 2003), institutional forces take on three major forms, some more explicit or visible, and others more subtle or invisible. In other words, institutions include (a) *formal structures*, explicit and enforced regulatory mandates or rules; (b) *normative structures*, publicly shared ideological commitments that serve to qualify a sense of what is obligatory; and (c) *cultural-cognitive structures*, "taken for granted" expectations, assumptions, shared meanings or internalized cognitive frameworks that support communication and goal-oriented joint activity . This paper emphasizes the third – the pervasive cultural/cognitive structures that are not readily available to the "conscious awareness" of the agents enacting them, yet are ubiquitous and consistently inform human decisions and interactions.

In order to understand the institutional environment that shapes the organized public education system in the United States it is important to consider its history. As several historians of education in the U.S. have shown (e.g. (Rogoff, 2003), many of the defining institutional and ideological features of public education in the U.S. remain rooted in the empiricist epistemology established and amplified in response to the nation's nineteenth century industrial revolution. This era was characterized by the sudden and rapid growth of urban centers and immigrant populations, creating a sense of chaos and conflict that gave rise to a corresponding demand to subdivide, organize, regulate, and routinize political and public services. Impacted by rapid technical improvements and the economic success of assembly-line production for retail markets, American values shifted. Harris (1969) describes the changing ideological landscape during the industrial period as one that increasingly favored "precision, accuracy, consistency and implicit obedience to the head or directive power," seeing it as necessary for "the safety of others and for the production of any productive results".

In many respects, school reforms were intended to serve similar functions. According to Tyack (1974), educational leaders in the second half of the nineteenth century focused increasingly on the aggregate collective function of schooling for society, as compared to the welfare and development of individual students. Meanwhile, the ideologies that helped to organize urban centers gave rise to what Rogoff et al. (2003) describes as the "factory model" of education. Generally, the provisions of the "factory model" are grounded in positivist assumptions about knowledge as a product; namely that knowledge is a *thing* rather than a *process*, a thing that can be unitized, replicated, sorted, dispatched, acquired and stored (Wells, 1999). The model is one that relies on a hierarchy of control, a set curriculum, direct instruction (where explicit procedures and abstract definitions are presented by an authority figure then reproduced by students), an emphasis on pedagogical "products" (student outcomes) and decontextualized, standardized assessment criteria. As Rogoff et al. (2003) explains, teachers in this model were cast as "technical workers who were supposed to insert information into children" and students were seen as "receptacles," while "information itself was broken into bits to be delivered in a specified sequence like an assembly line" (p. 181).

Thus, the industrial era is largely responsible for the institutionalization and proliferation of normative standards that value efficiency as an axiological ideal, one that still informs organized education today. Contemporary ramifications include sharp distinctions between disciplines rather than interdisciplinary study, standardized curricula, conventional assessment measures and pedagogic mandates (especially for low-performing schools), age-grading and ability tracking, the reification/nominalization of conceptual material, and hierarchical rather than cooperative participant structures. Largely, the focus remains on "product output" rather than on process development, a focus that is reinforced by inflexible routines and external rewards and sanctions. It is our view that one consequential impact of these institutional norms on education is the cultivation of "good students" rather than "good learners", in other words, of obedient, conforming students rather than ones who are independent, original, critical, questioning or reflective.

By the end of the twentieth century, however, many educators and educational researchers were seeking alternatives to a positivist view of knowledge and behaviorist accounts of how people learn (Barab & Kirshner, 2001). Recognizing students as agents in the development and construction of their own understanding, researchers began instead, to create agendas characterized by an interest in understanding what resources learners bring to a situation and, correspondingly, how pedagogy could allow students a more active or *critical* role in learning activities (Bransford, Brown, & Cocking, 2000). Basically, this constructivist platform emphasizes that all knowledge is built on the prior beliefs, commitments, and attitudes that learners bring to a new situation and therefore that the both direction and assessment of learning must account for and utilize the different resources individual learners employ to make sense of new information. The suggestion here is that, if students themselves are not given opportunities to draw upon and express what they already understand, they are not able to integrate the new material, no matter how explicit the presented explanation. This remains the case, constructivists argue, even when such explanations include references to the "everyday" or "familiar" experiential world.

However, research-based critiques of the most radical constructivist views were soon to follow. A

main concern was that a constructivist approach tends to overemphasize the individual and the internal development of presupposed, innate learning structures. (Geist, 2003; Karpov, 2003; Lompscher, 1999) Further, in emphasizing the sudden insights ("aha moments") facilitated by the kind of cognitive conflict typical of Piagetian interviews, constructivists seemed to overlook the significance of the situated learning environments that attempt to facilitate those moments. Finally, radical constructivist perspectives have been critiqued for returning to a paradigm that invites the age-old Cartesian separation between internal mental life and an external material environment.

Following Vygotsky, a third, dialectic view, broadly known as Cultural Historical Activity Theory (CHAT), has emerged, in part as an attempt to moderate between the philosophical extremes represented by material-empirical and ideational or radical constructivist approaches to human development, and in part to help inform the "praxis" of pedagogy. From this perspective "human mental processes are neither developed in the course of children's independent activity (as constructivists would hold), nor 'unfold' as a result of maturation (as nativists would hold) nor are inculcated into children by adults (as behaviorists would hold)" (Karpov, 2003, p. 139). Basically, a dialectic view maintains that learning cannot be reduced either to acquisition of domain specific knowledge or to construction of personal knowledge related to experience in the domain. Instead, learning is considered as a recursive yet expanding cycle of practical activity and theoretical reflection as the learner engages a more complex yet interconnected system of domain specific conceptions. Exemplars of a neo-Vygotskian approach to learning and pedagogy includes Davydov's (V. Davydov, 1999; V. V. Davydov, 1988) programs of domain/subject specific learning, described as "ascending from the abstract to the concrete", Engeström's (Engestrom, 1999) model of an expansive cycle of internalization and externalization, and Wells' (1999) explanation of "the spiral of knowing," where knowledge grows out of and has value for action. Yet, a dialectical approach to learning does share several assumptions with constructivist approaches, including recognition of the need for learners themselves to be active agents (both practically and cognitively) in the learning activity. While advocates of a dialectic approach agree that learning activity must involve "what the learner already knows" they maintain that learners need new "objects" (goals) to act on. The emphasis on "goal formation" in a dialectic view (as opposed to "goal-orientation") is central, as Lompscher (1999) explains:

> Whereas the transmission strategy, as a rule, emphasizes goal orientation in the sense of presenting learning goals in a ready form, explaining them, if necessary and expecting or demanding an appropriate learning behavior, our orientation is directed to goal formation. We confront the learners with the phenomena, situations, and tasks going beyond their actual possibilities to such a degree that problem situations can arise. (p. 268)

The first "task" in a dialectic approach is for learners, using their own or readily available resources, to negotiate a definition of the problem-situation itself, thus transforming the object of study as it is engaged and appropriated. Further, learners need to become *aware* not only of the emerging object but also of how the process and results of their own (object-oriented) activity are situated by that object. We refer to this kind of strategic awareness or reflection as *metacognition*.

It is important to recognize that, despite major developments in research-based theories of learning and pedagogy, the institutional context that supports public educational organizations still remains largely grounded in an ideology established by the needs of the burgeoning urban-centered industrial revolution (Tyack, 1974). In a society driven by "the market" and focused on the promotion of capitalism, it is not surprising that "effectiveness" becomes confused with "efficiency". While ideals promoting efficiency may be appropriate for organizations operating to maximize their profit margin, it does not follow that such ideals equally well serve organizations concerned with the development of human potential. Yet, because educational organizations function within the public sector, and thus are part of broad institutional systems, they are subject to the ideological norms that mediate decisions about the relative social "legitimacy" of all levels of organizational forms and activities (this is especially likely for those sorts of organizations, as noted earlier, with highly complex, mutually contingent, and relatively ambiguous core operating systems – like educational organizations).

In particular, because schooling in the United States operates under the purview of institutional norms largely dominated by economic concerns around levels of production, the legitimacy and thus accounts of the effectiveness of different learning activities and pedagogical approaches may easily become confused by, or infused with, the axiom of efficiency. For example, at the microgenetic level, ideological norms influence how likely a student is to interrupt an instructor in order to assert his or her own perspective about a topic. Instructors however, may resist indulging "tangential" student interruptions in favor of ensuring that students are introduced to further "focal" information, so that the planned curriculum/course

material is not delayed or bypassed. While research and theory suggest the importance of learners gaining opportunities to express their developing ideas, standards of efficiency (largely derived from corporate business models) push instructors to "cover" material directly related to a proposed curriculum, as opposed to "uncovering" student understanding.

Rationale for Course Design

Several considerations, including the preceding critique of the application of the ideal of efficiency to education, as well as our own theoretical commitments to CHAT, prompted our development of an alternative design for the undergraduate course on theories of education. To begin, ample research has demonstrated the failure of transmission-style teaching in achieving learning outcomes as compared to those achieved through more interactive forms of learning and teaching (Wergerif, Mercer, & Dawes, 1999). Meanwhile, employers as well as instructors are becoming increasingly dissatisfied with the inability of students to apply decontextualized concepts and skills learned in class to problem contexts beyond the classroom (Bransford et al., 2000). Also, the first author of this paper, having served as a university teaching assistant five different times in the past three years has become increasingly aware of undergraduate dissatisfaction with the quality of education offered in large didactic formats. For instance some former students' have complained (informally) about their own lack of motivation and/or self-efficacy in what they perceive to be authoritative formats, which may coincide with a lack of opportunities to express their own sense of agency, individuality or identity in learning activity.

A further and more general concern is that school activities typical of transmission-style teaching seem increasingly disconnected from life outside educational institutions. This is amplified by the inability of didactic pedagogy and other institutionalized classroom practices to respond flexibly to the diverse needs of an increasingly multicultural national population. Thus, for many students, it is not apparent how the prescribed material relates to their own life trajectories, developing identities and personal concerns. Goldman (2004) points out that rapid advances in multi-media information technology in contemporary society pose new demands and challenges in education. He argues that, "the competencies and skills demanded by a knowledge society differ in many ways from those needed by an industrial society" (p. 318). In particular a "knowledge society requires individuals to: work as teams rather than only as individuals, engage in problem solving as opposed to routinized execution of a set of procedures, understanding how bits of information relate in systematic and meaningful ways, the ability to consistently make choices about what information to "trust" and what to question, what information to pass on to others and what not to, and finally how to be flexible and adaptive to a rapidly changing environment.

As already mentioned, we remain concerned that many of the students who are successful in gaining entry into the university are precisely those who have assumed the role of the "good student," that is to say those who have successfully navigated systemic requirements for entry into a major university -- those who have learned to play by the institutional "rules of the game" (North, 1990). However, more often than not, such success means that the student has learned not to question the perspectives, rationale or conclusions presented during instruction, but rather to align their own perspective with institutional expectations in order to perform efficiently on various benchmark assessment measures. While this stance may have proved successful in their gaining entrance to university, it does not prepare students for the conditions they will meet in the various professions they aspire to enter. And, in the case of those who are hoping to become teachers, it is not one that we wish to see perpetuated in their work with the next generation of students. Thus, breaking this cycle was one of our prime concerns in developing a course structure more appropriate to the need for a critical and dialogic approach to learning and teaching in order to prepare students to meet the challenges that they and society at large face in the complex and rapidly changing world of the 21st century (Wells & Claxton, 2002)

Finally, there was the subject matter of the course itself, an *Introduction to Theories of Education*, which was intended to include a critical comparison of the various theories underpinning contemporary educational practices. Based on our evaluation of these theories, as presented in the opening section of this paper, we wanted students to recognize the importance for learning of collaborative engagement in "praxis"; that is to say, we wanted them to understand that effective pedagogy requires opportunities for students to engage in both practical activity and conscious reflection. With these as intended learning outcomes, it seemed clear to us that, if students were to be encouraged to appropriate such theories about how teaching may best support learning, they could reasonably expect to learn about them in a format that enacted the theories espoused.

In his description of the development of higher mental functions, (Vygotsky, 1986) emphasizes the mutual interdependence in development of *scientific concepts* (as complex systems) and *spontaneous concepts*. He stresses that the "empirical" worldliness and flux of the spontaneous concept preserves a richness that is critical for the appropriation of the

meaningful relationships that can then operate to establish systems of scientific concepts. Meanwhile, he suggests that scientific conceptual systems, that is, higher mental functions, make possible the achievement of a deeper and more integrated understanding of the experienced world.

> Moreover without well-defined relationships to other concepts, the concept's existence would be impossible. In contrast to what is taught by formal logic the essence of the concept or generalization lies not in the impoverishment but in the enrichment of the reality that it represents, in the enrichment of what is given in the immediate sensual perception and contemplation. However this enrichment of the immediate perception of reality by generalization can only occur if complex connections, dependencies and relationships are established between the objects that are represented in concepts and the rest of reality (Vygotsky, 1986, p. 224).

This thesis primes the importance of a combination of practical activity and opportunities to reflect on those actions - or "praxis" - for learning; thus our rationale was to devote some of the time allotted for the course to collaborative practical activities and some to extended opportunities to negotiate the meaning of those activities, which could then serve as the basis for further collaborative activity.

Course Design

In light of the arguments developed above, we set out to design a course that would not only introduce students to the different theories of learning that have been drawn on to explain and shape classroom pedagogical practices but would also challenge students to explore and critique their own learning practices, their role in educational institutions, and their assumptions about how other people learn. For this latter reason, in order to encourage students to engage more directly and critically with their community of peers, we wanted to provide more intimate and active opportunities for them to connect, relate, debate and compare the diversity of their own previous learning experiences to their experience and understanding of the "big ideas" presented in this course. Finally, we wanted to design a course that would foster among the students a sense of ownership of their own learning, a design that would position them as both protagonists and authors of knowledge-building activities rather than simply as conscripted information-processors with regard to the ideas of acknowledged experts in the field.

Our first problem, therefore, was to find a more interactive format within the constraints of the campus class schedule, which, for large introductory classes, normally consists of three 70 minute lectures per week with an additional meeting in smaller sections led by teaching assistants. This we did by retaining the timetabled structure of three meetings per week but with a different format. The class was organized in ten sections of approximately 30 students each, with each section being further divided into six 'study groups' consisting of four to six students. Each week there was a 90-minute lecture on Monday attended by all the undergraduates and teaching assistants. Then, during the remainder of the week, each study group met for one to one-and-a-half hours on their own. Finally, the study groups then reported on their group work during the following 90 minute section meeting, where they were encouraged to make connections between the group activities and the readings and lecture for the week. Thus section meetings, led by teaching assistants, were designed as a central "pivot" for the course structure as a whole. Since the leadership role played by the teaching assistants in this course carried more responsibilities than is typical of other large university courses, it was important that these five teaching assistants were all graduate students pursuing advanced degrees in education (four doctoral students and one master's student) and already familiar with many of the core principles of CHAT.

Overall, the format of the course was organized to cycle through different types of engagement, moving from the explicit explanation of key concepts in the lecture, to more agentive, experiential and dialogic explorations in the small study group, set within opportunities for further dialogue and synthesis with a relative expert (the teaching assistant) in the section meeting. It also involved students in inclusive "levels" of community, beginning with self.

Individually, students were expected to make regular entries in a journal, documenting and synthesizing how they were connecting weekly assignments (readings and group activities) with their own experiences as learners, their own questions about learning, their reflections on learning events and group dynamics, or whatever else they themselves believed to be relevant. The journals were also intended to give students an alternative (legitimate) mode of discursive participation that relieved them from the pressure of making "public" contributions in class discussions and the restraints on raw authenticity that often come with it. Journal writing was also presented as an opportunity for them to develop their own understanding by using writing to "dialogue with self" in what Vygotsky called "inner speech."

In the study groups, students were required to complete a variety of tasks that highlighted different kinds of intellectual challenge, which might subsequently be incorporated into their planning of

curricular units in schools. Having completed the task for the week, the groups were encouraged to adopt a "metacognitive stance" to the relationship between the processes in which they had engaged and the course readings. In contrast to "everyday" or what Bartlett once termed "incidental" learning, the term *metacognition* describes learners' conscious inquiry into and reflection upon their own repertoires of strategies of learning (Brown, 1994). Metacognition has been recognized by several respected educational researchers as a valuable skill or "stance" for the advancement of learning (Brown, 1994; Brown & Campoine, 1996; Resnick, 1987; Schauble & Glaser, 1993; Schoenfeld, 1987)

Accordingly, one of the first practical activities of the quarter, "magic squares", was paired with an introduction to the concept of metacognition in the reading for that week. The magic squares activity consisted of arranging the numbers 1-9 in a three by three grid so that every row, column and diagonal would add to the same sum. For this activity, the students were asked first to work individually on a problem involving a 3 x 3 magic square, a grid with three columns and three rows. After solving a 3 x 3 square, they could go on to try a 4 x 4 square, which proves interesting in comparison to the 3 x 3 square because some different algorithms apply to a square with an even number of rows and columns, and then a 5 x 5 square. After completing this task, or at least giving it an honest attempt, they were required to meet with the other members in their study group to compare and discuss the strategies they were using to solve the initial problem and then to work together to solve more complex ones. No further instructions were given. This activity was intended to provide students with a common experience which they could then use collectively to investigate, reflect, and debate about their own problem solving strategies, as well as to realize the diversity of strategies employed by group members to solve what technically appeared to be the "same" problem. Thus, the magic squares activity was designed to provoke a metacognitive understanding of the contingencies constraining strategy choice, where different strategies are more and less applicable to particular problem contexts.

What is interesting is that many of the same strategies that work to solve the 3 x 3 square, for instance, deciding *first* what number should occupy the center, are also useful for solving the 5 x 5 but not for solving the 4 x 4, because there is no absolute center. This prompts students to consider more carefully how different strategies work differentially under various conditions, and may lead to alternative outcomes. Also, we considered it important for those students considering future careers in teaching to realize that their own students will not all approach a given task in the same way. As they develop their identities as teachers, these undergraduates need to recognize the importance of developing a diverse repertoire of strategies and explanations in problem solving, rather than remaining focused on the one with which they are already familiar, or which is authoritatively presented in a text. Although this problem involved a specific domain, namely one involving math and logic, the section meeting discussions aimed to generalize and adapt this metacognitive stance to a wider range of problem solving contexts and activities spanning disciplinary domains. While subsequent weekly group-activities involved challenges of different kinds, the same general structure applied: some individual work, followed by exploratory discussion and peer-scaffolding in the study group, followed by a more comprehensive synthesis/analysis in the section meeting.

A further important intention for these study-groups was that they would foster a more intimate peer-network, a working space where, in the absence of authority figures responsible for evaluating academic progress, students would be more likely to engage in critical debate and less likely to assimilate or assume a passive role. Building on these earlier activities, the final group activity was to design a grade-appropriate curriculum unit, using the principles encountered during the course.

The large lecture session, in contrast to the more student-centered orientation of other aspects of the course, provided an introduction to each new topic and an overview of the principles and ideas that it involved. Nevertheless, in keeping with CHAT theory, each lecture also attempted to incorporate more interactive episodes (e.g., video-clips, demonstrations), followed by a brief period of interaction with peers and more general discussion – acknowledging the need for active participation in collective sensemaking. Within this organizational framework, section meetings were positioned as a central and pivotal venue, providing an arena in which the different levels and aspects of the course could be mediated and integrated.

In every aspect of the course, the students were continually encouraged to question and debate the ideas they encountered, put them to use in a pro-active manner, and monitor the outcomes. In place of midterm and final exams, students were required to submit a substantial portfolio at the end of the quarter, in which they demonstrated their understanding and engagement with the theories presented. Students were informed on the first day of class that they would not be receiving formal grades for individual assignments but that the final grade would be based on these portfolios and on their participation week by week. This arrangement was adopted in an attempt to move away from the traditional paradigm, in which students' engagement

with course material tends to be motivated by external incentives and to lead to the memorizing of neatly packaged information that they can repeat in response to exam questions that elicit a single, "correct" answer.

By removing the emphasis on "external" and immediate sources of validation or verification, our intention was to encourage students to decide on, develop, and take more responsibility for forming their own learning *goals* – that is, to devote their time and effort to developing lines of inquiry that they perceived as personally and socially relevant rather than simply carrying out mandated tasks, fulfilling pre-determined ends that might be experienced as detached from their own lives and interests. Working from the assumptions of CHAT, we argue that the range of skills involved in *goal-formation* are valuable for learning in general, and find them to be especially valuable in a society where decisions for action can be overwhelmed by a vast amount of available information and multiple alternative points of view that characterize what Goldman (2004) refers to as a "knowledge society".

As we shall discuss below, while this new organization of the course did not fully realize our theoretical orientation, it did succeed in enabling the students to engage with the ideas of the course in a more active and personal manner than the lecture-only format permits.

Evaluation of the Course as Experienced

In order to evaluate the extent to which the students' experience of the course had matched our intentions in designing it, we reviewed several measures of the student's participation and performance as well as their reactions to the course design. At the end of the quarter we conducted and recorded two focus group interviews, in which 4-6 students were asked to discuss various aspects of the course. The five teaching assistants also participated in a focus group interview reflecting on their perceptions of the affordances and tensions of the course. We also developed a tailored course questionnaire (see Appendix A) that was administered on the last day of the course and completed by 178 of the students.

The first stage of analysis involved coding the written responses to each of these questions as simply negative or positive. Next we analyzed these responses for salient themes - sometimes collapsing related content from two (or more) different questions, sometimes deriving multiple themes from a response to a single survey question. During this stage of analysis an undergraduate student volunteered to read through the survey questionnaires and help with the initial coding. After deriving an open taxonomy of response themes, we went back through the responses to the survey questions and quantified according to their content theme and positive or negative tone.

The categories derived from the survey questionnaire were not final, but rather served as heuristics for a review of journal entries, many of which included useful insights into the student's experience of the course. We expected that new themes would replace some of the categories in our initial taxonomy and that our understanding of these themes would certainly be expanded and complicated during this second stage of analysis. Each teaching assistant was asked to select and submit a representative sample of completed journals, approximately ten journals, and instructed that the sample should represent the full range of academic work and engagement in each respective section. The themes derived from journal entries and the responses to the survey questions were later triangulated with other data sources, including the three focus group interviews, audio recordings of section meeting discussions, and teaching assistant diaries (posted to an internal webboard). Rather than present a quantified table of the complex and overlapping themes represented in this data, we have chosen to represent the most salient points through a series of student quotations, which are presented below.

Taken together, these various sources of evidence suggest that, on all counts, the undergraduate participants experienced the course as distinctly different from other introductory level courses. The novelty for many students was that, for the first time in their careers as institutional learners, they were being explicitly asked to define the problem or purpose of the activities in which they engaged rather than simply using a prescribed means to provide routine or acceptable answers and solutions to pre-determined questions.

The Course as Experienced by Undergraduates

This opportunity to take on the role of protagonist motivated some students and frustrated others. Indeed, a major theme emerging from our analysis of student responses to this course design can be characterized in terms of a tension between, on the one hand, the security of purpose that comes with imposed, clearly defined parameters for achieving success and, on the other, the exciting challenge of having the opportunity to research and define both purpose and criteria on one's own or in collaboration with peers. For some, this opportunity was transformative, and their number increased as the course proceeded. These students truly embraced the chance to engage more directly with their peers; they also valued the opportunities to express themselves more freely, to think metacognitively by placing "text" in "context", to take ownership of their

own learning and learning goals, and to apply what they were learning to a constructive collaborative project when designing a curriculum unit, which was one of the major assignments. In sum, they engaged in a deeper and more interconnected kind of sense-making. One student summed up her experience of the course in the following journal entry:

> I believe in teaching to change the world, and I don't mean in the 'I impacted a child today, there's no knowing how far that will take him,' way. I mean in the way that I want to teach children to think critically and pull apart the decisions and rules and standards set out by authority figures and institutions….We just finished our presentations for the course. I admit that our sections seemed long at first but towards the end of the class, I really got into them, and began using that time for asking questions I really wanted answered. I find that I wake up everyday with more questions to ask the group. I do this because I have come to know and respect my classmates as future educators.

On the other hand, in the absence of pre-determined goals (much less pre-determined means for achieving them), some students found it difficult to establish connections or synthesize different aspects of the course independent of an expert and, as a result, they became frustrated by the ambiguity and uncertainty. Lacking their own clear purpose for their work, and getting lost in details, some of these students tended to lose interest and to give up trying to make their own sense of their experience of the course. One student comments on her struggle midway through the course in a journal entry:

> I have found myself struggling to create my own structure in this class, but despite what I create as a structure…there are still expectations….Usually the expectations of the teacher create the goals of the student, especially in this university setting. And this is where I am faltering…I don't know the expectations of the teacher (except that I have to turn in a portfolio at the end) and so my goals concerning the class aren't forming well.

This tension was felt in different ways in different aspects of the course. For instance, many students reported that they deeply appreciated the weekly journal requirement, noting that, lacking prescriptive expectations, this medium was crucial in that it allowed them to regularly explore, develop, and monitor changes in their understanding of various theoretical perspectives. Yet, on the other hand, they often felt that the effort they put into the journal entries was not sufficiently recognized or incorporated into the core of the course and so it was unclear whether the ideas they were writing about were valid or not. This was largely because of the sheer inability of the five Teaching Assistants to read and respond to over three hundred journal entries per week and then to devise interesting ways, in weekly section meetings, of incorporating students' individual perspectives into a productive public discussion of the key ideas and principles of the course.

Small group meetings were not recorded with video or audio equipment because this time was designated as a time for students to work away from the inspection of authority figures. Consequently our analysis of the kind of dialogue and interaction that structured these meetings relies on the students' own self–reports and commentaries rather than on other methodologies, such as an analysis of discourse patterns derived from transcripts of small group interaction. We argue that in an education course largely designed to explore the principles of metacognition and to encourage students to continuously reflect on and monitor their own learning, the self-reports generated by students in regard to their experience of the course, including those aspects we did not witness first hand - such as the study groups – gain validity as a compelling and sensitive data source. In the first instance, the sheer volume of survey responses, journal entries, and focus group discussion that addressed the topic of small group interaction within the course, suggests that this time was significant for the students.

As Johnson and Johnson (Johnson & Johnson, 1999) point out, "Not all groups are collaborative.… Some kinds of learning groups facilitate student learning and increase the quality of life in the classroom. Other types of learning groups hinder students learning and create disharmony and dissatisfaction." (p. 68) Furthermore some learning groups may experience harmony without being productive. Johnson and Johnson offer criteria for ranking the effectiveness of learning groups on four levels. Their criteria involve the beliefs of the students about why they are together, their "interest" and "motivation" for working together, the impact of evaluation structures on the integration of the group, the degree to which participants form shared goals, and finally the academic achievement of the group as compared to what individuals might achieve alone. Although we did learn that some students had become frustrated with other members in their study group or felt that they could have accomplished more by working alone as individuals – these types of responses to the study group were the outliers rather than the norm. Generally, students reported that the support network they developed in these peer groups was crucial to their intellectual progress in the course. Students consistently reflected positively on the

dialogue that took place in this forum. A typical response to the survey questions targeting small group interaction (see questions IV and V in Appendix A) was the following:

> I found the small group work done within the section to be very beneficial. In one way, it allowed me to learn and think about things said by different people in section. A lot of my focus and energy in the class was based around the ideas that my group and I developed revolving around the themes discussed but the small group work and group presentations allowed me to discuss the same things but with different people. It was very beneficial and also showed how people learn better from each other in small groups. It reinforced some of the ideas discussed in the course.

Another student wrote about the group learning that took place during the "magic square" activity in his journal:

> The driving question though is how does *the internal pattern recognition gained through behaviorist learning* compare with *the views perceived through joint group activity*? For this specific question [i.e. task] I think there is a definite answer. I feel the knowledge gained through joint group activity outweighs the learning taking place through the behaviorist paradigm. I feel this way for several reasons. I feel that the pattern recognition skills are simple at most. There may be several complex equations leading to answers but overall it is finding the numbers that can solve the equation. There is no room for debating and the mind never opens up to heated thought. As with all aspects of life, diversity is key. When a problem has a definite answer, once it is found, the learning essentially stops. I feel therefore the acts in which we all shared and took in the strategies and thought processes of our group members was more beneficial. Listening to what they are doing may make your mind in turn start looking at new strategies [that] would not have been considered on an individual basis.

Overall, student responses regarding the positive influence and importance of the small study groups in their experience of the course constituted one of the most consistent themes in our analysis.

While students reported that peer interaction was important, some students found it difficult to make use of their emerging metacognitive skills to relate the weekly activities to the broader themes of the course. Given freedom to choose their own approach to the activities, they had difficulty in finding and/or constructing their own purpose for the activity beyond completing the task itself and often were frustrated when a definite purpose wasn't provided explicitly. One student wrote:

> There is little discussion about why we are engaging in the activities we are. Things seem very loosely connected at times in this class and the 'Rescue at Boones Meadow' [part of an educational series developed by the Cognition and Technology Group at Vanderbilt University: The New Adventures of Jasper Woodbury (Cognition and Technology Group, 1996)], was a good example of this. I believe that the aim of this activity was to get us thinking about ways to teach problem solving and math to younger children. However my group spent a large amount of time together attempting to make scientific conversions that I had long forgotten. I don't enjoy the way that we are expected to jump from one random subject matter to the next, expected to make our own connections. While I enjoyed what we did in section more than I would have talking about the Boones Meadow activity (it was really cool to talk about the reading in depth – More!) I felt disconnected from the lecture to the group activity to the section.

It is likely that some students found it difficult to forge connections between the activities and the larger aims of the course because, in prior educational settings, they had been routinely charged with completing a task in accordance with clearly defined, non-negotiable expectations. Recognizing this, one student included the following in boldface type in her journal:

> Our current educational system takes the structured aspect…to such an extreme that this approach ends up arresting the student's ability to function in and take advantage of the other approach. People seem to have such a hard time accepting the philosophy and expectations [of this course] and this is only because their previous school learning developed certain modes of operation, habits, approaches to problem solving, ways of thinking that stand in stark contrast to the [approach guiding the course]. Their acquired skills lose their meaning and capacity for use in this new setting. Undoubtedly it must prove perturbing for students to find themselves in a context where they are unable to use the habits and skills they have refined through their years in school.

It is worth noting that it was the small study groups that the majority of the students found to be the most

beneficial feature of the course format. And, while some groups had difficulty in constructing their own purposes for the earlier activities, the final group activity, that of creating a curriculum unit based on the California Curriculum Standards appropriate for their chosen grade level, was nearly universally successful in engaging students in thoughtful and productive collaborative work. Volunteers for the focus group interviews following the course communicated their own positive feelings about the usefulness and authenticity of constructing a curriculum unit especially clearly.

> My favourite part of the class was the curriculum assignment. It was very helpful for me in understanding the concepts of the class. I feel that it was a form of praxis, the conjunction of theory and practice. [The curriculum unit assignment] was the first time I have been given a chance to do a project like this in a class.

Moreover, from a pedagogic perspective, the intellectual and academic benefits of this project, in particular, were apparent when students presented their curriculum plans to their sections and, in many cases, in the rationales they wrote individually for the choices they made in constructing them.

Some students appreciated the lecture as a place to encounter and review the major theoretical ideas of the course, while others found it to be redundant when taken with the assigned readings. On the whole, students felt that the lecture-format did not fit with the theories of education they were learning about and some even found it contradictory. This was difficult to reconcile with the fact that, at other junctures, students feeling lost complained that they needed more explicit, direct instruction. Lectures were also the one venue in which students had access to an expert. Clearly, questions remain about how to make the best use of this part of the course time.

Grading (or rather its absence) was also a contentious issue. Students expressed concern and feelings of vulnerability regarding their final grade when they did not have access to concrete indicators of their ongoing standing in the class, knowing the importance of course grades for later access to graduate programs and other career opportunities. As one wrote,

> During our last class meeting the subject of grading arose and this led to a very intense group discussion on this topic because it is a topic that most students care very much about. Students who are very concerned about their grades worry because GPAs are important if they want to attend graduate school. Because their grade is so important to them, these students want to know that their grade is also important to their [teaching assistant] and the professor…I can only hope that my sincere hard work and the quality of my contributions will earn me the grade I so care about."

At the same time most recognized grades as inadequate indicators of their learning:

> I think that…questions about Assessment and Communication are important…Some students better understand how to take tests and give teachers what they want. But I don't think that necessarily implies they know or understand more than other students that answer the questions "seemingly" less correctly….But having taken many tests I do know that there will be a wide range of answers. I've seen brilliant students not give a damn about grades and it would be reflected by their grades, but I always knew they knew way more than me while I was the one getting better grades. I think [formal] assessment…is the wrong motivating tool. It doesn't help teachers make the proper adjustments, it doesn't give the students the right confidence in their abilities. I can't even recall how many points I've been screwed out of by a teacher when I knew the subject backwards and forward. And I blame the teacher for playing the point game…It relates to the same questions I posed last week about the goals of the system and how it fits into our current social structure and practices. For those reasons it's a system that works quite well, but in terms of benefiting students and their own self worth it is a very defeating tool. I hope to bring this understanding into the classroom.

In the context of these various sources of ambiguity and uncertainty, the section meetings were critical to the success of this way of organizing the course. As anticipated, the students saw section meetings as *the* place to integrate their personal understanding of the course readings with the weekly activities, group discussions, and the information presented in lecture. The majority found these weekly meetings extremely helpful and they were full of praise for the teaching assistants' skill and supportive adaptability in meeting their diverse needs. However, the heavy demands that organizing these meetings placed on the teaching assistants meant they were not always able to organize meetings that attended to all the issues that students raised. As a result, issues that were not explicitly discussed in section appeared to be treated as peripheral, leading to some of the less agentive students feeling even more confused.

Discussion

A CHAT perspective suggests, "people and organizations are all the time learning something that is not stable, not even defined or understood ahead of time. In important transformations of our personal lives and organizational practices, we must learn new forms of activity which are not yet there. They are literally learned as they are being created" (Engestrom, 2001). However, the current format of most large university courses in the U.S. leaves little space for such considerations. Thus our attempt was to design a course that made space for interactive networks of learners to negotiate and attempt to achieve meaningful goals through dialogue and activity. The data we collected suggests that, with a few exceptions, undergraduates experienced this course as distinctly and noticeably different from other courses in this respect. Further, beyond the course being something novel, our analysis shows that for most of the student participants it was a largely successful learning experience.

Several theoretical frameworks across the social sciences are moving away from characterizations of learning as occurring through rational, "goal directed" activity, undertaken by independent individuals, toward models that recognize the importance for learning of the negotiated nature of the goals and outcomes that emerge in the course of engagement in collective endeavors. Open systems theories, such as CHAT, look beyond individual action/achievement to an analysis of networked activity, while recognizing the inherently "open" rather than "closed" status of semiotic systems. Thus our analysis attempted to understand student responses as dynamic and interconnected contingencies of a larger semiotic system.

Given the norms shaping the larger institutional setting of university lecture courses, one way of describing the students' experiences in 92B is as a kind of systemic *contradiction* or *interruption* (Engeström, 1999; Weick, 1995). Working within the framework of organizational theory, Weick (1995) describes interruptions, or breaks in the "ongoing flow of events", as moments in organized activity that "capture sustained attention" or "occasions for sensemaking" (1995, p. 86) Similarly, several voices in the CHAT community have discussed "contradictions" as opportunities for the kind of change and transformation that involves learning, where "sensemaking" is said to involve a shift from automatic to volitional, active thinking (Engeström, 1999).

Weick (1995) is careful to distinguish between different varieties of occasion that are perceived as problematic. In particular, he distinguishes *ambiguity* from *uncertainty*, asserting that while both invoke a shift to more active thinking, in the case of ambiguity " people engage in sensemaking because they are confused by too many interpretations, whereas in the case of uncertainty they do so because they are ignorant of any interpretations" (1995, p. 91). The importance of distinguishing ambiguous occasions from uncertain ones is that they require different means for resolution. To resolve uncertainty, ignorance created by insufficient information, people need more information. On the other hand, to resolve ambiguity, confusion created by multiple meanings, a different kind of information is required, namely the integration of multiple cues through rich collaborative communication – negotiations that "enable debate, clarification and enactment more than simply provide large amounts of data" (1995, p. 99).

Further, Weick (1995) argues that people may respond to any occasion for sensemaking in different ways, and he describes two strategies as particularly salient: sensemaking as *expecting* vs. sensemaking as *arguing*. On the one hand, agents may search for and rely on old routines, habits, and expectations, even when these increasingly mislead or narrow their perspective. The suggestion here is that people are more interested in confirming than disconfirming existing beliefs. This initiates a cycle of activity that might be characterized as a "self-fulfilling prophecy". Seeking to confirm what they already assume or expect, people attend only to those cues in a situation that seem to confirm or correspond easily to previously established beliefs (or schemes) and heuristics, and then act accordingly. Through these belief-driven actions, the enacted situation is brought closer to the beliefs and expectations shaping the agents' actions, thus providing further confirmation. Weick argues that unless there is a major disjuncture, compelling people to confront "noncontingent reinforcement of their responses" (p. 84), they will make use of the earliest available information that indicates some feasible way of acting. Feasibility is determined by consideration of the way the future seems to be unfolding. This mode has been noted by several authors, including Bruner (1986) who describes how expectations work at the level of perception.

> It is characteristic of complex perceptual processes that they tend where possible to assimilate whatever is seen or heard to what is expected….What human perceivers do is to take whatever scraps they can extract from the stimulus input, and if these conform to expectancy, to read the rest from the model in the head. (p. 46-47)

Argyris reiterates Weick's (1995) view of sensemaking as expecting as a common, everyday practice:

> Every theory-in-use is a self-fulfilling prophecy to some extent. We construct the reality of our

> behavioral worlds through the same process by which we construct our theories-in-use. Theory building is reality building, not only because our theories-in-use help to determine what we perceive of the behavioral world, but also because our theories in use determine out actions, which in turn help to determine the characteristics of the behavioral world, which in turn, feed our theories-in-use. (quoted in Weick, 1995 p. 123)

The alternative, sensemaking as arguing, is initiated when people become aware of more and more varied cues, conceive of multiple meanings and seek to find some way to integrate or organize them. Depictions of sensemaking as collaborative joint activity, which emphasizes dialogue and argumentation, have been repeatedly described by a variety of authors working across several disciplines in the social sciences. (Hagvet, 2003; Matusov, 1996; Mercer, 2004). Most discussions can be related to what Wells (1999) describes as the "negotiation of meaning": a process where multiple participants, collaborating in dialogue, advance, entertain, rescind, and revise a range of perspectives on a topic in an ongoing attempt to establish intersubjective agreement. Weick (1995) describes this kind of cooperative debate as "individual reasoning...embedded in social controversy"(p.137) and points out that this form of sensemaking requires more sustained attention, conscious-volitional engagement, and active decision making than sensemaking as expecting would require. Basically, sensemaking as arguing is more effortful than sensemaking as expecting, so people only engage in it when they think there is good reason to do so. He also predicts that a certain amount of "stability" is required for argumentation to be perceived as potentially fruitful:

> Arguing in a world where no one is certain what is happening or what will happen next is fruitless, although it may be soothing. In an unstable world, what people need is some sort of stability… The combination of selective noticing, selective shaping, and serial self-fulfilling prophecies eventually constructs a social world where people may then be able to worry about the accuracy rather than stability. Once stability is achieved then accuracy is possible. (p. 153)

Conclusion

For most of the students, the experience of ED 92B: *Introduction to Theories of Education* fits Weick's (1995) description of ambiguity. Rather than providing clearly defined and authoritative guidelines that establish concrete or routine means-ends repertoires, the goals and means of the problems presented in 92B were treated as themselves negotiable. The course was designed to promote an "occasion for sensemaking" through distributed rather than hierarchical responsibility in fluid decision-making, explicit investigation of contradictions and paradoxes, the engagement of multiple and conflicting goals, and dialectic negotiation of multiple interpretations of information. However, as a result, students were often uncertain about what strategies might be relevant and what success in resolving a situation would mean.

As Weick's (1995) framework suggests, the students engaged with this state of ambiguity in one of two predominant ways: by relying on previously established (institutionalized) expectations about how success is defined in learning (i.e., expectations involved in forming an identity as a "good student"), or by exploring and engaging with multiple meanings through argumentation. We have tried to show through reflective excerpts from journal entries, group interviews and student responses to our questionnaire that the undergraduates' expectations for the course were conditioned by the their own historical careers in educational organizations, which we argue are themselves are shaped by the ideology of the surrounding institutional environment (also see Weick, 1995, for a review of how institutions organize habitual expectations). In the absence of other "objective" criteria, some students tended to rely more on previously established value orientations and ideology to make sense of the situation. For them, the expectation was that instructors have established notions not only about correct versus incorrect responses, but also about how they are formed and performed. It follows, then, that it is to the student's advantage to deduce the instructor's position as quickly and efficiently as possible, so as to align his or her own actions and perspectives accordingly. Alternatively, those students who were able to move beyond previously established expectations about their role and what would count as legitimate evidence of successful learning were able to find relevance and to integrate multiple meanings by adopting a dialogic and metacognitive stance towards their own learning, and thus come to a more complex understanding of how people learn more generally. This they did primarily with others in their study groups and with themselves through writing in their journals. Finally it must be acknowledged that each "variety" of sensemaking involves the other to some degree. Every attempt at negotiation intermittently involves the strategic assumption of retrospective consensus, otherwise a continuing conversation would be impossible. Meanwhile, every assumption or

expectation involves some degree of negotiation because no two situations are ever identical.

Questions remain about why some students were likely to rely on previously established expectations while others were motivated to confront multiple cues and construct new meanings. We need to understand whether these differences are "systemic" and whether they are tied to similar cultural-historical trajectories on the part of the students that engaged in these different approaches to learning. Answers to these questions would help us to modify the format and expectations of the course to engage all students more fully and effectively. In planning for future iterations of the course, we expect that by removing institutional supports more gradually, we can reduce students' anxiety and help them come to terms with ambiguity more effectively.

Many of the students enrolled in this course will continue as pre-service teachers. We expect that their learning experiences here will carry over, and have greater impact on their teaching than anything they read about. Furthermore, we argue for the importance of attending to participation structures in higher education not only to promote learning in this venue, but because ultimately the example set at this level serves as an influential standard and proving grounds for primary and secondary educational reforms.

References

Barab, S., & Kirshner, D. (2001). Guest editor's introduction: Rethinking methodology in the learning sciences. *Journal of the Learning Sciences, 10*(1&2), 5-15.

Bransford, J. D., Brown, A., & Cocking, R. (2000). *How people learn: Brain, mind, experience and school*. Washington D. C.: National Academy.

Brown, A. (1994). The advancement of learning. *Educational Researcher, 23*(8), 4-12.

Brown, A., & Campoine, J. (1996). Psychologcial theory and the design of innovative learning environments: On procedures, principles and systems. In R. Glaser (Ed.), *Innovations in learning: New environments for education* (pp. 289-325). Malwah, NJ: Lawrence Earlbaum.

Cognition and Technology Group. (1996). The new adventures of Jasper Woodbury--Rescue at Boone's Meadow. Vanderbilt University: Lawrence Earlbaum.

Davydov, V. (1999). The content and unsolved problems of activity theory. In R. M. Yrjo Engstrom, Raija-Leena Punamaki (Eds.), *Perspectives on activity theory* (pp. 39-52). Cambridge: Cambridge UP.

Davydov, V. V. (1988). Problems of the child's mental development. *Soviet Education, 30*(8), 44-97.

Engestrom, Y. (1999). Actvity theory and individual and social transformation. In R. M. Yrjo Engestrom, Raija-Leena Punamaki (Eds.), *Perspectives on activity theory* (pp. 19-37). Cambridge: Cambridge UP.

Engestrom, Y. (2001). Expansive learning at work: Toward an activity theoretical reconceptualization. *Journal of Education at Work, 14*(1).

Geist, H., & Lomp, J. (2003). Formation of learning: Activity and theoretical thinking. In A. Kozulin (Ed.), *Vygotsky's educational theory in cultural context* (pp. 267-288). Cambridge: Cambridge UP.

Goldman, S. (2004). Cognitive aspects of constructing meaning through and across multiple texts. In N. Shuart-Faris & D. Bloome (Eds.), *Uses of intertextuality in classroom and educational research*. Greenwich, CN: Information Age.

Hagvet, B. E., & Wold, A. H. (2003). On the dialogical basis of meaning: Inquiries into Ragnar Rommetveit's writing's on language thought and communication. *Mind, Culture and Activity, 10*(3), 186-204.

Johnson, D., & Johnson, R. (1999). Making cooperative learning work. *Theory into Practice, 38*(2), 67-73.

Karpov, Y. (2003). Vygtosky's doctrine of scientific concepts: Its role for contemporary education. In A. Kozulin (Ed.), *Vygotsky's Educational Theory in Cultural Context*. Cambridge: Cambridge UP.

Lompscher, J. (1999). Activity formation as an alternative strategy of instruction. In R. M. Yrjo Engestrom, Raija-Leena Punamaki (Eds.), *Perspectives on activity theory* (pp. 264-280). Cambridge: Cambridge UP.

Matusov, E. (1996). Intersubjectivity without agreement. *Mind, Culture and Activity, 3*(1), 25-45.

Mercer, N., Wegerif, R, & Sams, C. (2004). Reasoning as a scientist: Ways of helping children to use language to learn science. *British Educational Research Journal, 30*(3), 359-377.

North, D. (1990). *Institutions, institutional change and economic performance.* Cambridge: Cambridge UP.

Resnick, L. (1987). *Education and learning to think.* Washington DC: National Academy.

Rogoff, B., Paradise, R., Mejia Arauz, R., Correa-Chavez, M., & Angelillo, C. (2003). Firsthand learning through intent participation. *Annual Review of Psychology, 54*, 175-203.

Schauble, L., & Glaser, R. (1993). Scientific thinking in children and adults. In D. Kuhn (Ed.), *Developmental perspectives on teaching and learning thinking skills* (pp. 9-27). Basel, Switzerland: Karger.

Schoenfeld, A. (1987). What's all the fuss about metacognition? In A. H. Schoenfeld (Ed.), *Cognitive science and mathematics education* (pp. 189-215). Hillsdale NJ: Lawrence Earlbaum.

Scott, R. (2001). *Institutions and organizations*. London: Sage.

Scott, R. (2003). *Organizations: Rational, natural and open systems*. Upper Saddle River, NJ: Prentice Hall.

Selznick, P. (1957). *Leadership in administration*. New York: Harper & Row.

Tyack, D. (1974). *The one best system* (15th ed.). Cambridge, MA: Harvard UP.

Vygotsky, L. S. (1986). The development of scientific concepts in childhood: The design of a working hypothesis (A. Kozulin, Trans.). In *Thought and Language* (pp. 146-209). Cambridge, MA: MIT Press.

Weick, K. (1995). *Sensemaking in organizations*. London: Sage.

Wells, G., & Claxton, G. (2002). *Learning for life in the 21st century: Sociocultural perspectives on the future of education*. Oxford: Blackwell.

Wergerif, Mercer, N., & Dawes, L. (1999). From social interaction to individual reasoning: An empirical investigation of a possible socio-cultural model of cognitive development. *Learning and Instruction, 9*, 493-516.

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Appendix A

INTRODUCTION TO THEORIES OF EDUCATION:
WHAT AND HOW HAVE YOU LEARNED?

Please use the following questions to guide your reflection on the course. Be as specific as possible in your answers, as they will help in designing future offerings of the course. These questionnaires will be collected but your responses will remain anonymous.

I. In what ways has this course differed from other large courses (100+ students) that you have taken as an undergraduate?

II. To what extent have you learned about yourself as a learner – preferred ways of learning, insights about helpful and less helpful strategies, achieving deeper understanding – from the various activities in which you have been asked to engage?

III. How helpful have you found the making of journal entries in engaging with the key ideas of the course?

IV. What have you gained from the group activities? What benefits and/or problems have you experienced in participating in these activities? Which activities were most or least helpful in expanding your understanding of: how you come to know and understand new ideas; discover what you think about particular issues; attempt to solve problems?

V. On balance, was spending course time working in groups beneficial or not?

VI. Having read the chapter on 'Teacher Learning' in *How People Learn*, how well did this course measure up to the ideas discussed there? Did the course as a whole succeed in enacting the theories that were presented in the readings and lectures?

VII. How useful were the weekly lectures? Were there any aspects of them that you particularly liked or disliked? What suggestions do you have for making the lectures more helpful?

VIII. Section meetings were intended to be a central part of the course. Were there any aspects of them that you particularly liked or disliked? What suggestions do you have for making them more helpful?

IX. In enabling you to understand current theories of learning and teaching, how helpful was: a) the text, *How People Learn; b)* the additional articles in the course reader?

X. In what ways do you think you have come to a deeper or different understanding about how people learn and about the ways in which teaching can facilitate or impede people's learning as a result of taking this course?

Appendix B

Focus Group Prompts*

Why did you sign up for this course?

What will you remember about 92B?

How did you make use of the time allotted for study groups activities?

What was different or the same about your experience in 92B as compared to other introductory courses?

What can you say about the organization of the course? What was helpful? What seemed productive? Unproductive?

What was difficult? What seemed easy or rudimentary? Why do you think so? What challenged you to think and what didn't?

* Prompts were intended only as points of departure for emerging student commentary. It was our intention to learn what the students thought was salient about their experience of the course rather than to constrain their responses according to what we anticipated would be important**.**

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Developing a Peer Observation Program with University Teachers

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This paper evaluates a peer observation of teaching scheme one year after its introduction in a United Kingdom (UK) university. In order to understand why the case study institution chose to implement peer observation, there is discussion of the national policies that have encouraged its use in the UK and the lessons learned from universities in the United States and Australia. A series of themes are identified which provide an analytical framework for the consideration of the responses of individual academics from some of the departments involved to the underlying principles, processes and practices of the scheme. The research demonstrates the importance of implementing peer observation sensitively, taking account of the organizational culture of the different departments and being fully aware of the anxieties and concerns of academic staff.

This paper evaluates the peer observation of teaching process one year after its introduction in a United Kingdom (UK) university. The decision to implement peer observation was taken centrally, but the execution was decentralized to departmental level. The departments started at varying points in the journey towards acceptance of the value of peer observation. These different starting points, and other factors related to the variety of academic tribes involved (Becher & Trowler, 2001), resulted in departments making different choices about how to implement the model that was presented to them. Reactions of individual academics to these choices are described through interviews with members of academic staff from some of the departments involved. To understand the decisions taken by the university management to implement a programme of peer observation, a brief discussion is provided of the national policies that have driven this agenda forward.

Higher Education Funding Council for England (HEFCE), Quality Assurance Agency (QAA) and Department for Education and Skills (DfES) publications have emphasized the importance of enhancing teaching quality in UK universities to meet the challenges of the increasing numbers and diversity of students in the early part of the twenty-first century (Hativa & Goodyear, 2002). The UK government now requires all universities to be judged on their performance in teaching and the facilitation of learning. This concern to address the issue of teaching and learning quality is explicit in the QAA's Institutional Audit of universities that commenced in September 2002. There are ten objectives of institutional audit and the first of these is, "to contribute…to the promotion and enhancement of high quality in teaching and learning" (QAA, 2002 p.2).

Also, the HEFCE's Strategic Plan for 2003-2008 states its aim to develop a higher education system that regards excellence in teaching as highly as excellence in research (HEFCE, 2003).

Given this emphasis on the importance of university teaching, peer observation is seen as a means of improving teaching quality through the sharing of good practice among academic staff. However, the enhancement of teaching quality will only be achieved if schemes are implemented sensitively and address the significant concerns of academic staff. Often there will have to be substantial change in the attitudes of staff who will need to appreciate the value of peer observation if it is to lead to quality enhancement. Peer observation involves a university lecturer attending a colleague's teaching session with the intention of offering feedback as a 'critical friend' (Kinchin, 2005).

There is an examination of the challenges of implementing quality-enhancing peer observation through the construction and use of theoretical models and frameworks. A case study of the implementation of a scheme in a UK university leads to the identification of a number of themes that highlight the key decisions which need to be made and the issues that need to be addressed.

Historical Context

In UK universities, peer observation of teaching has been a relatively recent development that has benefited from the lessons learned from the earlier introduction of the process in universities in the United States and Australia. Its use has varied from accountability and individual performance review at the judgmental end of the scale to wholly developmental reasons (LTSN, 2002). In these cases peer observation is seen as a means of providing professional input based on experience and expertise into the lecturer development process (Bingham & Ottewill, 2001). Blackwell and McLean (1996) regard peer observation as an opportunity for academic staff to reflect critically upon their teaching which leads to an improvement in performance. Essentially, peer observation is seen as a valuable tool for improving the teaching skills and knowledge of university lecturers.

Peer Observation and Quality Enhancement

There are a variety of reasons why peer observation has become more wide spread in the UK. Peer observation has been a response to the quality assurance agenda of the QAA. More recently, the debate has moved towards peer observation as a quality enhancement tool rather than a quality assurance mechanism, with its main objectives being to help academics examine their teaching for the purpose of self-improvement and to establish good practice as a means to enhancing student learning.

Whereas quality assurance establishes systems and processes that require conformance to externally imposed standards, quality enhancement aims to achieve improvements in quality by encouraging new approaches to teaching, learning and assessment (Biggs, 2003). Peter Williams (2002), Director of the QAA, argues that quality enhancement can occur as a consequence of the quality assurance process. He claims that quality enhancement is an integral part of quality assurance by disseminating the mass of good practice collected through reviews, and also by warning against the bad practice that is sometimes seen. However, Jackson (2002) suggests that quality enhancement is more transformative and is directly concerned with adding value and improving quality. Quality enhancement involves enthusing the students, responding to new technologies as one of the many means of coping with the more diverse range of students, and ensuring that staff are recognized and rewarded for excellent teaching (TQEC, 2003).

Developmental peer observation is a formative rather than a summative process that links to lecturers' continuing professional development by identifying areas of teaching and learning that require in-depth consideration (Bingham & Ottewill, 2001). Continuing this argument, peer observation can be seen as a key factor in institutional quality enhancement at a broader level. Formative peer observation involves direct classroom observation, followed by supportive feedback and constructive advice, elements which Keig and Waggoner (1994) consider as being essential to improving teaching.

Hutchings (1994) suggests that there are three main arguments for the peer observation that should be considered by the academic community:

- to encourage collaboration amongst academic staff in order to share ideas and good practice;
- to ensure that the enhancement of teaching is largely the remit of professionals rather than members of outside agencies; and
- to supplement student evaluations of teaching with the comments of respected colleagues and thereby provide multiple data sources.

Each of these elements require academics to be actively engaged with the substance of teaching, to be directly involved in collecting the evidence to show what they actually do and so reveal the thinking behind their actions they take. Currently, the evaluation of teaching rests largely on student feedback, and often the evaluation report is given directly to the head of department. Consequently, academic departments and individuals within them are objects of that evaluation rather than participants within the process. Gibbs and Habeshaw (2002) suggest that relying on student evaluation is not sufficient on its own to enhance the quality of teaching and learning across departments. Academics and senior managers need to be active in the process of enhancing teaching and learning.

On the basis of the discussion so far, it is clear that formative peer observation can be a positive means of enhancing teaching and learning within the academic community.

Peer Observation Models

Gosling (2002) identifies three models of peer observation, each of which aims to enhance the quality of teaching in universities:

- the evaluation model,
- the development model, and
- peer review model.

There are significant differences between the three models. With the *evaluation model* senior staff observe the other staff, whereas with the *development model* educational developers observe the lecturers. The *peer review model* involves lecturers observing each other. The status of the evidence is also very different. The more hierarchical evaluation model is based on the authority of senior staff. Expert diagnosis is fundamental to the development model while the peer review model is far more collegial and involves the shared perceptions of the observer and the observed.

Opposition to Peer Observation

There are many reasons why academic staff might oppose educational innovations or be indifferent about the prospect. A major stumbling block to peer observation has been the reluctance of academics to engage with the process. Keig and Waggoner (1995) cite some of the reasons for academics' lack of involvement or engagement:

- peer observation can be seen as challenging academic freedom;
- perceptions of the representativeness, accuracy and generalizability of what is observed;

- concerns about the objectivity of those who observe; and
- values relating to the institution's rewards and incentives – incentives are perceived as far greater for research than teaching.

Lecturers may be concerned about 'change overload' which, together with internal pressure to teach and publish more while the diversity and numbers of students increase and resources fall, has made many academics suspicious and regard peer observation as yet another time-consuming management initiative (Evans & Nation, 2000).

Massy, Wilger, and Colbeck (1994) argue that academics will engage with any professional activity if they find it intrinsically valuable or if they are rewarded for it. However, Fairweather (1993) reminds us that most universities promote staff on their ability to publish research rather than on the basis of their teaching. Therefore, it is important that understanding, managing and implementing a peer observation process takes account of the realities of academic life. The Carnegie Foundation's research in the United States (1989, 1990, 1994, 2001) has shown that academics are very often more interested in their teaching than research, but feel forced to give up the intrinsic satisfactions of teaching for the external rewards of research. The UK government's report "The Future of Higher Education" (DfES, 2003) aimed to increase the commitment of academic staff to teaching by setting out ways that universities can recognize and reward good teaching. The report exhorted them to support the enhancement of teaching and learning by demonstrating the intrinsic value of peer observation.

Martin, Smith, and Double (1999) raise the objection of some academic staff that the observation of their teaching is an intrusion into an intimate part of their work. Blackwell and McLean (1996) go on to argue that this is perceived as a threat to their professional autonomy. Resistance to change in organizations often surfaces through an uncompromising 'not invented here' attitude (Carnall, 1997; Knight, 2002). Becher and Trowler (2001) contend that the acculturation that occurs within particular academic 'tribes' serves to reinforce these boundaries and further increase the difficulty of the change-management task.

Identifying effective ways to counter such views held by academics is the key to creating an effective developmental approach to continuing professional development and the enhancement of teaching and learning. Research by Keig & Waggoner (1995) and the HEFCE (2002) suggests that academics participating in formative peer observation of teaching have improved their understanding of the teaching process and increased their understanding of teaching actions and the level of collegiality in departments.

Managing Peer Observation

Managing change in a university can be a most difficult task with academic staff often failing to respond to the arguments advanced by innovators (Trowler, 2002). Innovators need to persuade and cajole if there is to be any success in addressing the concerns about peer observation. High levels of leadership skill, commitment and perseverance are required if these barriers are to be broken down (Kogan, 2002). Fullan (1991) reminds managers that change is a complex process rather than an event and it requires a fine balance of pressure and support. He advises that pressure without support can easily lead to resistance and alienation whereas support without pressure can lead to drift and a loss of momentum.

Bell (2001), Ferren (2001) and Keig and Waggoner (1995) consider that departments that undertake formative peer observation raise the levels of understanding and engagement in innovation in teaching and learning environments. These authors argue that peer observation is more likely to be accepted by staff if:

- assessment is non-judgmental by colleagues and indicates areas for development;
- there is peer observation on a regular annual or biennial cycle;
- departments lead in the design and implementation of formative peer observation;
- departments provide opportunities for training in the skills needed to conduct formative peer observation; and
- there are institutional rewards and incentives structured to demonstrate that participation in formative peer observation is valued.

Changing Culture

When implementing a program of peer observation, the organizational cultures of a university and its departments need to be understood. Individuals and their departments still have a great deal of power within a university and it is essential to take account of the departmental culture with its particular historical and political elements (Bamber, 2002; Bowden & Marton, 1998).

The basic beliefs and values (Schein, 2004) of academic staff members should be discussed and, if necessary, challenged in an attempt to raise the status of teaching and develop an awareness of the importance of peer observation in continuous improvement. The aim should be to embed peer observation as part of the departmental culture. In order to achieve this, the perception that teaching is a private activity, which is not shared with colleagues, needs to be tackled (Hutchings, 1994). The changing of this perception requires a different mindset leading to changed behaviors. Clark's (1998) research on

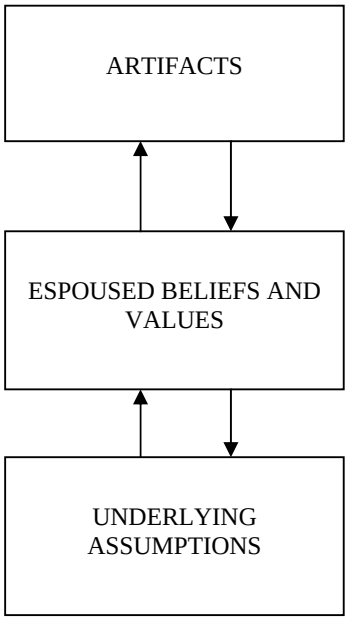
cultural change is most helpful here. He found that universities that were successful in changing culture were characterized by a concerted effort to innovate and to galvanize all the staff of the university: senior management, academics and administrative staff. There was 'stronger steering' from the center, with staff responding in a flexible and adaptable manner. Both Salford University, in the UK (Powell et al., 2001), and the University of Western Sydney-Nepean, in Australia (Duke, 2001), made use of Clark's work when seeking to transform their institutions' predominantly bureaucratic culture to one that was far more entrepreneurial. Clark's strategy can be used in a similar way to help bring about an organizational culture that is more conducive to innovations such as peer observation.

Similarly, Quinlan and Åkerlind's (2000) comparison of departmental peer observation in Australia and the United States demonstrated that cultural change is required if academic staff are to be committed to peer observation and it is to be conceived as "collegial conversations and collaborations about teaching, rather than merely as peer judgments about teaching" (p. 27). Achieving this collegial approach to teaching is more likely when collaborative working, regular dialogue about educational issues and a history of educational innovation already exist in a department (Quinlan & Åkerlind, 2000).

Consensual leadership and skilled management are required in order to gain the confidence and support of academic staff. Intrinsic motivational approaches are likely to be far more effective (Knight, 2002) and, by adopting a normative-educative approach, staff can be persuaded that peer observation will greatly improve lecturers' teaching abilities. The value of self-reflection and continuous improvement can also be extolled. One can also appeal to feelings of institutional loyalty by arguing that not only will peer observation improve individual lecturer performance, it will also enhance the work of the department and the university.

As lecturers might reasonably feel anxious about the prospect of a colleague coming to their classes and evaluating their teaching, it is essential that their fears and anxieties are swiftly allayed. One way of doing this is to introduce peer observation as a support mechanism that involves other members of the particular learning community and who are 'critical friends' (Melrose, 1998). Martin et al. (1999) state that honesty and trust are key elements for the success of any scheme if a 'critical friend' is, for example, to suggest ways of dealing with a colleague's problems in coping with large groups of students in lectures, or possible strategies for encouraging all members of a seminar group to contribute to the discussion.

FIGURE 1
Schein's Simple Model of Organisational Culture (2004)



Case Study

The case study institution is a university that receives a significant proportion of its income through research. This research takes the approach of hypothesis generating rather than hypothesis testing. Initial discussions with School Teaching and Learning Coordinators helped to focus on key issues. This input was supplemented by the findings described by Jones and Zhou (2004) in their analysis of the process within the School of Social Science and Public Policy of the case study institution and allowed the identification of key issues (data categories) for exploration. The next step was to conduct interviews with colleagues across the college to clarify and amplify these themes.

In deciding upon the number of staff to be consulted, there is a trade-off between generalizability and practicality. Descriptions given in the research literature of attempts to achieve blanket coverage of staff within an institution have been met with very low response rates (Closser, 1998), making efforts to achieve generalizability non-viable. It was therefore felt to be more important to focus on the quality of data gathered rather than the quantity of data. Coded transcripts from initial interviews revealed seven themes that are described in detail below. These themes emerged from the first batch of five interviews and were amplified and clarified by the following five interviews. Further interviews were used to determine that these themes applied equally across academic disciplines and to achieve saturation of the categories. A total of 20 interviews were conducted. Interview data was collected from academic staff, below Head of Department level, during December 2004 and January 2005. Quotes from these interviews are used to illustrate points throughout the text. All interviewees were guaranteed total anonymity and so individuals and departments are not identified.

The aim of this evaluation is not to compare departments or conclude that one department runs a better peer observation program than the next. Rather the point is to identify and illustrate the evolving diversity within the college that has arisen as a consequence of choices made. These choices may have been conscious or subconscious. By raising the profile of these choices, it is hoped that departments across the professoriate will reflect upon them and use these reflections to justify the direction of future developments, enabling peer observation of teaching to make its contribution to enhancing the student experience.

Efficiency versus Effectiveness

In applying the model of peer observation, there is a choice between having a small team of observers within the department, or having everyone act as observer and observee. Both options have been employed within the case study institution.

The use of a group of specialist senior staff observers has been adopted in some departments and this has allowed them to complete the process quickly. Interestingly, the view of speedy completion seems to overlook the developmental intention of the process. The research literature suggests that such a model can be improved by rotating the group of staff who are trained as observers so that more staff within a department are involved in the process (Hammersley-Fletcher & Orsmond, 2004). This specialist observers model, allied to Gosling's (2002) development model, may help to achieve consistency within the process, particularly if an appropriate discourse of peer observation develops among the observers within and between departments. However, time for such dialogue does not seem to have been given a high priority. The lack of such a discourse may have an isolating effect upon the observers, "I can't comment on what happened in any of the others, because I haven't spoken to any of the other observers. It might be sensible for us to have a little session between us."

Such an approach also loses one perceived benefit to most members of the department – that of observing others teach. This is seen to be of particular importance, and interest, to new and inexperienced lecturers who would like to see how others do it.

> We will often take one of the younger, newer people in the department and send them in to observe someone like X, for example. He is a star man…magician. He's an excellent lecturer. Therefore the idea is that people can go in and learn from good lecturers.

Application of the specialist observers model also implies that the process can be completed and set aside, as an adjunct to normal teaching rather than as a part of it, "that way we did it efficiently. We had two people that discussed everything and it all got done. If you involve lots of people you don't get all the feedback returned and you can never have closure."

The effectiveness of the process is hampered in some departments by a lack of clarity regarding the aims of peer observation and a failure to contextualize the process explicitly for those involved, "What are the explicit aims of what peer observation is supposed to achieve?', and "In spite of all the excellent guidelines, I am not really sure what the aims are." Such comments suggest a lack of effective dialogue within the department before implementation and reflect a view of peer observation as an imposition rather than an opportunity for development, "we all did it, because we were just told to do it. I don't remember who told us to do it."

The level of engagement with peer observation crucially defines the rewards an individual will perceive from involvement with the process. This is linked with feeling safe during the process – for many anonymity, equal status within the pair and independence from appraisal have been helpful here. Within a safe environment, colleagues may see beyond peer observation as a tick-box exercise, and begin to engage with it more actively, as a developmental process.

> If colleagues would choose more demanding scenarios to be observed – one that causes them real concern – they would gain more from it. By choosing a comfortable teaching situation to be observed (as many of our less enthusiastic colleagues do) there is less to be gained in terms of professional development as teachers.

> I actually thought to myself I would take the opportunity to be peer observed in the setting of a challenging session. I thought that actually it would be the most useful time to have feedback on what was going on. I was having difficulty with a session and I wanted to work out why. Maybe not many of my colleagues would do the same thing, but I think that would be nice to encourage people to do that.

The level of engagement with the peer observation process also depends on lecturers' professional identities – whether you consider your stance to be from within or without the teaching community, and what you consider your role to be within that community (Åkerlind, 2004), "If you say "I am a medic/historian/engineer", then the process may seem less relevant. But if you say, "I am an educationalist", as many of us do, then the rationale for peer observation becomes clear."

Anonymity versus Focus

If peer observation is anonymous, departmental heads cannot then focus on an individual's developmental needs and so the department has to be treated as a homogenous body. If however you remove anonymity, you may inhibit the honesty of the process. Anonymity of the observation means that there is no way of establishing a picture of the overall student experience of teaching on any given course. It may be helpful to construct an image of consistency of teaching and/or diversity of teaching.

Links to student evaluations of teaching are conducted loosely within some departments within the constraints imposed by anonymity of peer observation. It is seen as a way of complementing student evaluations of teaching, as students often like or dislike courses/lecturers for the 'wrong reasons', "Students may say – I don't like [lecturer X] because he doesn't give us the answers – he makes us think."

Maintenance of anonymity seems to have been a key factor in allowing the development of the peer observation process. Removal of anonymity is likely to trigger widespread anger and resentment, though not among those staff who already label themselves as teachers. Overall, the linking of peer observation directly to appraisal is likely to be counter-productive and result in less honest engagement in the process.

Formative versus Summative

Formative observation will encourage participants to identify developmental needs, but this has to be followed up. There should to be a mechanism for this and adequate resource provision as a year-on-year rolling program. Summative assessment can be one-off and can be completed within a given time frame. This assessment can be linked to appraisal, but is less likely to be honest and deliver improvements in teaching quality. Peer observation is intended as a formative process of professional development, but for those who are not used to sharing their teaching space, it may initially appear to be appraisal-like, "I must admit to being worried about it beforehand and feeling that I was being tested, but actually it has given me confidence that I must be doing something right."

There is little evidence of effective mechanisms for the practical dissemination of good practice to occur within departments, beyond discussions at teaching and learning committees. This is a problem that is not unique to the case study institution (Hammersley-Fletcher & Orsmond, 2004) and means that the department as a whole is not benefiting as much as it could:

> My understanding is that the comments go to X and he has a look at them. I don't know what he does with them to be honest. I think the aim was that there should be some way of disseminating that back, but how is that being disseminated back to the lecturing staff? I have to say, I don't know.

> Maybe they have it elsewhere in the college, maybe there is nothing new about it. However, for our department it was new.

> It is happening in isolation and there is nowhere we are pooling that information.

In some departments there persists a content-driven view of teaching that seems to cloud the view of enhancing the student experience, "I'll get better by being more knowledgeable about my subject – spend more time in the library," and "I think that because so many people in [subject] focus very much on the knowledge they are transmitting and less on other things they are transmitting." This has to do with the departmental dialogue that precedes the

implementation of peer observation, and the department deciding what is wants to gain from the process (i.e. setting its own professional development agenda).

Formality versus Informality

The three part process – pre-observation, observation and post-observation – adopted by the case study institution is typical of those used in other universities (Hammersley-Fletcher & Orsmond, 2004) and is cited by some colleagues as a strength of the system, providing a focus for those who have not previously engaged in this type of activity. However, completing forms is universally loathed, and a focus on paperwork may deter some colleagues from engaging positively with the process.

For some the paperwork involved is not seen to complement the collegiality of the process. It is perceived to add a managerial layer that is not productive and may be obstructive to dialogue between peers, a feature noted also by Shortland (2004). Effective use of the paperwork to complement the process requires colleagues to engage professionally with peer observation, "my observer still hasn't got round to giving me the comments back. He was going to take them away to type them up nicely, and that's the last I saw of them." For others who are passionate about their teaching, and positive about peer observation, a criticism remains that observation of teaching sessions puts the focus on only part of the role of the university teacher, "There can be many good aspects of teaching which may not necessarily be identified by this process. For example, the extent to which a lecturer is available to talk to students."

Frequency of Observation

Most departments seem to carry out observations of teaching once per year for each colleague. Others undertake to observe colleagues once per year per course as different courses may present very different teaching issues (e.g., teaching large classes of undergraduates against teaching small groups of master's level students, or teaching in a classroom/lecture theatre against teaching in a laboratory or a hospital). Support is seen to be essential for each teaching context, "You might be lecturing to the whole cohort (120). Other times you will be doing a practical class of 20 and other times you will be doing a seminar in a much smaller group."

Changing contexts for teaching create stress amongst the teaching staff that could be alleviated by support through peer observation, "We were just told – this is what you are doing now, so off you go. So for the first six months of doing it, I had a neck rash every time I entered the classroom."

The departmental model adopted for peer observation needs to reflect the size of teaching loads and the diversity of teaching undertaken – though colleagues with little contact time may be those who could benefit most from the observations of a critical friend. In some departments, there is a significant reliance upon post-doctoral and other staff who are visiting or on short-term contracts – colleagues who are exempted from the process, "I don't think there was a single course where the lecturer was genuinely bad – bar one. It was actually a course where somebody had been brought in from outside to teach it." There is no evidence to suggest that the formal program has initiated more informal observation of peers, or team-teaching, largely because of the amount of time this would take. The amount of informal observation of peers varies enormously between departments. Team-teaching is common in some departments, absent in others. The benefits of peer observation to the individual can be immediate.

> I feel confident that my individual experience of being peer observed actually did produce a positive impact on the session that I was leading. More interestingly, perhaps, because I have done that session again, I subsequently was able to further incorporate and consolidate on the other changes that I had made when I was peer observed and that was maintained and indeed more than maintained actually. I thought that I was going to have problems with teaching that session again, on the occasion that I did do it most recently, because I had to teach it several times in quick succession to different groups of students. That is very tiring and a very difficult thing to do. Because I really thought very hard about that session on the occasion when I was peer observed some months before, I had that session really quite sorted in my mind and so it wasn't actually as difficult to do, although it was still quite a challenge.

But very often benefits may take some time to become apparent, "I am not really sure how much can be improved immediately." and "You don't know at the time whether you have been effective." An annual observation of such developments would seem to be prudent if there is to be reflection on such long-term gains.

Pairing Partners

Some colleagues have noted that teaching experience does not equate with teaching expertise and this influences the choice of observer, for those who have that choice. This means that immediate line-managers or departmental heads are not always the first choice, particularly if that individual currently does little teaching. Issues are evident when

the observer and observee are of different status within the department, "What would I have done if I had been paired with someone … for instance with the Prof? What if [X] had done a crap lecture that day?" and "To make it good you probably have to really make sure there is no threat on either side if it is going to be helpful."

A buddy system of reciprocal pairs is used in some departments. This eases the process by helping to remove the perception of threat, particularly where pairs are self-selected rather than imposed, but also reduces the possibility of the dissemination of good practice as the process is governed by a 'private contract' within the pair.

In departments employing a panel of specialist observers, the main criterion for selection of observers appears to be teaching experience, "I think it was the people who had been doing it the longest." But there is recognition that more junior colleagues may have much to gain and a valuable contribution to make, "in terms of more junior members of staff, it would almost be more valuable for them as a peer observer." and "people who are coming through the College's Postgraduate Certificate in Academic Practice program often come out with much newer sorts of ideas anyway, and therefore may be good doing peer observations'. Those who were acting as specialist observers in these departments commented that this role added significantly to their teaching load.

Pairings of unequal status give the process a feel of appraisal and tend to skew the process towards an evaluation model or a development model rather than a peer review model (see Gosling, 2002), "That [having senior colleagues exclusively observing junior colleagues] is slightly against the definition of peer review'. Pairings must be considered with care. Randomizing them may work for some colleagues but it may generate inappropriate pairings in some instances, "If I was being observed and I was told that [X] will observe you, and it was someone for whom I felt no professional respect, it would be a complete waste of time." The question to guide pairings should be along the lines of, 'who would contribute most effectively to this colleague's professional development as a university teacher?'

Teaching versus Research

While peer review of research is regarded as the norm, and indeed is seen to add credibility through journal publications and conference presentations, the same perception is not held universally for teaching (Asmar, 2002b). This difference of perception is associated with an apparent lack of dialogue about teaching and learning within many departments (see Jones & Zhou, 2004) and reflected in comments made by staff, "the day-to-day contact, talking about teaching matters has completely gone out of the window'."

A common perception seems to be that if you want to talk about teaching, it is a sign of weakness and there must be a problem and this perception seems to deter the development of a departmental discourse of teaching in some departments. There is a widespread belief among lecturers that good teaching is not rewarded in the same way as good research, "Actually the more teaching I do, the more my career is under pressure." and,

> [Lecturer X] gives a tremendous amount to the students. His lectures are highly praised. He is obviously a meticulous lecturer and he has been interested in [subject] education for many years. He does all the right things – he is available to talk to the students, he encourages them and so on – but in the end, he didn't get any reward for it.

This is not a view that is peculiar to the case study institution (Wareing, 2004; Young, 2004). This distinction creates a hierarchy of activities, with research rated above teaching. Therefore, time taken away from research activity is regarded as 'non-productive' because of the perceived link between research output and promotion; "You cannot be a star researcher and put in the amount of time that is necessary to deal with things like peer observation." and "if we treat it all in detail, it will take up quite a lot of time. It might scupper my research for the day."

The so-called 'teaching-research nexus' seems patchy. Many colleagues appear to be teaching in areas that are allied to their research interests, but which do not feed directly into their research. Consequently, colleagues do not relate their teaching to their research in the manner that is popularly perceived. In addition, the skills needed to be a good researcher are not seen to be the same skills required to be a good teacher; "You can become a Professor on the basis of outstanding research work and you might be one of the worst lecturers in the department." and,

> There is this big push isn't there that good researchers are good teachers. Some are. I don't think there are many of those around – who can do both. You end up getting to the lofty heights of lectureship and then you start doing some lecturing on the basis of a very strong research background. It doesn't mean that you are a good lecturer at all.

Discussion of the Findings

The scheme appeared to benefit both the lecturer and the observer through local learning and the reflection and detailed discussion that are key elements of the process. The scheme also identified general university-wide developmental needs as well as providing opportunities for good practice to be

disseminated. Before the introduction of the university-wide scheme, only a small number of departments had implemented peer observation. Overall, provision was very patchy and there tended to be few written records of the outcomes from these observations and this meant that the dissemination of good practice and the identification of general development needs had been very limited. In terms of the impact of the scheme, certain departments have made greater progress than others but in general the whole university has moved a long way forward in the eighteen months or so that the scheme has been in place. Although reactions to the notion of peer observation varied, many staff said that they found all aspects of the process – pre-observation, observation, post-observation meetings – to be highly valuable and how it helped their practice by providing them with constructive criticism within a supportive environment. Staff also commented on how the process had given them an opportunity to reflect and consider ways in which their teaching could be improved. Some staff appeared to be willing to take part in the scheme because they appreciated that it was expedient for the university to implement their own internal systems for assuring the quality of teaching. However, despite having a generally positive approach to the peer observation scheme, a few staff were openly hostile to the idea. These staff constituted a small minority group.

The progress made to introduce peer observation across the college may be mapped against the four main insights for successful change described by Fullan (1991).

Active Initiation and Participation of Staff

After the college had made the decision to initiate a formal program of peer observation, staff were required to participate. Responsibility for this was devolved to Heads of Departments and most members of the teaching staff were observed by a peer over the past academic year.

Pressure and Support

The QAA provided external pressure while internal support was provided centrally through the introduction of a dedicated seminar series and through the provision of standardized paperwork.

Changes in Behavior and Beliefs

For many colleagues, behavior had to change – to a greater or lesser degree. Some departments had previously run an informal peer observation process, while in others team-teaching was a common practice so that having an additional member of staff in the room was not unusual.

Ownership

Ownership was indicated by the ways in which departments modified the model (as originally presented to them) in order to address their own agenda for professional development. As such, the evolving diversity of approaches was interpreted as an indicator that departments were taking ownership of the process. However, direction of development within the themes described may indicate increased or decreased engagement.

While peer observation must be tailored to suit departmental needs, it must also mesh with the other demands placed upon academic staff. This is not to say that peer observation should be such a smooth process that it should proceed unnoticed, "One of the great benefits of [peer observation], is to some extent that it actually interferes with the normal process and it makes you think." Such professional development has to recognize the diversity within the academic staff and the variety of starting points they will hold, in terms of their development as a teacher (Asmar, 2002a). It also promotes the concept of the *professional teacher*, as one who continually learns from the practice of teaching, rather than one who has finished learning how to teach (Darling-Hammond, 1999).

It has been argued that peer observation can be a quality-enhancing tool that is an integral part of individual lecturers' continuing professional development, and the professionalization of the teaching process. If the full benefits of peer observation are to be achieved and it is to enhance the quality of teaching and learning, the implementation and maintenance of any scheme has to be managed thoughtfully and skillfully. The particular concerns and anxieties of academic staff need to be addressed fully with decisions on systems, structures and procedures being contingent upon the organizational culture and sub-cultures of a particular department. The dominant behaviors, beliefs, values and basic assumptions need to be taken into account. Having taken full cognizance of these concerns and the prevailing organizational culture, it is probable that there will be a positive response when the advantages of peer observation to individual lecturers and the organization are clearly, robustly and appropriately set out. Lessons can be learned from the examples of successful implementation of cultural change strategies discussed earlier.

The case study demonstrates that raising awareness, management of change and the implementation of a scheme are sensitive and time-intensive processes in which the normative-educative approach is not successful with all staff. However, the literature and the case study do suggest that the careful management of the change does lead to a peer observation scheme that is far more likely to enhance

the quality of teaching and significantly improve students' learning experiences.

References

Åkerlind, G. (2004). A new dimension to understanding university teaching. *Teaching in Higher Education, 9*(3), 363 – 375.

Asmar, C. (2002a). *Turning academics into teachers, and teachers into scholars: Approaches to scholarship at a research-extensive Australian university*, Paper presented at the 4th World Conference of the International Consortium for Educational Development. Perth WA, 3-6 July.

Asmar, C. (2002b). Strategies to enhance learning and teaching in a research-extensive university. *International Journal for Academic Development. 7*(1), 18 – 30.

Bamber, V. (2002). To what extent has the Dearing policy recommendation on training new lecturers met acceptance? Where Dearing went that Robbins didn't dare. *Teacher Development, 6*(3), 433-457.

Bell, M. (2001). Supported reflective practice: A programme of peer observation and feedback for academic teaching development. *International Journal for Academic Development*, 6(1), 30-39.

Becher, T., & Trowler, P. (2001). *Academic tribes and territories (*2nd ed). Buckingham: SRHE/Open University Press.

Biggs, J. (2003) *Teaching for quality learning at university.* 2nd ed. Buckingham: SRHE/Open University Press.

Bingham, R., & Ottewill, R. (2001). What happened to peer review? Revitalising the contribution of tutors to course evaluation. *Quality Assurance in Education, 9*(1), 32-39.

Blackwell, R., & McLean, M. (1996). Peer observation of teaching and staff development. *Higher Education Quarterly, 50*(2), 156-171.

Bowden, J., & Marton, F. (1998). *The university of learning.* London: Kogan Page.

Carnall, C. (1997). *Managing change in organisations* (3rd ed.). Hemel Hempstead: FT/Prentice Hall.

Carnegie Foundation for the Advancement of Teaching (1989). (1990). (1994). (2001). *The Condition of the Professoriate: Attitudes and Trends.* Princeton, New Jersey: University Press.

Clark, B. (1998). *Creating entrepreneurial universities: Organisational pathways of transformation.* Elsevier: IAU Press.

Closser, M. (1998). Towards the design of a system of peer review of teaching for the advancement of the individual within the university. *Higher Education, 35*, 143 – 162.

Darling-Hammond, L. (1999). Teacher learning that supports student learning. In Presseisen, B. (Ed.), *Teaching for intelligence: A collection of articles* (pp. 87 – 96). Arlington Heights, VA: Skylight Professional Development.

Department for Education and Skills (DfES) (2003). *The future of higher education.* Cmd 5735. Norwich: HMSO.

Duke, C. (2001). Cultural change and the machinery of management. *Higher Education Management, 13*(3), 31-43.

Evans, T., & Nation, D. (2000). *Changing university teaching: Reflections on creating educational technologies.* London: Kogan Page.

Fairweather, J. (1993). Academic values and faculty rewards. *Review of Higher Education, 17*(1), 43-68.

Ferren, A. (2001). Reconciling corporate and academic cultures. *Peer Review, 3*(3), 9-17.

Fullan, M. (1991). *The new meaning of educational change (*2nd ed.). London: Cassell.

Gibbs, G., & Habeshaw, T. (2002). *Recognising and rewarding excellent teaching.* Milton Keynes: TQEF/NCT.

Gosling, D. (2002). Models of Peer Review of Teaching. *Learning and Teaching Support Network (LTSN)*. London: UK.

Hammersley-Fletcher, L., & Orsmond, P. (2004). Evaluating our peers: Is peer observation a meaningful process? *Studies in Higher Education, 29*(4), 489 – 503.

Hativa, N., & Goodyear, P. (2002). *Teacher thinking, beliefs and knowledge in higher education.* London: Kluwer Academic Publishers.

Higher Education Funding Council for England. (2002). *Teaching quality enhancement fund (Report 02/24).* London: author.

Higher Education Funding Council for England. (2003). *Strategic Plan 2003-2008 – For Consultation.* Bristol: Author.

Hutchings, P. (1994). Peer review of teaching: From idea to prototype. *American Association of Higher Education Bulletin, 47*(3), pp. 3-7

Jackson, N. (2002). Principles to support the enhancement of teaching and student learning. *Educational Developments, 3*(1), 1-6.

Jones, J., & Zhou, J. (2004). *A report on Peer Observation of Teaching (POT) in The School of Social Science and Public Policy*. King's College London. pp. 1-54.

Keig, L., & Waggoner, M. (1994). Collaborative Peer Review: The Role of faculty in improving college teaching. *AASHE-ERIC Higher Education Report No. 2.*

Keig, L., & Waggoner, M. (1995). Peer review of teaching: Improving college instruction through formative assessment. *Journal on Excellence in College Teaching, 6*(3), 51-83.

Kinchin,I.M. (2005). Evolving diversity within a model of peer observation at a UK university. Paper presented at the British Educational

Research Association (BERA) annual conference. University of Glamorgan, Wales, UK, from http://www.leeds.ac.uk/educol/documents/153411.htm

Knight, P. (2002). *Being a teacher in higher education*. Buckingham: SRHE/Open University Press.

Kogan, M. (2002). The role of different groups in policy-making and implementation: Institutional politics and policy-making. In Trowler, P. (Ed.) *Higher Education Policy and Institutional Change: Intentions and outcomes in turbulent environments* (pp. 46-63). Buckingham: SRHE/Open University Press.

Learning and Teaching Support Network. (2002). *Peer observation of teaching*, from http://www.ltsn.ac.uk/genericcentre/projects/peer-ob

Martin, G., Smith, B., & Double, J. (1999, September). Agony aunt. *Times Higher Education Supplement*, 40.

Massy, W., Wilger, A., & Colbeck, C. (1994). Overcoming 'hollowed' collegiality. *Change*, 26(4), 10-20.

Melrose, M. (1998). Exploring paradigms of curriculum evaluation and concepts of quality. *Quality in Higher Education*, 4(1), 37-43.

Powell, J., Harloe, M., & Goldsmith, M. (2001). Achieving cultural change: Embedding academic enterprise – a case study. *Higher Education Management*, 13(3), 45-64.

QAA (Quality Assurance Agency for Higher Education) (2002). *Handbook for Institutional Audit: England.* Gloucester: QAA.

Quinlan, K., & Åkerlind, G. (2000). Factors affecting departmental peer collaboration for faculty development: Two cases in context. *Higher Education*, 40, 23-52.

Schein, E. (2004). *Organisational Culture and Leadership*. 3rd edn. San Fransisco, CA: Jossey-Bass.

Shortland, S. (2004). Peer observation: A tool for staff development or compliance? *Journal of Further and Higher Education*, 28(2), 219 – 228.

TQEC (Teaching Quality Enhancement Committee) (2003). *Final Report of the TQEC on the Future Needs and Support for Quality Enhancement of Learning and Teaching in Higher Education.* Bristol: HEFCE.

Trowler, P. (2002). *Higher Education Policy and Institutional Change: Intentions and outcomes in turbulent environments*. Buckingham: SRHE/Open University Press.

Wareing, S. (2004). *Research vs. Teaching: What are the implicit values that affect academics' career choices?* Paper presented at the Annual Conference of the Society for Research in Higher Education, Bristol, 14 – 16 December.

Williams, P. (2002). Anyone for enhancement? *QAA Higher Quality*, no. 11.

Young, P. (2004). *Out of balance: Lecturer's perceptions of differential status and rewards in relation to teaching and research*. Paper presented at the Annual Conference of the Society for Research in Higher Education, Bristol, 14 – 16 December.

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Cybernetic Circularity in Teaching and Learning

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This article presents an investigation into the meaning of 'learning' It uses cybernetics as a framework to look at the fundamental questions of: What is learning and why do people learn? Why do they learn this (and not something else)? How does learning happen? The article first describes the origin of cybernetics and its central tenets of circularity, feedback and communication, which suggest that learning is fundamentally about living. The living system learns as it fits with the environment in an integrated brain/body/environment learning system. This leads to a discussion of teaching and learning as building relationships with self and others in communication, with self and others, with or without the intention of changing and being changed in the encounter. Teacher and learner inevitably change (learn) as they interact whatever the context. The article suggests that what is happening in the encounter between teacher and learner, that which we call 'learning', happens to each of us in the same way all of the time. Learning is change; change learning. 'Teacher' and 'Learner' change (learn) together in a constant feedback network of communication.

We all have a particular way of looking at the world. Sometimes it is examined and consciously adopted, often not. Sometimes we endeavour to be consistent, sometimes we happily hold various conflicting beliefs. Often our belief systems are made up of fragments gleaned over a lifetime and held together with the glue of our heritage.

Cybernetics is one such way of looking at the world. When I accidentally happened on cybernetics I found it sat well with my hitherto tacit beliefs about how the world works. As I discovered the language, theories, philosophy and personalities of cybernetics I was compelled in the name of consistency to examine its implications for living. In addition, because I'm a teacher, I examined its implications for teaching and learning to see what difference it made. I applied a cybernetic lens to familiar questions like: What is learning and why do people learn?; Why do they learn this and not something else?; and How does learning happen? I found cybernetics made quite a difference to the answers that previously I would have offered as my 'common sense' view. And although cybernetics did not change my idea of what constituted *good teaching* it did give me a new set of explanations for why this might be *good teaching*.

So What is Cybernetics?

Cybernetics is a term coined by the mathematician, Norbert Wiener, in 1947, from the Greek *kubernetes* meaning helmsman or cox, which is also where we get the word *governor*, which in turn has connotations of controller or regulator (Glanville, 2005). The choice of cybernetics to name this new field of study indicates something to do with steering (helmsman) and control (governor), both of which rely on communication to do a good job. In fact, cybernetics originally centred around control and communication in people and machines (Wiener, 1948) where communication was unambiguous, and transmitting a message was an 'engineering problem' (Shannon, 1949). The 'controller' was there to ensure that information was conveyed as accurately as possible. If there were discrepancies the behaviour of the controlled system was changed according to the wishes of the 'controller' (Glanville, 1995). Ultimately, feedback governed the changes in communication, which changed behaviour, which changed the communication and so on in a circular feedback loop that enabled a system to maintain a desired state.

Thus, cybernetics not only had something to do with control, communication and feedback but also was underpinned by the central notion of circularity (von Foerster, 1992). However not everyone interested in this new field of study felt that communication was that straight forward (or circular). When this notion of circular feedback and communication was applied to other areas of life, things became complicated. Messages were not unambiguous, meanings were constantly being negotiated and no-one could be the controller sitting outside the system knowing exactly what the message was supposed to be. As von Foerster (1992, p. 10) stated, they came to realize that they too were "included in a larger circularity, maybe within the circularity of their family, or that of their society and culture, or being included in the circularity of even cosmic proportions." How could the observer be outside looking in when there was always another system, engulfing the observed system and the observer? The observer was always part of a system that was observed by another and so on. As part of the system, the observer always, by being in the system rather than outside of it, made a difference to the system and the system inevitably made a difference to the would-be observer. This was cybernetics of cybernetics, a cybernetic study of cybernetics itself, second order cybernetics.

The Far-Reaching Implications of Second Order Cybernetics

If we can no longer be on the outside looking in, then there is no one outside the system able to explain discrepancies in the transmitted and the received messages – no communication can be controlled by an outside controller. We have no way of knowing if information is conveyed accurately. Information itself becomes a slippery concept; whose version of information are we talking about? Both listener and speaker recognize that, as Maturana (1988, p. 27) points out, "everything said is said by an observer," which means that nothing can be said as an unambiguous statement of fact, everything said is colored by somebody's history (see also Maturana, 1987). Nothing is said as an absolute truth "but as an *invitation to orient* in a particular manner - and no more" and those habits of orienting "depend upon (inter-) personal history (based of course, on our initial biological structure) - and no more" (Donaldson, 1992, p. 6, emphasis in the original). In the same way we could say 'everything heard is heard by an observer' because everything heard is heard through the filter of a life. As Brier says, "communication of information" has given way to "jointly actualized meaning" (1992, p. 3) where we "give meanings to the utterances we perceive others to have made" (Glanville, 1995, p. 48). Information, in this view of the world, does not enter us, it is constituted by us.

In recognizing that by communicating with others in a system we negotiate and constitute meaning, and that by being *of* the system we change and are changed *by* it, we are inevitably led towards the idea that there is no pre-existing reality, but that we create this world of ours by living in it. The world is not being revealed through our enquiry but constituted by us, through the particular questions we ask and those we don't ask, as we change and are changed in constant feedback/communication with the environment, each other and ourselves. As I describe, through my life history, what I observe, my observations become my construction of reality (Glanville, 2001). This realization is one of the major implications of a cybernetic view of the world. We are observers and as observers we describe *one* domain of reality while being aware that there are many domains of reality. In this paradigm there is no one 'right' view of the world, no possibility of objective commentary on a fixed reality. Likewise there is no one system but as many systems as there are people doing the observing (see Dell, 1985; Efran & Lukens, 1985; Efran, Lukens, & Lukens, 1990; Maturana & Varela, 1992). Thus circularity, feedback and communication, which are central to cybernetics of cybernetics, (which has now once more become known simply as *cybernetics*) lead inevitably to a reality that we construct in constant feedback and communication with and in an environment.

System and Environment

At this point I need to introduce two common terms that are use in a specialized way – system and environment. *Systems* can be non-living like a bicycle or a house; living like a single cell, or a person or frog made up of many cells; or social systems like a club or an organization. The literature discusses two major ways of conceptualizing such systems. The first conceptualization considers a system in terms of a whole and its parts; the second conceptualization considers a system in its environment. A parts/whole perspective implies hierarchy, that is, parts within a whole, and parts can be wholes that have parts, within an ever-receding system. Or as Glanville (2001, p. 14) says, "a part is a whole in a role." A parts/whole perspective can be useful for examining non-living systems, however, it can be difficult to examine living systems in this way because they may no longer be living if taken apart for examination. The biologist Bertalanffy (1968) suggests that systems can also be viewed as networks of relationships in an environment. He says that parts of a system should be understood in the context of the whole. In this view of systems properties of the whole "arise from the interactions and relationships between the parts" (Capra, 1995, p. 15). These interactions and relationships occur within the whole. They constitute the whole as that particular whole. Such a system, far from being understood if taken apart, would cease to exist if taken apart. In this interdependent world the notion of a linear hierarchy disappears in favor of the circularity of an interacting whole. With the notion of circularity it is easy to see why cybernetics sits more comfortably with a system environment way of carving up the world than with the hierarchical system of parts and wholes.

Significance of a System and Environment View of the World

If I create the world by living in it and I see the world in terms of system and environment, I must also create the system and environment. Again, the implications are far reaching. I can draw boundaries for systems and environments wherever I like. I may see myself as a system in the environment of my family or my work or my local ecosystem. Another member of my family, my work or my ecosystem will not be able to make the same distinctions as I do, the distinction that separates my system from its environment. They will make their own distinction and will *be* in a different environment, if only because theirs will include me. I may also, of course, distinguish my family as a system in the environment of my community, or my ecosystem in the environment of the country's ecology. The universe is an environment out of which I can carve many systems. A system jumps out from the background environment when I notice it as a coherence against

the background noise. It may be, for example, that I notice that car drivers are becoming more aggressive, this is a difference in the normal pattern of events, it jumps out from the background of car driving. I give it a label, *road rage*, identify conditions in which I think it occurs and talk about it. *Road rage* becomes a phenomenon, soon it is seen, speculated on and written about around the world. The distinction I made (road rage/other driving) arose from my own "interests and values, personal history, emotions and *cognitive capacity*" (Parra and Yano, 2002, p. 80, italics in the original). Having made this distinction the system I have identified becomes information to me. The information did not belong to me independent of the phenomenon, I had to noticed something, a difference, for there to be any information to know. Nor did it belong to the phenomenon, which did not 'exist' until I distinguished it from the background environment. The information, and associated learning, arose in interaction/communication between living system (in this case me) and environment, it belongs to us both, created somewhere in the space between us, an idea that I shall come back to later (Glanville, 1999).

Through a cybernetic lens a particular system and a particular environment do not have an existence as system and environment until I, the observer, distinguish them from background noise and define them as system and environment. This idea of noticing a difference is, like circularity, central to cybernetics. Once we distinguish something from the background as different it becomes information to us, or what Bateson (1972, p. 381) calls "a difference which makes a difference." We learn something new, and in the learning we change the phenomenon as we bring it into focus, provide it with attributes and communicate our observations to others, and we are changed by it, as it becomes part of our lives.

Change as Learning

This brings us to one of the major implications of cybernetics for learning. Circularity, feedback and communication - with all of its negotiations and hit-and-miss potential - imply change. They take place over time in a constantly changing environment. We change the environment by being part of it and are changed by the environment through feedback and communication with it. In a cybernetic view of the world, we living systems do not adapt to the environment as in the classical system-environment model (Krohn, Kuppers & Novotny, 1990), but through our history of interactions over time both system and environment change as we find ways to 'fit' together. Maturana and Varela (1992) argue that evolution and adaptation, which they say are the terms used by an observer to describe our history of finding ways to fit together, our co-history of change, happen to individuals nanosecond by nanosecond over lifetimes and generations. This means that in the process of living we change, and our whole mind/body is changed by the people, environments and ideas with which we come into contact. According to Maturana and Varela (1992) this change is learning. Even if the change is infinitesimal, it becomes part of who we are and, in turn, who we are affords changes in our environment. Thus, everything we do and say contributes, however minutely, to the making of the future of our universe.

However, each living system is structurally different; therefore, each living system will find significance in, and be changed by, different triggers in the environment. Brier (1999) says that for something to be seen as information it has to be relevant to our survival. He also points out that for it to be relevant to survival, in biological, social and/or cultural terms, it must in some way be anticipated by our mind/body otherwise we would not 'know' it was relevant. In other words, learning is fundamentally about survival, about living; we can only recognise in the environment and take from the environment as information, something that we, in some way, already anticipate through our whole mind/body structure. We can't notice a difference unless in some way we are already prepared to notice it.

We anticipate out of what our bodies already know and our anticipations allow us to 'fit' or 'not fit' with the environment. This view of learning as the recognition of something, information, in the environment that is anticipated and relevant to survival, has consequences for the traditional view of what constitutes learning and how learning takes place. Maturana and Varela (1992) argue that learning takes place not by taking in information from the environment but by going on living in the environment, mutually adapting and changing. They propose that this is what we call learning and provide a definition of knowing as effective behaviour in a context. They suggest that as long as we are learning we are also living. We either live/learn together or we part company or we die. Knowledge is neither out there, to be ingested, nor totally inside us. Freeman and Núñez (1999, p. xiv) say that the "mind is not restricted to the brain or body but extends out into the world" and "the mind is a seamless fabric of inner and outer experience." In this way, they argue, learners incorporate the world into their being through experience. Learning is constructed in communication – in the relationships we build and the connections we make – with our environment, which includes other living systems. In this view, knowledge is not formed by the senses taking information in, but as a whole body changing in dynamic reciprocal interaction in an environment. In fact, learning may be more accurately described as engendering knowing rather than some kind of static, stored knowledge. In this cybernetic view of the world it appears that learning happens to us as we communicate in an environment. It enables us to go on living.

To Summarize

Above I have identified what I see as the fundamental principles of cybernetics. These principles can be summarized as follows.

- We are all observers.
- As observers we are always embedded in a system and cannot claim an outside view.
- We observe through the lens of a life history and our observations cannot be other-wise because we only have this one mind/body and this one life history out of which to observe.
- As observers we notice differences, make system/environment distinctions; different observers make different distinctions, notice different differences, carve out different worlds from the background 'noise' that becomes *information* to us.
- Information does not reside in the observer, system or environment, but arises in the process of living *between* the observer and the system/environment.
- In constant, communication and feedback we change our carved out world and are changed by it, with or without the intention of changing and being changed.
- This change is called *learning.*
- Learning arises from the need for survival – in social, economic, cultural or physical terms – and enables us to go on living.
- Learning is triggered by the environment, fits within our life history, will be anticipated, and will be different for everyone.
- We are all observers observing in a system.

The above summary provides what to me are some interesting answers to the questions with which I began: What is learning and why do people learn?; Why do they learn this and not something else?; How does learning happen?

Implications for Teaching

Although this model suggests that learning is triggered by the environment, happens to us continuously, and is not necessarily what anyone sets out to teach, formal teaching in educational settings is nonetheless an integral part of our way of life. As part of the environment of living systems, teacher and teaching become part of who we are.

The above answers to my questions about learning suggest particular ways of understanding teacher and teaching that may be useful in constructing effective learning environments. For example, if learning is change and change is the continuum of living, then teaching, within the particular environment in which it is embedded, is about fostering changes that will take students along a particular life trajectory. If people learn/change through a need to survive then teaching has to satisfy the survival needs of many individual students. If learners learn this and not that because they take from the environment whatever fits with a life history, and can be anticipated in some way, then teaching is about constructing diverse environments so that many learners can find ways to fit. And if learning happens in communication with an environment that includes self, artefacts and other living systems then teaching is about providing many and varied ways for communication to occur.

Teaching as Fostering Change

Teaching, viewed through a cybernetic lens, is about fostering changes that will move students' lives along a trajectory that connects with the society in which it is embedded. Whatever we do, our students and our selves will change in the encounter. However, we cannot directly *cause* change or 'input' our knowledge into students. The only thing that we can do to foster change is create environments in which the changes we wish to occur have a chance of occurring; environments in which students find ways to fit. Since we are part of the learning environment we are confronted with the prospect that whatever we contribute may become part of the being of others. Therefore the multi-media text that is teacher (Murray, 1999) is a powerful part of student learning. A teacher who sees the world through a cybernetic lens will be aware that we teach who we are, and students learn the implicit messages of our being and acting in the classroom just as we learn theirs. To invite relationships that connect learners to the learning environment and immerse them in a particular world will require all of the teacher's enthusiasm, knowledge, curiosity and energy. Such learning environments will provide a range of options for explaining concepts, demonstrating, modeling and relating to students, any one or combination of which may trigger learning.

Teaching as Contributing to Survival

Teaching, through a cybernetic lens, must communicate something relevant to survival in the student's particular social, cultural, technological, economic and political environment. Students' survival needs will be many and varied. Some, for example, will be related to their place in the social system, some to their families and some to their place in the wider world and their hopes for the future. Their survival needs will grow out of their past histories. Thus teaching and teacher have to assist students to make links with their own histories and enable them to anticipate the learning through connections with past experiences.

Survival, however, will also be operating at a more intimate level in the classroom. In our teacher/student interactions all involved will be 'reading' the situation, striving to maintain 'a stable state' through minute-by-minute decisions. Student survival at any minute may or may not be linked to whatever the teacher is teaching. If the classroom milieu is an unknown, students may not be able to find ways from their past histories to 'fit'. In this case they may 'depart' for another environment. This could be by creating change in the environment, making some part of the environment familiar, withdrawing into thoughts, or physically relocating. Just what it is that threatens the student's survival may depend on where in Maslow's hierarchy of need that student is operating. For some it could be the daily struggle to find the basic necessities, for others it could be building esteem of self and others. Whatever the actions they cannot be otherwise at that moment in time, and are, from the point of view of the mind/body living system, entirely logical.

This view of how the world works provides teachers with different options for dealing with what they might see as inappropriate responses (or behavior). Rather than actions that may increase a student's need to 'depart' the environment, because in some way it threatens their survival, teacher actions can be directed towards understanding student responses. In a 'cybernetic classroom' the teacher, rather than paying attention to controlling a student's response – something that would appear from the above discussion to be impossible – instead pays attention to understanding the history out of which this logical response arose.

Of course, the teacher too is a living system and part of the classroom milieu, making minute-by-minute survival decisions. Those decisions, made within the context of feedback and communication in the classroom environment, will depend on the teacher's life history. Reading the classroom world is important to survival in it for teachers as well as students (Murray, 1999).

Teaching as the Construction of Environments

If there are no direct inputs of information through the senses for storage in the brain and we cannot directly cause learning then construction of a learning environment is all that we, as teachers, can control. The learning environment includes teacher, artifacts, texts and all communication. Thus teacher preparation, including reflection on past experiences, rehearsal, and thought given to teacher/student communication scenarios are important ingredients of successful learning environments. They will extend the repertoire of what Schön (1979, 1983) refers to as *reflections-in-action* which he says, are the tacit theories that guide the moves of practicing professionals in second-by-second decision making.

If learning is triggered by the environment and we connect with the environment in idiosyncratic ways, then it is essential to provide as wide a range of potential 'triggers' as possible and many ways of connecting with the learning environment. A wide range of artifacts and texts may be necessary as well as ways to connect with them including discussion, hands-on experiences, reading and reflection, providing many ways into the world in which the teacher hopes to engage students.

There will, however, always be numerous other ways in which students can connect with the stream of living/communicating afforded by the total environment, only one small part of which can ever be consciously set up by the teacher for *teaching* a particular idea or skill. What stands out from the background noise for one student may be different for another. Hence students may or may not learn from the environment what it is that others wish them to learn.

Teaching as the Creation of Opportunities to Communicate

In constructing learning environments that include multiple ways of engaging with the materials, teacher and other students, teachers facilitate learning through communication, through the relationships built, with self, others and artifacts. Building and maintaining relationships that allow people to communicate freely is therefore an essential part of the teacher's role. An awareness of cybernetics will heighten awareness of the communication options afforded by the environment and sensitivity to the ways in which communication, as part of the environment, supports learning.

The integral nature of learning and communication indicates that one of the ways to increase the likelihood of learning is to maximize opportunities for communication with self in reflection and others in discussion. Just as the teacher may benefit from reflection and rehearsal so too may students. Because different parts of the learning program will resonate with different students in different ways some will need time to reflect on and rehearse ideas while others will need time to reflect on and practice know how. Time for both kinds of rehearsal and reflection therefore would seem to be important. If communication is a whole body endeavor, multiple ways of relating to the environment through a variety of activities would also seem to play a part.

Concluding Remarks

A cybernetic view of the world suggests that the only environments that exist at any moment are the inside mind/body learning environment of the living system, which has been shaped by the living system's

history of interactions, and the immediate outside environment with all that it affords. The only possible learning that can occur is learning contingent on these two environments as the living system fits with the outside milieu and through communication with artifacts, self and others reorganizes its internal 'gnolocopoeia' (Murray, 2002) until we are once again comfortable with our world. Knowing something about cybernetics may not change your view of what constitutes good teaching but it may provide a different and interesting explanation for why a particular approach seems to 'work' while another does not.

References

Bateson, G. (1972). *Steps to an ecology of mind*. New York: Ballantine Books

Bertalanffy, L. von (1968). *General systems theory*. New York: Braziller.

Brier, S. (1992). Foreword. *Cybernetics and human knowing*, *1*(1), 1-4.

Brier, S. (1993). A cybernetic and semiotic view on a Galilean theory of psychology. *Cybernetics and Human Knowing*, *2*(2), 31-45.

Brier, S. (1995). Cyber-semiotics: On autopoiesis, code-duality and sign games in bio-semiotics. *Cybernetics and Human Knowing*, *3*(1), 3-14.

Brier, S. (1999). Biosemiotics and the foundation of cybersemiotics: Reconceptualizing the insights of ethology, second-order cybernetics, and Peirce's semiotics in biosemiotics to create a non-Cartesian information science. *Semiotica*, *127*(1-4), 169-198.

Capra, F. (1995, Winter). From the parts to the whole. *The Education Network*, *7*, 14-20.

Dell, P. (1985). Understanding Bateson and Maturana: Toward a biological foundation for the social sciences. *Journal of Marital and Family Therapy*, *11*(1), 1-20.

Donaldson, R. E. (1992). Cybernetics and human knowing: One possible prolegomenon. *Cybernetics and Human Knowing*, *1*(2/3). 11-13.

Efran, J. & Lukens, M. D. (1985, May-June). The world according to Humberto Maturana. *Networker*, 23-28 & 72-75.

Efran, J. S., Lukens, M. D. & Lukens, R. J. (1990). *Language structure and change*. New York: W.W. Norton & Co Inc.

Fell, L. & Russell, D. (1993). *Co-drifting: The biology of living together*. Unpublished Manuscript. Glenbrook: Fell, Russell and Associates.

Fell, L. & Russell, D. (1994). Towards a biological explanation of human understanding. *Cybernetics and Human Knowing*, *2*(4), 3-15.

Freeman, W.J. & Núñez, R. (1999). Restoring action, intention and emotion to cognition. *Journal of Consciousness Studies*, *6*(11/12), ix-xix.

Glanville, R. (1995). A (cybernetic) musing: Communication 1. *Cybernetics and Human Knowing*, *3*(3), 47-51.

Glanville, R. (1999). Acts between and between acts. In R. Ascott (Ed.), *Reframing consciousness* (pp. 11-16). Exeter: Intellect Books.

Glanville, R. (2001). An observing science. *Foundations of Science*, *6*(1/3), 45-75.

Glanville, R. (2005). Cybernetics and the future: The Alfred Deakin Innovation Lectures (April 29- May 12). Melbourne Town Hall, Victoria: Australia.

Jarvilehto, T. (1999). The theory of the organism-environment system III: Role of efferent influences on receptors in the formation of knowledge. *Integrative Physiological and Behavioral Science*, *34*(2), 90-100.

Krohn, W., Kuppers, G., Novotny, H. (1990). Self-organization: The convergence of Ideas. An Introduction. In W. Krhon, G., Kuppers & H. Novotny (Eds.), *Self-organization: Portrait of a scientific revolution* (pp. 1-12). Dordrecht: Kluwer Academic Publishers.

Maturana, H. R. & Varela, F. J. (1992). *The tree of knowledge: The biological roots of human understanding*. Boston & London: Shambhala Publications Inc.

Maturana, H (1987). Everything is said by an observer. In W.I. Thompson (Ed.), *Gaia: A way of knowing* (pp. 65-82). Great Barrington, MA: Lindisfarne Press.

Maturana, H. (1988). Reality: The search for objectivity or the quest for a compelling argument. *The Irish Journal of Psychology*. *9* (1), 25-82.

Murray, J. (1999). Reading the teacher: Teacher as multimedia text in the classroom communication milieu. *Cybernetics and Human Knowing*, *6*(1), 61-75.

Murray, J. (2002). The placebo effect in teaching and learning. *Cybernetics and Human Knowing*, *9*(3/4), 101-115.

Parra, Carlos, M. & Yano, Masakazu. (2002). Tridimensional recursive learning model. *Cybernetics and Human Knowing*, *9*(3/4), 79-99.

Schön, D. (1979). Generative metaphor: A perspective on problem setting in social policy. In A. Ortony (Ed.), *Metaphor and Thought* (pp. 254-283). Cambridge: Cambridge University Press.

Schön, D. (1983). The reflective practitioner: How professionals think in action. New York: Basic Books.

Shannon, C. E. (1949). The mathematical theory of communication. In C. E. Shannon, & W. Weaver (1971 [c1949]). *The mathematical theory of communication*. Urbana: University of Illinois Press.

von Foerster, H. (1992). Ethics and second-order cybernetics. *Cybernetics and Human Knowing*, *1*(1), 9-19.

Wiener, N. (1948). *Cybernetics or control and communication in the animal and the machine*. Cambridge, MA: MIT Press.

Winn, W. & Windschitl, M. (2001). Towards a framework for learning in artificial environments. *Cybernetics and Human Knowing*, *8*(4), 5-23.

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Teaching Grant Writing with Service Learning

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Grant writing experience can be a valuable asset for students completing masters-level degree programs across a variety of disciplines. A service learning grant writing project was incorporated in a multidisciplinary program evaluation course as part of a writing requirement. Twelve students served as "ghost writers" and wrote grant proposals to foundations for community organizations. Projects were assessed by ratings provided by faculty across departments who served as judges. Qualitative data was collected from students and organizational sponsors that showed high levels of satisfaction from both groups and an awareness of reciprocity of benefit from service learning were observed in both groups. Benefits and limitations of the pedagogical technique are discussed.

Academic service learning has been implemented across the country in an effort to improve student learning and social behavior skills such as civic engagement and participation. The advantages of service learning have been pointed out since John Dewey (1938) recommended them. Although service learning has been endorsed at a national level, much debate exists concerning the meaning of this form of pedagogy (Mooney & Edwards, 2001). For example, Jacoby (1996) claimed that there were over 150 terms associated with service learning, the majority of which had different definitions. In an effort to use simplicity, this project regarded service learning as an integration of community service and academic coursework (Chapin, 1998). In other words, service learning projects expand teaching and learning beyond the classroom activities by relying on more practical applications (Berson, 1994; Giles & Eyler, 1994; Kinsley, 1993).

There is substantial evidence identifying the importance of grant writing skills across a variety of disciplines (Eissenberg, 2003; Kleinfelder, Price, & Dake, 2003; Medina-Walpole, Barker, & Katz, 2004; Wooley, 2004). The three primary venues for securing external funds include the federal government, state governments, and foundations. Among the various sources of where to apply for grants, foundations represent the largest number of sources. In 2004, more than 66,000 foundations provided an estimated $32.4 billion in grants (Renz & Lawrence, 2005). The development of professional skills is often the focus of many masters-level graduate programs. Although some schools offer grant writing training within select departments (see Reynolds et al., 1998), the majority of training seems to occur by working with mentors or by attending workshops provided by institutional grants offices (Kleinfelder, Price, & Dake, 2003) and opportunities for formal coursework is often limited. A properly structured grant writing project was incorporated into a course in a community service learning format to provide such training to graduate students.

The current project assessed an interdisciplinary graduate-level course in Program Evaluation at a master's granting state university. Students represented the fields of criminal justice, exercise science, psychology, social work, sociology, and general liberal arts. In addition to teaching the basics of program evaluation methodologies, there was an attempt to provide students with an "applied" writing project. In other words, a writing project was developed such that the labor of completing the project had both community and individual rewards. The community had the possibility of benefiting by having the possibility of receiving much needed monies and the students benefited by learning a new skill and gaining actual grant writing experience. Thus, an opportunity to partner with the community seemed possible. Putting all of these elements together, the goal was to provide students with a marketable writing skill that would be perceived as being useful and connect students with the community by providing a much needed service. The general structure of the service learning component of the class attempted to follow the recommendations of Tannenbaum and Berrett (2005) who conducted an extensive literature review and listed 11 "best practice" characteristics of effective service-learning projects (see Table 1).

Most of the collegiate level assessments of service learning have been quantitative, survey based, and comparative (Boyle-Baise, 2002). It is typical that a pre-post approach is used to assess the change in such variables as grasp of the subject matter, development of civic engagement and skills, and personal growth (see Eyler & Giles, 1999). There have been a limited number of qualitative studies that provided information regarding what actually happened within service-learning experiences. Within the qualitative studies that have been conducted, although students are assessed, the community is often overlooked (Cruz & Giles,

TABLE 1
Tannenbaum and Berrett's (2005) Characteristics of Effective Service-Learning Projects

Best Practices
1. Service should be connected to the curriculum.
2. Service should involve a specific action.
3. There should be student reflection at the end of the service.
4. There should be ongoing reflection throughout the course.
5. Student's should have a choice in selecting the service.
6. Students should receive training in the service area.
7. Students should be involved for a minimum of 10 hours.
8. Faculty should be trained in the use of service-learning.
9. There should be ongoing communication between the faculty member and community service-learning partner throughout the project.
10. Assessment should be conducted to determine if program outcomes were achieved.
11. There should be recognition of student contributions.

2000) and examination of the issue of collaboration between the two constituent groups has been largely neglected. The present study attempted to address these shortcomings by using qualitative methodology to assess the service-learning experience from the perspectives of the students and community.

Method

Twelve students were enrolled in a graduate level class in Program Evaluation at a master's granting institution in Texas. The class met for 75 minutes twice a week during a 15-week semester. Of the students enrolled, six were pursuing a graduate degree in psychology, two in general liberal arts, and one each in criminal justice, sociology, social work, and exercise science. The course used a textbook (i.e., Rossi, Freeman, & Lipsey, 1999), had several outside readings, and required students to take a mid-term and final exam. Of relevance to this paper is the grant proposal which comprised 40% of the final grade.

Grant Proposal Structure

On the first day of class, students were provided with a 20-item multiple-choice knowledge test regarding the preparation of grant proposals for foundations. After completing the pre-test, they were given a 16-page document on preparing grants for foundations. The foundation and grants-related document is something that was developed by the instructor and included the following sections:

- what is a grant
- different sources of funding
- what is a foundation
- before you begin to write
- how to begin
- assessing need
- finding funders
- general guidelines in seeking foundation funds
- elements of a proposal
- how proposals are assessed.

In addition, students were provided with copies of two successful grant proposals that were awarded monies by foundations in order for them to have models. Students were required to read the document for the following class meeting at which time a representative from the university grants office provided a presentation on basic grant writing and finding foundation funders. Throughout the semester, topics related to the grant writing process were covered while discussing relevant issues in program evaluation. Seven deadlines were provided and enforced in order to ensure progress of the writing project. The deadlines across the 15-week semester were as follows:

- Deadline 1: During week 2, students identified an organization in the community that allowed them to serve as a "ghost writer" in writing a grant. An organizational contact including the name, title, phone number, and e-mail address of that individual had to be turned in.
- Deadline 2: During week 3, students provided an overview of the group that agreed to work with them. The overview included an organizational flow chart, mission and history of the organization, description of services, description of clients, a brief summary of that which was in most need of funding, and a list of three potential funders.
- Deadline 3: During week 6, students provided a problem statement, an implementation plan, an evaluation plan, and selected one funder.
- Deadline 4: During week 9, students provided a budget and budget narrative.
- Deadline 5: During week 11, students provided a rough draft with the following sections: cover letter, title page, one-page summary, overview of the organization, problem statement, goal, major objectives, sub-objectives, evaluation, future funding, budget, references, and appendices.
- Deadline 6: During week 13, students provided the completed proposals. The proposal followed the standard format detailed in the Deadline 5 section and students were required to attach the rough draft in order to provide the instructor with an opportunity to assess recommended changes.

- Deadline 7: During week 14, students gave a 10-minute oral presentation. The nature of the presentation required students to (a) discuss the organization with which they partnered, (b) summarize the services the organization provides and which groups are primarily served, (c) detail the amount of monies requested and the purpose for the monies requested, (d) discuss the source from which the monies will be requested, (e) provide a statement of the need, and (f) give details of the implementation and evaluation plans.

Four faculty members from different disciplines (i.e., criminal justice, exercise science, psychology, and social work), all of whom had successful grant writing experiences, were recruited to serve as reviewers. Faculty members were given instructions and a scoring sheet similar to that used by Wooley (2004). The instructions were provided in a one-page summary format. Reviewers understood that a structured format was followed and the relevant and expected information under each section of the grants was listed and detailed. Reviewers were also given a scoring sheet and were asked to rate each proposal according to 10 criteria (see Table 2), based on a 0-10 scale. Each of the four reviewers worked independently and did not discuss scores until all scoring sheets were completed.

The overall assigned score was an average of the four independent reviews. During week 14, students were provided with the scored grant proposals and asked to make necessary modifications to the proposals prior to turning them in to their respective sponsor organization. During week 15, students provided the instructor with a letter from their contact at their respective organization indicating that the completed grant proposal was provided to the sponsor. On the last day of class, students took the 20-item knowledge test that was given to them on the first day of class. It should be noted that students were not informed that they would be given the knowledge test after the first administration.

With regards to qualitative data, all students completed a questionnaire at the end of the semester; the instruments were completed in 10-15 minutes. The questionnaire asked three open-ended questions in an attempt to assess what actually happened during the service-learning experiences. These questions included: (a) What did you gain from the grant writing project?; (b) What were advantages/disadvantages of the grant writing project compared to more traditional writing assignments?; and (c) What did you learn from working with your organization?

TABLE 2
Reviewer Scoring Sheet

Grant Scoring Summary

Name of Applicant	Name of Reviewer
<u>Scoring</u>	
One-page Summary	_____(10 points max)
Statement of Problem	_____(10 points max)
Project Impact on Problem	_____(10 points max)
Implementation Plan	_____(10 points max)
Staffing	_____(10 points max)
Feasibility	_____(10 points max)
Evaluation	_____(10 points max)
Staffing	_____(10 points max)
Budget	_____(10 points max)
Overall Neatness and Organization	_____(10 points max)
TOTAL POINTS	_____(100 points max)
Overall Strengths	
Overall Weaknesses	
Recommendations	

The instructor met with the contact person from each organization with whom a grant was submitted on behalf of the students to collect feedback from their perspectives. In addition to asking informally about the positive and negative aspects of the project, each sponsor was provided with a questionnaire to answer the following items provided in an open-ended format: (a) How did your organization benefit from this project?; (b) How did the student benefit from participation in this project?; and (c) What did you learn from working with the student?

The qualitative data from both students and organizational sponsors were analyzed by use of a "framework" approach (Ritchie & Spencer, 1994). This involved the intentional collation of raw data under pre-identified themes in a systematic manner, from which key concepts were subsequently refined. There are five key stages to the framework method which include familiarization, identifying a thematic framework, indexing, charting, and mapping. In stage one, responses to the questionnaires were reviewed and recurrent themes were listed in the participants' own words. In stage two, the recurrent themes listed during stage one (i.e., familiarization) were used to label the data into distinct units. The purpose of this stage was to identify major themes. In stage three, the thematic framework was systematically applied to the data in order to detect patterns of information. In stage four, each a priori question and any emergent themes were used to categorize the data. In stage five, the thematic framework was used to detect patterns among themes and rate importance of themes. Two judges independently applied the thematic framework to the data. The few discrepancies that did exist (i.e., five) were discussed and consensus was reached resulting in 100% agreement.

Results

The organizations that were represented in the project were quite varied and included a boys and girls club, preschool, faith-based outreach center, high school, juvenile detention center, homeless shelter, daycare center, community mental health center, group home for the developmentally disabled, geriatric care center, museum, and drug rehabilitation center. The primary need of each organization also varied widely and was determined by needs assessments conducted in collaboration between the students and organizational sponsors. Budgets ranged from $5,000 to $52,000 with the average request at $17,500. The grant writing project was assessed by four methods.

The first assessment method involved knowledge of grant writing and foundations. The 20-item knowledge test was given during the first and last day of class. There was a significant increase in knowledge, $t(11) = 25.71$, $p < .001$, with the posttest scores ($M = 16.83$, $SD = 1.96$) higher than the pretest scores ($M = 7.17$, $SD = 1.89$). The second assessment method examined the scores assigned by the four independent raters who judged the quality of the proposals. Scores were collapsed across raters to yield an average score which ranged from 74 to 93, with a maximum score of 100. It was of interest to conduct an analysis in order to assess the degree of consistency among raters. In situations where multiple judges are used, it is recommended to use Cronbach's alpha coefficient as an appropriate consistency estimate of interrater reliability (Crocker & Algina, 1986). Cronbach's alpha coefficient is a measure of internal consistency reliability and can be useful for interpreting the degree to which the ratings from a group of independent judges hold together to measure a common dimension. Low Cronbach's alpha estimates among the judges suggest that the majority of the variance in the total composite score is accounted for by error variance rather than true score variance (Crocker & Algina, 1986). The calculated Chronbach's alpha value was .90 indicating a high level of agreement across the four independent raters.

The third and fourth assessments involved feedback from the students and organizational sponsors regarding satisfaction with the grant writing proposal project. Four themes emerged for the student group which included marketable skills, knowledge, community service, and workload. All 12 students reported that grant writing was a skill that would increase their marketability in the job market. One student stated, "I remember my internship advisor told me that I had to learn to write grants to get a job. Well, now I know how and I really think it will help me." Another stated, "Everybody I talk to tells me that I need to know how to get grants so I think this course helped me and I actually have experience doing a real grant." There was a general consensus (75%) among students that very little was known about grant writing coming in to the course and that knowledge regarding grant writing was gained throughout the semester. One student explained,

> I knew that grants are important in my field [human services] but I had no idea where to even start. I knew that you could get money from places, that's about it. Now, I think that I could show someone else how to do it.

Nine students indicated that they thought their work benefited the community. One student wrote,

> It was cool that I did a project that actually mattered. Instead of just writing some type of research paper, this one can actually help people. I

> hope they get the money because they do great work there [homeless shelter].

Similarly, one of the general liberal arts students stated, "I had no idea how hard they work [boys and girls club]. In fact, I started volunteering after meetings because they didn't have enough staff and their work can really help kids."

There was common project criticism that was identified by seven of the students that can be summarized by the criminal justice student who explained, "It was a good project, but it took too much time. That's a lot of work to do for one person." Similarly, half of the students recommended that the project might be better if completed in a partner or group format rather than individually.

Organizational sponsors were overwhelmingly supportive of the project and each one supported the possibility of future projects with students working with them in the same capacity. Three themes emerged for the organizational sponsors group which included organizational resources, real world experience, and support. None of the organizations employed a professional grant writer although grant seeking activities were vital in the sustainability of the majority of organizations so these activities were most welcomed. Eleven of the organizational sponsors indicated that the students were very helpful in writing the grant because of organizational resource shortcomings. One representative said, "There is no way we would have got that grant submitted if [Karen] would not have helped us; she was a godsend." Similarly, the representative from the mental health center agreed, "We are so busy around here, I can't tell you how glad we were to have [Jonathon] work with us. He did a great job." Eight of the sponsors felt that students benefited by experiencing the real world. The homeless shelter sponsor stated,

> I noticed a change in [Adelle] during the semester. At first she was almost scared to come through the door and didn't even look at anyone. By the time she left, some of our clients knew her by her first name and she spent time talking with them every time she came in.

In a similar vein, the daycare sponsor said,

> I think [Angela] has a greater understanding of what goes on at a daycare center and realizes that we do more than play games. We all laughed when she told us that she would retire after one year of this kind of work.

Eight of the sponsors had no recommendations to improve the project. The recommendations that were provided included doing the project more often and assigning several students to one organization to work on multiple grants. In summary, the organizational sponsors were overwhelmingly supportive of the project and encouraged future collaborations between the university and their respective organizations.

Discussion

This project served several purposes. First, it taught a marketable skill to students and provided them with "real world" experience in grant writing. Depending on the field students enter, even a basic understanding of the grant writing process could be an asset during a job search and perhaps even tied to later promotions. And, rather than just having a working knowledge of grant writing, participation in the project ensured that each student had actual grant writing experience including first hand knowledge of each step during the process from beginning through the actual grant submission. Many jobs require the ability to get grant funding (e.g., Wooley, 2004) and grant writing experience would most likely be an asset on student resumes. Another benefit of the acquisition of grant writing skills is that it can be transferred across fields. Grant writing is a process rather than being a discipline specific activity, thus has applications across a wide variety of fields. Second, the project provided a valuable community service. All 12 of the organizational sponsors indicated that the proposals provided by the students offered a much needed service. The organizations served vital health, educational, artistic, social, and economic roles in the community. Many of these organizations claimed to be short-handed with the majority of services they provided so free assistance in an attempt to solicit much needed monies for their programs was most appreciated from their behalf. Students provided an opportunity for organizations to conduct their administrative and service roles within the organization with minimal distractions from the student grant ghost writers with the potential for financial benefits. Third, it was a good way for students to become knowledgeable about various organizations and activities in the immediate community. Students were required to provide an oral presentation at the end of the semester discussing the organization they worked with, the services provided by the organization, and a summary of the grant proposal. The presentation was open to other students and faculty in order to provide students with the opportunity to make professional presentations and to disseminate information regarding community organizations and services across the campus.

The majority of best practices recommended by Tannenbaum and Berrett (2005) were followed. Of the 11 best practices that were listed, the following nine

characteristics were met: (a) the grant writing project was connected to the curriculum, (b) the service did involve a specific action (i.e., grant writing), (c) students were provided with an opportunity to reflect at the end of the project, (d) although students had to write a grant and had no control on the actual service component, they were provided with the opportunity to select which organization they wanted to work with, (e) students did receive training in grant writing, (f) all students were involved for substantially more than 10 hours, (g) the instructor attended workshops in the use of service learning prior to the course, (h) there were multiple assessments to determine if project outcomes were achieved, and (i) students were recognized for their contributions by organizational sponsors, faculty, and other students.

There were shortcomings on two of the characteristics. That is, there was limited emphasis on providing students with adequate opportunities for ongoing reflection throughout the course and limited contact between the instructor and community organizations. Perhaps one alternative to address better that characteristic in the future would be to require the students to maintain a weekly journal that details what they experienced that week with regards to the project, and their reactions to those experiences. In addition, the instructor did not have ongoing communication with the organizational sponsor. Specifically, there were two times throughout the project when the instructor was in contact with the organization contact. After students identified an organization they wanted to work with, the instructor contacted the sponsor via telephone in order to provide details of the project. The next meeting was in person and occurred at the conclusion of the project. Perhaps efforts could be made to have more contact with the sponsors that could take the form of phone calls, e-mails, or brief meetings.

Successful completion of this course required a writing assignment consisting of a completed grant targeting a foundation. Students were required to partner with an organization in the immediate community and serve as a "ghost grant writer" such that they were responsible for working with the organization to identify needs, find a potential funder, and complete a formal proposal. It can be argued that this project met the criteria established by Chapin (1998) regarding a service-learning project. In addition to the grant writing skills gained by students in this endeavor, prior work has reported that participation in community service projects lead to increased levels of civic professionalism, personal growth, community involvement, interpersonal skills, and self-confidence (Bringle & Hatcher, 2002; Hardy & Schaen, 2000; McGovern et al., 1991; Piliavin, 2003; Sherman, 1982; Waldstein & Reiher, 2001).

Although this project had positive outcomes, all components of courses should be monitored and adapted in order to improve the effectiveness of the instruction. This project is no exception, and there were issues that developed during the course of the semester that can be improved upon. It is necessary for the instructor to be very clear about the role of a "grant ghost writer" from the beginning of the semester. There were two main problems that emerged when the assignment was initially provided to the students. First, there was a lack of understanding of the final product of the project. In other words, the term "ghost writer" was not readily understood such that some students were under the impression that they were going to submit a grant for themselves and work for the organization. This may have been the case because of their unfamiliarity with the grant writing process. Examination of the pre-test knowledge scores indicated that students responded at the chance level so their understanding of the grant processes was very limited. Perhaps more time should be spent during the first class clearly articulating not only what their role is, but also what there role is not. After the instructor received feedback which suggested some role confusion associated with the project, an attempt was made to detail what the project did not involve. A second issue that emerged throughout the semester involved complaints of time requirements. In other words, students complained that the project was taking substantially more time compared to other courses. The instructor attempted to convey that in addition to being a content course, it was also a skills-based course. It was further emphasized that the ideal way to develop a skill is via practice in a real world setting. There was also an attempt to realize the importance of civic engagement and that volunteerism is a just cause requires sacrifice which is often in the form of time. This is an area that will certainly require modifications by the instructor. That is, it is of great importance to convince students that although extensive time is required (i.e., relative to other more traditional classes), the benefits are substantial to both the student and the community. In this vein, it may not be appropriate to consider the actual success of a grant (i.e., if it was funded or not) as an outcome measure. Students served the role as a ghost writer for organizations and it is up to the discretion of the organization what they did with the proposal. The organizations may elect to submit it, modify it and submit, or not submit. These options are out of control of the student and should not be used as a grading factor within this context.

Another consideration should be the number of projects that an instructor has within a class. This is largely determined by geographic location. Urban areas may offer more opportunities for such partnerships with

organizations. Thus, in more rural areas with fewer possible partners, one might consider group projects depending on the size of the class. The majority of students had a very limited knowledge of the organizations within the community that were eligible and in need of funding. Instructions were provided to identify non-profit organizations in the community that may be of a topical interest to individuals students, then contact the organization to determine if there might be a need that a grant could be used to address. They were motivated to do so because 40% of their grade was determined by the project, but because this was the first service-learning project for each student, there was probably some degree of anxiety associated with this task. One approach could be to provide a list of eligible organizations within the community. The instructor, however, believed that it was of value to put that responsibility on the student in order to gain a better understanding of what organizations actually exist in the community. This grant writing project was conducted with students pursuing master's degrees across a variety of disciplines and it may be applicable to advanced undergraduate populations. It would certainly seem to fit within an internship model, but incorporating it into an upper-level undergraduate course may require some modifications. Notably, an instructor may abridge the evaluation component of the proposal and focus more on simple outcome measures rather than more sophisticated designs and analytical plans. A final recommendation would be to make an effort to bring in the organizational sponsors to class at some point during the course of the semester so that they may discuss their organization. This may provide a stronger tie between the university and community organizations and assist in the development of stronger long-term relationships and may create possible internship and job opportunities for students or research collaborations with faculty members.

In summary, this community service-learning project was a success and has great potential. This grant writing project can be applied in a variety courses across a wide range of disciplines. There was ample evidence that students knew very little about grant writing prior to the course and gained a significant amount of knowledge within this skill set. All 12 students completed actual grant proposals for an organization within the community. Future studies might use this method in other courses, with other students, and try different approaches to determine its relative effectiveness and alternative applications. It would be of particular interest to assess long-term effects regarding the potential impact this project had on finding a job and subsequent employment activities.

References

Berson, J. S. (1994). A marriage made in heaven: Community college and service learning. *Community College Journal, 64*, 14-19.

Boyle-Baige, M. (2002). Saying more: Qualitative research issues for multicultural service-learning. *Qualitative Studies in Education, 15*, 317 - 331.

Bringle, R. G., & Hatcher, J. A. (2002). Campus-community partnerships: The terms of engagement. *Journal of Social Issues, 58,* 503-517.

Chapin, J. R. (1998). Is service learning a good idea? Data from the National Longitudinal Study of 1988. *Social Studies, 89,* 205-211.

Crocker, L., & Algina, J. (1986). *Introduction to classical and modern test theory*. Orlando, FL: Harcourt Brace Jovanovich.

Cruz, N., & Giles, D. (2000). Where's the community in service-learning research? *Michigan Journal of Community Service Learning, Special Fall Issue,* 18-27.

Dewey, J. (1938). *Experience and education.* New York: Collier Books.

Eissenberg, T. (2003). Teaching successful grant writing to psychology graduate students. *Teaching of Psychology, 30*, 328-330.

Eyler, J., & Giles, D. (1999). *Where's the learning in service-learning?* San Francisco: Jossey-Bass.

Giles, D., & Eyler, J. (1994). The theoretical roots of service-learning in John Dewey: Toward a theory of service-learning. *Michigan Journal of Community Service Learning, 1*, 77-85.

Hardy, M. S., & Schaen, E. B. (2000). Integrating the classroom and community service: Everyone benefits. *Teaching of Psychology, 27*, 47-49.

Jacoby, B. C. (Ed.) (1996). *Service-learning in higher education: Concepts and practices.* San Francisco: Jossey-Bass.

Kinsley, C. W. (1993). Community service learning as a pedagogy. *Equity &Excellence in Education, 26,* 53-63.

Kleinfelder, J., Price, J. H., & Dake, J. A. (2003). Grant writing: Practice and preparation of university health educators. *American Journal of Health Education, 34*, 47-53.

McGovern, T. V., Furumoto, L., Halpern, D. F., Kimble, G. A., & McKeachie, W. J. (1991). Liberal education, study in depth, and the arts and sciences major-Psychology. *American Psychologist, 46*, 598-605.

Medina-Walpole, A., Barker, W. H., & Katz, P. R. (2004). Strengthening the fellowship training

experience: Findings from a national survey of fellowship trained geriatricians 1990-1998. *Journal of the American Geriatrics Society, 52,* 607-610.

Mooney, L. A., & Edwards, B. (2001). Experiential learning in sociology: Service learning and other community-based learning initiatives. *Teaching Sociology, 29,* 181-194.

Piliavin, J. A. (2003). Doing well by doing good: Benefits for the benefactor. In Keyes, C.L.M. & and Haidt, J., (Eds.), *Flourishing: Positive psychology and the life well lived* (pp.247-277). Washington, DC: American Psychological Association.

Renz, L. & Lawrence, S. (2005). *Foundation growth and giving estimates: 2004 preview.* New York: The Foundation Center.

Reynolds, C. F., Martin, C., Brent, D., Ryan, N., Dahl, R.E., Pilkonis, P., Marcus, M.D., & Kupfer, D.J. (1988). Postdoctoral clinical-research training in psychiatry. *Academic Psychiatry, 22,* 190-196.

Ritchey, J. & Spencer, L. (1994). Qualitative data analysis for applied policy research. In Bryman, A. & Burgess, R. (Eds.) *Analyzing Qualitative Data* (pp. 173-194). London: Routledge Press.

Rossi, P. H., Freeman, H. E., & Lipsey, M. W. (1999). *Evaluation: A systematic approach.* Thousand Oaks, CA: Sage Publications.

Sherman, A. R. (1982). Psychology fieldwork: A catalyst for advancing knowledge and academic skills. *Teaching of Psychology, 9,* 82-85.

Tennenbaum, S. C., & Berrett, R.D. (2005). Relevance of service-learning in college courses. *Academic Exchange Quarterly, 9,* 197-201.

Waldstein, F. A., & Reiher, T. C. (2001). Service-learning and students' personal and civic development. *Journal of Experiential Education, 24,* 7-14.

Wooley, S. F. (2004). A review committee as a way to teach grant writing skills. *American Journal of Health Education, 35,* 366-368.

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A Proposed e-Learning Policy Field for the Academy

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In this article, Lewin's (1951) social field theory is used as a framework for analyzing the potential for implementing scalable and sustainable e-learning initiatives in the academy. Powerful external economic and social forces coming to bear on academic leadership decisions are considered. The impacts of the emergence of the global learning society, knowledge economy, and information technology paradigm are explored. Five social forces—postmodernism, the interpretive turn, identity politics, globalization, and the post-colonial critique (Lincoln, 2001)—are examined. Existing and emergent pressures, exerted by both external and internal socioeconomic forces, are analyzed for their potential to support or inhibit adoption of e-learning initiatives into research, teaching, and learning activities. An e-learning policy field is posited.

In this article, Lewin's (1951) social field theory is used as a framework for analyzing the potential for implementing scalable and sustainable e-learning initiatives in the academy. Powerful external economic and social forces coming to bear on academic leadership decisions are considered. The impacts of the emergence of the global learning society, knowledge economy, and information technology paradigm are explored. Five social forces, postmodernism, the interpretive turn, identity politics, globalization, and the post-colonial critique (Lincoln, 2001), are examined. Existing and emergent pressures, exerted by both external and internal socioeconomic forces, are analyzed for their potential to support or inhibit adoption of e-learning initiatives into research, teaching, and learning activities. An e-learning policy field is posited.

Definition of e-Learning

For the purposes of this article, *e-learning* is defined as electronically-mediated learning. e-Learning initiatives include the provision of online resources to support classroom-based learning, distance learning, and distributed learning models. *Distance learning* is defined as the provision of learning opportunities to learners situated away from a university campus. *Distributed learning* refers to the provision of learning opportunities in a combination of on and off campus settings.

Theoretical Framework

In order to analyze the forces that come into play in the transition from primarily place-based learning opportunities to the large-scale provision of distributed learning options in higher education, Lewin's (1947, 1951) field theory, as a framework for managing change, is employed.

Lewin (1947) argued that in order to successfully facilitate change, organizational leaders need to undertake a three-step process: *unfreezing*, *moving*, and *refreezing*. *Unfreezing* involves destabilizing the status quo. *Moving* includes identifying and evaluating the relative strengths of forces within a social field, considering available options and initiating incremental change. A social field is defined as an "ecological setting" in which "coexisting social entities, such as groups, subgroups, members, barriers, [and] channels of communication" (p. 200) undergo periods of relative constancy and change. The "relative positions of the entities" within the social field illustrate their roles as either driving or restraining forces (p. 200). Driving forces are defined as those forces that initiate and sustain change; restraining forces are defined as those forces that restrain or decrease the driving forces. *Refreezing* is the process of supporting a return to a sense of stability in the changed environment.

Figure 1 illustrates relative positions of driving and restraining forces within a social field, as well as potential changes in quasi-stationary states of the power of forces on equilibrium over time.

Emergent needs, trends, challenges, and pressures both external to and within the academy include driving forces for making the transition from primarily place-based learning to distributed learning models. Existing group norms, standards, values, and perceptions may be shown to be potentially restraining forces in large-scale adoption of e-learning. Therefore, an analysis of external socioeconomic forces, as well as internal organizational forces, for their potential to enable or limit adoption of e-learning initiatives into the practice of teaching and learning in traditional universities, framed within a social field, is useful.

As this article focuses on identifying driving and restraining forces within the e-learning policy field of the academy, its scope does not encompass Lewin's full three-step model. Rather than invoking the full

model, attention is paid to the first step, *unfreezing*, because we do not yet know how the transition to e-learning in higher education will move or stabilize.

Critiques of Field Theory as a Framework for Organizational Change

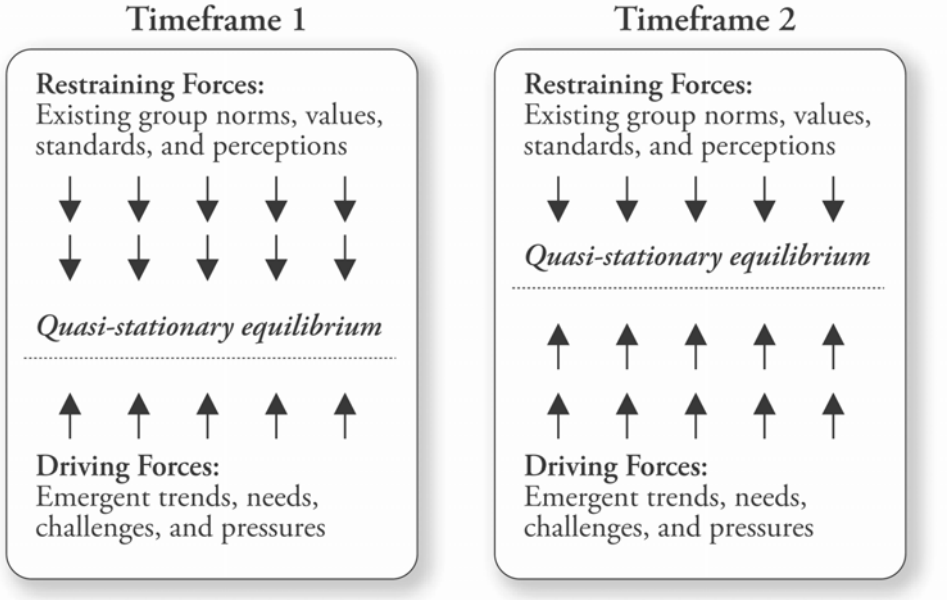
There are four predominant, contemporary critiques of the continuing usefulness Lewin's field theory as a framework for understanding organizational change. First, field theory has been criticized for its linearity, simplicity, and mechanistic approach (Dawson, 1994; Kanter, Stein, & Jick, 1992). Secondly, it has been argued that field theory can only support small-scale, incremental change, and therefore, is not appropriate in situations where broader-scale transformational change is needed (Dawson, 1994). Field theory has also been criticized for naively excluding issues of power and politics within organizations (Pfeffer, 1992). Finally, Lewin's work has been perceived to be a top-down approach to change management, thus lacking relevancy to the culture of contemporary organizations (Dawson, 1994; Kanter, et al., 1992).

Responses to Critiques of Field Theory

While Lewin's work has undergone significant critique in the past 20 years, recent re-analyses of field theory have countered many earlier criticisms. In particular, Burnes (2004) directly addresses the body of criticisms of field theory. In response to the linearity, simplicity, and mechanistic critiques, Burnes (2004) argues that these criticisms "appear to stem from a misreading of how Lewin perceived stability and change" (p. 992). Countering the critique of field theory as being limited to isolated and incremental applications, Burnes (2004) posits, "Over time, incremental change can lead to radical transformations" (p. 993). In contrast to the view that Lewin's lack of sensitivity to power and politics issues within organizations, Burnes states that this "seems a strange criticism. Anyone seriously addressing racism and religious intolerance, as Lewin was, could not ignore these issues (p. 994). Finally, Burnes notes that "gaining the commitment of all concerned" (p. 995) is a critical underpinning throughout Lewin's work. Therefore, perceptions that Lewin advocated a top-down approach are unfounded because Lewin's work consistently focused on how to identify the forces within and between groups who hold variant levels of power within and among organizations.

Burnes' position on the continuing value of field theory is supported by Elord and Tippett's (2002) meta-analysis of change models across a range of disciplines, which provides strong evidence that more contemporary models are extensions of Lewin's model of change than those that diverge from it. Field theory is based "on building understanding, generating

FIGURE 1
Change in Relative Strengths of Driving and Restraining Forces over Time



Note. Adapted from Lewin (1951, pp. 198-208).

learning, gaining new insights, and identifying and testing (and retesting) solutions" (Burnes, 2004, p. 997), and remains a relevant framework for understanding and managing change. As the adoption of e-learning is a potentially disruptive agent of change within the academy, field theory is a useful framework for understanding and managing this change.

Criteria for Evaluating the Feasibility of e-Learning Initiatives

This examination of the ecological setting of the academy focuses on e-learning initiatives for alignment and attunement with larger social and economic forces, as well as the existing institutional, organizational, cultural, economic, and pedagogical contexts. As in broader change initiatives, if the planning, design, and implementation of a strategic e-learning initiative is to be deemed worthwhile, it must have sufficient utility; it must "meet some need" and it must be operationally, fiscally, and politically viable (Guba & Lincoln, 1985, p. 227). Further as with other transitions, the broad-scale adoption of e-learning must be, and must be seen to be, as an efficacious adjustment to emergent circumstances, for which alternative responses would be insufficient (Ruttenbar, Spickler, & Lurie, 2000). Determining whether a broad-scale e-learning strategy is feasible within a particular academic setting, depends in part upon, gaining an understanding of the driving and restraining forces that influence leadership within the academy as a whole, as well as variant levels of support for adoption from within individual academic contexts.

A factor that may make broad-scale adoption of e-learning an efficacious adjustment to emergent circumstances, for which alternative responses would be insufficient, is significantly increased demand for the provision of online resources to support classroom-based learning, distance learning, and distributed learning models. The emergence of a global learning society is increasing these demands.

Learning a Living

In 1964, Marshall McLuhan predicted that the future of work would involve "learning a living"; information technology would "unite production, consumption, and learning in an inextricable process"; and the "process of automation that causes withdrawal of the present work force from industry" would "cause learning itself to become the principal kind of production and consumption" (pp. 350-51). Forty years later, there is a significant body of evidence that suggests McLuhan's prediction of the emergence of a global learning society has been realized and has become a catalyst forcing complex issues to the fore in higher education.

External Economic Forces

The *knowledge* economy is a powerful force in contemporary society (Nesbit, 2004; Alcaly, 2003; Norton, 2000; O'Driscoll, 2003). As increasing numbers of countries move towards knowledge-based economies, the importance of human capital—sharable knowledge, leadership capacity, and creativity of a human involved in economic activity—will continue to grow. In the foreseeable future, workers who create and use knowledge to add new value to products and services will be "a prominent and perhaps the dominant group in the workforce" (Alcaly, 2003, p. 9). Given the economic and social promise associated with success in higher education, demand for access is likely to continue to significantly increase over the next decades. Limitations on existing tertiary educational institutions' abilities to accommodate rising enrollments, increasing numbers of adult learners, as well as competing responsibilities in adult learners' lives, have all contributed to the demand for distance learning options.

While the new economy's reliance upon a well-educated workforce for survival and success suggests a strong role for the academy in the future, cultural and value differences may impede corporate-academic collaboration. Corporate demands for knowledge workers who continually renew their knowledge for the purpose of sustaining innovation—but do not necessarily seek formal credentials for that knowledge—and may not be attuned to traditional university culture and values. The norms of the traditional academy may not well serve the corporate agenda, and may not wish to do so.

Current structures and functions of the traditional academy may not reflect the "network enterprise" norm of the corporate world (Norton, 2000). Networked enterprises are described in terms of a triangulation of initiatives, each of which work toward the goal of achieving maximum flexibility as a strategy for dealing with complexity, ambiguity, and continual change. Implementing a networked system effectively involves an inter-related and complex set of changes to conventional business practices, which can only be accomplished "if managers and workers understand" that the changes do not constitute "a fixed way of doing things but, rather, a method, or philosophy of experimentation, of constantly testing existing procedures against proposed changes, of always searching for small ways to improve" (Alcaly, 2003, p. 148).

Coping with the ambiguities of work as an experimental arena where there are no fixed processes

or procedures will require an adaptable, informed, and innovative workforce, capable of high levels of effective interpersonal communication and collaboration. Members of this workforce will need to continuously renew their knowledge; and therefore, adopt learning as a life-long process. The resultant pressures on existing post-secondary educational institutions to provide continuing personalized education for adult learners via flexible, affordable, distributed learning options may become an increasingly strong driving force for change within the institutions themselves.

e-Learning as a Disruptive Technology?

In the new economy, even the most knowledgably staffed and effectively networked enterprises, as well as, one might argue, traditional universities, need to be aware of the possibility of the emergence of a "disruptive technology" (Norton, 2000, p. 129). A disruptive technology is defined as any technology capable of "overturning the established order" (Norton, p. 129). The "irony" of disruptive technologies is that "in the face of a disruptive technology, good management can contribute to [organizational] failure" (p. 130). The reason for failure is that disruptive technologies *do not* serve the needs of existing organizational structures, *do not* support existing business incentives, *do not* provide avenues to "increase profit margins on existing products," and *do not* meet the needs of an organization's "most-valued existing customers" (p. 130). Disruptive technologies gain advantage via newcomers' creations of "bare-bones product[s]," initially distributed to "the low end of the market" (p. 130). The newcomers "then improve the package over time while still charging a lower price. At some point the over-served established market will start to turn to the minimalist newcomer, and all bets are off for the leaders" (Christensen, p. xvii).

A parallel in higher education is plausible. To date, e-learning competition from the private sector may only indirectly influence faculty. Faculty responses to this new competition tend to lack a sense of urgency "due to [faculty] belief in the quality and rigor of their own programs" (Olcott & Schmidt, p. 269). However, leaders of traditional universities may wish to consider the extent to which e-learning is driving a "transformational market" within higher education (Olcott & Schmidt, p. 269). The educational sector cannot hope to escape the influence of the new economy, including its disruptive technologies; therefore, universities may need to consider how to adapt to this influence.

One way to approach adaptation is to study the complexities and convergences that mark the new economy to identify *crossover points*—points at which new economy forces will most likely and most immediately influence university activities. The convergence of research, higher education, and information technology (IT) in e-learning initiatives is an evident and immediate *crossover point*. Archer, Garrison, and Anderson (1999) argue that the emergence of e-learning as a potentially disruptive technology in higher education is already evident:

> Universities currently enjoy a dominant position in the postsecondary education "industry." However, this "industry" now seems to be entering a period of rapid technological change – the sort of period in which the leading firms in an industry may rather suddenly be eclipsed by new players. (p. 13)

The increase in the number and sources of electronic distance education "products" is an outgrowth of rapid technological change (Archer, Garrison, & Anderson, 1999, p. 14). Moreover, many new players, institutions that specialize in e-learning, such as the University of Phoenix and Athabasca University, have focused their attention on the least profitable "customers" in the educational sector (Archer, et al., p.18). "In the environment of public universities in Canada, it is easy to identify undergraduates as being among the university's 'least profitable customers'" because they do not contribute to the most "lucrative part of the 'market' addressed by traditional universities" (Archer, et al., p. 18).

As research is the currency of traditional universities, the predominant source of tenure and promotion for faculty, and as undergraduate students rarely contribute to this currency, emphasis on undergraduate teaching may be less valued. Further, within this potentially less valued group, "a few 'customers' have been a particularly "unprofitable market segment" (Archer, Garrison, & Anderson, 1999, p. 18). This particularly unprofitable group is made up of individuals, who for geographic, economic, or academic reasons, "cannot access a conventional university program" (Archer, et al., p.18). The educational aspirations of these individuals have created an opportunity for the emergence of distance education as a disruptive technology. As these individuals cannot not access traditional universities, they have little choice but to accept often simpler and sometimes, lower-quality educational "products." As long as distance education almost exclusively served this unprofitable market segment, within traditional universities it was marginalized in continuing education and extension divisions, and of little interest to the academy at large.

However, e-learning is blurring traditional boundaries, blending outreach and campus-based activities, introducing cost-recovery models, and

potentially becoming a disruptive technology, as well as a disruptive cultural influence—especially in institutions that have committed themselves to integrating entrepreneurial culture into the fabric of the university (Hanna, 2000). Integration of entrepreneurial culture into traditional college structures, is often perceived as commercialization and critiqued as evidence of an institutional lack of purpose and mission "beyond a vague commitment to 'excellence'" (Bok, 2003), and as a threat to "the quality and relevance of teaching, learning, and research" (Daniel & Mohan, 2004). Entrepreneurial continuing education and extension units may also be perceived as threats to existing discipline-based, instructor-centered, and classroom-oriented programming and "to traditional, content-based organization and decision making" (Hanna, 2000, p. 99).

A driving force behind an increasing emphasis on the development of an entrepreneurial culture within the academy has been accelerating competition among universities (Bok, 2003; Daniel & Mohan, 2004; Hanna, 2000). Increased competition has sparked concerted efforts within universities to acquire greater resources "because almost anything that a university does to try to lift its reputation costs money" (Bok, 2003, p. 14). While traditional universities have been focused securing funds for recruiting renowned professors and the most talented students in order to further their attempts to become first-rate research universities (Bok, 2003), newcomers in the arena of higher education have focused their efforts on providing access to higher education via e-learning.

For-profit or corporate universities, such as the University of Phoenix, Jones International, Capella University, among many others, have entered the post-secondary e-learning *market*, and have with variant levels of success, established themselves as significant players in both the undergraduate and graduate "sectors." For example, the University of Phoenix currently "enrolls over 70,000 students in degree programs" and has become the largest provider of online degrees in North America (DiPaolo, 2003, p. 6; See also Bates, 2000).

While the e-learning *market* remains highly volatile, the list of educational entrepreneurs has expanded both within and beyond the corporate model to include collaborations among traditional universities, corporations, publishers, associations, and both national and international governmental organizations, including the European Commission and the United Nations (DiPaolo, 2003, pp. 3, 11). Further, these initiatives are often very well funded. The European Commission adopted at "13.3 billion dollar plan" in April 2001 "to promote online university education" (DiPaolo, p. 3). Universitas 21, "an international network of universities," and Thompson Learning collectively invested 50 million dollars in their online learning alliance (DiPaolo, p. 4).

These newcomers often access traditional universities' more prominent faculty members, and pay these members very well, to refine and expand educational products and services. As a result, newcomers are becoming increasingly competitive in the graduate education market. For example, the University of Phoenix's most high profile and profitable offering is its "masters of business administration program" (Hanna, 2000, p. 144). *Strayer Online* is a for-profit venture in higher education that claims the position of being "the largest accredited adult-focused university in America, and a leading provider of online education" (Strayer University, 2005). *Stayer Online* delivers graduate degree programs through twelve campus sites (Hanna, p. 144).

Traditional universities have responded to the rise of educational competitors in a variety of ways. As well as entering into public-private collaborative ventures, they have also attempted with variant success to create for-profit spinouts. Duke Corporate Education, Babson Interactive, National University, and eCornell are, to date, operational; NYU Online, Fathom/Columbia, UMUC Online, and Virtual Temple are notable failures (see DiPaolo, 2003, p. 23). Given the level of risk, the apparently equal odds for success and failure of for-profit spin-offs, as well as alternative models for e-learning initiatives, strategic planning appears critical.

A strategic plan obviously needs to include a sound business plan, but a sound business plan may not be a sufficient guarantor of success. Understanding the potential for e-learning initiatives to create a significant disruption of existing "group goals, group standards, group values, and the way a group 'sees' its own situation and that of other groups" (Lewin, 1951, p. 198) within the social field of the academy may be an even more important consideration. Stated differently, "How do we move from a position where everyone has a different, fixed idea about the changing higher education landscape to a position in which the community as a whole can move forward with confidence" (Brown & Jackson, 2001, p. 13)?

External Social Forces

Five "powerful social forces," warrant consideration in change management strategies because they currently exert influence on a "variety of social, economic, governmental and legislative activities around the world" (Lincoln, 2001, para. 1). These forces pervasively influence the social fields of policy creation because:

> Taken together, postmodernism, the interpretive turn, identity politics, globalization and the post-

> colonial critique—even though each might be sensed or enacted differentially at any given time—form a powerful force for social change. They will… force changes in our relationships with other countries, with other cultures, and indeed, with the multiple and pluralistic subcultures inside our own country. (Lincoln, para. 4)

Lincoln posits that understanding these forces, as well as the changes to existing social policies and structures they affect, is a crucial aspect in evaluating how a proposed change "fits with those changes, contradicts the changes, resists changes, or is completely out of touch with them" because "if one proposed change exhibits great consonance with other, larger social forces, its chances of surviving, and possibly thriving, is enhanced" (Lincoln, 2001, para. 3). Given that the adoption of a large-scale e-learning initiative may have the potential to significantly impact existing university organizational cultures, structures, and functions, consideration of adopting such a policy warrants analysis of the academic social field to determine the relative strengths of consonant driving forces and contradictory restraining forces.

Postmodernism

Postmodernism influences the way complex problems, such as whether or how to embed an e-learning initiative into the core activity of the academy, are articulated, analyzed, and resolved. From a postmodernist perspective, "reflexivity, rather than reason, is the process that postmodern thinkers advocate for coming to a deeper sense of the kind of world we are personally constructing with our words" (Sackney & Mitchell, 2002, p. 890). A *deeper sense* of the issues involved in e-learning initiatives in traditional universities involves an analysis of potential impacts on existing academic culture, as well as their alignment with and attunement to emergent social, cultural, economic, educational, and organizational trends.

A further implication of post-modern thought is "that theory and practice [must be] inseparable, and 'useful theories [will be] those that have the potential to offer new alternatives to the present culture'" (Mitchell, Walker, & Sackney, 1996, p. 50). Given a need for an inclusive, stakeholder-sensitive approach, e-learning system policy options need to be explored in an action-oriented perspective. The result of this broadly based environmental scan of the sense that variant stakeholders make of potential e-learning policies must assume that the emergent effects of "uncertainty, instability, complexity, and indeterminacy" (Sackney & Mitchell, p. 900), may surface value pluralistic constructions that "are inextricably linked to…particular physical, psychological, social, and cultural contexts," which in turn, require a dynamic of "negotiation" (Guba & Lincoln, p. 8). The outcome of negotiation may be a consensus, a "shared construction" of how to respond to the situation (Guba & Lincoln, p. 9), or an explanation why a shared construction cannot be reached. A clear course of action may *not* emerge from this process; however, a deeper understanding of whether a strategic e-learning policy is operationally, fiscally, and politically viable may be reached.

The Interpretive Turn

Lincoln's (2001) second social force, "the interpretive turn," is an acknowledgement "that facts are only 'facts' within some theoretical framework, and that much of what passes for science is, in fact, some assertion within a theoretical discourse system" (The interpretive turn, para. 1). Within theoretical discourse systems:

> Social constructivism posits that two kinds of realities exist side by side, and operate within the same domain: the first reality resides in tangible objects, sites, and events, and is peopled by individuals and groups with specific social interests. The second reality is constituted in the minds of…stakeholders, and is driven by the sense-making and meaning-imputation activities of the human minds. (The interpretive turn, para. 1)

Under the lens of deconstruction, a critique of theoretical language that questions both the predominance of scientific theory and the sole privilege of scientists to define independent knowledge, "the trademark of a research university—independent production of scientific knowledge is obviously challenged" (Tjeldvoll, 1998, para. 3). Given that "in the wake of postmodernism and the critique of positivism, the earlier division of knowledge into distinct disciplines is no longer generally accepted" (Tjeldvoll, para. 3), the discipline-based organizational structures of the academy may not be well-aligned to meet the knowledge needs of a global learning society. Interdisciplinary-collaborative research, teaching, and learning initiatives, which are enabled by e-learning solutions, may be better aligned to global knowledge construction because these initiatives include multiple perspectives, broader access to current theory, and therefore, wider-ranging critiques.

Identity Politics

Sensitivity to "identity politics" (Lincoln, Identity politics, para. 2) seems to be a topic distinct from the one at hand. However, issues of identity and ethnicity

are deeply connected to issues involving information technologies because both are "social construct[s] that might evolve in one context and change in another" (Zurawski, para. 2). Therefore, it is important to "understand the relationship between cultural identity and information technologies and how the dynamic of the information age affects the collective identities of groups and their modes of self-organization" (Zurawski, para. 3). Acknowledging this dynamic provides a further rationale for taking "into account the social, cultural, educational and political interests of various stakeholding groups" (Lincoln, Identity politics, para. 2), who will be affected by the result of the decisions of policy-making groups.

Globalization and the Post-colonial Critique

Globalization, the actualization of trans-national corporations, money, currencies, and whole economies moving "at lightning speed over the Internet," as well as the accompanying effects of the post-colonial critique of the "'McDonaldization' of the non-Western world" (Lincoln, Globalization, para. 1; See also Barber, 2001) are both driving and restraining forces in the development of e-learning strategies. Access to international learners may be perceived as a desirable strategy for increasing enrollment revenues; therefore, e-learning initiatives can be aligned with globalization, and re-colonization. However, it is not necessary to perceive e-learning in this fashion. While e-learning policy makers need to be cognizant of the potential effects of exporting "Western forms of thinking," which may "impinge" (Lincoln, Globalization, para. 2) upon learners' lives in international contexts, it is possible to include opportunities for critique of Western ways of thinking and respect for international contexts, and as a result, promote East-West, North-South dialogue. Such considerations can include an ethic of awareness, a sensitivity to possible outcomes of influencing international students' perceptions of the "norms and codes…embedded in the traditions, laws, customs, arts, and literature" of their home societies (Zurawski, Ethnicity and communication technology, para. 3). Variant levels of faculty expertise in cross-cultural issues and awareness of post-colonial critiques regarding "negative impacts on indigenous universities" (Hanna, 2000, p. 343) may be restraining forces in the success of e-learning.

Potentially Restraining Forces Within the Academy

Restraining forces within the academy may include place-based policies that have not been revised sufficiently to remove obstacles to effective distributed learning practice. For example, academic leaders may need to reconsider existing residency requirements (DiPaolo, 2003; Olcott & Schmidt, 2004), imbalanced research and teaching reward systems (Archer, Garrison, & Anderson, 1999; Boyer, 1990), problematic intellectual property policies (DiPaolo, 2003; Hilton & Neal, 2001; Tallman, 2000), and insufficient levels of application of research-based distributed learning strategies (Bates, 2000). Inadequate levels learner-centeredness in instruction and in support services, or alternatively stated, meaningfulness to learners (DiPaolo, 2003; Hanna, 2000; Olcott & Schmidt, 2004; Thomas, Carswell, Price, & Petre, 1998; Thompson, 2000; Vinicini, 2001) can be especially inhibiting in distributed learning environments. Misaligned organizational structures and functions can slow the rate of adoption of e-learning options by creating unnecessary disciplinary barriers in development projects (Tjeldvoll, 1998).

Significant concerns about financial risk may restrain efforts to develop and implement institutional e-learning systems. The notable failures (DiPaolo, 2003, p. 23) among those universities where scalable e-learning systems have been attempted are cause for caution. However, strategically drafting e-learning system policies, as crucial components of long-term planning initiatives, at a time when convergent driving forces for flexible, accessible, distributed learning opportunities are rapidly increasing is necessary.

A Proposed e-Learning Policy Field

In order to determine if or to what extent restraining and driving forces may influence the adoption of e-learning within the academy, a force field policy model is posited. Eight potentially restraining forces within the e-learning system policy field are presented. Financial risk, pervasive fiscal challenges, existing residency requirements, imbalanced research and teaching reward systems, problematic intellectual property policies, inadequate levels of application of research-based distributed learning strategies, and potentially misaligned organizational structures and functions may each act as powerful restraining forces in the adoption of scalable and sustainable e-learning solutions.

Lincoln's (2001) five social forces may influence the direction of change within the academy, as the institution adapts to the changing social context of contemporary society. While the identity politics and the post-modern critique have the potential to become restraining forces, influences of postmodernism, the interpretive turn, and globalization may act as driving forces.

Comparably, the new economy, and its significant impact on the everyday lives and needs of academy graduates to constantly update their knowledge and skills, may initiate and sustain change that drives e-

FIGURE 2
A Proposed e-Learning Policy Field for the Academy

learning adoption (Alclay, 2003; Barone, 2003; Ghosh, 2004; Norton, 2000). Technological innovation (Alclay, 2003; Bates, 2000; Barone, 2003; Norton, 2000), disruptive technologies (Archer, Garrrison, & Anderson, 1999), enrollment and reputation competitions among traditional institutions of higher education (Bok, 2003; Hanna, 2000), the entrance of for-profit, corporate competitors (Bates, 2000; Hanna, 2000), and heightened competition in both the academic and corporate research sectors (Bok, 2003; Tjeldvoll, 1998) may drive increased use of e-learning as conduits to competitiveness. In addition, the need to form inter-institutional research and teaching alliances and collaborations in order to achieve efficiencies (MacKay, 1996), and the need to address the international trend to establish service university models in response to pervasive fiscal challenges (Tjeldvoll, 1998) may drive the e-learning agenda.

E-learning solutions can provide distributed learning opportunities to broaden life-long access to higher education (Bates, 2000; Hartman & Truman-Davis, 2001). As life-long learners need to balance commitments to learning, work, and family (Bates, 2000; Hanna, 2000; Palloff & Pratt, 1999), access to distributed learning options may be the most pragmatic solution to meeting their learning needs.

Emergent needs within the academy, including solutions to knowledge management and resource-sharing challenges (Daniel & Mohan, 2004; Hanley, 2001), the requirement for cross-functional, team-based work to construct cost-efficient, effective learning resources (Bates, 2000; Hanley, 2001; Hartman & Truman-Davis, 2001), and the trends toward inter-departmental and inter-divisional collaboration to extend learning opportunities across disciplinary boundaries (Hanna, 2000a; MacKay,1996; Tjeldvoll, 1998) suggest that attention be paid to current organizational structures.

The need for technological standardization and stabilization to ensure quality, interoperability, and dependability of educational resources (Bates, 2000; Daniel & Mohan, 2004; Hartman & Truman-Davis, 2001), the necessity for process clarification to avoid duplication of efforts (Bates, 2000; Hartman & Truman-Davis, 2001), as well as a response to increasing student demands for flexible, adaptable, and customizable instruction and programs to meet individual needs (Daniel & Mohan, 2004; DiPaolo, 2003; McCalla, 2004), each require strategic institutional e-learning policies.

Figure 2 theorizes an e-learning policy field that addresses questions directed to external and internal driving and restraining forces for e-learning adoption within the academy.

Conclusion

Potential driving and restraining forces, which may significantly influence the broad-scale adoption of e-learning as a core function in traditional academies, have been discussed in this article. The ratio of driving to restraining forces in the *Figure 2* may appear to predict the adoption of e-learning as a core function across academies over time. However, the relative strengths of driving and restraining forces remain context-specific and time-sensitive. Furthermore, existing and emergent forces, which are not identified in this field analysis, may be particularly formidable in some contexts. Analysis of the context of an individual institution may benefit from the application or adaptation of the posited policy field, but the outcomes of such an analysis at any given time are not predictable.

References

Alcaly, R. E. (2003). *The new economy: What it is, how it happened, and why it is likely to last*. New York: Farrar, Stratus, & Giroux.

Archer, W., Garrison, D.R., & Anderson, T.D. (1999). Adopting disruptive technologies in traditional universities: Continuing education as an incubator for innovation. *Canadian Journal of University Continuing Education, 25*(1), 13-44.

Barber, B.R. (2001). *Jihad vs. McWorld*. New York: Ballentine.

Barone, C.A. (2003). The changing landscape and the new academy. *Educause Review, 38*(5), 40-47.

Bates, A. W. (2000). *Managing technological change: Strategies for college and university leaders*. San Francisco, CA: Jossey-Bass.

Bok, D. (2003). *Universities in the marketplace: The commercialization of higher education*. Princeton, NJ: Princeton University Press.

Boyer, E. L. (1990). *Scholarship reconsidered: Priorities of the professoriate*. Princeton, NJ: The Carnegie Foundation for the Advancement of Teaching.

Brown, D.G., & Jackson, S. (2001). Creating a context for consensus. In C. Barone & P. Hagner (Vol. Eds.), *Educause leadership strategies: Vol.5. Technology-enhanced teaching and learning: Leading and supporting transformation on your campus* (pp. 35-54). San Francisco, CA: Jossey Bass.

Burnes, B. (2004). Kurt Lewin and the planned approach to change: A re-appraisal. *Journal of Management Studies, 41*(6), 977-1002.

Christensen, C.M. (1997). *The innovator's dilemma: When new technologies cause great firms to fail*. Boston: Harvard Business School Press.

Daniel, B. K., & Mohan, P. (2004). Re-engineering the public university with reusable learning objects approach. *Proceedings of the International Conference on Education and Information Systems: Technologies and Applications*, Orlando, FL, July 21-25.

Dawson, P. (1994). *Organizational Change: A Processual Approach*. London: Paul Chapman Publishing.

DiPaolo, A. (2003). Choices and challenges: Lessons learned in the evolution of online education. *Presentation to the Association of Pacific Rim Universities' 2003 Distance Learning and the Internet conference*, Singapore, Nov. 30-Dec. 2. Retrieved April 21, 2006, from the National University of Singapore's Web site: http://www.cit.nus.edu.sg/dli2003/Presentation/Andy_DiPaolo.pdf.

Elrod, P. D. II, & Tippett, D. D. (2002). The "Death Valley" of change. *Journal of Organizational Change Management, 15*(3), 273-91. Retrieved October 24, 2005, from Emerald Full Text.

Ghosh, A. (2004). Learning in strategic alliances: A Vygotskian perspective [Electronic version]. *The Learning Organization: An International Journal, 11*(5), 302-311. Retrieved July 25, 2005, from Emerald Full Text.

Guba, E.G., & Lincoln, Y.S. (1985). *Naturalistic inquiry*. Beverly Hills, CA, Sage.

Hanley, G. L. (2001). Designing and delivering instructional technology: A team approach. In C. Barone & P. Hagner (Vol. Eds.), *Educause leadership strategies: Vol.5. Technology-enhanced teaching and learning: Leading and supporting transformation on your campus* (pp. 57-64). San Francisco, CA: Jossey Bass.

Hanna, D.E. (2000). Emerging organizational models: The extended traditional university. In D. Hanna & Associates (Eds.), *Higher education in an era of digital competition: Choices and challenges* (pp. 93-116). Madison, WI: Atwood.

Hanna, D.E. (2000a). Emerging approaches to learning in collegiate classrooms. In D. Hanna & Associates (Eds.), *Higher education in an era of digital competition: Choices and challenges* (pp. 45-65). Madison, WI: Atwood.

Hartman, J. L., & Truman-Davis, B. (2001). The holy grail: Developing scalable and sustainable support solutions. In C. Barone & P. Hagner (Vol. Eds.), *Educause leadership strategies: Vol.5. Technology-enhanced teaching and learning: Leading and supporting transformation on your campus* (pp. 45-56). San Francisco, CA: Jossey Bass.

Hilton, J. L., & Neal, J. G. (2001). Responding to intellectual property and legal issues. In C. Barone & P. Hagner (Vol. Eds.), *Educause leadership strategies: Vol.5. Technology-enhanced teaching and learning: Leading and supporting transformation on your campus* (pp. 65-78). San Francisco, CA: Jossey Bass.

Kanter, R. M., Stein, B. A. and Jick, T. D. (1992). *The Challenge of Organizational Change*. New York: Free Press.

Lewin, K. (1947). Frontiers in group dynamics. In D. Cartwright (Ed.), *Field Theory in Social Science*. London: Social Science Paperbacks.

Lewin, K. (1951). *Field theory in social science: Selected theoretical papers* (D. Cartwright, Ed.). New York: Harper & Brothers.

Lincoln, Y.S. (2001). The fourth generation view of evaluation: The future for evaluation in a new millennium. *Keynote address at the 2001 Arizona Evaluation Network's Spring Conference*. Retrieved December February 20, 2006, from http://aspin.asu.edu/azenet/fall01.html#yvonna

MacKay, H. H. (1996). *The MacKay report on universities*. Retrieved April 21, 2006, from http://www.sasked.gov.sk.ca/branches/university_services/mackay/mackay05.html.

McCalla, G. (2004). The ecological approach to the design of e-learning environments: Purpose-based capture and use of information about learners [Electronic version]. *Journal of Interactive Media in Education,* (7). Retrieved April 21, 2006, from www-jime.open.ac.uk/2004/7.

McLuhan, M. (1964). *Understanding media: The extensions of man* (2nd ed.). Toronto: The New American Library of Canada.

Mitchell, C., Walker, K., & Sackney, L. (1996). The postmodern implications for school organizations and educational leadership. *Journal of Educational Administration and Foundations, 11*(1), 38-67.

Nesbit, T. (2004). [Review of the book Universities in the marketplace: The commercialization of higher education]. *Canadian Journal of University Continuing Education, 30*(1), pp. 104-106.

Norton, R.D. (2000). *Creating the new economy: The entrepreneur and the U.S. resurgence*. Northampton, MA: Edward Elgar.

O'Driscoll, T. (2003). Proposing an optimal learning architecture for the digital enterprise. *Educational Technology, 43*(1), pp. 12-18.

Olcott, D., & Schmidt, K. (2000). Redefining faculty policies and practices for the knowledge age. In D. Hanna, (Ed.) & Associates, *Higher education*

in an era of digital competition (pp. 258-286). Madison, WI: Atwood.

Palloff, R. M., & Pratt, K. (1999). *Building learning communities in cyberspace: Effective strategies for the online classroom* (1st ed.). San Francisco, CA: Jossey-Bass.

Pfeffer, J. (1981). *Power in Organizations*. Cambridge, MA: Pitman.

Ruttenbar, B.W., Spickler, G.C. & Lurie, S. (2000). *Elearning: The engine of the knowledge economy*. Retrieved April 10, 2006, from the Morgan Keegan Web site: http://www.internettime.com/itimegroup/morgankeegan.pdf.

Sackney, L., & Mitchell, C. (2002). Postmodern expressions of educational leadership. In K. Leithwood & P. Hallinger (Eds.), *Second international handbook of educational leadership and administration* (Vol. 2) (pp. 881-913). Boston, MA: Kluwer Academic Publishers.

Strayer University. (2005). *We fit your life.* Retrieved from the Strayer University Website, April 10, 2006 from http://online.strayer.edu/.

Tallman, J. (2000). Who owns knowledge in a networked world? In D. Hanna & Associates (Eds.), *Higher education in an era of digital competition: Choices and challenges* (pp. 185-218). Madison, WI: Atwood.

Tjeldvoll, A. (1998). The idea of the service university [Electronic version]. *International Higher Education.* Retrieved April 8, 2006, from the Boston College Web site: http://www.bc.edu/bc_org/avp/soe/cihe/newsletter/News13/text4.html.

Vinicini, P. (2001). The use of participatory design methods in a learner-centered design process. *ITFORUM 54*. April 8, 2006, from http://it.coe.uga.edu/itforum/paper54/paper54.html.

Zurawski, N. (1996). Ethnicity and the Internet in a global society. Paper presented at the *1996 Internet Society of Canada conference*, Montreal, June 44-28. Retrieved April 8, 2006, from http://www.isoc.org/inet96/proceedings/e8/e8_1.htm.

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Peer TA Mentoring in a Foreign Language Program

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This paper describes a peer-mentoring program in a large language department. Experienced Teaching Associates (TAs) served as peer mentors to novice TAs, providing the type of individualized guidance that new TAs need. The peer mentoring model has several advantages over the supervision-only model, including one-on-one help, multiple classroom visits and meetings, and regular feedback on various aspects of teaching. The experience that TAs share at different levels, as teachers and as students, is also important and plays a positive role in a peer mentoring program. Even though the program described has been instituted in a language department, the model may be useful to departments in other disciplines that also employ a large number of TAs.

Mentoring programs have existed for over four decades at American colleges and universities (Anderson & Shannon, 1995; Barr Ebest, 2002; Siskin and Davis, 2001). The model for mentoring has also existed in international settings such as Brazil and Mexico, where this type of model meets the needs of trainees and new teachers who do not have access to formal training. In academia there are two patterns of mentoring based on hierarchy: faculty mentoring (senior faculty-junior faculty or faculty-teaching associate) and peer mentoring (student-student, faculty-faculty, teaching associate–teaching associate).

Several studies describe mentoring of teaching associates (TAs) by other TAs. Nyquist and Sprague (1998) report on a study by Darling (1986), whose findings included the fact that new TAs resorted to experienced TAs for information regarding not only their program of study but also teaching assignments and other teaching procedures. Nyquist and Sprague (1998) consider that "this reliance on peers as the ultimate authority on teaching can create difficulties" (p. 66). However, in spite of possible problems, we believe that supervisors can take advantage of the trust that exists among TAs. Since they already exchange ideas about teaching, the next natural step seems to be the formalization of this exchange: a peer mentoring program that allows TAs who have experience and who have been positively evaluated to mentor new TAs.

Writing programs such as those described in Martin and Paine (2002) and Weiser (2002) have successfully taken advantage of peer mentors. In Martin and Paine's (2002) writing program, experienced TAs were first invited to mentor new TAs. Later, both novice TAs and adjuncts were assigned to work with mentors. In their investigation they found that although TAs do not mentor tenure-track faculty, senior TAs do include tenure-track faculty in collaborative grading groups.

Weiser (2002) reports on the ambivalence he has faced regarding the use of TA mentors, but offers several good reasons to have peer mentors in a teaching environment. One reason is related to knowledge of the discipline. Weiser reports that some faculty were not as familiar with scholarship in rhetoric and composition as many of their graduate students. In the department described here, as in many other large foreign language departments, tenure-track faculty are not directly involved with language teaching—and thus are not readily available to provide guidance regarding teaching.

Barr Ebest (2002) also reports on writing programs that have successfully used experienced TAs to mentor new TAs. At the University of Massachusetts Amherst and at the University of Arizona, for example, a group of new TAs is assigned a peer mentor that will meet individually and in groups throughout the year. The mentor observes the new TA in the classroom, holds post-observation conferences, analyzes syllabi, assignment sheets and handouts, and reviews graded papers. At Northern Arizona University mentoring is a privilege granted to only a few TAs who are chosen on the basis of their pedagogical skills as well as their openness and their ability to listen.

In this paper, we report on our experience with a collaborative peer mentoring program in the Department of Spanish and Portuguese at The Ohio State University. The pilot program was established to address some of the problems that arose from staffing over 100 classes in multi-section language courses with instructors who lacked a foundation in foreign language pedagogy. The initiative of the supervisors grew into a collaborative effort with the TAs involved in the project, as well as staff from the Faculty & Teaching Assistant Development office (FTAD). In this paper, we also propose revisions for the future of the program. The peer mentoring model may be useful to departments in disciplines other than foreign language which also employ a large number of TAs.

What Is a Mentor?

According to The Mentoring Group (2004), the broad definition of mentor is "an experienced person who goes out of his/her way to help a mentee set important life goals and develop the skills to reach them" (¶ 2). In the specific context of teacher/TA formation, mentoring has been described in various ways. Anderson (1987, cited in Anderson and Shannon, 1995) defines mentoring as "a nurturing process" in which the mentor not only teaches and encourages the new teacher, but also befriends the new teacher, thus developing a "caring relationship" (Anderson & Shannon, 1995, p. 29). In an attempt to arrive at a definition of mentoring, Shaw (1995) mentions several variations of the term, including "coaching, peer teaching, guidance and counseling" (p. 260). Jacques (1995) believes that considering a mentor as an experienced adviser who guides his or her protégé is better than regarding the mentor as a supervisor. In our view, those two positions—mentor and supervisor—are indeed very different. In the next subsection, we outline the differences between the two positions.

Mentor and Supervisor: Two Distinct Concepts

Maynard and Furlong (1995) point out that the concepts of mentor and supervisor are distinct and argue that we need to move from supervision to mentoring. They indicate that mentoring is an active process because teachers "have an active role in the training process" (p. 12). While the two concepts are indeed different, we believe that supervisors do play an integral role in training by observing classes and offering feedback, providing orientation workshops, and sponsoring professional development opportunities. Nevertheless, supervisors offer guidance in groups while mentors interact one-on-one. Furthermore, supervisors evaluate new teachers, whereas mentors develop a plan of action with mentees according to individual needs.

According to Maynard and Furlong (1995), supervision is supposed to look at "the application of training acquired elsewhere" (p. 11). However, the difference that we see between mentoring and supervision is not related to where the training is acquired, since the TAs in the Department of Spanish and Portuguese at OSU all received the same orientation prior to starting their teaching duties at the university. We view this distinction as a reflection of how much time a mentor spends with a mentee and the type of support, practical help, feedback, or encouragement offered, since mentors have the opportunity to observe their mentee's performance multiple times during the academic year.

In a language program that is staffed by over 80 instructors with two supervisors, it is difficult, if not impossible, to devote 160 hours (equivalent to four weeks) exclusively to the one-on-one guidance that new TAs need in the beginning of their careers. The duties of a supervisor typically include, but are not limited to, coordination of multiple course levels, preparation of the teaching schedule, articulation with other university offices, supervision of student services, resolution of student or instructor conflicts, placement of students in appropriate levels, participation in committee work, and teaching at least one graduate course per year. With this job description, a more creative approach must be sought in order to maximize the teaching experience for new instructors.

A possible solution to the supervisory issue is the mentoring/consulting model. The models of consultation described in Brinko (1997), for example, create mentoring relationships that are comparable to instructional consultation. The distinction between supervision and mentoring is even more pronounced when the mentor is also a peer. While the supervisor ranks above the TA, the peer mentor is a colleague who has gone through the same process before, not that long ago. Peer mentors, therefore, are perceived very differently than supervisors. That difference in perception works to the advantage of the peer mentoring process and helps new TAs develop their teaching skills.

Nyquist and Wulff (1996) approach mentoring as a relationship between peers. However, their view differs from ours in a fundamental aspect: for Nyquist and Wulff, the mentoring relationship can only develop *after* TAs have acquired some experience, implying that mentoring takes place between faculty and TA, and that an experienced TA can be considered a peer to a faculty member. In this paper, we adopt one of the definitions of mentor provided in Shaw (1995): someone "experienced but not very senior…someone committed to good teaching and professional development" (p. 260). This description captures the essence of the relationship between peer mentor and mentee, who share the same general rank but are not separated by many years of seniority. The key word in Shaw's definition is *experienced*, which does not have to equal many years in the profession, nor does it necessarily entail a hierarchical relationship.

Learning to Teach and Juggling Roles

It is common for new TAs in foreign language departments to go through an initial orientation period or course that ranges from a few days to a few weeks before the beginning of the academic year. In addition to that orientation course, many foreign language

departments offer a methodology course (Rifkin, 2001). This type of course often provides some theory behind the preferred pedagogical approaches in the field. It may also offer some practical tips for the classroom, including materials and lesson plans that may be adapted to each teaching/learning context.

The orientation and the methodology courses aim at preparing new TAs for situations that they will encounter in the classroom. However, learning to teach is a "complex, bewildering and sometimes painful task" (Maynard & Furlong, 1995, p. 10). The development of teaching skills does not generally happen overnight—or over one week. Therefore, it is necessary to offer new teachers continued support, not only in a theoretical course, but also in more practical, 'hands-on' ways that will be useful in the classroom. This type of practical support can be accomplished with a peer mentoring program that complements other initiatives, such as workshops and seminars that address teaching issues.

Many universities have general training programs for all national and international students (Rifkin, 2001). In spite of the fact that TAs have attended these general orientation programs, complications arise as they begin to manage their busy schedule and to juggle their obligations as students, teachers, and scholars. In American colleges and universities, it is not uncommon for TAs to find themselves in the middle of conflicting messages: on one hand, supervisors stress the importance of improving teaching skills; on the other hand, professors underscore the value of scholarship and downplay the responsibilities and the skills associated with teaching lower-level classes (Barr Ebest, 2000). Caught between these conflicting forces, new TAs find themselves at a loss. Chaput (2001) captures the essence of this problem faced by TAs when she states that "language teaching continues to be viewed as the problem child of language departments" (p. 191). The tension between the 'two sides of the camp' is also raised by Tesser (2005), who reports on a time not too long ago (or has that time really passed?) when professionals did not communicate: those who attended the Modern Language Association conference, dedicated mostly to literature and literary theory, did not want to hear what those who attended the conference for the American Council on the Teaching of Foreign Languages had to say, and vice-versa. According to Tesser, the two sides must exchange ideas for the sake of healthy enrollments in foreign language departments across the country; after all, students who learn language and culture in elementary/secondary school and in college will become the literature and linguistics majors that the professors are hired to teach. Peer mentors also play an important role in alleviating the tension that exists between language teaching and literary or linguistic research. They show new TAs how to strike a necessary balance between teaching and scholarship. As students who are also teachers, peer mentors have been able to find time and energy to dedicate to both activities. They have realized that demonstration of good to excellent skills, both as a researcher and as a teacher, increases their chances of success in a very competitive market. As pointed out by Leaver and Oxford (2001), teachers who also attend school, the very definition of a TA, need to be reassured that the experience they are acquiring is in fact worth their time and effort. This reassurance comes from the job market: a good teacher who is also a strong scholar is more competitive than a scholar who does not do well in the classroom.

The next section outlines the TA support offered before the beginning of the peer mentoring program. It is important to note that this support has been a key component in the training program in the Department of Spanish and Portuguese at OSU.

TA Support before Peer Mentoring

Before the creation of a peer mentoring program in the Department of Spanish and Portuguese at OSU, TAs already received support through a three-week training session offered prior to the beginning of the academic year. This training included practice sessions and lesson preparation, as well as lectures on language pedagogy and presentations by other offices in the university. Furthermore, TAs also had the opportunity to participate in professional development workshops during the academic year that addressed issues ranging from teaching reading to using online learning platforms. In addition, every TA enrolled in the mandatory teaching methodology course during their first autumn term.

Before peer mentoring, several experienced TAs were assigned to observe classes taught by new TAs in the fall, thus helping identify issues that needed immediate attention. These senior TAs, selected because of their excellence in teaching, were volunteers and did not receive specific training to observe classes, other than their own experience of participating in the orientation workshop and being observed as well.

Given this less than ideal situation, the supervisors proposed the development of a peer observation and mentoring program that would formalize the support provided by more experienced TAs and strengthen the volunteer program. The original proposal called for two experienced TAs to enhance the support provided for new TAs. Funding from the Faculty & Teaching Assistant Development office, matched by funds from the department, made it possible to start the program, which would then continue in following years with departmental financial support. The next section outlines the Peer Mentoring Program.

Peer Mentoring Program and Participants

As mentioned previously, our original proposal called for two experienced TAs to take part in the new program. Upon receiving the notice that we were awarded the grant, an e-mail message was sent to all the experienced TAs in the department to determine interest in helping the new TAs during the following academic year. In that message, there was no information about the grant; that is, the TAs did not know that they would receive financial compensation. Much to our surprise, the response was greater than expected. Six experienced TAs volunteered to enhance TA support. With that response, we decided to include in the program all those who volunteered. Before the program started, we held our first meeting with the participants and informed them that they would receive financial support. We discussed general guidelines and established a timeline for future meetings. Participants were also given several articles on mentoring foreign language TAs. The program participants would take part in the orientation workshop before the beginning of autumn term in order to meet the new TAs and familiarize themselves with the type of feedback that is provided during the practice teaching sessions. At the beginning of the term, the peer mentors would be assigned new TAs with whom they would work during the term. Each term there would be three to four peer mentors participating in the program. Peer mentors would be "on duty" two out of four terms per academic year. No peer mentors would be on duty during summer term. Each of the peer mentors would dedicate a total of 60 hours to the Peer Mentoring Program during the academic year (30 hours/term). These hours would cover the activities shown in Table 1.

TABLE 1
Hours Spent by Each Peer Mentor (per Term on Duty)

Activity	Hours
Orientation workshop	4 h
Three supervisory meetings	3 h
Observations (6 visits+ 6 follow-ups)	12 h
Mentoring	11 h
Total	30 h

Before the beginning of autumn term, each peer mentor participated in two practice sessions during the orientation workshop, attending vocabulary and grammar practice lessons. These four hours were applied to observations, mentoring, or meetings during the second term of participation in the program. Three meetings with the program supervisors were scheduled for each term. Twelve hours were dedicated to six observations and six follow-up meetings with the new TA. The remaining eleven hours were dedicated to helping new TAs with pre-observation consultations, lesson planning, suggestions for activities, class management, and other possible issues related to teaching or academic life. With this program, the peer mentors observe and work with new TAs from the very beginning of the training workshop. The new TAs seek assistance and guidance from the peer mentors regarding not only teaching but also other aspects of graduate student life, such as how to balance responsibilities as a teacher and as a student. The supervisors observe classes taught by new TAs only at about the middle of the term, after the peer mentors had the opportunity to work with the new TAs. The supervisors then point out to the new TAs any aspects in their teaching that still deserves attention, and encourage the new TAs to keep working with the peer mentors.

Revisions to the Program

Several revisions were done to the program during that first academic year. During the first year of the program, peer mentors communicated among themselves more often than they did with the supervisors. That was a natural result of the environment. Since mentors share offices, they interact frequently. At the end of the first term, the supervisors decided to take advantage of that frequent contact, and asked one of the peer mentors to coordinate weekly meetings with the other peer mentors. The outcomes of those meetings were then reported to the supervisors and adjustments to the program were made accordingly.

Another point targeted for revision was the participation of the peer mentors in the orientation workshop offered before the beginning of autumn term. The peer mentors now take active part in the workshop from the very beginning. They are introduced on the first day and immediately begin to work with the new TAs, helping them prepare practice lessons. Later in the workshop, peer mentors observe the new TAs as they teach practice lessons. Peer mentors also help the new TAs prepare their lesson plans for the classes they are assigned to teach.

Peer mentors were also given a handbook at the beginning of the workshop that included copies of articles on mentoring, observation forms, a time sheet to track program activities, mentoring guidelines, a copy of the departmental directory, the term schedule, and a copy of the original grant proposal. The training in the beginning of the academic year followed what is mentioned in Shaw (1995)—that mentors needed to "attend a specific course of training" (p. 260) so they would know what to observe in a class and how to conduct post-observation meetings. The supervisory meetings were geared toward providing continued support to peer mentors (Weiser, 2002).

This closer and more active participation in the orientation workshop stems from the need to make the role of the peer mentors clear from the outset in order to avoid incorrect assumptions about the program. In the first year, peer mentors were briefly introduced to the new TAs but no detailed explanation was given as to what their exact role was and why they should work with the new TAs. This may have led to misunderstanding the role of peer mentors: during the first year, some of the new TAs appeared to perceive peer mentors as "spies" who would report all errors related to teaching or classroom management to the supervisors. Although that image seemed to have dissipated toward the end of the first year, it is best to avoid it altogether. The role of peer mentors is to help new TAs succeed, not only as instructors, but also as students. The early and close participation in the orientation workshop makes it clear to the new TAs that the peer mentors are an integral part of the program and are there to help and work with them.

One interesting observation expressed by the peer mentors was the notion that some of the mentors had been placed into the role of "physician" administering aspirins and first aid at the last minute as novice TAs rushed to class without lesson plans. The solution was to assign each peer mentor to a specific course level. These peer mentors would then meet on a regular basis with their assigned new TAs to discuss lesson planning, exam correction, and so forth.

Another lesson learned from the pilot program was that the peer mentors needed a physical space where they could meet with the new TAs—a space that was separated from the other TAs. An office was designated as the Peer Mentoring Center. It is equipped with textbooks, dictionaries, and pedagogical resource materials, as well as a TV/VCR and DVD player to view and critique lessons of the new TAs. The videotaped lessons are an excellent tool for post observation meetings, a starting point for self-evaluation by the new TAs and for suggestions offered by the mentor.

Many of the lessons learned during the pilot program are outlined in the revised guidelines for peer mentors (see Appendix A). Among those, we highlight the detailed "Role of the Peer Mentor" section, which specifies what is and what is not expected of a peer mentor. This section includes suggestions on how to conduct observations and evaluation meetings. A folder has been created on the university server that includes "FAQs" with problems and solutions. A peer mentoring group e-mail account was also created, allowing all peer mentors to receive and respond to TA queries more quickly.

Concluding Remarks

The peer TA mentoring program was well received. In its second year, the program continued with three new peer mentors who came from the ranks of new TAs during the first year of the program. Among the reasons they mentioned for wanting to continue participating in the program as peer mentors were their positive experiences, echoed in comments from other new TAs during the first year of the program:

- "I loved the peer mentoring program! I enjoyed visiting the peer mentors. I used my peer mentor's feedback when she visited me and it was a reassurance that I was on the right path."
- "The activities they supplied last quarter were very helpful and you could tell that they were willing to help you."
- "As a new member of the department, it was great to know that there was someone always there for us. All of them were always ready to answer any questions we had."
- "Another positive aspect of the peer mentoring program was having them observe our classes. It gave us a chance to review our lessons plans with someone experienced. Personally, I got many new ideas that I quickly incorporated to my classes."
- "I think it is a fantastic program that should be provided to any new teacher."

Another sign of success arises from the evaluations of new TAs, many of whom finished the year with stellar comments from supervisors and students. The peer mentors have also profited from the experience. They have reportedly learned quite a bit from the new TAs while becoming, at the same time, more critical of their own teaching. This type of self-reflection is mentioned by Barr Ebest (2002, p. 217), who argues that mentoring gives TAs the opportunity to reflect on their own teaching. Shaw (1995, p. 262) reports that an Oxfordshire head teacher mentions that "in terms of professional development, [mentoring is] the best thing that has happened to [the mentors]." Shaw goes on to argue that mentors feel that they are identified as good practitioners who share good practice. Weiser (2002) also sees professional benefits to the career of mentors, from finding out that not every technique works the same for everyone to contributing insights that have been useful not only to other TAs but to faculty members as well.

In the Department of Spanish and Portuguese at OSU, new and veteran TAs have received help regarding pedagogical methods and approaches, while being encouraged to develop their own teaching style. This enhanced mentoring program has allowed the supervisors to follow the classes taught by new TAs more closely, thus offering them the type of guidance that, many times, they would not have been able to provide. In that respect, the Peer Mentoring Program becomes essential in a department that emphasizes teaching, guidance and support for new TAs.

References

Anderson, E. M. (1987). *Definitions of mentoring*. Unpublished manuscript.

Anderson, E. M., & Shannon, A. L. (1995). Toward a conceptualization of mentoring. In T. Kerry and A. S. Mayes (Eds.), *Issues in mentoring* (pp. 25-34). NY: Routledge.

Barr Ebest, S. (2002). Mentoring: Past, present and future. In B. P. Pytlik and S. Liggett (Eds.), *Preparing college teachers of Writing: History, theories, programs, practices* (pp. 211-221). Oxford: Oxford University Press.

Brinko, K. T. (1997). The interactions of teaching improvement. In K. T. Brinko and R. J. Menges (Eds.), *Practically speaking: A sourcebook for instructional consultants in higher education* (pp. 3-8.). Stillwater, OK: New Forums Press.

Chaput, P. R. (2001). Language teaching: Raising expectations for instructor preparation. In B. Rifkin (Ed.), *Mentoring foreign language teaching assistants, lecturers, and adjunct faculty* (pp. 191-222). Boston: Heinle & Heinle.

Darling, A. L. (1986). *On becoming a graduate student: An examination of communication in the socialized process.* Paper presented at the annual meeting of the Speech Communication Association, Chicago.

Jacques, K. (1995). Mentoring in initial teacher education. In T. Kerry and A. S. Mayes (Eds), *Issues in mentoring* (pp. 111-119). NY: Routledge.

Leaver, B. L., & Oxford, R. (2001). Mentoring in style: Using style information to enhance mentoring of foreign language teachers. In B. Rifkin (Ed.), *Mentoring foreign language teaching assistants, lecturers, and adjunct faculty* (pp. 55-88). Boston: Heinle & Heinle.

Martin, W., & Paine, C. (2002). Mentors, models, and agents of change: Veteran TAs preparing teachers of Writing. In B. P. Pytlik and S. Liggett (Eds.), *Preparing college teachers of Writing: History, theories, programs, practices* (pp. 222-232). Oxford: Oxford University Press.

Maynard, T. and Furlong, J. (1995). Learning to teach and models of mentoring. In T. Kerry and A. S. Mayes (Eds.), *Issues in mentoring* (pp. 10-24). NY: Routledge.

Mentoring Group, The (2004). FAQs. Retrieved January 10, 2006, from http://www.mentoringgroup.com/html/faqs.html.

Nyquist, J. D., & Sprague, J. (1998). Thinking developmentally about TAs. In M. Marincovich, J. Prostko and F. Stout (Eds.), *The professional development of graduate teaching assistants* (pp. 61-88). Bolton, MA: Anker.

Nyquist, J. D., & Wulff, D. H. (1996). *Working effectively with graduate assistants.* Thousand Oaks, CA: Sage.

Rifkin, B. (Ed.). (2001). *Mentoring foreign language teaching assistants, lecturers, and adjunct faculty.* Boston: Heinle & Heinle.

Shaw, R. (1995). Mentoring. In T. Kerry and A. S. Mayes (Eds.), *Issues in mentoring* (pp. 259-267). NY: Routledge.

Siskin, H. J., & Davis, J. (2001). Historical, theoretical, and pragmatic perspectives on mentoring. In B. Rifkin (Ed.), *Mentoring foreign language teaching assistants, lecturers, and adjunct faculty* (pp. 1-17). Boston: Heinle & Heinle.

Tesser, C. (2005). *The future of Portuguese in the United States.* Lecture delivered at the University of Massachusetts Dartmouth, December 1st, 2005.

Weiser, I. (2002). When teaching assistants teach teaching assistants to teach: A historical view of a teacher preparation program. In B. P. Pytlik and S. Liggett (Eds.), *Preparing college teachers of Writing: History, theories, programs, practices* (pp. 40-49). Oxford: Oxford University Press.

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Appendix A
Mentor Program Guidelines (Revised)

Requirements of a Mentor

- Good teaching evaluations
- A minimum of one year teaching in our department, preferably in a variety of classes
- The ability to create and adapt a variety of activities for classroom use
- Good communication and interpersonal skills
- Good understanding of teaching philosophy and methodology of our department: the communicative approach
- Experience being observed and observing classes
- Well-organized and able to share resources from various courses taught, prompt in following up with instructors regarding observations and consultations, keeping records of instructors' progress and goals
- Available for two terms that do not coincide with scheduled MA or PhD exams.

The Role of the Peer Mentor

- Available for observation, consultation and meetings (30 hours per term, or 60 hour per year).
- Help new instructors transition from the workshop setting into the real classroom.
- Meet with each assigned new TA early in the term to make sure that both understand the goals and expectations of the mentor-mentee relationship from the outset.
- Help new TA with lesson plan.
- Conduct both unannounced and planned observations as required. New TAs must understand that these observations are not optional and may occur at any time. One advantage to announcing the observation is that it potentially lowers the anxiety level of the new TA.
- Take detailed notes during the observation of what happens during the class period. Observation notes should objectively show what activities occur at what time, how much time is spent on each activity, wording the instructor uses, transitions, use of English, pacing, sufficient practice, etc. The notes can also include subjective information like student response and involvement, effectiveness of approach, classroom presence and personality, suggestions to consider. Ask new TA to reflect on lesson and avoid judgmental comments.
- Review the standardized observation form that outlines all the points to consider in a lesson plan with the new TA. The peer mentor need not take notes on this form, but it is a useful tool to go over with the instructor in the post-observation conference.
- Follow up as soon as possible, ideally immediately after the class ends, and discuss the effectiveness of the lesson plan. Were the objectives met? Should the plan have been different? Should it have been implemented differently? Focus on a few (~3) general areas for future growth. If needed/desired, work together to plan the lesson for the next day. The peer mentor may wish to bring some examples of suggested activities for the new TA to consider. One suggested method for observation is the 3-step process.
    1. Meet with the new TA and decide what day the observation will occur. Discuss the lesson to be taught that day and perhaps help with the lesson plan. This allows the peer mentor to see a given grammar lesson, a vocabulary lesson, etc.
    2. Observe the class as planned, and take notes.
    3. Follow up as soon as possible, and compare the lesson plan to what actually happened in class.
- Most new TAs should be observed a second time later in the term. The peer mentor may observe two similar types of lessons or two different lessons (for example, one grammar and one vocabulary) as s/he feels is necessary. Remember the points discussed following the previous observation and track progress.
- Following each observation and feedback session, the peer mentor will upload comments to the Mentoring folder on the server as well as notes from observation and follow-up meeting plus instructor reaction form (if used). This file will contain all observation notes and reports and will serve as a record of the instructor's teaching history within the mentor program and will document the main issues that have been identified as areas for growth. This will be especially useful if a new peer mentor is assigned to a given TA. To save time, notes may also be scanned and uploaded as pdf files.
- The peer mentor may wish to create a resource folder and make it available to instructors. This archive might include actual lesson plans or more general plans—for example, "How to inductively present indirect object pronouns." The folder might also include clip art, transparencies and other visuals, as well as resources for

communicative and info-gap activities for instructors to borrow or photocopy. These resources are best used in helping the new TA to develop his/her own activities. Avoid simply handing over an activity without first making sure the new TA understands how to use it.

Documents

- Peer Mentor notebook. The documents include the department directory, term schedule of classes, and calendars/ syllabi for elementary levels.
- Class observation forms. These are optional, though potentially helpful in giving guidelines for observation notes as well as points to consider during follow-up meeting.
- Peer Mentoring Program evaluation. This is the evaluation form for the new TAs to fill out to evaluate the peer mentoring process.

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Lesson Study as a Model for Building Pedagogical Knowledge and Improving Teaching

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This paper proposes a model for building pedagogical knowledge and improving teaching based on the practice of lesson study. In lesson study a small group of instructors jointly designs, teaches, studies and refines a single class lesson called a research lesson. We describe how college teachers can do lesson study in their classrooms. We explore how the practice of lesson study creates multiple pathways for improving teaching and how the knowledge teachers create can help to advance the practice of teaching in their fields.

On any given day thousands of college instructors enter similar classrooms to teach similar, if not identical, subjects. Despite similar pedagogical goals, approaches and experiences, teachers typically work alone when planning instructional activities and assignments. Such isolation limits efforts to improve college teaching on a broader scale, both within and across disciplines. Although individual teachers may reflect on and improve their practice, there are few occasions to converse with colleagues about what they discover about teaching and learning. When they do share their ideas about teaching, it likely takes the form of knowledge they develop from their experiences in the classroom. Although practitioner knowledge is immediately useful for the teacher, it tends to be tied to concrete and specific contexts (Hiebert, Gallimore, & Stigler, 2002). It is not always in a form that can be accessed and used by others. In order to become professional knowledge, practitioner knowledge must also be made public, shareable, and verifiable (Hiebert et al., 2002). How can college teachers improve teaching practice in their fields and, in the process, contribute to the formation of a professional knowledge base?

One answer is *lesson study*, as Hiebert et al. (2002) suggest. Lesson study is a teaching improvement and knowledge building process that has origins in Japanese elementary education. In Japanese lesson study teachers work in small teams to plan, teach, observe, analyze, and refine individual class lessons, called research lessons. Nearly all Japanese teachers participate in a lesson study team during a school year. In addition, they observe research lessons regularly in their own schools and at schools that host lesson study open houses. Research lessons are published and widely disseminated throughout the country. In essence Japanese lesson study is a broad-based, teacher-led system for improvement of teaching and learning.

In this article we propose a model of lesson study for the college classroom, and explore how college teachers can improve their practice and the practice of teaching in their fields through lesson study. We draw from our experience with the College Lesson Study Project (CLSP), which began in fall 2003 with four lesson study teams in Biology, Economics, English, and Psychology. By spring 2006, participation increased to 40 teams involving more than 150 instructors in approximately 25 disciplines on 10 campuses in the University of Wisconsin System. At the University of Wisconsin-La Crosse nearly 24% of fulltime instructors have participated in lesson study since fall 2003. As practitioners of lesson study and coordinators of the College Lesson Study Project, we are in a unique position to discuss the opportunities as well as the challenges of doing lesson study at the college level and to comment on how lesson study makes possible the creation, exchange, and use of professional knowledge in teaching.

A Model of Lesson Study for the College Classroom

In developing a model of lesson study for college teachers, we have attempted to retain essential features of the Japanese model, making necessary changes to adapt to the contexts and purposes of American higher education, which are in no way uniform across institutions or disciplines. We acknowledge the Japanese model as the intellectual inspiration for our work and recommend the work of scholars who have brought lesson study to the attention of Western educators and researchers (Chokshi & Fernandez, 2004; Fernandez & Chokshi, 2002; Fernandez & Yoshida, 2004; Lewis, 1998a, 1998b, 2002; Lewis & Tsuchida, 1997, 1998; Stigler & Hiebert, 1999; Yoshida, 1999).

Whether in Japan or the United States, lesson study involves a small team of instructors working together to design, teach, study, and refine a single class lesson. This work culminates in at least two tangible products: (a) a detailed, usable lesson plan, and (b) an in-depth study of the lesson that investigates teaching and learning interactions, explaining how students responded to instruction, and how instruction might be further modified based on the evidence collected. Aspects of lesson study resemble other teaching

improvement strategies such as backward design (Wiggins & McTighe, 1998) and classroom assessment (Angelo & Cross, 1993). A closer look at how the lesson study process plays out in higher education, however, reveals important differences with other teaching improvement activities in the United States as well as differences with the Japanese model. Below we briefly discuss key steps in the process.

Formulating Learning Goals

Lesson study teams usually consist of 3-6 instructors from the same discipline although there could be interdisciplinary teams. They begin by selecting a course, topic and goals for student learning. Instructors select a topic of interest to them, usually one that is important in the discipline or course, one that poses problems for students, or one that is new to the curriculum. Ideally, a research lesson addresses immediate academic learning goals (e.g., understanding specific concepts and subject matter) and broad goals for development of intellectual abilities, habits of mind and personal qualities.

In Japan, schools often have a "research focus" that specifies important school-wide goals that include qualities of character, dispositions and sensibilities such as curiosity, independent thinking, tolerance of individual differences and so forth. In lieu of an institutional research focus, college teachers can link their research lessons to institution-wide aims for student learning (e.g., critical thinking) or learning goals specific to an academic program or discipline. For example, a CLSP team in psychology designed a lesson to promote understanding of specific psychological concepts, but to do so in a way that more broadly helped develop students' ability to analyze and explain human behavior in terms of multiple factors or variables. The team identified this ability as an important element of social science reasoning, and a goal that should be addressed in the introductory course and developed throughout the undergraduate program.

Designing the Research Lesson

The team creates a lesson intended to "bring the goals to life" (Lewis, 2000). They may modify an existing lesson or start anew. Teachers, who may be virtual novices or seasoned experts, share their previous experiences teaching the topic, and discuss possible ways to address the lesson goals. Planning a research lesson differs from everyday class preparation in several ways. An obvious difference is the degree to which teachers collaborate with one another in creating the lesson. Moreover, as the team proposes instructional activities, they consider how they will help students achieve the goals, a process similar to backward design (Wiggins & McTighe, 1998).

More significantly perhaps, teachers doing lesson study practice *cognitive empathy* and work to make student thinking visible. Japanese teachers have a well developed sense about how their students learn and think (Yoshida, 1999). In planning a lesson, they predict how students are likely to respond to specific questions, problems and exercises. Teachers try to put themselves in the position of a student and imagine what it would be like to experience the material and lesson activities as a novice, an approach that fosters the development of pedagogical content knowledge. In order to investigate student learning during the class period, teachers try to design a lesson that makes students' thinking visible—that is, open to observation and analysis. Not surprisingly, lesson study involves more time and greater depth of planning than typical class preparation. CLSP teams meet multiple times to plan a research lesson.

Designing the Study

The team develops a plan to investigate how students learn from the lesson. The plan specifies the type of evidence the team will collect and how observers will observe and record data during the lesson. Planning the study coincides with planning the lesson. As teams design the lesson they discuss what types of data they will collect as evidence of student learning and thinking. For example, one CLSP team used students' explanations as a measure of conceptual understanding. The team designed several exercises in which students explained key ideas, both orally and in writing. During the lesson, observers attended to how students explained the material and also collected students' written explanations for later analysis (Cerbin, Cary, Dixon, & Wilson, 2006).

A common misconception about lesson study is that the study is intended to determine the lesson's effectiveness (e.g., whether students learn what they are supposed to learn and achieve the lesson's goals). Of course this is an important question, and one that most teachers want to answer. However, the primary focus of lesson study is not *what* students learn, but rather *how* students learn from the lesson. To investigate *how* students learn, teams focus on student thinking during the lesson, how they make sense of the material, what kinds of difficulties they have, how they answer questions, how their thinking changes during the lesson and so forth. This is different from efforts to determine a lesson's effectiveness that might use pre- and post-lesson evaluation of student learning or comparisons between the performance of students in the research lesson with a suitable comparison group (e.g., students taught the material in a different lesson).

To assist in data collection teams prepare observation guidelines that describe the lesson and indicate what kinds of data to collect. Data typically consist of detailed observations of student activity and written work during the lesson. (Teams interested in the question of effectiveness may collect additional data for that purpose such as pre- and post-lesson evaluations of student performance.)

Teaching and Observing the Research Lesson

The lesson is taught at the scheduled time during the term. One member of the team teaches the lesson and other members attend the class to collect data. Teams may also invite guest observers (e.g., departmental or professional colleagues, administrators, graduate students).

Instead of observing how the teacher teaches, as in typical classroom observations, observers focus on how students respond to the lesson, which was designed by the team rather than by the person who happens to be teaching. The collective ownership of the lesson helps pave the way for public knowledge building.

Observers gather rich evidence related to the learning goal during the lesson, capturing the complexity of actual teaching and learning. Depending upon the team's data collection strategy, observers may record detailed field notes, focus on specific types of student activity, or use checklists or rubrics to categorize or monitor student engagement, performance, thinking, and/or behavior. They may observe the entire class or focus on specific students during the lesson. The lesson is videotaped, sometimes from multiple vantage points, for future reference and review.

Lesson studies are approved by campus Institutional Review Boards. Students are briefed on the purpose and nature of the study, and sign informed consent. Instructors explain the reason for observation and how the data will be used to improve the lesson.

Analyzing the Evidence

Soon after the lesson is taught the team holds a debriefing meeting to examine evidence related to the learning goals and to reflect on the experience. Participants include the lesson study team members and guest observers. Teams may adopt ground rules to guide discussion (e.g., the lesson instructor talks first followed by team members, and guest observers) but there is no standardized process for data analysis and reflection. Participants share their observations and examine additional evidence from the lesson, such as student written work, searching for patterns that may reveal important insights into teaching practice and student learning.

Repeating the Process

Following the debriefing session, the lesson study team holds one or more meetings to organize and analyze the data further and discuss possible changes to the lesson and/or the study. Based on the evidence, the team revises its approach. In addition to revising the lesson and the method for collecting data, some teams reconsider their learning goals in light of the findings.

During the second iteration, the lesson study team teaches the revised lesson in another class, usually the following term. Again, the team members observe the lesson, collect data, and hold a follow up debriefing session to analyze and revise the lesson. Most college teachers do not have special training in either instructional design or formal educational research. This iterative design process offers teachers a chance to explore ideas and different approaches, making evidence-based improvements as they go.

Documenting the Lesson Study

Teams document their lesson studies so that other instructors can review and learn from their work. A lesson is a recognizable unit of instruction and a lesson plan is a familiar genre, increasing the likelihood that others who teach similar courses can actually use the lesson materials. The field-tested lesson plan is accompanied with an explanation of the context and the results of the investigation.

The final lesson study contains two closely related parts: the lesson and the study. The lesson documentation includes: (a) the learning goals, (b) the lesson plan, (c) a rationale for the lesson topic and lesson design, and (d) supplementary materials such as student handouts, video clips of the lesson and instructors' notes. The study documentation includes: (a) the student learning goals, challenges, problems, and issues investigated; (b) a description of the types of data collected and the method used to study the lesson; (c) an explanation of data analysis and summary of findings; (d) conclusions about the lesson, especially with respect to student learning goals but also about the methods used to study it; and (e) supplementary material such as data collection instruments, checklists, rubrics and observation guidelines so that interested instructors could replicate the study.

In short, the lesson is described in enough detail that fellow teachers could adapt it to their own classrooms; likewise, the study is described in enough detail that other teacher-researchers could replicate or modify it.

To help teachers through the process described above, we ask that each CLSP team:

1. participate in lesson study "start-up" training, consisting of a workshop or self guided tutorial designed to get teams started doing lesson study;
2. conduct a year long lesson study (i.e., carries out two iterations of the lesson study cycle);
3. participate in a mid-year review, summarizing their lesson study after one iteration of the cycle and receiving feedback and suggestions about how to improve their study; and,
4. write a final lesson study that will eventually make a contribution to a knowledge base for other teachers in the same discipline or field.

College Lesson Study in Practice

Teams in the College Lesson Study Project (CLSP) range from 3-9 instructors. Team members are usually from the same discipline but some teams are interdisciplinary (e.g. a team consisting of faculty from the Library and Communications Studies Department is working on a research lesson about information literacy). A common approach is for a group of instructors who all teach the same class to focus on a topic they all teach. However, some teams include members who do not teach the course or topic of the research lesson. This underscores the idea that producing a lesson for use in class is only one benefit of lesson study. Instructors also benefit from careful analysis of learning goals, teaching practices, evaluation of student learning, and observation of student thinking in the classroom. In addition, instructors report that talking about teaching and learning with colleagues is rewarding in and of itself (Cerbin & Kopp, 2004; 2006).

Teams set their own schedules, decide how often and how long to meet, and distribute their work over an entire academic year – typically 15-20 hours during the year. Work is highly collaborative; instructors participate fully in all phases of the cycle. The result is a sense that the research lesson is team product, in the same way that a collaborative research project yields a team product.

There are several reasons why the actual practice of lesson study appeals to instructors. Teachers control the process, and adapt it to their work schedules. It affords an opportunity for teachers to examine collectively teaching and learning issues that matter to them and have direct application to their classrooms. Lesson study is low risk; changing a single lesson is less risky than changing an entire course or adopting a significantly different pedagogical approach.

Lesson Study as a Teaching Improvement Process

Teaching is a multidimensional process. Shulman (1998) proposes:

> Too often teaching is identified only as the active interactions between teacher and students in a classroom setting (or even a tutorial session). I would argue that teaching, like other forms of scholarship, is an extended process that unfolds over time. It embodies at least five elements: *vision, design, interactions, outcomes, and analysis* (p.5).

Perhaps because it embodies all five of these elements, lesson study is highly valued by Japanese teachers and an effective way to promote long term teaching improvement. In a survey of 125 active lesson study practitioners in Japan, 98% reported that lesson study helped them improve their teaching and 91% believe that lesson study is the most effective form of professional development (Murata & Takahashi, 2002). Moreover, researchers argue that lesson study has helped improve the quality of instruction in mathematics and science at the elementary level in Japan, resulting in higher student achievement in these areas over the past two decades (Stigler & Hiebert, 1999; Lewis, 1998).

Murata and Takahashi (2002) note that lesson study incorporates features associated with effective professional development such as,

> using concrete practical materials to focus on meaningful problems, taking explicit account of the contexts of teaching and the experience of teachers, and providing onsite support within a collegial network. It also avoids many features noted as shortcomings of typical professional development, e.g., that is short term, fragmented, and externally administered (p. 1880).

In our view, lesson study is an exceptionally fertile context for college teaching improvement. It scaffolds reflective practice in which instructors carefully examine goals for student learning and development, design goal-oriented learning experiences, conduct a lesson, observe and analyze student learning and revise the lesson design to improve learning. Teachers examine and discuss a wide range of key issues including,

1. what are the most important goals for learning and development in the course and academic program,
2. what are the differences among students that matter most in their classroom performance,

3. how do specific strategies support changes in student thinking,
4. what knowledge do students have that serves as a foundation for the lesson,
5. what misconceptions do students have that hinder their learning, and
6. what aspects of their written work or actual classroom interactions indicate how they interpret and make sense of the topic.

Lesson study encompasses the full complexity of teaching and learning in the context of a single class lesson. Essentially, teachers have opportunities to question, explore and reflect on every phase of the teaching and learning process.

Lewis (2005) suggests that lesson study creates multiple "pathways for learning" that lead to instructional improvement. According to her model, teachers' thinking and practice may improve in multiple ways as a result of,

1. increased knowledge of subject matter,
2. increased knowledge of instruction,
3. increased ability to observe students,
4. stronger collegial networks,
5. stronger connection of daily practice to long-term goals,
6. stronger motivation and sense of efficacy, and
7. improved quality of available lesson plans (p.115)

Lesson study offers a different way of thinking about teaching and learning. For many college teachers entering into a lesson study means approaching teaching with different assumptions and expectations. This is most evident in the way that lesson study is oriented toward student learning. An underlying principle of lesson study is that teachers need to know how their students learn in order to teach them effectively. Thus, how students learn is central at every step in the lesson study process. In the lesson planning phase teachers consider how their students are likely to interpret, construe and respond to the parts of the lesson. Observers attend to learning and thinking as the lesson unfolds. Data collection focuses on student learning and thinking throughout the lesson. After the lesson the group analyzes the evidence of student learning as a basis for making changes to the lesson.

We propose that certain features of this learning-oriented inquiry are likely to mediate changes in college teachers' pedagogical thinking and practices. The patterns below have emerged in our work, but further research is needed to verify that these are, in fact, what teachers learn about teaching through lesson study.

Collaborative Involvement Fosters Mutual Understanding of Goals, Teaching Practices and Student Learning

Researchers suggest that the educational community in the United States "lacks a shared language for describing teaching" (Stigler & Hiebert, 1999). When teachers ascribe different meanings to the same basic concepts, they do not communicate effectively about the nature of teaching and how to promote better learning. We observe instructors in the same field who mean very different things for fundamental terms such as learning, assessment, and understanding. Variations in meaning make it difficult to discuss teaching coherently and are a formidable impediment to teaching improvement. Teachers who conduct lesson study can develop a shared language for teaching and learning. Common meanings arise because instructors observe and discuss the same problem in the same context over an extended period of time. Members of a lesson study group are like members of any research team that develop increasingly precise ways to describe what they study.

Focus on Goals for Learning, Thinking and Development

Teachers carefully consider what they want students to know and what kinds of abilities and personal qualities they should develop. Some instructors report that they rarely if ever start with learning goals as the basis for their teaching, and that the experience of lesson study makes them more goal-aware in their other classes (Cerbin & Kopp, 2004, 2006).

Design Instruction with Learning Goals in Mind

Learning goals are the focal point of lesson design. As instructors plan the lesson they speculate about how specific instructional and learning activities will help students achieve the goals. This type of backward design is markedly different from typical class preparation. Even teachers who try to keep goals in mind when they teach may not actually design instructional experiences deliberately intended to foster the goals. In lesson study teachers ask the question, "Why do we think that will work?" We believe this can prompt theory building as teachers examine their assumptions and beliefs about teaching and learning.

Make Student Thinking Visible

Teams try to design activities that will externalize student thinking, making it open to observation and analysis. We suspect that making student thinking

visible affects the types of exercises and activities teachers incorporate in the lesson. It is challenging to design ways to make student thinking visible that are also pedagogically purposeful. For example, instructors could access student thinking several times during a class period merely by pausing and asking them to write what they are thinking. However, this is unlikely to facilitate their learning. In contrast an exercise in which students analyze and explain material in small groups creates opportunities for students to articulate their ideas, compare them to other points of view and receive feedback from the instructor and fellow students. Not only does the exercise externalize thought but it helps foster the lesson's goals.

Observe Student Learning and Thinking in the Classroom

On average Japanese teachers observe 10 research lessons per school year. They appear to be keenly aware of how their students think about subject matter, what concepts might be difficult and what kinds of misconceptions students may have about the topic (Fernandez & Yoshida, 2004; Lewis, 2002; Lewis, Perry, & Hurd, 2004; Lewis, Perry, & Murata, 2004; Yoshida, 1999;). Surely their deep understanding of student learning develops from these extended opportunities to observe learning and thinking in the classroom.

College instructors rarely observe lessons and have little opportunity to learn about their students' learning. Lesson study is one of the first times instructors systematically observe and analyze students' classroom activity.

Evidence-based Improvement

Lesson study is an evidence-based approach to teaching improvement. In the best cases, teachers get important insights into how their students learn from the lesson, where they get stuck, what changes take place, and how they interpret ideas. We believe that observations of classroom thinking can provide the kind of data that is directly applicable to making improvements in the lesson. These data are different from more general information about student performance on tests, quizzes and papers.

Lesson Study as a Knowledge Building Process

Lesson study is a form of practitioner research in which teachers investigate issues of teaching and learning in their own classrooms (Zeichner & Noffke, 2001). It can be a method for generating not only practitioner knowledge but also professional knowledge if it becomes a way to carry out the scholarship of teaching and learning (Hutchings, 2000). Lesson study is scholarly inquiry to the extent that instructors: (a) systematically investigate teaching and student learning, (b) collect and analyze evidence of student learning, (c) connect findings to relevant scholarship, and (d) put forward their work in a form that can be peer reviewed and built upon by others.

In Japan, lesson study is a system for creating professional knowledge about teaching (Hiebert, Gallimore & Stigler, 2002). Teachers produce several thousand research lessons and articles each year. These are disseminated widely throughout the country and are an important source of knowledge about teaching. We see similar potential at the college level. Lesson study could be a training ground for college teachers to learn how to do scholarly inquiry into teaching and learning, and the actual studies could be the basis for specific knowledge about teaching core concepts and ideas in ones' discipline.

Learning to do Scholarly Inquiry into Student Learning

Most college instructors are not trained to investigate their own teaching and student learning. The lesson study process structures systematic inquiry in which instructors: (a) formulate a learning goal, (b) design a lesson that addresses the goal, (c) collect systematic data about student learning and thinking, and (d) analyze the data and draw conclusions about student performance. Lesson study is a framework in which instructors can learn to investigate teaching and learning in the classroom. Moreover, the group can pool its expertise which reduces the demands on any individual instructor to be a classroom research expert.

Building Pedagogical Knowledge Based on Lesson Studies

Many disciplines have periodicals that publish work on teaching in the field. We suggest that lesson studies could be valuable additions to these publications. In particular, lesson studies could generate specific and usable pedagogical content knowledge. Shulman (1987) defines pedagogical content knowledge, as an understanding of "the most useful forms of representation of [topics], the most powerful analogies, illustrations, examples, explanations, and demonstrations—in a word, the ways of representing and formulating the subject that make it comprehensible to others" (p. 9).

We noted that the *lesson* is a meaningful and manageable level of analysis for investigating teaching and learning. Day to day instruction is organized around individual class periods. Even when the work in one period carries over to the next, the individual lesson is a distinct unit with specific goals, purposeful learning

activities, expected learning outcomes, and a specific time frame. Moreover, studying a lesson is a manageable task in the context of one's other professional responsibilities. Teams can schedule meetings as needed and the actual data collection takes place in one class period.

In addition the lesson may also be a highly transportable entity. If research lessons were readily available we suspect that teachers would be able to adopt and adapt them to their own classes and circumstances. Toward this end, we have developed an online format for documenting and sharing college lesson studies (http://www.cfkeep.org/html/gallery.php?id=75749626546865) Our aim is to represent the work in ways that make it accessible for peer review and for use by interested instructors and classroom researchers as well as others (Cerbin, Cary, Dixon, & Wilson, 2006; Cerbin & Kopp, 2006).

College lesson study is an opportunity to work with colleagues on substantive issues and problems related to teaching and learning. Although instructors design only a single lesson, what they learn from the experience applies to other classes and contexts. The aim of lesson study is not merely to produce a well-crafted lesson, but also to build capacity, expertise, and knowledge to improve teaching and learning in a broad spectrum of disciplines and fields. Hiebert, Gallimore & Stigler (2002) observe that "as much as they might benefit from the knowledge of their colleagues, most teachers have not accessed what others know and must start over, creating this knowledge anew (p.11)."

We hope teachers will one day have at their fingertips a collection of field-tested lessons related to the subjects they teach; lessons that can be adapted for classroom use and that can serve as springboards for systematic inquiry into teaching and learning. Broad scale teaching improvement is perhaps possible in higher education if teachers work together to build a professional knowledge base—one lesson at a time.

References

Angelo, T. A. & Cross, K. P. (1993). *Classroom assessment techniques (2nd ed.)*. San Francisco: Jossey-Bass Publishers.

Cerbin, W. & Kopp, B. (2004). [Focus group interview with lesson study instructors].Unpublished raw data.

Cerbin, W. & Kopp, B. (2006). [Focus group interview with lesson study instructors].Unpublished raw data.

Cerbin, W. & Kopp, B. (2006). Lesson Study Template. Retrieved March 28, 2006 from the Carnegie Foundation for the Advancement of Teaching Knowledge Media Laboratory Web site: http://www.cfkeep.org/html/stitch.php?s=31341993465407&id=86044779686299.

Cerbin, W., Cary, M., Dixon, R, & Wilson, C. (2006). A lesson study in general psychology on bystander intervention. Retrieved March 28, 2006 from the Carnegie Foundation for the Advancement of Teaching Knowledge Media Laboratory Web site: http://www.cfkeep.org/html/stitch.php?s=3993307765567&id=98964288643528.

Chokshi, S. & Fernandez, C. (2004, March). Challenges to importing Japanese lesson study: Concerns, misconceptions, and nuances. *Phi Delta Kappan*, 520-525.

Fernandez, C., & Chokshi, S. (2002, October). A practical guide to translating lesson study for a U.S. setting. *Phi Delta Kappan*, 128-34.

Fernandez, C. & Yoshida, M. (2004). *Lesson study: A Japanese approach to improving mathematics teaching and learning*. Mahwah, NJ: Lawrence Erlbaum Associates, Publisher.

Hiebert, J., Gallimore, R., & Stigler, J. (2002). A knowledge base for the teaching profession: What would it look like and how can we get one? *Educational Researcher*, 31, 5, 3-15.

Hutchings, P. (Ed.) (2000). *Opening lines: Approaches to the scholarship of teaching and learning.* Stanford: Carnegie Foundation for the Advancement of Teaching.

Lewis, C. (2000, April). Lesson study: The core of Japanese professional development. Paper presented at the American Educational Research Association Meeting, New Orleans.

Lewis, C. (2002). Does lesson study have a future in the United States? *Nagoya Journal of Education and Human Development*, 1, 1-23.

Lewis, C. (2002). *Lesson study: A handbook of teacher-led instructional improvement*. Philadelphia: Research for Better Schools, Inc.

Lewis, C. (2005). How do teachers learn during lesson study? In P. Wang-Iverson & M. Yoshida (Eds.). *Building our understanding of lesson study*. Philadelphia: Research for Better Schools, Inc.

Lewis, C. & Tsuchida, I. (1997). Planned educational change in Japan: The shift to student-centered elementary science. *Journal of Educational Policy*, 12, 313-331.

Lewis, C., & Tsuchida, I. (1998). A lesson is like a swiftly flowing river. *American Educato*r, 22(4), 12-17; 50-52.

Lewis, C., & Tsuchida, I. (1998). The basics in Japan: The three C's. *Educational Leadership*, 55, 6, 32-37.

Lewis, C., Perry, R., & Murata, A. (2004, April). What constitutes evidence of teacher learning from lesson study? Paper presented at the American

Educational Research Association Conference, San Diego.

Lewis, C, Perry, R., & Hurd, J. (2004). A deeper look at lesson study. *Educational Leadership*, 61, 5, 18-23.

Murata, A. & Takahashi, A. (2002). Vehicle to connect theory, research, and practice: How teacher thinking changes in district-level lesson study in Japan. In: Proceedings of the Annual Meeting [of the] North American Chapter of the International Group for the Psychology of Mathematics Education (24th, Athens, GA, October 26-29, 2002). Volumes 1-4.

Shulman, L. (1998). Course anatomy: The dissection and analysis of knowledge through teaching. In P. Hutchings (Ed.). *The course portfolio: How faculty can examine their teaching to advance practice and improve student learning*. Washington, DC: American Association for Higher Education.

Shulman, L. (1987). Knowledge and teaching: Foundations of the new reform. *Harvard Educational Review*, 57, 1-22.

Stigler, J. W., & Hiebert, J. (1999). *The teaching gap: Best ideas from the world's teachers for improving education in the classroom*. NY: Free Press.

Wiggins, G. & McTighe, J. (1998). *Understanding by design*. Alexandria, VA: Association of Supervision and Curriculum Development.

Yoshida, M. (1999). *Lesson study: An ethnographic investigation of school-based teacher development in Japan*. Unpublished doctoral dissertation, University of Chicago.

Zeichner, K. M. & Noffke, S. E. (2001). Practitioner research. In Virginia Richardson (Ed). *Handbook of research on teaching* (4th Ed.). Washington, DC: American Educational Research Association.

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