Research Experiences of Undergraduate Students at a Comprehensive University

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Narrative inquiry was utilized to allow undergraduate students involved in an undergraduate research course to narrate their experiences in their research undertakings under the guidance of their respective mentors. A total of four focus groups representing the Bachelor of Arts and Letters, Bachelor of Commerce, Bachelor of Secondary Education, and Bachelor of Science in Pharmacy were interviewed. The present study describes the research experiences of a select group of undergraduate students who had defended their research outputs. The findings reveal that undergraduate students who were under competent, motivating, and supportive research mentors undertook the rigorous research process and experienced various activities and mixed feelings in the following stages: Groping, Developing, and Accomplishing. Only a few teams disseminated their outputs in refereed journals, educational conferences, and/or public poster exhibits.

The aim of education, according to Whitehead (1932), is the production of active wisdom (as cited in Elliot, 1996); thus, engaging in research makes one a partner in the creation of knowledge (Shamai & Kfir, 2002). Institutions have been challenged to involve students in hands-on research experiences to enhance their learning (Merkel, 2003). For most students, hands-on experiences with their peers provide the best learning tools. Most of them conduct research by teams (Doerschuk, 2004). The essence of undergraduate research is the supportive, encouraging, and intellectual partnership among students and between students and their faculty mentor through which they apply knowledge gained in the classroom to new questions and problems. Essentially, the students become junior partners in faculty research (Merkel, 2003). Undergraduate research is important and popular for the following reasons: (a) to integrate young scholars in the community of learning; (b) to motivate undergraduates to become independent thinkers; (c) to ensure that research experience be a necessity (Merkel, 2003; Schwartz, 2005); and (d) to prepare students for graduate programs (Adamsen, Larsen, Bjerregaard, & Madsen, 2003).

In research classes, teachers promote students' learning to become scholars and develop understanding that scholarship is creating new knowledge (Wilensky, 2002). As research mentors, teachers sustain human and intellectual connection with their students in the quest for knowledge and understanding (Lopatto, 2004). Undergraduate students become collaborators and those who make significant contributions to their mentor's on-going work become co-authors of articles in refereed journals (Merkel, 2003). Merkel (2003) describes undergraduate research as a partnership between students and their mentors through which students apply knowledge gained in the classroom to explore new problems and increase intellectual capacity. According to Doerschuck (2004) and Schwartz (2003), research paves the way for young scholars to belong to a community of learning, experiencing independent thinking, teamwork, leadership, and communication as they work under the direction of a faculty member. Furthermore, Adamsen et al. (2003) shared that undergraduate research facilitates students' interest in research, leading them to have their own research projects in research-based practice. To attain the goals of undergraduate research, student researchers are engaged in consulting experts, applying for grants, presenting conference papers, writing for publications, participating in research clubs, and networking or collaborating with peer mentors or faculty mentors (Dohm & Cummings, 2002; Johnston & McCornaack, 1997: Merkel, 2003). These research activities require support, such as mentoring guidance, orientation, and training (Greene, 2005; Shakespeare, 2005); good infrastructure and resources (Gibson, 2005; Shakespeare, 2005); and the psychological, social, and political aspects of support for students' research involvement (Johnston & McCornack, 1997). Through the adequate support for their research activities, both extrinsic and intrinsic rewards/benefits are gained by the young scholars. Some of the extrinsic rewards/benefits which may be received by the undergraduate researchers include degree acquisition and recognition/award (Delatte, 2004; Katz & Coleman, 2006), and the intrinsic benefits which may be gained by them are professional and personal growth (Dohm & Cummings, 2002), self-confidence, self-esteem, and feeling of affiliation (Adamsen, Larsen, Bierregaard, & Madsen, 2003; Johnston & McCornack, 1997; Katz & Coleman, 2001), and improvement of research culture (Cohen, 2005). With the above-mentioned studies, describing the research

experiences of the undergraduate students remains imperative.

The present study describes the research experiences of a select group of undergraduate students belonging to the science, education, business, and humanities disciplines of a university offering diverse academic programs.

Method

Narrative inquiry is a qualitative research method for gathering information through storytelling, which according to Connelly and Clandinin (1990) is normally done by people who are storytelling organisms who lead storied lives. In this study, stories of such lives shall be told by the study's focus groups, and narratives of the experiences shall be organized.

Study Context

The study took place in four research classes representing the four colleges – Faculty of Pharmacy, College of Education, College of Commerce, and Faculty of Arts and Letters – of a comprehensive university. The Thesis Writing/Research Methods (a 3-unit course) classes in the colleges under study provided opportunities for students to identify and solve existing problems in the field or discipline of their study by applying qualitative, quantitative, or mixed methods methodologies. In the four colleges, hands-on research experiences for students is a requirement. Students conducted research either individually or by team and selected their respective research advisor. Two of the research advisors advised almost all the teams in their respective research classes. At the end of the term, the written research output (see Appendix A) was submitted to the research teacher and defended in a forum within the college.

Participants

The participants of the study included teams of students who were randomly selected from four research classes, each class belonging to the following curricular programs: Bachelor of Arts and Letters, Bachelor of Commerce, Bachelor of Secondary Education, and Bachelor of Science in Pharmacy. Each research team consisted of 3-5 members, except in the case of Bachelor of Arts and Letters where each student had to work individually on a topic. Only two members from each of the randomly selected teams were interviewed using a semi-structured interview guide (see Appendix B). Four focus groups representing the four curricular programs freely responded to the interviews. A total of 27 female and 8 male Filipino students with an average age of 20 years participated in the study.

Materials

The semi-structured interview guide was utilized to stimulate the respondents to reflect on their research experiences as undergraduate students of the Thesis Writing/Research Methods course and to relate their research stories. Before conducting the interview, the guide was subjected to content validation by two experienced researchers in qualitative research. These researchers examined each interview question and the question guide as a whole and made suggestions for revision. Following a revision of the interview guide, the fourth year student was interviewed using the guide to assess the clarity of the guide's items.

Procedure

Data were collected through the semi-structured interview of each focus group: five teams of two students each representing a particular curricular program except those from the Bachelor of Arts and Letters. Members of each focus group were allowed to respond collectively or individually, depending on the interview question. Each focus group was interviewed for approximately 1.5 hours, separately. These interviews were audio-taped and later transcribed.

Data Analysis

The transcripts of the interviews were organized, synthesized, and searched for common and significant patterns of behavior and ways of thinking. The data were then sorted according to categories and themes. Categories were evaluated on the basis of their homogeneity, which according to Patton (1990), is the extent to which the information belongs to a category and the extent the categories differ and/or are unique. In this study, the participants' feelings, attitudes, and behaviors were categorized based on similarities and differences. This was done by going back and forth between the data and the classification domains to verify the meaningfulness, salience, uniqueness, and accuracy of the categories and the information in them.

Results

The students under study engaged in various research activities, which led them to the fulfillment of the Thesis Writing/Research Methods course requirements. They had various experiences as they were exposed to similar steps of the research process. Almost all undergraduate students of the respondent

university had to go through these steps for completion of the Thesis Writing/Research Methods course requirements, unless they withdrew from or failed the course. In this study, the undergraduate students successfully completed their research, and their experiences during the research process were grouped into three stages: Groping Stage, Developing Stage, and Accomplishing Stage.

The Groping Stage

The Groping Stage occurred in two phases: (a) when the student researchers were getting oriented regarding the expectations and requirements of the research course and (b) when they had to search for related refereed studies to guide them in problematizing and conceptualizing their research problems. It was in this stage that insecurity, fear, and challenges were the prevalent experiences.

Experiencing insecurity and fear. Inexperienced undergraduate student researchers felt inadequate about their knowledge and skills in research and were apprehensive about their ability to fulfill the requirements of the course. At the beginning of the research undertaking, students made the following statements:

> I may not be able to meet the deadlines! There are too many of them.

> We need to do a lot of readings in the libraries and do a lot of paper work. Accomplishing these tasks may be in conflict with our assignments and tests in other courses.

> Research seeks answers to certain questions. I may not be able to do it. It may require hard work and much thinking. I never had orientation on scientific research.

These were the students' remarks despite the encouraging disposition of their respective research advisors during the course orientation in their research classes. Although their research advisors oriented them about the research purposes, course outline, requirements, grading system, and the opportunities and benefits they may gain, instead of becoming motivated, many students were apprehensive that research entails much work and hard work.

Experiencing challenges. In the second week of classes, students from the colleges under study were told by their research advisors to search for research topics from recommendations of previous studies, or to come up with new topics that are relevant and timely in the Philippines and are within their interest and capability. These topics could be original or

replications. The students were challenged by their research advisors to consult refereed studies and other experts and to brainstorm with them in the selection of the research topic; afterwards, the students selected one research problem and the research advisors assisted the students in refining their topics. Published references and experts were consulted for the formulation of the research problem. These problems, according to two focus groups, enriched the advisors'/mentors' research agenda. The following are the explanations of the four focus groups on how they conceptualized their problems:

> We reviewed studies from the journals, then brainstormed with the teammates and the advisor on topics, which are the trends and issues to be addressed in society. The advisor assisted each group in choosing the topic. Before the group chose the topic, we had to show the advisor enough references to support it. We searched as many references through the internet and the libraries. Getting exposed to the materials and brainstorming broadened our perspectives on certain issues. We were eager to seek solutions to the chosen problem.

> Reading several previous studies stimulated our mind to frame a new research problem, but we had to revise it several times till we got the approval of our advisor. I think it took us four times to revise the title and the statement of the problem.

> It was challenging to have our research topics aligned with our advisors' research agenda. When we were able to do so, these easily gained their approval. In some cases, that is, after some brainstorming sessions, the research problems had to be modified to fit our abilities and the time frame for the research activities.

In the Groping Stage, as the students were venturing into a new scholarly endeavor, they were experiencing insecurity, fear, and challenges. However, according to the students, they were intellectually and morally supported by their research advisors, other experts in their major fields, and their teammates. They were also closely guided by their research advisors during their formal and informal meetings.

The Developing Stage

It is in the stage of selecting and organizing the related information, selecting and applying the research methods, and gathering and treating the data that the students under study were confused, exhausted, motivated, inspired, nurtured, frustrated, and humanized.

Confusing and exhausting but motivating experiences. Selecting and organizing the related scholarly articles was difficult for the students because at times important information was too long, or the topics were new with very few related readings. The focus groups shared their confusing and exhausting, yet motivating experiences as follow:

We had to go to other libraries to look for other related articles or studies because of the limited related articles on the Internet. We had to follow the outline given by our mentor, who regularly checks our work before our group reviews the inputs. The other teams also helped us by giving us information about some sources when they came across our topic. We also shared what we gathered in the library with the other teams when they needed them. As a result, we learned many things, which were not discussed by our mentors in our classes.

It was tiresome to look for related studies in refereed journals because of our new topic. There were too few related readings for it. What motivated us to proceed in this endeavor was the novelty of the study and our desire to learn.

We had a lot of related readings but we could not make up our mind in organizing the available information. Our advisors/mentors guided us, discussed and shared with us how to organize, cluster, and synthesize the important information. They corrected our work and gave us stimulating suggestions. They reminded us to cite the sources of information correctly so as to observe intellectual property rights.

Although it was difficult for most of the teams to select, categorize, and synthesize the related readings, they found it easy to present these following the format and style of the American Psychological Association (APA). According to the students, this was due to the training provided by the research advisors and the practice they had in their other courses in first year.

Inspiring and nurturing experiences. When selecting and applying research methods and sampling techniques as well as treating the research data, the teams under study were closely assisted by their research advisors, expert evaluators, and the statisticians, thereby making their tasks easier. Moreover, members of the same team contributed to the accomplishment of the tasks, sharing what they had accomplished whenever the team met. Some teams had difficulty meeting with all students who belonged to their team, but they tried to win their cooperation instead of quarreling with each other.

We could follow the procedure well and understand what we were doing because our advisors and other consultants were approachable, meticulous, patient, supportive, competent, goal-oriented, good critics, and empowering. They love to do research very much and are very skillful. Because of their regular close follow-up and open communication with us, we were then gaining interest in it. (These remarks excluded the advisor/s of three teams who did not have enough time to meet them.)

Our advisors and other consultants are research experts. In the case of my team, the advisor shared her collection of refereed articles which we cited in our paper. We could also borrow her research books. Also, our statistician assisted us in processing the data and guided us in interpreting the results. We learned some skills and values from these experts. They critiqued our teamwork without embarrassing us, so we tried our best to meet their standards.

Our teammates shared openly what they knew and gave moral support to everyone in the team. At times, we shared also some information, which we had gathered, to other teams. We also had the opportunities to try by ourselves in the team doing things and applying the knowledge gained from classes.

At this stage, the students shared that they looked forward to working often with their teammates and their research advisors. They mentioned that the latter were very encouraging and helpful in facilitating the students' learning of more concepts, skills. and values in research that would lead them to the solution of their research problems.

Motivating and humanizing. There were both motivating and humanizing experiences in their gathering of data. Motivation was both intrinsic - interest in the problem and desire to acquire a degree - and extrinsic, encouraging words and support from experts and parents. Though motivating, the research task can be rather tedious and requires moral and financial support for the researcher to enable him/her to collect sufficient data. The students had to be patient, persevering, and cooperative; hence, the experience was humanizing.

It was tedious but fascinating! It proved my understanding of what the Western mind had

imposed as meanings of the symbols. I was excited to come up with a new thing.

Our outside consultant was very much interested in the result of our work. He was as approachable as our mentor. We got tips from him; hence, we could get the data easily.

Whenever we experienced difficulty, our parents consoled us and gave us words of encouragement. Aside from moral support, they also gave financial support for our respective projects.

There were those, however, who could not cope with the demands of data gathering. They complained about their frustrations when meeting some difficulties.

We had to use the laboratory of another university because many groups in the other sections were using the facilities of our college and we were running out of time. We also had to spend much for gathering data, so we had to rely on our parents to support our project financially. This difficulty led us to be more patient and resourceful.

It was difficult recording interview data and extracting responses from strangers. We had to think of ways to make them feel relaxed and we had to think of follow-up questions. This made us more flexible and caring.

It is a humbling experience to adjust to the available schedule of the respondents and to be made to wait by the interviewees. Some interviews had to be postponed. But, we learned how to budget our time to cope with the schedules of classes and the interviews.

There were frustrations during the gathering of data, primarily caused by inaccessible facilities and lack of cooperation and competence of interviewees. However, these difficulties provided opportunities to develop some human values, such as humility, patience, flexibility, understanding, concern for others, time management, and resourcefulness.

The Accomplishing Stage

Towards the completion of the research projects, some students had exciting and fulfilling experiences, whereas others had frustrating yet fulfilling experiences. Although there were teams who failed to submit their completed projects on the set deadline, all were able to submit the manuscripts prior to the oral defense.

Exciting and fulfilling. Synthesizing the findings was easy because a lot of references were available for the discussion portion and many of the students were previously trained to summarize what they had read. Also, the students were excited to have reached the conclusion. In this stage, the students were happy that they had gained confidence; increased knowledge in their field; and improved research, higher thinking, and communication skills. They, then, realized that their outputs were useful.

It was exciting to have reached the conclusion. We had long waited for it to come. We were very eager to find the solution to the problem. After synthesizing the results, we brainstormed over the conclusion and decided that one of us in the team writes the conclusion for the approval of our advisor.

We were able to apply the research process and introduce new ideas, models, or techniques.

We gained recognition for our work. Other experts would like to try our results or findings. Some of us had penetrated refereed journals. Our works were accepted for publication by international journals. Some of us had the chance to present our outputs in a public forum.

One team also added, "We can earn an income through our research output! In fact, we gained so much confidence with the output."

Frustrating yet fulfilling. A few research teams experienced difficulty in formulating the conclusion because they only realized toward the end of their research projects that the solutions to the problems were still unattainable due to the lack of data or related literature to support the conclusion.

We were done with the discussion but had to gather some more related reading before we could generalize our findings and form the conclusion. We almost cried over this.

In our case, we realized only at the end that some data are missing, and so we had to set new appointments with our interviewees. We had to convince them that the interview was very necessary and urgent. Two of them refused to be interviewed because they did not have the time. We got so worried but fortunately, we had the chance to include this in the limitation. This experience, though difficult to handle, was resolved through the advice of our advisor.

Mam, a member of our team, lost the transcripts of his interviewees. Since they could no longer be located, he had to replace them by other interviewees. We were afraid that we could not meet the deadline. But we needed to repeat the interviews because we were told by our advisor that we had to be honest with our data. Instead of making her (our teammate) fully responsible to gather more data, we helped her interview some more people.

Some teams were disappointed by the rejection of some refereed journals to publish their papers. However, they were satisfied with their outputs and the evaluation given by their teachers.

We were quite disappointed because, despite our efforts, the evaluators seemed to disagree with our work and treated our research outputs as ordinary, not worth publishing. We are contented with the comments and suggestions given by our advisors/mentors. These led us to produce useful outputs.

In this study, two research classes had to prepare their research outputs for submission to refereed journals and presentation in a public forum. Only three of the submitted papers with the respective research advisors as co-authors were approved for publication by international refereed journals, and five teams were accepted for international paper presentations. Though the teams had the approval of their papers for presentation abroad, they were not able to present them due to financial constraint. All of these authors and presenters gained recognition during the graduation ceremony. Some received cash awards and others medals.

One class had to prepare the final report for possible oral presentation and poster exhibit within the university. A team of this class with the best thesis joined the National Research Competition for an oral presentation of their paper. Though the team did not win, they were happy about their exposure to the community of researchers.

Unfortunately, the class of one focus group was not given the opportunity to disseminate the outputs publicly in journals nor poster exhibit. Students of this class only submitted their papers to the research advisor and/or the teacher of the research class and defended them.

Discussion

The undergraduate students under study engaged in research for fulfillment of the Research Methods/Thesis Writing course requirement. As they undertook the rigorous research process, they experienced various activities and mixed feelings, which are clustered in this study in three stages: Groping, Developing, and Accomplishing. The students came to understand that research is a scholarly endeavor, which, according to Wilensky (2002), is a condition through which new knowledge is created.

In the Groping Stage of the students' research endeavor, the very start of their research undertaking, the majority felt apprehensive and fearful of the forthcoming research activities and the requirement of submission of quality research outputs; yet, they also felt challenged in their task of conceptualizing a research problem. Their insecurity may be attributed to the failure of their teachers in other courses to orient them regarding research and exposing them to research-based learning. Despite fears and apprehensions, the students were challenged by their research advisors in their research classes to review as many research studies from refereed journals within their line of interest and specialization. This was done to problematize and propose a research problem and to align their research projects with their respective research advisors's research agenda. Dunleavy (2005) posited that the research advisors provide a vision, which helps develop research projects that further the research advisor's research agenda. However, at times, it was necessary for the research advisor to adjust the project, as Cortinas, Straka, Beasley, Schneider and Machacek (1996) posited, in order to accommodate the students' abilities.

Before the approval of the problem, challenging brainstorming sessions took place among the members of a team and between the team and the research advisor to set goals, discuss topics, and set a plan in motion to help achieve the goals established by and for the students. This indicates that research mentoring is an interactive, interpersonal process that requires contributions from the research advisor and students involved as explained by Thomas, Kelly, and Back (1992). According to Wade (2004), meetings from time to time provide feedback on how things are going and where the research advisor and the students want to go. The research advisor shares with students interesting and informative research experiences (Page & Abramson, 2004), especially at the Groping Stage.

During the Developing Stage, selecting and organizing the related articles was confusing and exhausting but also motivating to the undergraduate students. In cases where there were too many related studies, students had difficulty in categorizing and synthesizing them; yet, they were motivated to do so by their research advisor, who guided, shared, discussed, and gave them feedback. In addition to their research advisor, the students' desire to learn continued to motivate them throughout the process. According to

Gray and Smith (2000) and Dunleavy (2005), a good research advisor is knowledgeable/competent, enthusiastic, approachable, patient and understanding, organized, self-confident, open, available, sensitive, caring, motivating, responsible, and a good communicator. Furthermore, Dunleavy (2005) stated that the research advisor must have a strong moral and ethical fiber. All these qualities, according to the students, were possessed by most of their advisors.

The undergraduate students had inspiring and nurturing experiences when they learned how to apply certain research methods and sampling techniques and how to treat data correctly by working closely under the assistance of the competent and encouraging research advisor, discipline experts, and statisticians. Providing undergraduate research opportunities with faculty experts is a means of developing familiarity and comfort with the scientific method and analytic process as well as a means of building skills in problem-solving and critical thinking (Abudayyeh, 2003). The students engaged in teamwork in analyzing and interpreting their data before they had their work corrected by their respective statisticians and research advisor. This opportunity enhanced their education, particularly in research, and gave them invaluable experiences in teamwork, leadership, and communication (Doerschuk, 2004).

The students also experienced mentoring relationships, which fostered their professional and personal growth. They learned the skills needed for successful completion of professional tasks and developed the confidence to try new behaviors (Dohm & Cummings, 2002) for they were allowed to have their own individuality and style (Rodts, 2005). The students' opportunity of working with the research advisor, who has the qualities, mandate, time, and resources to do high quality research, facilitated the completion of their research. As previously mentioned, the essence of undergraduate research is the supportive, encouraging, intellectual partnership between students and their research advisor and among the students as researchers through which students applied knowledge gained in the classroom to new questions and problems (Merkel, 2003).

Experiences of the students when gathering data were motivating and humanizing as well as frustrating and humanizing. As they performed this task, they were developing some human and scholarly values. Research provided opportunities for the development of knowledge, skills, and values. Thus, the critical roles of a research advisor are as a role model, advisor, promoter of scholarly values and scientific integrity, nurturer, educator of knowledge and skills, and advocate of research endeavors (Reynolds, 2005).

Support and motivation from the research advisor, experts in the field, statisticians, teammates, and parents

were experienced by the greater majority of the undergraduate students under study. The students were assisted with specific aspects of their research and with the social, political, and human aspects of research involvement (see Johnston & McCormack, 1997). They learned how to interrelate, communicate, and adjust to different personalities during the Developing Stage. They also had to cooperate, not only with their teammates, but also with their research advisor and respondents as well as be patient and persevering in their work. In other studies, students benefited from working closely with the research advisor and learning research strategies from them, consulting other experts on their work, and having a supportive and stimulating community (Lundmark, 2002).

As earlier mentioned, there were frustrations in the undergraduate research students caused by the inaccessible facilities, lack of cooperation and competence of interviewees, and lack of support by some teammates who were unmotivated. These difficulties provided opportunities for them to develop some human values as they tried their best to meet the requirements of the research advisors and the set deadlines for completion and submission of the projects. According to Greene (2005), teams that can manage difficulties will bring out the best of the team environment by generating a more productive team.

In the Accomplishing Stage, it was then exciting and fulfilling for most of the teams to have reached the portion of synthesizing the results and formulating the conclusion but frustrating for others. Most had the ease of citing their references during the discussion of results or findings because of the availability of the reference materials and the guidance of their research advisor. Regular meetings of research advisors and students proved to be effective in refining the written communication and problem-solving skills of the students and in providing suggestions for possible solutions to the research problem (Cortinas, Straka, Beasley, Schneider, & Machacek, 1996). The students were happy to have arrived at the formulation of the conclusion and to have contributed new ideas, processes, or products to their fields of study and to certain sectors of society. The completion of their studies also paved the way for students to be co-authors of publications in national or international journals and conference proceedings (Abudayyeh, 2003) and co-presenters in international or national paper presentations or exhibits organized by professional organizations.

The undergraduate students who engaged actively in these research projects gained some benefits for themselves too. Such undertakings improved students' confidence; research skills; and their teamwork, communication, problem-solving and higher thinking skills; it also increased their knowledge in the field

which they are pursuing as Tell and Gates describe (as cited in Delatte, 2004). Johnston and McCormack (1997) shared that the undergraduates gained recognition through their successful conference papers and publications as well as network opportunities, which likewise were experienced by some of the undergraduate students under study.

Those who had frustrating experiences due to missing data or information from related readings and those whose works were rejected by journals or organizers of conferences for paper presentations, nevertheless, felt fulfilled because they passed the evaluation of the panelists during the oral defense of their papers.

Students who engaged in the research also had to go through the rigorous process of conceptualizing the problem; selecting, organizing, and documenting the related literature and studies; selecting the research method and sampling techniques; gathering and treating the data; generalizing the results/findings; and disseminating the research output. Challenge was one of the best things experienced by the students. When one faces challenge, he/she learns, grows, and discovers truths and himself/herself (Wade, 2004).

Good attributes of the research advisor and students and the quality of the mentoring relationship enhanced the completion of the students' research. Katz and Coleman (2001) mentioned that effective mentoring relationships were characterized by attributes such as mutual respect, caring, accessibility, compatibility, and support. Moreover, Schwartz (2003) suggested that advisors be a key link in the development of undergraduate research. These advisors can advocate for administrative support, recruit faculty to provide undergraduate research opportunities, assist in designing systems that match those opportunities with promising students, source out funding for the undergraduate researches, and assist in nurturing students through the process.

Conclusion

The findings reveal that undergraduate students - who were guided by competent, motivating, and supportive research advisors - completed the rigorous research process successfully with rich and colorful experiences. Generally, the students experienced improved thinking, research, communication, writing, presentation, and relational skills while manifesting values such as self-confidence, goal-consciousness, determination, perseverance, resourcefulness, self-discipline, passion for reading and work, open-mindedness, creativity, courage, responsibility, and concern for others. In most cases, the research was undertaken through the teamwork of peers under the mentorship of a research advisor, who is competent in

the same discipline as the students and has a track record in research, and, when necessary, under the assistance of a statistician and another expert on the research topic.

At the start of the research endeavor, the undergraduate students were insecure and fearful of what they were about to undertake, but they also experienced some challenges at the early stage of their research involvement. During the information and data gathering stage up to the interpretation of data, they had mixed experiences of confusion, exhaustion, motivation, inspiration, nurture, frustration, and humanization. At the end of their research endeavor, however, they experienced fulfillment with excitement and frustration.

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APPENDIX A
Titles of Research

In Education

- From Contrived to Lived Experiences: Lessons from Students' Early Field Exposure and Immersions
- Informal Mathematics: Lessons from Underground Economy in the Philippines
- Struggles and Successes of Filipino Pre-service Science Teachers Captured from the Lens of Qualitative Inquiry
- Why go into Teaching? A Look into the Motives of Career Shifters in the Philippines
- Clientele Recognition of Library Terms and Concepts: the case of an Academic Library in the Philippines

In Arts and Letters

- Rereading the Arcana: A Pinoy Analysis of the Western Tarot
- Poetics of Male Homosexual Desire in the Selected Poems of Ronald Baytan
- Narrativization of Space in F. Sionil Jose's "Ermita: A Filipino Novel"
- Once on This Island: The Filipino Archipelagic Unconscious in NVM Gonzalez Selected Works"
- From the Fringes/ At the Margins: Constructing the Filipino in the Guinness Book of World Records"

In Commerce

- An Assessment of the Impact of Budget Deficit on the Philippine National Government External Debt
- The Patterns of the Philippine International Trade with the United States of America, European Union and Japan, 1994-2003
- The Performance of Selected Macroeconomic Variables under the Inflation Targeting Framework
- Alleviating Fiscal Deficit Through the Value Added Tax (1995-2004)
- Performance Efficiency of Selected Microfinance Organizations in Metro Manila: An Application of Data Envelopment Analysis

In Pharmacy

- Disintegration and Dissolution of Metformin Hydrochloride Tablets
- A Comparative Study of the Anti-inflammatory and Antimicrobial Activities of Averrhoa bilimbi and Averrhoa carambola (Oxalidaceae)
- Quality Control Tests: Dissolution and Assay Testing of Chlorpromazine Tablets Available in the Market
- An Assessment of the Hypoglycenic Property of the Crude Leaf Extract of Anarcadium Occidentale
- Formulation of an Ointment from the Crude Extract of Milcania cordata.

APPENDIX B
Interview Guide

1. What were your impressions of research undertakings/endeavors before you started attending the research classes?

2. What were your experiences (good and bad) in the conduct of research?
   a. Conceptualizing the problem
      (Is the problem your own choice? How was it conceptualized?)
   b. Selecting and organizing the related literature and studies
   c. Documenting the references cited
   d. Selecting the research method and sample techniques
   e. Determining the study site, sample subjects and the size of sample
   f. Gathering the data
   g. Treatment of data (analysis and interpretation)
   h. Generalizing the results

3. How did you handle your difficulties?

4. Who supported you in your research endeavors? How were you supported?

5. What has the college provided to make you succeed in your research undertaking?

6. Is the environment in your research class conducive to your completion of the research project? Why?

7. Did you gain interest in research upon your completion of your respective studies? Why?

8. How were the results of your study disseminated?

9. Were your papers published? If so, please fill out the details on the form.

Identifying Research Priorities and Needs in Mobile Learning Technologies for Distance Education: A Delphi Study

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The main purpose of this study was to identify, categorize and rank the future research priorities and needs for mobile learning technologies. The key research inquiries were the following: (a) What are the major research issues and challenges identified by online workers for mobile learning technologies over the next ten years?, (b) What are the major research categories identified by online workers for mobile learning technologies over the next ten years?,(c) What are the major research priorities identified by online workers for mobile learning technologies over the next ten years?, and (d) What are the major research needs identified by online workers for mobile learning technologies over the next ten years?. A Delphi study was used to represent a constructive communication device among a group of experts. A total of 72 participants (24 female and 48 male) were selected for participation. These experts identified top research issues and challenges, categories, priorities, and needs for mobile learning technologies.

The aim of this study was to systematically investigate the current difficulties in, and the dilemmas and arguments around, mobile learning technologies while considering how the problems might be faced and overcome. The need for clear definitions and critical action has never been more pressing. On the one hand, mobile learning technologies in distance education have been modeled and influenced by a variety of new communication technologies. There are patterns and customs of mobile learning technologies drawn from the distinctive improvements in online communications. On the other hand, as noted by Burniske and Monke (2001), we should carefully identify future research needs and priorities which will affect and modify the development of mobile learning technologies in a post-modern world; we need to learn how to break down the digital walls. Past and future developments must be considered in order to devise a unique, open, and democratic system of distance learning through technology in the higher education system.

There has been some public dissatisfaction with mobile learning technologies which needs to be addressed. Responsible online workers must be found to identify the priorities and needs of mobile learners. A critical approach must be taken to handle the increased volume of distance learning, the frequency of its use, and to ensure a growth in the quality of online communications. Research on mobile learning technology should address practical and technical issues, but it must also consider the philosophy behind interactive online communications. The objects and goals of online programs must be subject to constant critical attention and revision.

Mobile learning technologies have been the subject of serious academic research. However, there is little attention paid to the impact of the latest technological developments on distance education. Online workers such as communication designers, the learners themselves, support staff, managers, and stakeholders need to keep abreast of the latest research in mobile learning technologies. Furthermore, key workers should incorporate such research into their decision-making processes and focus on future trends. Identifying future research needs and priorities for mobile learning technologies is necessary to foster these improvements. Future research needs must be identified and priority given to the social and political impact of technological developments on society and the relation of those developments to the idea of a free society. All of those concerned with and involved in mobile learning technologies and distance education must consider the impact of the digital world not just on themselves but at a global and international level.

Purpose

Recent years have seen rapid movements in mobile learning technology, a powerful utilization of new approaches, and methods and techniques that will have an impact on social and political issues and problems. A major issue is the identification of a set of global values, norms, and ethics to relate to the diverse needs of users in the digital world. One of the major issues appearing perpetually throughout this concern is how to identify global values, norms, and ethics (Green, 2002; Hine, 2003; Kirby, 1999; O'Sullivan, Morrell, & O'Connor, 2002; Perrons, 2004). Establishing appropriate interactive online communication environments empowered by mobile learning technologies is essential and complex. As suggested by Dhillon (2002), making the right decisions to maintain and improve online workers' sense of social responsibility in the Information Age is important not only because of our increased dependence on mobile learning technologies, but because these online communication technologies pose complex challenges, which will have an even greater significance in the near future. When addressing major research priorities and

needs, and examining the major research issues and challenges for mobile learning technologies in the near future, it is essential to clearly identify, rank and categorize the research and to take into account the online workers' values, norms, and ethics in relation to these revolutionary communication technologies. The main purpose of this research, therefore, is to identify, categorize, and rank the future research needs and priorities of mobile learning technologies. Based on the stated aims of this study, four research questions were asked to meet the goals and determine the direction of this research:

1. What are the major research issues and challenges identified by the online workers for mobile learning technologies over the next ten years?
2. What are the major research categories identified by online workers for mobile learning technologies over the next ten years?
3. What are the major research priorities identified by online workers for mobile learning technologies over the next ten years?
4. What are the major research needs identified by online workers for mobile learning technologies over the next ten years?

In essence, I aimed to provide a rich collection of online workers' ideas on projecting future trends in mobile learning technologies in order to enrich prospect analysis and practices in this area as it relates to a complex decision making process. The use of mobile learning technologies will be different, perhaps, from the more conservative approaches to the technologies in previous decades. Understanding future research priorities and future needs in this field can help online workers be more successful in their current professional roles.

The Background of Study

Understanding the future priorities and needs of mobile learning technologies can help online workers understand (a) how to manage their roles and tasks and (b) how to pay careful attention to the needs of a diverse online community. They can also be made to understand the importance of their roles and responsibilities, learning how to establish a sense of global values, norms, and ethics by utilizing mobile learning technologies. Thus, in this study, I combined media richness theory and radical constructivist theory with the theoretical and philosophical foundations of mobile learning technologies.

Media richness theory is utilized to identify, categorize, and rank the future research needs and priorities in mobile learning technologies as recognized by online workers. Media richness theory is based on contingency and information processing theory, one of the most widely used media theories. It argues that task performance is improved when task information needs are matched to a medium's richness or its "capacity to facilitate shared meaning" (Daft, Lengel, & Trevino, 1987, p. 358). Media richness theory points out that media vary in certain unique ways that affect the personal ability to communicate rich and complex information. According to Daft and Lengel (1986), information richness can be defined as the ability of information to change understanding within an interval of time in addition to media being capable of sending rich information better suited to tasks with ambiguous or equivocal information. As highlighted by Kahai and Cooper (2003), empowering online communications can have significant and positive impacts on design quality and that effects of participant deception can be mitigated by employing a critical pedagogy. Kurubacak (2006) notes that a purposeful, coherent approach can considerably decrease the communicational ambiguity that several online workers are facing. In this context, the critical pedagogy approach can decrease ambiguity through the theory of media richness for empowering online communications. As Kahai and Cooper (2003) point out, empowering critical online communications as a richer medium can have a significantly positive impact on generating democratic online societies.

Radical constructivist theory, on the other hand, was founded by psychologist Ernst von Glasersfeld (1987, 1989, 1991), and was part of a larger constructivist movement in the philosophy and sociology of science (Schwandt, 1994). Radical constructivism is based on two main assumptions: (a) knowledge is not passively received but actively built up by the cognizant subject, and (b) the function of cognition is adaptive and serves the organization of the experiential world, not the discovery of ontological reality (von Glasersfeld, 1989). von Glasersfeld claims that knowledge is the self-organized cognitive processing of the human mind (1987, 1989, 1991). That is, the process of constructing knowledge regulates itself; knowledge is a construct rather than a compilation of empirical data. Therefore, it is impossible to know the extent to which knowledge reflects an ontological reality. von Glaserfeld's radical constructivism emphasizes the ability of human beings to use the understandings they construct to help them navigate life (Raskin, 2002). In this context, mobile learning technologies can help learners operate in their own private and self-constructed worlds, interpersonal communications, and social interactions. Replacing an emphasis on the validity of human perception with an emphasis on its viability can help online workers

understand the future priorities and needs of mobile learning technologies.

Mobile learning technologies provide online workers with radical constructivist communication milieus combined with the principles and strategies of the media richness theory (Daft & Lengel, 1986; Daft et al., 1987), which helps online workers concentrate on significantly decreasing the boundaries of time and space. This is also an alternative approach to increasing learners' knowledge, improving their professional skills, and expanding their personal networks (Pulichino, 2006). Media richness theory helps online workers to look closely at the extent to which the human environment affects their learning experiences and to be interested in the relationship between linguistically mediated human social interactions. As described by Corrent-Agostinho and Hedberg (2000), a radical constructivist learning environment based on media richness theory has four general principles: (a) learning is a process of construction, (b) learning occurs through social negotiations of meaning, (c) learners are immersed in authentic contexts, and (d) reflective thinking is an ultimate goal. These generic principles can be implemented in practice and direct how mobile learning technologies can be incorporated. In this sense, media richness theory and radical constructivism theory can form the theoretical and philosophical foundation for this study for gathering invaluable and detailed information about the future priorities and needs of mobile learning technologies. Recognizing these social interactions as a source of knowledge helps online workers to build a viable model of experience formed within an individual but still influenced by the global context within which an activity is experienced (Doolittle, 2006).

Method

The purpose of this study was not only to identify the major research issues and challenges of mobile learning technologies but also to consider the complex problems of people and natural resources. To accomplish this, both quantitative and qualitative research techniques were utilized. Moreover, the combination of these methods helps to generate new perspectives and stimulate new directions in the data analysis. The methodology combinations provide data triangulation from a variety of data sources, and also methodological triangulation from multiple methods (Patton, 2002).

Despite considerable variance in the application of the technique, the Delphi study methodology was used in this study as a powerful communication device for a group of experts. The Delphi application was utilized to reach decisions from a diverse group of people with different ideas for the solution (Woudenberg, 1991). As noted by Helmer (1994), a Delphi study is a reliable method for investigating the formation of a group judgment, the exploration of ideas, and the production of suitable information for decision making. Furthermore, a Delphi study provides the researcher with a tool for facilitating consensus among individuals who had special knowledge to share, but who were not always in contact with each other (Adler & Ziglio, 1996).

A Delphi study was designed to develop the instrument necessary for the survey of mobile learning technologies. The incorporation of the Delphi method in the Internet milieu makes possible a number of significant refinements to the priorities and needs in the area of mobile learning technologies. The Delphi method was used to take advantage of the judgments of a group of experts for making decisions, determining needs and priorities, and predicting future needs. It provided an opportunity to obtain diverse opinions from a wide variety of experts across the world. The survey data were grouped according to the four sub-research questions: (a) the major research issues and challenges, (b) the major research categories, (c) the major research priorities, and (d) the major research needs. As noted by Osborne, Ratcliffe, Collins, Millar and Duschl (2000), the number of rounds for a Delphi study will be determined by how efficiently the panel reaches a consensus. On the other hand, many Delphi studies confine themselves to three rounds for pragmatic reasons. For reasons of time, a three-round Delphi application was chosen to determine the extent to which consensus exists among experts within the distance education community about future research priorities and the needs to be met by mobile learning technologies.

Research Setting and Participants

The research was conducted online during the 2005-2006 academic year. The researcher sent email messages and a demographic survey to different professional listservs to introduce the study and to ask the digital community whether they would like to participate voluntarily in this research. The process for conducting the study reported here involved an initial gathering of topics of interest to distance education followed by a broad emailed solicitation of nominations of people who would be appropriate participant experts for the study based on the following general criteria:

- at least three years work experience in the distance education sector, and/or
- a wide variety of experiences and activities of working in settings where educational service providers are transforming to distance education, and/or

- knowledge of design and delivery of distance learning courses, and/or
- comfort with utilizing new hardware and software tools, and skill in multimedia production

After the steering committee identified potential members for the Delphi panel from the initial pool of nominations, one hundred and seventeen (117) participants were formally invited to participate; of these, seventy two (72) agreed to complete the required three rounds of the survey. The researcher assembled an online panel of 72 online workers (24 female and 48 male) from across the world, including online administrators, online communication designers, online content providers, online learners, and online support staff from the broad area of distance education. These expert panelists identified top research issues and challenges, categories of research, the priorities and needs for future research for information, and the dissemination and partnership development between online workers. After the data were collected from the Delphi study, strategic planning around the main concerns identified in the research resulted in a planning document to outline needs and priorities in research for online workers up to the year 2016.

Data Sources

This Delphi study began with a questionnaire developed and revised by the researcher. First, the steering committee brainstormed the major research issues and challenges, categories, priorities, and needs for mobile learning technologies over the next ten years. Secondly, the researcher categorized these according to media richness theory and radical constructivist theory with the theoretical and philosophical foundations of mobile learning technologies; specific items were then organized into a draft survey instrument. Thirdly, the steering committee reviewed and critiqued the items on the instrument to confirm that the 52 items, along with their sub-topics, reflected the committee's thoughts and ideas about potential research issues and challenges, categories, priorities, and needs for mobile learning technologies. Finally, the feedback from the steering committee helped the researcher form the final shape of the Delphi survey, which had 48 items along with their sub-topics.

The survey was posted on a secure Internet website for a small team and for a larger group of experts. At the end of the survey, a series of questions seeking feedback about the survey was posted. After the questionnaire was returned, the researcher analyzed the results. The evaluative portion asked for specific feedback about survey content and layout, as well as the concerns, categories, priorities, and needs of mobile

learning technologies. At the end of the evaluation form, a question was added asking if there was anything else they would like to address. Participants were advised to visit the website and complete the survey and the evaluation form. The experts were allowed the opportunity to change their responses based on the results, and these second-round and third-round results were re-evaluated by the researcher. This process was to be continued until a consensus was reached. It would become clear that no consensus was possible.

The first round of the Delphi method asked the participants to respond to sixteen specific questions on identifying top research issues and challenges, categories of research, the priorities and needs for future research for information, and the dissemination and partnership development between online workers. The second round used questions developed from responses to the first questionnaire. The participants were asked to rate each statement on a 1 to 5 scale (1 = *very important*, 2 = *important*, 3 = *neither important nor unimportant*, 4 = *unimportant*, and 5 = *very unimportant*) and to optionally comment on each statement. The third round used the same statements as the second round and asked the participants if they would like to modify their answers based on the responses of the other participants.

Analysis

This Delphi study process essentially provided an interactive communication structure between the researcher and experts in distance education in order to identify, categorize, and rank the future research needs and priorities for mobile learning technologies. Both qualitative and quantitative questions were asked of the experts, and the information was then analyzed and provided to each person, via further questions. Their responses were analyzed again, recycled for feedback, and so on until the goal was reached: when a consensus was reached which offered a synthesis and clarity on the question. The three rounds of the Delphi study were followed in accordance with descriptions provided by Rockwell, Furgason and Marx (2000) as well as Osborne et al. (2000).

In the first round of the Delphi panel, the researcher asked each expert to rate each item based on two factors: (a) identifying top research issues and challenges and categories of research of mobile learning technologies, and (b) identifying the priorities and needs for future research for information and the dissemination and partnership development between online workers. The researcher used a scale of 1-5 for each question (1 = *very important*, 2 = *important*, 3 = *neither important nor unimportant*, 4 = *unimportant*, and 5 = *very unimportant*). The first round instrument was posted on a web page. All of the panel participants

accessed and answered the questionnaire electronically. Seventy-two panel members participated in the first round.

In the second round of the Delphi panel, mean scores were calculated for each item from the first Delphi panel response using a five-point scale (1 = *very important* to 5 = *very unimportant*). For the Delphi panel's second instrument, the mean score was marked on an importance scale for each of the original items; panel members were then asked to rate the accuracy of the mean scores using a three-point scale (1 = *should reflect more importance,* 2 = *is an accurate representation of importance,* and 3 = *should reflect less importance*). From the comments written in on the first round, eight new items were added to the second round questionnaire. Respondents were asked to rate the importance of these items using the same five-point scale (1 = *very important* to 5 = *very unimportant*) employed in the first round instrument. Seventy-two panel members completed the second round instrument.

Finally, in the last round of the Delphi study, frequency distributions were calculated for the accuracy ratings given to each of the original items. This meant that scores for the second round were adjusted based on the net difference between the proportions of responses, demonstrating that the item was judged either *"more important"* or *"less important."* The adjusted means were added to the instrument for a third round. The third round instrument again asked for a rating of the accuracy of the mean scores using a three-point scale (1 = *should reflect more importance,* 2 = *is an accurate representation of importance,* and 3 = *should reflect less importance*). A principal contribution to the improvement of the quality of the third round results, moreover, improved the understanding of the participants through analysis of subjective judgments to produce a clear presentation of the range of views and considerations (Turoff & Hiltz, 1996); it also detected hidden disagreements and judgmental biases that should be exposed for further clarification, and missing information or cases of ambiguity in interpretation by different participants.

Three faculty members who were experts in distance education coded the participants' response in the reliability check process. The anonymous and iterative nature of this process allowed the participants to submit their diverse opinions and make their critical decisions without meeting in person (Patton, 2002; Turoff & Hiltz, 1996). Finally, this Delphi application generated forecasts in mobile learning technologies (Cornish, 1977) and empowered expeditious understanding on the future consequences of present choices (Amara & Salanik, 1972).

Findings and Discussion

The present study focused on identifying, categorizing, and ranking the future research needs and priorities for mobile learning technologies. In addition, the factors necessary to investigate the major research issues and challenges identified by online workers over the next ten years were investigated. The findings of the study provide a pragmatic analysis, as well as a discussion of the four main areas identified by the online workers for mobile learning technologies over the next ten years: (a) the major research issues and challenges; (b) the major research categories; (c) the major research priorities; and (d) the major research needs.

The Major Research Issues and Challenges

The major research issues and challenges were those which provided online learners with diverse solutions to the future's most pressing dilemmas, problems, or barriers (see Table 1). To best prepare themselves for different situations of technological, pedagogical, and social leadership in the global online world, online workers were concerned about three main areas: (a) realizing the dialectic relationship between personal technology and everyday learning, (b) accommodating the diversity of learners, (c) and promoting strong interdisciplinary research agendas. These areas are important for online workers who need to be increasingly aware of the challenges involved in meeting the needs of multicultural online communities. In order to manage these communities well, online workers must be able to assess and analyze global thinking and trends, taking into account a range of viewpoints and philosophies (Ketterer & Marsh, 2006; McLean, 2006; Yang & Cornelious, 2005). These situations require more responsible and potent world wide distributed mobile technologies (McIntrye Boyd, 2008) to generate online community-based reactions and modify attitudes to better reflect the values of diversity and opportunity. In this context, the public responsibility, the management of the online community, and the need for specialists are the three key factors for online workers to participate in transforming technological and social change, accommodating the diversity of learners, and promoting strong interdisciplinary research agendas (Bonk, 2001; Pulichino, 2006). They need to be committed to and share in the values of independent online communities. The specialists participating in building technological and social change will, as future leaders, (Attwell, Dirckinck-Holmfeld, Fabian, Kárpáti & Littig, 2004; Martins & Kellermanns, 2004) need to embrace a large range of diverse opinions and perspectives,

make critical decisions, address the questions of radical movements, and consider communications on radical actions for the global public good (Holland & Childress, 2008; Kurubacak, 2006). Online workers, therefore, should focus on preparing for their leadership in mobile learning technologies; this will derive from their being familiar with democratic global online communities.

Online participants stressed that it was vital to develop the multicultural standards of accreditation for mobile learning technologies, provide learners with novel opportunities for synchronous online communications, and support a range of knowledge-based activities coupled with the increasing use of mobile technologies; less important, on the other hand, were access to learning to broaden from traditional approaches to become part of real-life, provide appropriate strategies for managing changes for technology implementation, and cover a variety of research topics ranging from the technologies through to socio-cultural research. Online workers, therefore, should consider how mobile learning technologies can provide digital citizens with the communication tools to better themselves and strengthen democracy, to generate a more egalitarian and just society, and thus to deploy distance education in a process of progressive social change (Holland & Childress, 2008; Yang & Cornelious, 2005).

TABLE 1

The Major Research Issues and Challenges for Mobile Learning Technologies
as Reported by Distance Education Experts

How important is it to:	
Very Important (1.00 to 1.49[a])	
1.03	realize the dialectic relationship between personal technology and everyday learning
1.04	provide critical reflects the diversity of learners
1.05	promote strong interdisciplinary research agendas
1.12	develop the multicultural standards of accreditation for mobile learning technologies
1.13	provide learners with novel opportunities for synchronous online communications
1.25	support a range of knowledge based activities coupled with the increasing use of mobile technologies
1.27	evaluate the usability of mobile applications
1.29	develop individual technologies that support a person through a lifetime of learning
1.31	adopt appropriate mixed research methodologies
1.34	increasing access to learning opportunities in diverse societies
1.37	promote a lifelong learning increasing the skills of the global workforces
1.40	provide learners with all the knowledge they need to flourish throughout a lifetime
1.42	provide learners with best practices for utilizing mobile learning technologies
1.46	offers new possibilities for interactive online communications
1.48	support learning outside formal educational settings over a learner's lifetime
1.49	access to a wireless network change the dynamics of learning-in and out of the classroom
1.49	manage the social, societal and cultural impacts of research in mobile learning technologies
Quite Important (1.50 to 1.99[a])	
1.50	support learning communities including new forms of improved critical thinking skills
1.61	cope with various network conditions which must be taken into consideration
1.69	forecast the exact situations of the mobile application use
1.78	focus on limited bandwidth and unreliability of wireless networks
1.79	investigate the rationale for implementing mobile learning technologies
1.84	develop models of diverse learners which embrace the widely varying timescale
1.86	improve a sustainable economy for mobile learning technologies
1.93	develop the effective use of new mobile technologies
1.96	improve gradually educational excellence
1.99	provide location-based services for educational networks
Somewhat Important (2.00 to 2.49[a])	
2.10	access to learning to broaden from traditional approaches to become part of real- life
2.18	provide appropriate strategies for managing changes for technology implementation
2.46	cover a variety of research topics ranging from the technologies through to socio-cultural research
Neither Important Nor Unimportant (2.50 – 2.99[a])	
2.86	provide learners with ubiquitous access to information

[a] 1 = Very important, 2 = Important, 3 = Neither important nor unimportant, 4 = Unimportant, 5 = Very unimportant

The Major Research Categories

The major research categories were those that helped to define the important and urgent areas of research for mobile learning technologies (see Table 2). Online workers emphasized that the following must become important research categories for the future: (a) their new roles, (b) a multicultural curriculum, (c) global patterns influenced by mobile learning technologies and interactive synchronous communications, and (d) cultural biases and stereotypes. There should be adjustments, agreements, and recognition of diversity in communications when integrating mobile learning technologies into curricular activities (Alexander, 2004). Mobile learning technologies must supply full and accurate communication milieus that the learners can base their judgments without cultural biases and stereotypes (Traxler & Bridges, 2004). Therefore, online workers have to respect the multicultural diversity; the rights of digital citizens; the varying ethics, values, and norms connected to the societies online learners live in; and digital people's connections with their societies that influence the technological management and leadership of mobile learning technologies (Bolliger & Martindale, 2004; Bonk, 2001; Ketterer & Marsh, 2006; Martins & Kellermanns, 2004; McLean, 2006; O'Neill & Palmer, 2004; Rossi, 2004). Table 2 shows that online workers would like to see a focus on diverse views as well as the biases, opinions, stereotypes, and prejudices of management in mobile learning technologies.

According to online workers, existing programs run by different educational institutes from all over the world need to re-evaluate their programs in the light of current internal and external trends (Ketterer & Marsh, 2006; Oakley, 2004), such as changing roles, multicultural curriculum, and global patterns influenced by mobile learning technologies. Therefore, mobile learning technologies should achieve the goal of equal participation of digital citizens in decision-making and provide a balance that more precisely reflects the composition of a free online society, which is needed to fortify democracy and promote its proper performance. There are few arguments involving the following: (a) working with subject matter experts in the planning and scheduling of the design and development of distance education, (b) assuring course design meets accessibility standards, and (c) managing and supplying pedagogical support for distanced learning program. On the other hand, as illustrated in Table 2, computer hardware and software developments as well as internal institutional trends rank as less important. The results indicate less interest in collaborating with subject matter experts on updates, revisions, and maintenance; providing online workers with the best practice models; and faculty reward systems.

TABLE 2

The Major Research Categories for Mobile Learning Technologies as Reported by Distance Education Experts

How important is it to:

Very Important (1.00 to 1.49[a])

1.12	Changing roles
1.23	multicultural curriculum
1.23	global patterns influenced by mobile learning technologies
1.30	interactive synchronous communications
1.35	cultural biases and stereotypes
1.38	the philosophy of mobile learning
1.39	current trends that influence the technological managements and leaderships
1.41	global values, ethics and norms
1.42	trends outside of the organizations
1.46	Stakeholder involvements

Quite Important (1.50 to 1.99[a])

1.51	higher accountability
1.68	funds for mobile learning technologies
1.94	infrastructure developments

Somewhat Important (2.00 to 2.49[a])

2.26	computer hardware and software developments
2.37	internal institutional trends

Neither Important Nor Unimportant (2.50 – 2.99[a])

2.53	interactive asynchronous communications
2.73	best practice models
2.81	faculty reward systems

[a] 1 = Very important, 2 = Important, 3 = Neither important nor unimportant, 4 = Unimportant, 5 = Very unimportant

The Major Research Priorities

The major research priorities were those that relate to how programs are delivered via mobile learning technologies are as follows: (a) addressing specific curriculum areas by diagnosing communication problems, and (b) ensuring privacy for the distance learners as well as enhancing different capacities for a more rich social interaction (see Table 3). In this case, priority should be given to those strategies, which are completely in accord with global agreements on equality and diversity issues (Ketterer & Marsh, 2006; Paulson, 2002; Roffe, 2002; Rovai, 2003; Yang & Cornelious, 2005). In line with this, online workers should expand their abilities to provide learners with emerging practices relating to the use of mobile learning technologies (Fabian, Kárpáti & Littig, 2004; Oakley, 2004) and should adopt suitable applications to match the needs of the users of the digital world (Amin, Mahmud, Abidin, Rahman, Iskandar & Ridzuan, 2006).

Online workers highlighted that mobile learning technologies would enhance different capabilities for rich social interactions, explore emerging practices relating to the use of mobile learning technologies, and adopt suitable applications that match the needs of the digital world. To promote learning within authentic contexts and to find new strategies based on learners' previous and current knowledge, online workers should affect the shaping of learning and communication events (Attwell et al., 2004; Traxler & Bridges, 2004). Additionally, there should be new dimensions added to the provision of interactive course materials for learners.

Online workers also indicated that online educators and technical developers should be encouraged to rethink their roles and responsibilities. This would help these professionals to plan and control their leadership roles in a technologically advanced learning setting (Oakley, 2004; Roffe, 2002; Trifonova & Ronchetti, 2003). Online workers believed that moving more outside of the traditional classroom, empowering learning through social interactions, and ensuring security for the distance learners required the appropriate use of mobile learning technologies to focus on improving more diverse skills for an authentic contextual awareness.

TABLE 3

The Major Research Priorities for Mobile Learning Technologies as Reported by Distance Education Experts

How important is it to:	
Very Important (1.00 to 1.49[a])	
1.12	address specific curriculum areas
1.14	diagnose communication problems that learners have with mobile learning technologies
1.19	ensure privacy for the distance learners
1.29	enhance different capabilities for rich social interactions
1.35	explore emerging practices relating to the use of mobile learning technologies
1.37	adopt suitable applications that match the needs of the digital world
1.39	design difficult activities simulated from real-life
1.41	provide interactive course materials to learners
1.43	promote learning within authentic contexts
1.46	prompt interactive communications within diverse culture
1.47	find new strategies based on learners' previous and current knowledge
1.49	develop strategies that map efficiently to the curriculum needs
1.49	become more embedded with diverse skills for context awareness
Quite Important (1.50 to 1.99[a])	
1.50	encourage educators and technical developers to rethink their roles and responsibilities
1.54	move more and more outside of the traditional classroom
1.59	Empower learning through social interactions
1.63	ensure security for the distance learners
1.64	assist in the management of learners and resources for online communication activities
1.78	investigate advantages and disadvantages of each mobile learning technology
1.96	investigate a cost model for infrastructure, technology and services
Somewhat Important (2.00 to 2.49[a])	
2.23	consider the use of mobile technologies for student administration tasks
2.47	present a main guideline to empower current educational practices
Neither Important Nor Unimportant (2.50 – 2.99[a])	
2.53	utilize new technologies for attendance reporting and reviewing student marks more effectively
2.57	customize mobile learning technologies for individual learners
2.71	connect mobile devices to data collection devices or a common network
2.79	identify the different types of mobile technologies that are applicable to learn

[a] 1 = Very important, 2 = Important, 3 = Neither important nor unimportant, 4 = Unimportant, 5 = Very unimportant

On the other hand, online workers were less interested in connecting mobile devices to data collection devices and a common network, and identifying the different types of mobile technologies that were applicable.

The major research priorities for mobile learning technologies have generated a new paradigm for distance education (Burniske & Monke, 2001; Sharples, 2000; Sharples, 2003). Successful participation in intercultural communications requires that online learners recognize and understand cultural influences on collective action and global participation, especially since the major research priorities for mobile learning technologies focus on cross-cultural communications and global cultural patterns (Alexander, 2004; Corrent-Agostinho & Hedberg, 2000; Martins & Kellermanns, 2004).

The Major Research Needs

The major research needs indicate that online workers should be provided with the tools necessary to facilitate the design and delivery of distance programs supported by mobile learning technologies (Trifonova & Ronchetti, 2003) to support collaborative learning, transform learning into a part of real-life, and support digital interactions dedicated learning milieus.

The results indicated that there was a significant interest in engaging in activities that did not correspond with the curriculum, linking with multicultural activities in the outside world, and using mobile technologies to support group learning. In this context, addressing issues of power, authority, and ownership could have novel effects in the new technological milieus (Rockwell et al., 2000; Rovai, 2003; Woudenberg, 1991), which raises specific concerns about the power of global companies, new perspectives on the meanings of democracy, multiculturalism, and so on (Alexander, 2004; Attwell et al., 2004; Chen, 2001; Traxler & Bridges, 2004).

Online workers stressed that instructors needed to provide effective technical supports, assist learners in the development of online communication skills, and construct critical cultural perspectives via mobile learning technologies. These actions can enhance

TABLE 4
The Major Research Needs for Mobile Learning Technologies as Reported by Distance Education Experts

How important is it to:

Very Important (1.00 to 1.49[a])

1.02	consider the use of mobile learning technologies to support collaborative learning
1.13	Transform learning into a part of real-life
1.27	support digital interactions dedicated learning milieus
1.27	engage in activities that do not correspond with the curriculum
1.32	link to multicultural activities in the outside world
1.36	consider the use of mobile technologies to support group learning
1.37	provide effective technical supports to the faculty
1.37	assist learners in the development of online communication skills
1.38	construct critical cultural perspectives via mobile learning technologies
1.38	enhance different possibilities for online communications
1.41	investigate issues of power and culture in mobile learning technologies
1.43	provide learners with authentic guidelines as to how the real-life problems may be approached
1.47	support intentional online learning activities
1.48	draw on context-aware applications to enhance the multicultural learning activities

Quite Important (1.50 to 1.99[a])

1.52	address diverse issues along with more practical concerns such as cost, usability and pedagogy
1.53	address multicultural issues that do not immediately inform practices
1.61	consider the various intersections of context, technology and learners
1.66	assign the necessary roles for supporting mobile learning
1.67	support human-computer interactions (HCI)
1.75	communicate with other devices of the same and/or similar types
1.76	provide critical developments beyond the classroom experiences
1.76	enhance new communicational activities powerfully
1.85	enable learners to share data, files and messages
1.89	support for administrative duties

Somewhat Important (2.00 to 2.49[a])

2.35	provide learners with the various potentials to escape the classroom

Neither Important Nor Unimportant (2.50 – 2.99[a])

2.50	facilitate for informal online communications
2.86	develop strategies for the management of mobile equipment

[a] 1 = Very important, 2 = Important, 3 = Neither important nor unimportant, 4 = Unimportant, 5 = Very unimportant

communication in a multicultural context (Attwell et al., 2004; Corrent-Agostinho & Hedberg, 2000; Dhillon, 2002; Martins & Kellermanns, 2004; Trifonova, 2007) and that this advent of mobile learning technologies could build completely new communication and learning environments. The results indicate that addressing diverse issues along with more practical concerns (e.g., cost, usability, and pedagogy); multicultural issues; and considering the various intersections of context, technology, and learners were considered more important; on the other hand, much less interest was reported in providing learners with the various potentials to escape the classroom, facilitating informal online communications, and developing strategies for the management of mobile equipment.

Conclusion

The main purpose of this research was to identify, categorize, and rank the future research needs and priorities in mobile learning technologies. This paper contains a series of original ideas, viewpoints, and insights identified by distance education experts on the roles and responsibilities that need to be addressed concerning mobile learning technologies over the next 10 years. The discussions raised numerous major issues at play in the present as well as questions about scientific, technological, and pedagogical productivity in the future. Several professionals had strong opinions on the impact of mobile learning technologies on social, societal, and political life, and they contributed well-articulated viewpoints from their own real-life experiences indicating different approaches to future research.

The collected data showed that cutting-edge technology improvements and diverse relationships changed by power and ownership could lead to various opportunities for scholarly research and inquiries related to mobile learning technologies (Bolliger & Martindale, 2004; Bonk, 2001; Dhillon, 2002). These experts would like to concentrate on these technological developments given that values, ethics, and norms can be overwhelmingly affected by this digital world. These experts need to be able to adapt to continuously changing conditions and the needs of sustainability, while taking into account the values and interests of the collectivity before collective action. Online workers should play an important role in strengthening technological, societal, economical, and political developments and in the facilitation of collaborative action (Ketterer & Marsh, 2006; Roffe, 2002; Yang & Cornelious, 2005). Online workers, moreover, should stimulate the global development process and strengthen online learners' ability to learn, adapt, and innovate (Attwell et al., 2004; Rockwell et al., 2000; Roffe, 2002; Traxler & Bridges, 2004). Finally, the

responses of these experts suggested three main areas of concern:

- the distinguishing qualities and factors of technological change strongly affect the role and responsibilities of future research,
- the problems of social adjustments to technological change powerfully impact socio-cultural patterns and a democratic way of life, and
- the responsibilities and roles of online workers professionally generate new dimensions in the process of change.

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Teaching West in the East: An American University in China

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Having closed its door to Western ideas for centuries, China has always presented itself as a puzzle both for academicians and politicians. Westerners, though, have always been attracted by the natural resources and human power that China offers to the capitalistic world. This study explores the entrance of Western ideas in China from an educational perspective. The researcher spent 2005-2006 in China researching a Sino-U.S. Joint venture campus, exploring the academic challenges when teaching Chinese students. While being independent learners, Chinese students maintained their cultural roots and were proud of their long historical and cultural background. Chinese students were receptive and appreciative of American education, and Western capitalistic ideas did not cause any concern among the students.

Being one of the oldest nations in the world, China has never been totally occupied by Western powers (Selmer, 2001). China has succeeded in preserving its traditions, history, and mystery with a strict argument that China has a history, while foreign peoples did not deserve any form of historical treatment (Barrett, 1994). Westerners, though, have always been attracted by the natural resources and human capital that China offers to the capitalistic world.

During one of the earliest Chinese-Western conflicts, the Taiping movement, the Chinese defended themselves against the Western powers by threatening to overthrow the ruling Qing Dynasty and establish a form of primitive Communism (Newsinger, 2001). Through the Boxer movement, they defended themselves from Imperialist ideas through a national liberation movement (Weisberger, 1997). Both Taiping and Boxer movements were anti-foreign in nature (Weisberger, 1997), and there is no actual account of the number of people who died during these movements. Chinese nationalists were promising that "when the foreigners are wiped out, rain will fall" (Preston, 1999, p. 28); Westerners, on the other hand, believed that these movements were simply caused by the famine and harsh rural conditions, and, after the rain, everything would go back to its normal flow (Preston, 1999). It was sometimes Western ignorance and sometimes the Chinese's overly proud nature that caused conflicts between China and the Western world.

Protecting China from external influence was both the physical and symbolic duty of the Great Wall. However, with globalization, China's recent "open doors," and the Information Age, it is becoming more difficult to keep China closed to Western ideas and ideologies. By opening its doors willingly, China is trying to control the expansion of Western ideas. This study explores the entrance of Western ideas in China from an educational perspective. The researcher spent 2005-2006 in China researching a Sino-U.S. Joint venture campus, exploring the challenges of an American education on Chinese soil. The research question for this study was "What are the academic challenges for a Sino-U.S. joint venture campus in China?"

Chinese Education

In order to understand the significance of the presence of a Western educational institution on Chinese soil, it is imperative that we have an understanding of Chinese education. It is probably not what Confucius, Mencius, or Chairman Mao Zedong would like to hear, but Westerners are here, and they are here to stay.

Education in Early Imperial China

When missionaries were first involved in the dissemination of Christian knowledge and faith in China, they lost no time in establishing schools as an instrument. They founded schools, not strictly for the children of Christians, but as a place where the new converts were educated and preserved from too intimate contact with the unbelieving world. They had no well-established educational policy. The schools opened by the Christian missionaries were, moreover, confined to the children of the humbler classes. The few who acquired a Western education had little prospect of employment in the government. In spite of these and other shortcomings, for some time, the schools of the missionaries were practically the only institutions where some form of modern knowledge was taught; for this reason, they justly claim to have been the first modern educational institutions in China (Pin-Wen, 1915). Purcell (1936), however, claimed that the main objective of these Christian schools was to maintain and strengthen the converts in their faith and to prepare candidates for the priesthood, and there was no attempt made to introduce Western learning to students. He further argued that the missions had great difficulty in getting pupils for their schools and both Catholics and Protestants had to resort to bribery to keep their schools

going, giving their pupils not only free tuition but food, lodging, and clothing as well.

In 1925, the American system, based on principles presented by educationalists such as John Dewey, was formally rejected due to anti-foreign feelings. The Chinese decided that education should be first and foremost nationalistic, and "Chinese learning should be the essence, and Western learning should provide material efficiency" (Purcell, 1936, p. 77). In this case, once again, East and West misunderstood each other. Each looked straight past the other, believing itself to be immeasurably superior and hence seeing no need to take the trouble to understand the other's perspective (Preston, 1999).

Traditional Chinese Education, Confucian Thought, and Mao Tse-tung

Reagan (2000) claims that it would be impossible to discuss traditional Chinese educational thought without repeated reference to Confucian thought. It was and still is "an integral part of the Chinese mentality" (p. 105). As a belief system, Confucianism has provided the Chinese with great stability and resilience (Redding, 1990).

Confucianism, as Turner and Acker (2002) explain, holds at its center the value for learning and for the ideals of social mobility, which are achieved by intellectual progression and development. Education and intellectual life, therefore, were at the heart of the social and organizational infrastructure of China for many hundreds of years. For many centuries the ethic of Confucius was the moral basis on which both human relationships and the conduct of government rested in China. It was also the source of traditional educational philosophy. Confucianism taught that man was by nature good and could be correctly shaped by education and all men had the capacity to reach moral perfection (Taylor, 1981).

Despite a period of Communist rule since 1949, Confucian ideology is still a strong force in China today. Taking the family as a model for society at large, Confucianism is basically authoritarian, emphasizing hierarchical principles and status differences. It guides the correct and best way of handling interpersonal relationships and is accepted at all levels of society (Bond, 1991), infusing Chinese organizational behavior, resulting in a largely autocratic managerial style.

According to Mao, the educational system was part of the cultural network of a country. In discussing the wider context of cultural work, Mao stated that the new culture created in the Soviet Union should be a model for the Chinese in building Chinese people's culture. Similarly, ancient Chinese culture should "neither be totally rejected nor blindly copied but should be accepted discriminatingly so as to help the progress of China's new culture" (Taylor, 1981, p. 9).

The educational system was to create individuals that were both Communist and knowledgeable. It was the duty of the educational system to instill into the young political awareness through strengthening their ideological and political work. Therefore, both students and intellectuals should study hard. They should study Marxism, current events, and political problems, which would then help them progress both ideologically and politically. As Taylor (1981) describes, "Not to have a correct political viewpoint is like having no soul" (p. 44).

Significance of the Study

The international promotion of political and economic ideologies through educational assistance was most apparent during the Cold War, when the Western and Eastern blocs competed to recruit allies in the developing world. Berman's (1983) analysis of Carnegie, Ford, and Rockefeller foundation programming is perhaps the most thorough study of this phenomenon. On the basis of interviews with foundation personnel and archival research, he argues that "these U.S. philanthropic organizations offered training intending to 'enculturate' or socialize a generation of African, Asian, and Latin American university graduates toward political and economic perspectives associated with the United States" (p. 14).

Western universities were seen to be successful in providing advanced education, in fostering research and scientific development, and in assisting their societies in the increasingly complex task of development (Altbach, 1991). Universities in both the United States and Germany were active in fostering industrial and agricultural development in the nineteenth century.

This study explored the entrance of a U.S. institution on Chinese soil granting American Bachelor's and Associate's degrees to Chinese students without them having to leave China. The focus is on student views on American education and the challenges throughout their education. Conducted at a Sino-U.S. joint venture campus in China, this study is significant in the sense that China has finally accepted their children being taught Western curricula by Western teachers using Western teaching methods. However, the question remains, "What do Chinese students studying at an American university in China think about studying at an American university in China?"

Pseudonyms and Abbreviations Used in this Study

In order to maintain the anonymity of the institutions and the people, real names were not used in

this study. Rather, pseudonyms were used for people, institutions, and places. These pseudonyms are as follows: (a) China American University, campus where this study was conducted; (b) American University, U.S. home campus of China American University; (c) China Investment Company, a Chinese joint venture partner; and (d) Southern Province, where China American University and China Investment Company campus are located. For the space and practical considerations, the following abbreviations are used throughout this study:

CAU:	China American University
AU:	American University
CIC:	China Investment Company
CCP:	Chinese Communist Party
P.R.C.:	People's Republic of China

China American University

China American University (CAU) was first established in 2000 in the Southern Province in the P.R.C. as a Sino-U.S. joint venture campus. When the first partnership with the CAU ended in 2004, new partners (CIC) were found. CAU moved to a new campus with new partners in the beginning of the 2004-2005 academic year. The study focused mainly on the new partnership with CIC.

Two of the main goals of CAU are (a) to create an environment in which the finest aspects of Chinese and United States cultures are respected, and (b) to provide multi-cultural opportunities to enable students to learn about various cultures in the contemporary world. Courses are taught in English by American professors, and an American University's degree is earned.

Students at CAU first complete an intensive English language program. After the completion of this program, they begin their studies in one of two academic areas that lead to American University's Associate's or Bachelor's degree. The only area of study, for the time being, is International Business.

China Investment Company

The China Investment Company (CIC) was established in 1999 in a rural city in a Southern Province of China. There are four higher education institutions that are located on the CIC campus: a vocational school, a technical college, a technology university, and the CAU. There are approximately twenty thousand Chinese students on the CIC campus. CAU is a Sino- U.S. joint venture university, managed by U.S. partners. CIC provides teaching facilities and staff support. Academic issues are handled by the U.S. partners.

Literature Review

It is commonly assumed that some Asian cultures are heavily influenced by Buddhism, which holds that knowledge, truth, and wisdom come to those whose silence allows the spirit to enter (Andersen & Powell, 1991). For instance, harmony or conformity is a key Chinese cultural value that often causes Chinese students to refrain from voicing opposing views in the classroom (Liu, 2001).

The imperial examination system in China, regularized during the Tang dynasty in the seventh century A.D., was a major feature of Chinese culture for centuries (Krebs, 1996). This imperial system led the teaching to be "didactic and text-bound, with very little or no time allowed for discussion" (Maley, 1983, p. 101).

Students are expected to compromise, moderate, and maintain harmonious relationships in which individualism and self-assertion are discouraged: honor the hierarchy first, your vision of the truth second (Bond, 1991). American teaching, on the other hand, encourages individualism, thus giving the students the responsibility to learn and expecting them to be individuals.

In American classrooms, students are expected to participate in class discussions which often form the core of classroom learning. Applicability of an American curriculum and teaching methods in China poses a significant challenge for American professors as well as for Chinese students. Chinese students are complex learners. Their needs and expectations are different than American students and Chinese students in the U.S. Cortazzi and Jin (2001) remark that although "Chinese students constitute a major group of the world's learners, roughly 25 %, as yet there is very little data-based research into their culture of learning" (p. 172). This lack of research makes Chinese learners a mystery.

Ginsberg (1992) adds that in China knowledge is not open to challenge and extension; that is, students arguing with their teachers. The teacher decides which knowledge is to be taught, and the students accept and learn that knowledge.

Even though American education is valued, American ideology is still a mystery for Chinese students and a difficult concept to understand and, most importantly, accept as valid. Gross (1996) reports that a high school political economics text explains the American system as follows:

We can firmly believe that the system of socialism possesses an incomparable superiority over the system of capitalism. The Western world is not a heaven neither is the United States a land of hope

and opportunity. In the final analysis, socialism is a better social system than capitalism, and the socialist new China is the most lovable place to live on the earth. (p. 137)

Another significant academic issue is having American academics on Chinese soil at an American university. Bodycott and Walker (2000) argue that in Confucian societies many local staff are wary of foreigners and are concerned with what they see as an invasion of Western cultural and educational ideologies and values.   These foreign academics often face difficulties adjusting to life in their new institutions and countries. Some experience stress related to alienation from families.   Some experience the challenges of living in a foreign culture and working in institutions that are very different from what they had previously experienced in their home countries. To be effective, they must learn to cope with such challenges. It is also worth noting that some foreign academics bring with them preconceived beliefs about their role. As Bodycott and Walker (2000) note, "Many see themselves as savior, that is, bringing the best of the West to a developing country" (p. 81).

Cheating and plagiarism is another issue that American professors face in their Chinese classrooms. Sapp (2002) explains, "Chinese students often consider cheating as a skill that everyone should develop just like math and computer skills; this skill is something they feel that they need in order to compete in the real world" (p. 5). When Chinese students plagiarize, they are actually honoring the actual author. For them, mentioning the name of the author or the source can be perceived as dishonoring them. Sapp later concludes that "it is extremely difficult for most of us to take a step back from our values and beliefs about plagiarism and academic dishonesty in order to be more sensitive to broader cultural, social, and political milieux" (p. 9).

Methodology

The research for this study was conducted in the People's Republic of China. CAU was used as the basis for this case, and the researcher lived and worked in China for the duration of the study.

Rationale for Qualitative Research

Patton (1990) claims that qualitative research is the most suitable research method for studies in Third World settings. Years of experience with large scale quantitative surveys and approaches has shown that the data-management problems of implementing large-scale efforts in Third World settings are typically so severe that validity and reliability are in serious doubt.

The data could not be trusted, and it was so expensive to collect such data that little or no time was left to analyze and use the data. Case studies are manageable and are trustworthy when carefully done, whereas large, generalizable samples may prove problematic due to the multitude of technical, logistical, and management issues in Third World settings.

Data Collection

Data were acquired through semi-structured interviews, surveys, and participant observations. The researcher interviewed, surveyed, and observed Chinese students studying at CAU. Participants were present and former students at CAU. Open-ended semi-structured interviews were utilized through which the investigator asked key respondents for the facts of a matter as well as for the respondents' opinions about events (Yin, 1994).   Berg (2004) defines semi-structured interviews as "involving the implementation of a number of predetermined questions and special topics" (p. 81). Structured interviews were not used because "as the interview becomes more and more structured, one often runs the risk of asking leading questions" (Shank, 2002, p. 46).   Regarding unstructured interviews, Robson (1993) argues that although unstructured interviews are very helpful in discovering new insight, they are difficult to apply when interviewing non-native speakers.

The presence of the researcher as a direct participant on campus was an important part of the research.   Bogdan and Biklen (1982) explain that qualitative research "has the natural setting as the direct source of data and the researcher is the key instrument. Researchers enter and spend considerable time in schools, families, neighborhoods, and other locales learning about educational concerns" (p. 27).   They further add that qualitative researchers go to the particular setting because "they are concerned with context. They feel that action can be best understood when it is observed in the setting in which it occurs. The setting has to be understood in the context of the history of the institutions of which they are a part." (p. 27).

Participant Responses and Investigator Observations

This field research was conducted during the 2005-2006 academic year at CAU. While collecting data, the investigator had the opportunity to work at CAU as an instructor.   The investigator arrived in China in September 2005 and stayed at CAU until June 2006 conducting this research. He spent seven to ten hours, five days a week, interacting with students, staff, faculty, and administrators. His teaching hours were scheduled in the mornings so that he could have time to

observe and take field notes in the afternoons. To maintain accurate notes, the investigator carried a mini tape recorder with him at all times and recorded his observations throughout the academic year.

Interview Responses: Former and Present CAU Students

A total of 15 CAU students were interviewed and surveyed. Specifically, nine CAU graduates were surveyed and six current CAU students were interviewed. Their responses were edited for grammar and anonymity concerns. However, because of the cultural elements that can be found in the responses, editing for grammar was minimal. As long as the meaning was clear, responses were reported as transcribed.

Question 1: How did you find out about the CAU? CAU recruits students mainly through newspaper advertisements. Even though the Chinese partner is responsible for student recruitment, advertising through newspapers is considered to be "an effective way to recruit students" by the U.S. partners.

Six of the students found out about CAU through a friend or relative. Three students found out about CAU through the Internet and five students said that they found out about CAU through newspaper advertisement. One student found out about CAU when he was studying at the Chinese partner university's high school.

Question 2: Why did you choose to study at CAU? Students at CAU are mainly students who have not been able to pass the National Examination to study at a Chinese public university. Even though CAU is accredited by the Southern Accreditation Association in the U.S. and Southern Bureau of Education in China, the Beijing government still does not recognize CAU; furthermore, CAU graduates are not allowed to work for the government as they have not been able to pass the National Examination in China. The reasons for studying at CAU can be explained in four different categories. First, the Chinese students had no choice/alternative. Second, the Chinese students wanted to study using a "truly American learning style" with a "very good English teaching program." Third, the Chinese students wanted to get "American diplomas." Lastly, the Chinese students felt that studying at CAU would help them get an "American visa easily." One student described his experience at CAU:

> I love to experience the life of studying in a foreign country and the foreign cultures. CAU gave me that chance and it cost much less. It

should be the way to go, wasn't it? Furthermore, CAU was providing lots of chances to study abroad after graduate. That means people would be having nice futures after that.

One student who has left CAU to study at the main campus in America expressed his feelings for CAU:

> I love CAU. I have no regrets that I spent three years of studying at CAU. Professors are all very kind and they are conscientious. They not only taught me the knowledge which is in the textbook, but also taught me how to study and how to become a strong person in society. CAU set up my personality, the way I think and how I judge things all around me. Life in CAU was funny, full of challenge and expectancy everyday. However, there are weaknesses I feel that is CAU lacks of a strong organizing and structure. It lacks of pressure and life is too easy there for some people. Those guys [CAU students] are not self-conscious teenagers. Anyway, an easy way to study is a major feature of CAU. I don't want to see someone is going to abandon it. Otherwise there is no significant difference between CAU and the rest of the universities in China.

Other responses included

- It is not my choose, my father's choose. My father said if I go to the international school it will better for my future. I don't want to be a businessman woman.
- I can learn lot of different knowledge and skill in CAU that other Chinese university can not.
- I could live in an English environment but didn't need to go abroad.
- Wanted to improve my English and learned a professional skill—accounting.
- All the teachers come from the U.S.A. I want to try what life is going on in the American Education.

Question 3: What were some of your expectations before you came? Can you give me specific examples? Most of the responses on their expectations before they came to CAU focused on their wish to improve their English language skills as they "expected that they can learn a native English." One expectation was that all of the professors would come from "America," all dormitory rooms would have hot water with "good living," and "rich and colorful living environment." They wanted to make

friends "in the innocent campus" and "learning as much as" they could.

Other responses were

- American knowledge, learning English, studied by American teachers and professors, American teaching style.
- I think CAU is a big family, a lot of teachers and students.
- I think CAU is just like an American school…hundred percent American school.

Question 4: Did you find what you were expecting at CAU? Can you give me specific examples? Except the "living environment," most of the students expressed that they had found what they had expected. They improved their "oral English," met with "high education" foreign professors, and "made good friends." They "communicated with English teacher directly and daily, so it gave a very language learning environment." Three students explained that they had not found half of what they had expected. They had expected "more real business stuff," and "some teachers seem came to China not for work, just for fun. They do not work hard, then the student not to need work hard."

Other responses included

- Yes, I did. I learned a lot differ from Chinese university. Like working attitude.
- I find a lot friends. I find nice teachers.

Question 5: What do you think about the cost of studying at CAU? When asked about the cost of studying at CAU, few students said that it was expensive but "it is worthy to take those courses." Majority of the students accepted the cost as reasonable and "worth because all the teachers are national Americans" but "the book material cost a little high." One of the students, now studying in Canada, said, "I had thought the cost was reasonable. And after I went to Canada, I even found that the cost was so cheap and unbelievable." One student responded by saying that "I think the cost is okay for me because many students in CAU could pay more than that tuition to study in such this school." Two of the students expressed their concern on the quality of the CAU program, but they were not concerned with the tuition cost. One of them explained that he was not as much concerned about the cost of studying at CAU as much as he was concerned about the quality of the program: "The cost is ok. But CAU needs to hire very good professor" and one other student confirmed this concern: "But the precondition is the education level. I mean the passing level should be increased. It is so easy go get this diploma. That makes me suspect the quality of the diploma."

Other responses follow:

- It is so so, not too expensive but not cheap. Maybe expensive for my parents.
- I think its cheap, very cheap. Is good for students to study.
- I think the study fee of CIW is acceptable for me, but as a Chinese student, the textbook fee is expensive.

Question 6: What do you think about the teaching methods of American professors? Can you give me specific examples? Most of the responses centered on the positive aspects of teaching methods of American professors. Having "less students" in the classroom, teachers "talking to students," "teachers and students being just like friends," and "enjoying outdoor activities" were main examples given by the respondents.

Some students said that "the environment is not only in classroom" and "in China, there is no any teaching method to improve the courage and speaking skill like at CAU," so "students love different methods that they didn't meet before."

They enjoyed "the actual example during taking the Business" whereas "Chinese style pays more attention on theories than practice" that it is "the reason I could be a business woman at present." Humorous attitude of professors "attached all the students focused on that lesson." Professors "went through details of the textbooks, gave representative examples and used easy ways to explain complex theories" and they [students] "can communicate freely in the class." Professors told them, "do not give up any hard time, pushed to learn more, and gave confidence" and "most of they really care about the students and we need our professors really use their heart to teach us, they treat us as their children and good friends."

Some students expressed their dissatisfaction as "the professor who has more real business experience will be better and the teaching should not be only teach the thing in book, but also the real business." Some said, "Some teacher waste the time to teach nothing to us, I like the teachers who use some substantive examples to let us solve the main problem. Not just know the answer from the book at the same time. I do not like cancel the courses without important reason. We pay for the fee." One student explained that "all the subjects that I took just had the text books, no other additional books, for instance, study guide, lecture notes, and exercise books."

One student commented about the differences in cultures as "we are come from two different cultures then you can learn our culture from us and we can [learn] your culture. If everything is very new, it is

exciting." In terms of the communication problems with the American teachers, he explained that "I think if students ask the questions, teacher don't want to answer or in the American tradition you shouldn't ask the question. But we don't know and we ask. But I think the teacher will not angry because they know we come from Chinese." "If compared to Chinese teacher, American teacher is more like a teacher, for the Chinese teacher is like your father or mother," which he explains to "fit the students." As for American style, it "tells you how to live yourself." "Language problem is the most important thing," one student responded, and "the other thing is the study and the teachers' style need to change. That is the most important thing. Because for the Chinese students, they are young and growing up and but for the American teacher, they teach you how to think yourself. So they need to change a little bit."

Question 7: Are you working or continuing your study at the moment? If working, where? If studying, where? Six of the former students are currently studying; four of them in Canada, one of them at AU in the U.S., and one of them at a Chinese-Australian joint venture university in China. The rest of the students said that they are working. All but one of them were working in the Southern Province as "office clerks," "business development officer," "special projects assistant," and "translator." One student is working in a Northern Province of China as a "financial assistant."

Question 8: Do you think studying at CAU helped/will help you find a better job after graduation? Why? Why not? Most of the answers focused on benefiting from gaining confidence in their English language skills. They explained that they have benefited from CAU in terms of "gaining confidence," "learning useful knowledge," "learning a second language," and "help me open my mind."

Other responses included

- Yes. I learned things from life more than from books. The teachers not only were teaching you the knowledge from book but also the life. They try to help us and give us confidence. They try to tell us do not easy to give up for your life.
- Yes, because I got my confidence from CAU teachers, and I knew more how the foreigner people thinking than before, so when I work for a foreign company, I knew how to talk with my boss, and I learn when you want to talk to people, you cannot hire yourself, even you make mistake you must need to talk. And I know if I want to get an "A", I need to learn hard and work hard.
- Wherever I work, the bosses like me. And they know I am hard worker and know what

they want. Even now I left CAU about two years but I still dream the life of there.
- Yes. My present job has high requirement for oral English. My oral English had been improved so much.
- Yes, I think present job is ok. I also think it will have promotion in the future.

Some of the students explained that the CAU diploma did/will not help them to find a better job. Responses indicating this included

- I don't think that is enough.
- I still cannot find a better job, because I didn't learn the professional skill well. If I have a bachelor degree, I think may find a job easier. The education in China is getting higher. The competition outside is furious.
- I don't think so. For me, I learned the ability to study, to communicate with people at CAU. However, my specialty at CAU was not strong. I majored in international business which was not enough specialized, in my opinion. So, it would be very hard to find a job once I graduated from CAU.
- Well, it only depends on how well-known CAU in China nowadays if you want a job in China.
- No, because in China, lots of people. Lots of people look for one job.
- No, because I will not be a businesswoman. Maybe I will open a restaurant sell the health food and also I like the children's school. Three or four years old children.
- I will work with my father after graduation
- Not really. If the diploma of CAU is recognized in China, I probably can easy to find jobs in different companies

One student expressed his concern about the diploma he would be getting from CAU as it is not recognized by the Beijing government and commented, "I plan to go on studying at a Chinese school and get a Chinese diploma which major is relate to international business."

Analysis of Findings

After interviewing, surveying, and observing students, faculty, administrators, and staff, it became apparent that the educational challenges at CAU were not very different than the challenges of Chinese students on U.S. campuses. The only significant difference between the Chinese students at CAU and Chinese students in the U.S. was the issue that CAU

was not approved by the Beijing government. Even though most of these students have not been to the U.S., the needs and expectations of CAU students were similar to those of the Chinese students in the U.S.

For example, CAU students have expressed their major concern to be the "language problem," that is their lack of English language skills. Even though CAU has an intensive ESL program with experienced teachers, and, CAU students study English language for nearly one academic year, students at CAU considered their English language skills "inadequate."

As for the Chinese students in the U.S., during interviews with six East Asian students at a U.S. institution in the U.S., Dillon and Swann (1997) found that one of the major areas of their insecurity was the lack of confidence in their English language skills. Takahashi (1989) reported that contrary to a common American assumption that everybody readily understands English, acquiring foreign language proficiency, especially academic English in adult years, requires relatively long periods of hard studying, strong linguistic ability, and an extensive knowledge of the adopted culture. Tompson and Tompson (1996), as reported in Senyshyn et al. (2001), explained that international students enrolled in business programs also identified the lack of confidence in language skills to be one of the most daunting barriers to a positive adjustment experience. One of the most widely used tools to measure the language proficiency level of the students is the Test of English as a Foreign Language (TOEFL). However, because of the complexity of the language proficiency, there are a significant number of studies suggesting the lack of relationship between the TOEFL and academic success (Stover, 1982; Özturgut, 2001). CAU also uses TOEFL as a measurement tool for students' English language skills. After studying English language for almost one academic year, the students then continue with their content classes. However, there is not sufficient English language support after their first year even though they might still be struggling to understand their textbooks and follow the instruction in the classroom.

The research data indicate that challenges faced by CAU students, other than the lack of English language skills, centered around "CAU not being recognized by the Chinese government," "expensive textbooks," "teachers not being professional," and, at times, "not having an idea" of what they [teachers from the U.S.] are teaching. These findings were not expected and there was no indication from the literature review conducted prior to this study. It was only after the interviews with the students that the cost of textbooks and quality of instructors were found to cause significant issues with the students.

In contrast to the literature suggesting Chinese students' refrain from voicing opposing views in the classroom (Liu, 2001), or their unwillingness to speak out, to question, or to criticize (Tsui, 1996), the data presently collected does not indicate any such characteristics of Chinese students. Chinese students in this study expressed concern and criticism, to a certain extent, of American teachers. As for American teachers, they have explained that Chinese students were responding to an American education system positively.

One issue expressed by one of the Chinese students was that the Chinese students needed to learn how to study "by themselves" as the American teachers require the students to be self-motivated. American teachers encourage individualism, give the students the responsibility to learn, and expect them to be independent individuals, but Chinese students at CAU struggle to understand the reason behind teachers asking them to be independent individuals, which is contrary to their past cultural experiences. For them, asking them to be individuals is almost like asking them to leave their centuries-long traditions of family and society, which simply does not make sense to them. Bond (1992) confirms that the Chinese students are expected to compromise, moderate, and maintain harmonious relationships in which individualism and self-assertion are discouraged.

Regarding the teachers' classroom discipline issues, it was mainly due to their inexperience in teaching, as they had minimal, if any, teaching experience prior to coming to China. Even though discipline problems are uncommon in Chinese classrooms where students have been taught never to question their tutors or challenge their judgment (Liu, 2001; Bond, 1992), American teachers had discipline problems due to their lack of experience in academia, as educators. The interview and survey data included responses that the CAU teachers lacked classroom management skills, and they either became "too friendly" with the students or "too distant."

U.S. teaching style was considered to be an attraction for the students at CAU. CAU students reported that one of the main reasons for them to study at CAU was "American teaching style," in addition to their main motivation, which is getting an "American diploma." It was confirmed through this study that American teaching style was greatly enjoyed by Chinese students and its benefits were highly appreciated by the Chinese students and parents. Chinese students found the U.S. teaching style to be effective and "fun" compared to the Chinese style, which is text-bound and didactic.

CAU students' motivation played a significant part in their academic success. Chang (1999) indicates that there is great pressure to succeed academically for Chinese students which is primarily because parents, uncles, aunts and other members of the extended family

participate in the children's learning. Most of the CAU students explained that studying at CAU was not their option, but they chose to study at CAU upon the "strong recommendation" of their parents and/or relatives. Overall, the educational challenges at CAU were due to CAU's non-accreditation by the Chinese government, faculty members' lack of teaching experience and professionalism, expensive textbooks for students, and cheating and discipline problems for CAU teachers.

Conclusion and Recommendations

Chinese students at CAU are not traditional Chinese students, expecting the teacher to have the ultimate power while obeying the authority without questioning. In contrast, they are asking questions and are very much aware of the quality of the instruction and the degree in general. With the Internet and other information sources being readily available to them, they are researching and learning about what they should expect from a U.S. education.

It should be noted that Western teaching methods, though highly enjoyed by Chinese students at CAU, are not always the "best practice in teaching." Wenzhong and Grove (1999) explain:

> We know that some Western educators are strongly convinced of the superiority of their methods. Nevertheless, we believe that they will be overstepping their bounds if they are assertive in pressing Western methods on their Chinese counterparts. For thousands of years the Chinese have been successful in learning needed information and skills using traditional pedagogical procedures. It is presumptuous for outsiders to visit and, after a rather brief period of observation, set out to reform those procedures. (p. 163-164)

While being independent learners, Chinese students maintain their cultural roots and are proud of their long historical and cultural background. However, the researcher argues that these qualities do not belong only to Chinese students in China, but to Turkish students in Turkey, German students in Germany, and even American students in the U.S. Chinese students were receptive and appreciative of American education, and Western capitalistic ideas did not cause any concern among the students. Westerners, once limited to Sha Mian Island in Guangzhou, China, now are free to roam around the school campuses in China and, most importantly, they are welcomed by the Chinese.

This study concludes that there are many academic challenges for students, teachers, and administrators. The main academic challenge for students is that the American teachers need to understand the Chinese learner, and thus, respond to the needs and expectations of these students. The lack of socio-cultural and instructional training for these instructors causes academic weakness for this program and student dissatisfaction. Chinese students do not necessarily follow the traditions of the past, but rather, are very open and question the education and the treatment they are receiving through a Sino-U.S. joint venture university. It should not be assumed that Chinese students will be accepting an average American education, but rather, hiring instructors with interest, enthusiasm, and qualifications to provide a quality learning environment should be the main focus. Chinese students know what they need and are quite aware of the weaknesses of the American education they are receiving through this joint venture. They need more experienced instructors. They need utilization of the technology for their education. They do their homework regarding the education they should be receiving, and such joint ventures should do their homework regarding the expectations of their students.

Recommendations for Future Research

This study was conducted as a single case study at a Sino-U.S. joint venture campus in China. Conclusions and recommendations were made in the light of the data collected throughout this study. Conclusions included the lack of academic and socio-cultural training for American teachers and its consequence as student dissatisfaction. It is the investigator's contention that, after spending three years in China, that China is still a mystery and more qualitative research needs to be conducted. This study focused on CAU and utilized the data collected throughout this to come to a conclusion. It is not the researcher's argument that the findings of this study can be generalized. It was not the purpose of this study to generalize the findings to other organizations and countries but to (a) add another perspective to the literature so that future endeavors in similar cases (in fact, not only for educational joint ventures, but for any form of Sino-Western joint venture in China) could be better prepared prior to their entrance into China, and (b) provoke some constructive criticism in how such campuses are operating within China yet maintain their academic integrity.

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Perception of Teacher Support and Reaction Towards Questioning: Its Relation to Instrumental Help-seeking and Motivation to Learn

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The present study was conducted to determine the effects of students' perception of both teacher support and students' reaction to questioning on the instrumental help-seeking strategy used by students. The researchers also examined the relationships between these three variables and the motivational components of achievement goal theory. A self-report questionnaire was administered to 1558 undergraduate university students, and structural equation modeling (SEM) was used to explore relations between the variables. Overall, the fit of the base model was reasonably good. Results indicate that perception of teacher reaction had a direct and positive effect on students' instrumental help seeking, as well as indirect and positive effects on self-efficacy, and task value. Perception of teacher support had an indirect, positive effect on task value. Furthermore, results revealed that motivational components have important mediating effects on instrumental help-seeking.

In predicting the success of university students, researchers often highlight the use of appropriate learning strategies and motivation as two important variables to consider. Specifically, these variables are important relative to their relation to the learning process and students' commitment towards achievement (Bandura, 1986; Pintrich & Schrauben, 1992; Zimmerman, 2000). This emphasis on motivation and learning strategies in the research on student success is consistent across the literature and is demonstrated in a number of studies (Bouffard, Boisvert, Vezeau, & Larouche, 1995; Eccles, Wigfield, & Schiefele, 1998; Midgley, 2002; Pintrich & Schunk, 2002). This vast body of research has offered both conceptual and empirical evidence to support that the proper use of learning strategies, including cognitive, metacognitive, affective, and self-regulatory processes, interacts with personal and contextual characteristics to predict students' motivation to learn and their level of academic success. In order to offer further support to this growing body of literature, this study explored the relationships between (a) the contextual characteristics of teacher support and teacher reaction to questioning, (b) students' motivation to learn, and (c) students' help seeking strategies. Specifically, the main purpose of this study was to determine the effects of undergraduate students' perception of teacher support and teacher reaction to questioning on help seeking strategies. As well, motivation was examined as a mediator of this relationship.

Several studies have previously examined contextual characteristics, focusing on students' perception of their instructors' behaviors, the instructors' attitudes towards student questioning, and the influence of these contextual variables on both students' motivation and their use of learning strategies. To support this, there is now considerable evidence that students' questioning in the classroom, considered a form of academic help-seeking, can be a proactive learning strategy in that it denotes student involvement and self-regulation (Ames, 1983; Karabenick 2004; Newman, 1994). As students ask teachers for help, teachers can play a significant role in the development of students' classroom involvement and motivation. By their general attitude and their responses to questions, teachers can exert significant influence over whether and how effectively students use this learning strategy. It is for this reason that the present study explored teacher support and response to questioning in relation to student learning and motivation.

In the present study, a broad adaptation of a model proposed by Pintrich and Schrauben (1992) was used to explore different aspects of motivation that may help explain university students' help-seeking strategy. An overview of the model is shown in Figure 1. The hypothesized relationships between variables identified in the theoretical model are consistent with those identified and discussed in the literature review to follow. The model proposes that students' instrumental help-seeking is influenced by motivational components such as their achievement goals, their self-perceptions, and task value. Self-perceptions include control beliefs and self-efficacy for learning and performance; achievement goals consist of mastery-oriented goals, performance-approach, and performance-avoidance goals, whereas task value represents the degree of importance, or the utility students grant to a learning task. Teacher support and reaction was also included in the model as a variable with indirect influence on instrumental help-seeking strategy. This modification of

FIGURE 1
Anticipated Direct and Indirect Relations among Variables in the Theoretical Model Retained
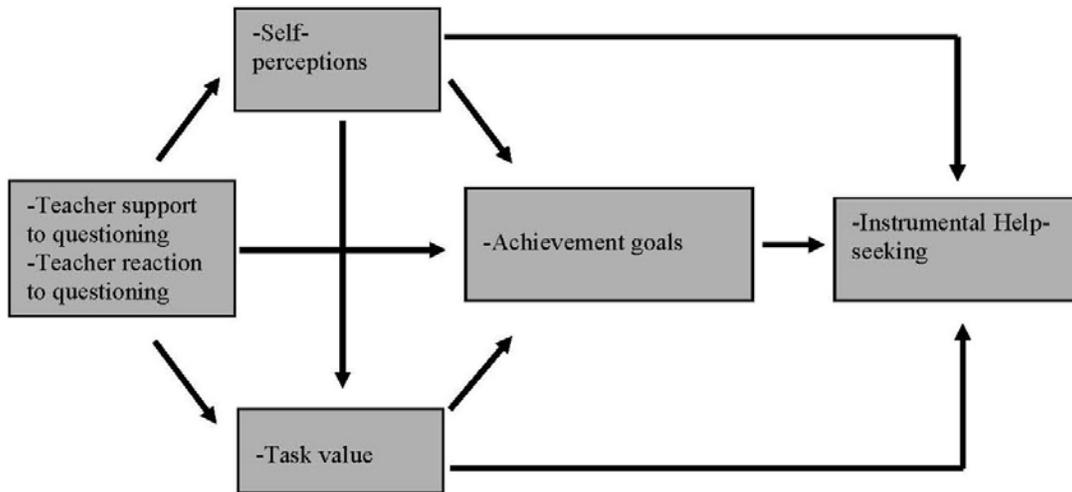
the model is based on Karabenick's (2004) work that proposes that teacher behavior has a significant influence on the sources and nature of university students' help-seeking strategies.

Help-Seeking Strategy

Researchers often distinguish between two different help-seeking patterns: one is referred to as *instrumental*, or *adaptive*, wherein students look to decrease the subsequent need for assistance by asking a clarifying question; the other help-seeking pattern is referred to as *executive*, or *expedient*, whereby the help-seeker attempts to avoid work by asking others for answers to problems (Butler, 1998; Nelson-Le Gall, 1981, 1985; Newman, 2000). Some authors indicate that help-seeking is generally subject to the same influences as other learning strategies, such as motivational components, self-beliefs, and study habits (Karabenick, 1998; Newman, 2000). However, Karabenick (2004) cautions that because the process of seeking help is inherently social, social features of the learning context are more relevant for this type of learning strategy than they would be for more cognitive or metacognitive strategies, such as rehearsal or effort regulation. Therefore, the way teachers respond to requests for assistance is considered a crucial social determinant of the extent to which students voluntarily seek help in classrooms (Karabenick & Sharma, 1994).

Research has thus identified the importance of teachers' behavior in the help-seeking behavior of

students. However, more recently several researchers have begun to explore classroom instructor behavior and the tone of student-teacher interpersonal interactions relative to students' motivation and self-regulated learning (Freeman & Anderman, 2005; Kerssen-Griep, 2001; Plecha, 2002; Seung, Schallert, & Lemonnier, 2004). In other words, recent research has identified the importance of the quality of student teacher relationships. These authors stress the importance of creating a classroom climate that promotes students' effort, improvement, and mastery of content. This research has also suggested that instructors encourage students to initiate interactions and allow for the establishment of a constructive relationship between themselves and the teacher. In addition, by their control over classroom activity and their responses to questions, teachers can create a classroom goal structure that is task mastery-oriented. Teachers can also design classroom activities and/or respond to questions in ways that encourage student questioning, thereby enhancing students' help-seeking strategies.

As with previous research on college students (e.g. Barron & Harackiewicz, 2001; Elliot & Church, 1997; Karabenick, 2004; Pintrich, Zusho, Schiefele, & Pekrun, 2001), the present study examined how students' perceptions of their teacher support and reaction to questioning influence students' motivation to learn and their use of academic help-seeking strategies. These relationships were explored from the perspective of achievement goal theory.

Achievement Goal Theory

Sociocognitive theories of learning often link motivation, cognition, and self-regulation (e.g. Pintrich & Schunk, 1996; Pintrich & Zusho, 2002; Snow, Corno, & Jackson, 1996; Zimmerman & Schunk, 2001). Out of these theories, achievement goal theory has emerged as one of the most prominent social cognitive theories of motivation (Pintrich & Schunk, 2002). A number of studies conducted on learning outcomes over the last 20 years have documented the essential role of achievement goals as predictors of adaptive learning behavior (for reviews see Ames, 1992; Dweck, 1990; Elliot, 1999). Furthermore, achievement goals are widely recognized as important constructs in understanding the behavior of students in higher educational settings (Church, Elliot, & Gable, 2001; Harackiewicz, Barron, Tauer & Elliot, 2002; Mattern, 2005).

Initially, achievement goal theory purported that there are two primary goals or reasons why students engage in achievement behavior. These goals were 1) mastery and 2) performance (Dweck & Legget, 1988). A mastery goal is characterized by the development of competence relative to a specific task and reflects a focus on the individuals' learning and understanding. By contrast, a performance goal reflects an individual's focus on demonstrating his or her ability or competence. The difference between the two goals then is the focus, such that mastery goals center on developing competence, whereas performance goals center on the demonstration of competence.

Although this two dimensional model is useful in separating individuals' orientation towards a goal, recent research has begun to highlight the limitations of such a model. For example, Elliot and his colleagues (Elliot, 1997; Elliot & Church, 1997; Elliot & Harackiewicz, 1996) challenged the two dimensional model and proposed instead a trichotomous goal framework. This three dimensional model includes both mastery and performance goals; however, it divides performance into performance-approach (an approach goal focused on attaining normative competence) and performance-avoidance goals (an avoidance goal focused on avoiding normative incompetence). Studies using this newer model have explored the differential effects of the two types of performance goals. Results from these studies have demonstrated that indeed there was a difference between the two types, such that performance goals had deleterious effects only when college students focused on avoiding showing their low abilities, as opposed to embracing and allowing for the demonstration of their low abilities (Harackiewicz, Barron & Elliot, 1998).

In addition, recent studies have examined the effectiveness of conceptualizing achievement goal theory based on a three dimensional structure. For instance, Harackiewicz, Barron, and Elliot (1998) examined studies in which researchers tested the independent effects of mastery and performance-approach goals. These authors noted that performance goals were both conceptually and empirically independent of mastery goals and that these goals do not necessarily have a reciprocal relationship (e.g. positive mastery goal effects do not necessarily imply negative performance goal effects). Moreover, Barron and Harackiewicz (2001) found that both goals can promote important educational outcomes and suggest that students who endorse both mastery and performance-approach goals will be most likely to attain success in college. In addition, researchers have more recently acknowledged that learners often have multiple goals (Barron & Harackiewicz, 2001; Mattern, 2005). Empirical data shows that, although the magnitude of both mastery and performance goals can be different, goals may co-exist in a learner and simultaneously exert their unique effects on learning. For example, a student can pursue high mastery goals in order to develop and improve his knowledge and at the same time be concerned about his grades due to their importance for admission to graduate school or a grant application. These results demonstrate the unique structures inherent in each of the goal orientations and argue for the importance of this model that accounts for both.

Using the three dimensional model, studies have begun to explore the effects of the three different goals on student outcomes. These studies have revealed that mastery goals have been linked to a number of positive processes and outcomes, such as deep processing of information, the long-term retention of information, students' effort, persistence, and affect in the face of a challenge while studying, as well as absorption in study material, self-regulated learning, and a willingness to seek help with schoolwork (Church, Elliot & Gable, 2001; Elliot & Church, 1997; Elliot & Harackiewicz, 1996; Middleton & Midgley, 1997). This indicates that mastery goals often have positive effects on student learning and development.

As for the outcomes of having performance goals, the research has shown that different outcomes occur as a function of the type of performance goals used, that is, performance-approach versus performance-avoidance. Performance-approach goals have been shown to lead to numerous positive and a few negative processes and outcomes. The positive outcomes linked to performance-approach goals are effort and persistence while studying, higher levels of aspiration, absorption during task engagement, and challenge-related affect (Elliot & Church, 1997; Elliot & Harackiewicz, 1996; Harackiewicz, Barron, Tauer, Carter, & Elliot, 2000; Middleton & Midgley, 1997).

However, performance-approach goals have also been linked to negative consequences, such as test anxiety, use of shallow learning strategies, and an unwillingness to seek help with schoolwork (Elliot, McGregor, & Gable, 1999; Middleton & Midgley, 1997). By contrast, performance-avoidance goals have been linked to far fewer positive outcomes and a multitude of negative processes and outcomes that include low interest in tasks, low self-determination, threat-related affect and distraction while studying, procrastination, anxiety prior to and during evaluation, poor retention of information, poor performance, and unwillingness to seek help with schoolwork (Elliot & Church, 1997; Elliot & Harackiewicz, 1996; Middleton & Midgley, 1997). Taken together, these findings provide further support for the trichotomous framework and the differential effects of each goal on student success.

Goal Orientation and Help-Seeking Strategy

Research has consistently reported relationships between goal orientation and help-seeking patterns of students. In other words, research has identified the importance of investigating the effects of goal orientation on students' level of help-seeking. Indeed, studies have shown that students who adopt mastery goals are more likely to engage in instrumental help-seeking, whereas those who adopt performance-approach goals either avoid seeking help or seek immediate or expedient help. (Arbreton, 1998; Butler & Neuman, 1995; Karabenick, 1998, 2004; Ryan & Pintrich, 1997). This suggests that students with a mastery goal orientation are likely to feel more comfortable and willing to ask for help, while students who tend to have more performance-approach orientations are less likely to engage in seeking help and working through a problem on their own. In fact, research has actually indicated that performance goal orientation and instrumental help-seeking are often unrelated (Arbreton, 1998; Ryan & Pintrich, 1997). One study, conducted by Newman (1998), did find a relationship between performance-approach goals and instrumental help-seeking, but the direction of the effect depended on the classroom environment, such that the classrooms that stressed learning (positive) led to more instrumental help-seeking, while those classrooms that focused more on performance (negative) resulted in fewer students using instrumental help-seeking. This finding suggests that the classroom environment is an important factor to consider when exploring the relationship between performance goal orientation and help-seeking.

Teacher Support of Questioning and Help-Seeking Strategy

Another important aspect of achievement goal theory is the consideration of how various structures in the classroom environment are thought to influence students' motivation. Such structures include the nature of the tasks used, the way in which students are recognized and evaluated, and the authority structure of the classroom, These, together with teachers' instructional practices, are related to students' adoption of mastery and performance goals (Anderman, Patrick, Hruda, & Linnenbrink, 2002; Patrick, Anderman, Ryan, Edelin, & Midgley, 2001). Karabenick and his collaborators (Karabenick, 2004; Karabenick & Knapp, 1991; Karabenick & Sharma, 1994) examined the role of undergraduates' perceptions of teacher support of student questioning and students' goal orientation as predictors of academic help-seeking. Results of this study indicated that perceived teacher support of student questioning had significant and consistent relationships with students' motivational tendencies and strategy use. In addition, a bidirectional relationship was found between these two variables. For instance, students who were more intrinsically motivated, highly valued course material, were more self-confident, or who had more achievement-oriented control beliefs, perceived their teachers as being more supportive of student questioning (Karabenick & Sharma, 1994). Conversely, students who were more threatened by seeking help perceived their teachers as being less supportive. These studies highlight the importance of examining the theoretical relationships between student variables, such as goal orientation, on students' perceptions of teacher behavior. However, one study found that threat appears not to be related to college students' self-reported help-seeking from formal sources, such as the teacher (Karabenick & Knapp, 1991), suggesting that the perceived benefits of seeking help can lead to adaptive help-seeking behaviors.

In addition, not only has research demonstrated that specific instructional characteristics can influence students' achievement goals, but studies have also shown that various aspects of the social-relational environment of classrooms have been related to students' self-confidence and self-efficacy beliefs (Plecha, 2002; Rugutt, Ellet, & Culross, 1998). For instance, when students feel more efficacious, they are more likely to use strategies like help-seeking to regulate their learning. The close relationship between self-efficacy beliefs and the use of adaptive strategies has been studied and confirmed (Karabenick & Sharma, 1994; Pintrich & DeGroot, 1990; Pintrich & Schrauben, 1992). Essentially, these studies have shown that

students who are more likely to seek instrumental help show higher levels of both self-efficacy beliefs and task value. Additionally, these students also demonstrate a higher tendency towards a mastery goal orientation (Arberton, 1998; Karabenick, 2001; Newman, 2000; Ryan & Pintrich, 1997). Moreover, previous research using students' self-reported perceptions of motivation and learning strategies show associations between teachers' promotion of a mutually respectful classroom environment and academic self-efficacy and self-regulated learning, such that the more respectful the classroom, the higher the students perceived their own self-efficacy and self-regulated learning (Ryan & Patrick, 2001).

Present Study

Research examining the associations between students' help-seeking strategy and preferred sources of help has consistently demonstrated that students with a mastery goal orientation prefer formal sources rather than informal sources of help. In other words, they prefer for the source of help to have a higher level of expertise. Conversely, expedient help-seeking is usually sought in order to minimize effort (by obtaining the answer to a problem rather than making use of more time-consuming explanations). Consequently, the students looking for more expedient help possess a stronger preference for performance-approach goals (Newman, 1998). These students also prefer seeking help from informal sources (Karabenick, 2004). Finally, the pursuit of performance-avoidance goals is often portrayed as fundamentally aversive and threatening, is posited to elicit few if any positive consequences, and, therefore, many researchers do not include this variable in their studies (e.g. Pintrich, 1999; Midgley, Kaplan, & Middleton, 2001).

With this in mind, it is important to point out a few differences in the way we assessed components of help-seeking strategy in this study. First, given its social nature and because we believe it bears greater pedagogical value, we chose to focus specifically on perception of instructors' support and reaction to student question asking and the influence of this perception on students' instrumental help-seeking. Therefore, unlike previous research, the conceptual and operational definition of help-seeking strategy in the present study exclusively considered student classroom questions addressed to formal sources. Student questions to informal sources were not examined.

Second, a particularly problematic feature of earlier research is the way in which help-seeking indicators were assessed. For example, rather than asking students for what purpose and from whom they sought help, they were asked what they would do contingently (Karabenick, 2004; Newman, 1994). These measures of

students' intentions to seek help contained statements in conditional form, asking students to rate why they would seek help (if they did) and from whom. Although it appears that studying students' intention to seek help can provide some valuable information on the sources and the nature of help seeking, we believe that in order to investigate variables that predict such behavior, actual help-seeking behavior, and not its likelihood, must be examined. In order to address this limitation, participants in the present study were asked to report their actual help-seeking behavior and not an eventual intention of such behavior.

Third, although earlier work has studied teacher support defined as a more general attitude towards student questions, little attention has been given to teachers' more specific behavior. In response to Karabenick's (2004) assertion, the current study will address more specific teacher behavior, particularly expressions of support and teachers' reactions that work to encourage the effective use of questioning in the classroom (e.g., opportunity and quality of responses). Hence, in the study reported here, we included perception of instructor's general attitude towards questioning as well as their reactions to student questioning in terms of verbal and non-verbal behavior. For example, we included behavior like praise for a good question and looking directly at a student when he/she asks a question. We hypothesized that the way teachers act and respond to their students' questions is particularly salient in the formulation of the students' impressions of their teachers.

Finally, although the literature has consistently laid claim to the importance of both students' goal orientations and help-seeking strategies in students' academic success, these constructs have yet to be extensively explored in relation to one another. The little work that has been conducted in this area suggests that goal orientations and help-seeking strategies are related (e.g., Karabenick, 1998; Karabenick & Sharma, 1994; Newman, 2000), but additional research is needed to further understand how these constructs are related to, or influence, one another.

Building on previous research that has examined associations between goal orientations, teacher support of questioning, and help-seeking strategy, the researchers examined the relations among these three constructs in the present study. More specifically, this research was based on three main goals:

1) To determine direct and indirect effects of student perceptions of teacher reactions and support of questioning on students' self-reported instrumental help-seeking strategies.
2) To explore the relationships between student perceptions of teacher reaction and support of questioning and the various motivational

components of learning (i.e., self-efficacy, task value, mastery goal, and performance goal)

3) To explore how the four motivational components are related to one another and how each component is related to students' help-seeking strategies.

Method

Overview

Data were collected between the eighth and twelfth week of the fall 2003 and winter 2004 semesters. A self-reported questionnaire was administered once to every student in each classroom and took approximately 15 minutes to complete. It was completed during students' class time, which helped maximize the number of participants. Since this study involves students' perceptions of self and of their teachers, and given that students were met in different classes, they were instructed to fill out the questionnaire focusing on the specific course they were in at the time of completing the questionnaires. All participants were assured total confidentiality of their responses and were told that only the researchers would have access to the data.

Participants

Participants were obtained from 32 classes in a variety of disciplines at two large Canadian, public, French-speaking universities located in the province of Quebec. This was an opportunity sample that included 1558 undergraduate university students with an overall 52% female ratio. Participation was voluntary, and approximately half of the classes sampled were in the humanities with others from the social sciences and education disciplines.

Measures

A questionnaire aimed at assessing students' perception of their teachers' support and reaction towards questioning, as well as of students' perception of their own help-seeking was developed for the purpose of this study. Several self-reported attitudes scales from different sources were used to constitute the questionnaire. Students were instructed to respond to the items on a five-point Likert type scale ranging from 1 (not at all true of me) to 5 (very true of me). Reliability and consistency (Cronbach's alpha) values reported are for the French version, the version used for the purpose of this study. Instrument validation was assured. This was conducted firstly by a two-way translation executed by two independent translators, and afterwards by three experts in the field who validated the French version. This validation was conducted prior to the pilot test of the questionnaire, which was distributed to 50 students. Responses from the pilot tested version of the scale were not included in any of the statistical analyses.

Motivational components. Twenty items from the *Motivated Strategies for Learning Questionnaire (MSLQ;* Pintrich, Smith, Garcia, & McKeachie, 1991) were used to account for the following variables: self-efficacy beliefs ($\alpha = .93$), task value ($\alpha = .90$), mastery goals ($\alpha = .74$), and performance-approach goals ($\alpha = .70$). The self efficacy subscale is made up of four items, such as "I am confident I can understand the most complex material presented by the instructor in this course." The task value subscale contains four items, such as, "It is important for me to learn the course material in this class." Four items comprise the mastery goals subscale, such as, "In a class like this, I prefer course material that really challenges me so I can learn new things." Finally, the performance-approach goals subscale consists of four items, such as "Getting a good grade in this class is the most satisfying thing for me right now." The MSLQ does not measure performance-avoidance goals; therefore, this construct was not included in this study.

Teacher support and reaction to questions. This section of the questionnaire consists of two distinct scales; the first measures students' perception of teachers' attitudes toward their questions. The second looks at students' perception of teachers' behavior to questions. A French version of the *Perceived Teacher Support of Questioning (PTSQ;* Karabenick & Sharma, 1994) was used to measure students' perception of teacher support of student questioning ($\alpha = .79$). The PTSQ comprises five items, two of which are worded in the supportive direction and indicate a positive attitude toward questions (e.g., "Your teacher tells students to interrupt him whenever they have a question."), and three of which are formulated in the nonsupportive direction, indicating a negative attitude toward questions (e.g., "Your teacher doesn't stop for questions once he begins talking."). Scores for these questions are reversed.

The four items ($\alpha = .80$) aimed at assessing perceptions of teacher's reaction to questions were adapted from existing questionnaires (Christensen, Curley, Marquez, & Menzel, 1995; Fritschner, 2000; Menzel & Carrel, 1999; Nunn, 1996). This scale includes verbal and non-verbal behavior, such as "In class, the instructor asks you to elaborate on a response to a question" (verbal), and "In class, the instructor looks at you when you ask a question"(nonverbal). Students were also instructed

TABLE 1
Items Factor Loadings from a Principal Axis Factoring with Oblimin Rotation

Items	Teacher support	Teacher reaction	Mastery goals	Performance goals	Task value	Self-efficacy	Help seeking
V2	.77						
V4	.75						
V12	.74						
V6	.72						
V8	.62						
V17		.77					
V14		.69					
V5		.68					
V16		.60					
V18			.82				
V25			.77				
V40			.63				
V42				.83			
V27				.75			
V37				.65			
V33					.86		
V50					.85		
V23					.77		
V29					.77		
V39						.85	
V32						.84	
V22						.83	
V47						.74	
V45							.82
V20							.78
V28							.78
V24							.76
V38							.72
V26							.70

to respond to the items on a five point Likert scale ranging from 1 (*entirely false*) to 5 (*entirely true*).

Exploratory factor analyses reveal that teachers' support of student questioning, which reflects a more general attitude, and teachers' reaction to student questioning, which reflects behavior addressed to a specific student, are two distinct concepts (see Table 1).

Help-seeking strategy. One scale of the *Test of Sources and Indicators of School Motivation (TSISM*; Barbeau, 1994, in its French version) was used to assess students' help-seeking strategy. The scale is comprised of six items, three of which are worded positively ("I raise my hand when I have a question."), and three of which are formulated negatively ("I rarely ask questions in class, even when I do not understand."). Again, the negatively formulated questions were reverse scored ($\alpha = .72$).

Data Analysis

To assess the coherence and independence of the scales, we began the analyses with a Principal Axis Factoring with Oblimin rotation with Kaiser Normalization. This process was conducted on the full sample using SPSS 13 for Windows. Seven factors

were extracted with eigenvalues ranging from 1.48 to 4.07 (see Table 1 for item loadings). Among the 35 items from the initial questionnaire, two were discarded following this process because of values lower than .4. Also, perceived control beliefs was discarded from the analyses as part of the items related to this factor cross loaded on two factors with values higher than .4, while the other part of the items did not load high enough to be retained. The final results indicate good internal validity of the measures.

With respect to this study's goals, structural equation modeling (SEM) was used to explore relations between (a) perception of teacher support and reaction to questioning, (b) students' help-seeking strategy, and (c) motivational components across students. SEM procedures provide a useful way to examine how multiple, related constructs interact with and impact one another (Hoyle, 1995). All SEM analyses were conducted with AMOS 4.0 using maximum likelihood estimation. As recommended by Hoyle (1995) and Hu and Bentler (1999), the goodness-of-fit of the models were assessed using chi-square, as well as several other indices of fit, such as, root mean square error of approximation (RMSEA), the Tucker-Lewis Index (TLI), and the Comparative Fit Index (CFI). Although

TABLE 2
Indices of Fit for Base and Final Structural Models

Model	X^2	df	RMSEA	TLI	CFI
Model 1 (base model)	3871.9	336	.07	.81	.84
Model 2 (final model)	2677.3	314	.06	.84	.86

exact fit to the model would be indicated by RMSEA = 0, by convention, there is also good model fit if RMSEA is less than or equal to .05. The model provides an adequate fit if RMSEA is less than or equal to 0.8. More recently, Hu and Bentler (1999) have suggested RMSEA<=.06 as the cutoff for a good model fit. As in OLS regression, the standardized regression coefficients (β) are used to compare the relative importance of the independent variables. The interpretation is similar to regression: if a standardized regression coefficient is 2.0, then the latent dependent will increase by 2.0 standard units for each unit increase in the latent independent.

Results

Overall, the fit of the base model was reasonably good, as is shown by the various fit indices (x^2 = 3871.9; RMSEA = .07, TLI = .81, CFI = .84). The direct relation between perception of teacher support and reaction on mastery and performance goals demonstrated non-significance. Therefore for parsimony, we eliminated this relationship from the model, resulting in a more simplified model. This resulted in a small gain of fit (x^2 = 2677.3; RMSEA = .06, TLI= .84, CFI = .86). Considering the improvement, we decided to retain the revised model as final. For purpose of clarity, the various fit indices of both models are also given in Table 2.

Figure 2 presents the significant structural weights when estimated freely with standardized maximum-likelihood parameter. The single-headed arrows (→) have standardized factor loadings next to them. All factor loadings in this model were statistically significant at the .05 level, indicating the convergent validity of the indicators. The curved, double-headed arrow has correlation coefficients next to it and indicates the estimated intercorrelation between the two exogenous latent variables. This correlation was statistically significant at the .05 level.

We first examine the direct and indirect effects of student perception of teacher support and reaction to questions on instrumental help-seeking strategy (see Figure 2). Perception of teacher reaction had a direct effect (β = .20) on instrumental help seeking, as well as indirect effects on self-efficacy (β = .25) and task value (β = .17). Perception of teacher support on the other hand only had an indirect effect on task value (β = .09).

Moreover, there were no statistically significant direct effects of perception of teacher support and perception of teacher reaction on achievement goals, whether mastery or performance oriented. The effect of perception of teacher support on achievement goals was mediated by task value, while the effect of perception of teacher reaction on achievement goals was mediated by both task value and self-efficacy.

Other important effects in the model were found for self-efficacy, task value, and achievement goals on instrumental help-seeking. First, self-efficacy exerted a significant direct effect (β = .13) on instrumental help-seeking, as well as various indirect effects on mastery goal (β = .49), performance goal (β = .12), and task value (β = .67). Second, task value solely exerted an indirect effect (β = .99) on mastery goal. Finally, mastery goal had a positive, direct effect (β = .09) on the outcome variable, whereas performance goal had a negative, direct effect (β = -.26).

Discussion

The main purpose of the present study was to determine the direct and indirect effects of students' perception of teacher support and reaction to questioning on help seeking strategy. We also wanted to examine the relationships between the aforementioned variables and several other variables, namely motivational components and help-seeking strategy. Regarding the initial objective of this study, results confirm the usefulness of our modified model in order to predict the outcome variable, instrumental help-seeking. Indeed, both exogenous variables of the model (perception of teacher support and perception of teacher reaction to questioning) were linked in important ways to student motivation components that mediated the effects of the former over instrumental help-seeking. This is consistent with prior studies that affirm that students are more likely to use strategies that characterize self-regulated learning when they perceive more support from instructors (Karabenick & Sharma, 1994, Newman, 1994).

Although all motivation components measured in this study were affected, it is important to mention that each exogenous variable showed a distinctive path. For instance, the effect of perception of teacher support on instrumental help-seeking differs in some way from that reported by previous studies. The influence of

FIGURE 2
Final Structural Equation Model for Instrumental Help Seeking
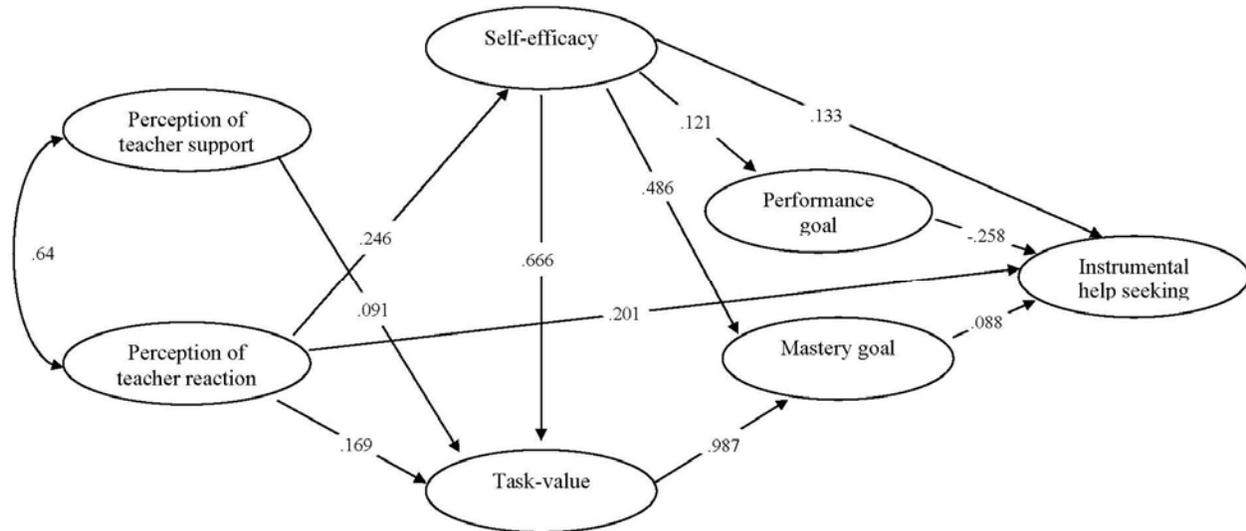
Note. p < .05

perception of teacher support was only mediated by task value. Task value, for its part, exerts a very strong direct effect on mastery goal orientation, which in turn, directly predicts instrumental help-seeking. We also found no evidence of a direct path between students' perception of teacher support to questions and achievement goals. We believe this to be the most noteworthy discrepancy between ours and results from earlier studies. These previous studies had hypothesized direct effects between these two variables (Karabenick & Sharma, 1994). This unanticipated result can partially be explained by the fact that our study asked students to report actual help-seeking behavior rather than rely on report of hypothetical behavior. This disparity might also be attributable to important class size differences between our sample and that of the previous study. In Karabenick and Sharma's study, enrollments varied between 229 and 450 students, while in our study enrollments varied between 13 and 59 students. It is possible that group dynamics, as a result of large differences in group size, have an impact on students' perception of teacher support For instance, a larger class size may increase the importance for students of having more teacher support. This may be especially important in light of our finding relative to the role of teacher support on students' achievement goal orientation.

Results from this study also demonstrated that achievement goals exerted different direct effects on help-seeking strategy. Indeed, mastery goals positively influenced instrumental help-seeking, whereas performance goals had a negative influence. These results indicate that students who pursue high performance goals tend to avoid seeking instrumental help during class time. This last finding challenges both Arbreton's (1998) and Ryan and Pintrich's (1997), claim that these two variables are unrelated. Our results are closer to the findings reported by Newman (1998). He observed an inverse relation between performance goal and instrumental help-seeking when classroom conditions stressed performance rather than learning. Drawing from this finding, it might indicate that participants in our sample were in classes that represented a rather competitive academic context. Whatever the case, our findings support theoreticians who have proposed that mastery and performance goals have independent effects on help-seeking behavior, and that university students can pursue a multitude of goals (Barron & Harackiewicz, 2001; Harackiewicz, 1998).

One of the most salient findings from the present study is the central role played by the perception of teacher reaction in concomitance with self-efficacy, which exerts a mediating effect on task value, on mastery and performance goal orientation, as well as on instrumental help-seeking. This finding parallels previous work by Plecha (2002), Rugutt, Ellet, and Culross (1998), and Ryan and Patrick (2001). These authors found that when students feel more efficacious, they are more likely to use strategies, such as help-seeking, to regulate their learning. Similarly, our data strongly suggest that teachers should seek to increase students' self-efficacy beliefs by promoting a mutually

respectful classroom environment. This can be done by explicitly indicating the importance and value of the material, thereby encouraging students to develop a more mastery goal orientation. Therefore, students who perceive their teacher's reaction to questioning in a positive manner are more likely to seek instrumental help, show higher levels of self-efficacy beliefs and task value, as well as being more mastery goal oriented (Arbreton, 1998; Karabenick, 2001; Newman, 2000; Ryan & Pintrich, 1997). Teachers can thus play a crucial role in the goal orientation of their students. In addition, this finding confirms, and offers further empirical support for, the relationships between beliefs, values, and goals and their complementary nature (Karabenick & Sharma, 1994; Pintrich, 1992; Pintrich & DeGroot, 1990).

Another interesting finding from the present study was that student perception of teacher reaction to questioning had a direct effect on instrumental help-seeking strategy. This finding is in line with researchers who have emphasized the importance of including more specific teacher behavior in relation to student achievement and success. In particular, these researchers have identified the importance of teachers' verbal and non-verbal behaviors that encourage the effective use of questioning in the classroom (Karabenick, 2004). Although this is one of the first studies to consider the impact of perception of specific teacher's reaction to questioning on students' help-seeking strategies, our results provide empirical evidence for the idea that social features of the learning context are essential social determinants of whether students voluntarily seek help in classrooms. The importance of statements addressed to the whole classroom that signify support and receptiveness for student questioning can also be inferred; however, more importantly, the way in which a teacher responds to a specific student question has significant consequences for students' self beliefs, their expectations, and eventually on their level of instrumental help-seeking. In other words, students not only need to hear that questions are welcomed during class time in order for them to seek help, but they also need to experience positive reactions from the teacher when they do ask a question.

In light of that, it seems that instrumental help-seeking is closely tied to teachers' verbal and non-verbal behaviors that explicitly demonstrate a positive reaction to each individual during class time. This offers confirmation for the ecological validity of the variable within the model. Moreover, these results confirm the distinct nature of the two teacher variables: teacher support and teacher response to questions.

In summary, the results of this study are encouraging because they suggest that teacher classroom behavior can affect college students'

motivation as well as their use of effective learning strategies. What is more, the results provide empirical evidence to support the importance of considering both motivational components and teacher behavior (i.e., perception of teacher support and reaction to questioning) in our model of instrumental help-seeking. In addition, our results demonstrate the effectiveness of studying the relationship among these variables from the perspective of achievement goal theory. For instance, students' instrumental help-seeking strategy is closely tied to mastery goal orientation, self-efficacy beliefs, and task value. At the same time, perception of teacher support and reaction to questioning both exert an important, but mainly indirect effect on achievement goals and instrumental help-seeking. Moreover, our results lead us to believe that explicit, positive teacher verbal and non-verbal behavior has a greater influence on undergraduate students' motivation and self-regulated learning strategies, particularly for their instrumental help-seeking.

Although our results demonstrate interesting and pertinent findings, there are several limitations of this study. First, all the variables were measured with a self-report instrument. Self-reports can be used effectively to measure student perceptions of teacher behavior and motivation components (e.g., Barron & Harackiewicz, 2001; Ramsden, 2003); however, the results would be more robust if corroborated by other measures, such as interviews or behavioral measures that offer different perspectives on the same construct (Garner & Alexander, 1989, Zimmerman & Pons, 1986). Second, other factors not included in this study may be implicated in student instrumental help-seeking strategy. For example, students' unwillingness to ask questions during class may reflect their compliance with informal classroom norms and peer pressure phenomena. Moreover, the nature of the course taken, whether the course was compulsory or an elective, as well as other classroom characteristics (e.g., group size, multiethnic composition of the class) may affect students' tendency to ask questions. Third, this study only included instructors who choose lecturing as their main pedagogical method. Therefore, future research may benefit from including various pedagogical methods in order to measure their unique effects on student motivation components and help-seeking strategy. Finally, it would also be useful to pursue the same objectives but include measures of student academic success and the impact help-seeking strategy has on student learning and perseverance.

With regard to the generalizability of the results of the present study, it is important to stress that the use of learning strategies, such as instrumental help-seeking, has been shown to be independent of student gender, age, or socio-economic background (Karabenick & Sharma, 1994). However, according to Ramsden

(2003), students' perception of the context of learning is closely related to their approaches to learning and learning outcomes. In this regard, students respond and react to the situation they perceive, which is quite different to that defined by teachers or researchers. Thus, instructors and researchers must be made aware of the importance of finding out about their students' perception of the course.

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Peer and Faculty Mentoring in Doctoral Education: Definitions, Experiences, and Expectations

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Mentoring has long been recognized as an effective strategy for retaining and supporting doctoral students in their programs of study. In this qualitative investigation, we conducted three focus groups of protégés, peer mentors, and faculty mentors to explore definitions, experiences, and expectations of mentoring. Results indicated that the three groups had meaningful differences in all three areas of interest. These differences were consistent with emerging conceptual frameworks explaining adult learning processes and perceived needs. The frameworks involved "stages" of mentoring and classifying the student's preferred mentoring style along dimensions of pedagogy and andragogy. These frameworks suggest the need for clarifying protégé and mentor roles/expectations early and throughout the doctoral program.

A high quality doctoral program involves a range of educational experiences that extend beyond coursework. While coursework can provide critical content and skills for leadership roles in special education, coursework alone may not be sufficient to motivate and retain doctoral students, provide them with necessary experiences associated with future job responsibilities, or socialize them to their new leadership positions. A few years ago we began a peer and faculty mentoring program for our special education doctoral students to address some of the program competencies and needs that are not addressed in coursework. We were particularly concerned about student satisfaction, retention, and socialization into the profession because a number of our students were employed full-time or had lengthy commutes to campus.

Researchers studying faculty mentoring programs for doctoral students have reported many benefits to protégés, including advantages in job placement, research skills, research productivity and self-efficacy, and collaborative publications (Kram, 1985; Paglis, Green, & Bauer, 2006; Rose, 2003; Terrell & Wright, 1988). Others have reported improved student retention, achievement, and degree completion (Maher, Ford, & Thompson, 2004; Tinto, 1993; Wunsch, 1994). Much like an apprenticeship, protégés are given individualized learning opportunities and experiences that socialize them into the profession (Lyons & Scroggins, 1990; Rose, 2005; Zachary, 2000). And as a result of mentoring, protégés report increases in self-confidence (Blank, 1988; Luna & Cullen, 1998) and satisfaction from having had "caring" experiences in their doctoral program (Redmond, 1990; Rose, 2003).

Benefits of veteran doctoral students mentoring new doctoral students (i.e., peer mentoring) have also been described in the literature (Bonilla, Pickron, & Tatum, 1994; Silva, Macian, & Garcia-Gomez, 2006). Peer-mentoring relationships are viewed by graduate students as providing a safe environment for giving and receiving feedback (Bonilla et al., 1994). Without concern for being evaluated or judged, students in peer-mentoring relationships said they felt freer to be authentic and to vent or reveal their feelings. In addition to providing a safe and supportive environment, students reported that peer mentoring was an important opportunity to receive additional guidance in meeting program requirements. Similarly, Dorn, Papalewis, and Brown (1995) found that peer mentoring helped keep students moving towards degree completion.

In addition to benefits to protégés (graduate students or junior faculty), mentoring programs also provide benefits to faculty mentors and their institutions. Faculty say that their own performance is enhanced through the mentoring experience (Ragins & Scandura, 1993), and that mentoring is generative and revitalizing (Blackburn, Chapman, & Cameron, 1993). Protégés frequently serve as catalysts in establishing new links among colleagues (Bargar & Mayo-Chamberlain, 1983), and as protégés become respected colleagues, they often provide social support to their mentors (Jacobi, 1991). Given that faculty and students are the heart of an academic institution, Wunsch (1994) posits, "The quality of an academic institution depends on the quality of the work and learning experience of its faculty, staff, and students" (p. 12). Furthermore, she believes that mentoring is a communal process that facilitates individual growth and counters feelings of isolation. Mentoring perpetuates itself: professionals who were mentored are likely to mentor others (Hunt & Michael, 1983).

Conceptual Framework

The conceptual framework for this study was based on two theoretical perspectives grounded in Vygotsky's (1978) sociocultural constructivism: cognitive apprenticeship (CA) and communities of practice. Both involve scaffolding and support in moving the protégé from being on the periphery of the group to becoming an insider. The objective of a CA is to initiate the novice into a community of expert practice (Collins, Brown, & Newman, 1989). The social network within the community/culture helps the novice learn its language and belief systems. In turn, this initiation promotes the process of enculturation into the discipline.

In a mentoring relationship, apprenticeship and coaching begin by modeling and scaffolding for protégés as they enter into authentic activities within the professional "community." As apprentices increase in self-confidence, they move into a more autonomous phase of collaborative learning and begin to participate more fully in the culture (Collins et al., 1989). Lave and Wenger (1991) discuss how members new to the community enter at the periphery. As the members learn the social rules and rituals of the community/culture, they move toward full participation and viewing themselves as full members of the community. In a study of an undergraduate mentorship program for minority students, Terrell and Hassell (1994) proposed a two-stage model to describe the shift in student mentoring needs and expectations that accompanies their growth in their new academic culture. In stage 1, protégés seek academic and career guidance; in stage 2, protégés desire collaboration with mentors to avoid pitfalls and learn strategies for success in the future.

Similarly, communities of practice have been defined as "groups of people informally bound together by shared expertise and passion for joint enterprise "(Wenger & Snyder, 2000, p. 139). In a community of practice, social relations are created around the common work of the group. People work and learn collaboratively: "Learning occurs within the context of social relationships with other members of the community who have similar, if not identical, issues and concerns for realms of practice" (Buysse, Sparkman, & Wesley, 2003, p. 267). The passion generated from this core community energizes the larger community by providing intellectual and social leadership (Wenger & Snyder, 2000). Wenger and Snyder further state that communities of practice are particularly effective arenas for (a) solving problems by knowing whom to ask for help, (b) sharing and spreading best practices, and (c) fostering professional development for both the protégés and the mentors.

Brown, Collins, and Duguid (1989) stated that while speaking of academic disciplines as communities or cultures appears strange, these communities of practitioners are bound by socially constructed webs of belief and shared language which is essential in understanding the culture.

From a very early age and throughout their lives, people, consciously or unconsciously, adopt the behavior and belief systems of new social groups. Given the chance to observe and practice *in situ* the behavior of members of a culture, people pick up relevant jargon, imitate behavior, and gradually start to act in accordance with its norms. (Brown et al., 1989, p. 34)

Brown et al. (1989) continue by discussing how advanced graduate students acquire refined research skills through the apprenticeships they serve with senior researchers. As apprentices, they must recognize and resolve the ill-defined problems of the field, in contrast to the well-defined exercises that are typically given to them in text books and on exams throughout their earlier schooling. Brown et al. note, "It is at this stage, in short, that students no longer behave as students, but as practitioners, and develop their conceptual understanding through social interaction and collaboration in the culture of the domain" (p. 40).

Purpose

We conducted this study as a formative evaluation activity. Our purpose was to explore the nature and outcomes of mentoring from the perspectives of our mentoring program participants. We also wondered if the participants shared common beliefs, expectations, and experiences about mentoring. Specifically, we posed the following research questions:

1. How do doctoral student protégés, peer mentors, and faculty mentors define mentoring?
2. What are the mentoring experiences of the three groups?
3. What are the outcomes of these mentoring experiences?

Methods

Participants and Setting

We conducted three focus groups: There were four protégés in the first group, four peer mentors in the second group (protégés of their faculty mentors, and mentors to novice doctoral students), and eight faculty

mentors in the third group. As indicated in Table 1, focus group participants were predominantly female and Caucasian. Protégés ranged in age from 31 to 52 years, and three had taught from 5 to 10 years. One had no teaching experience. None of the protégés had any experience teaching in higher education or with mentoring programs. The peer mentors were a slightly younger group (mean age of 39 compared to 41 years), ranging in age from 34 to 49 years. There was one male in the group. As a group they had a great deal more K-12 teaching experience (ranging from 5 to 20 years) than the protégés, and all had teaching experience in higher education. Professionally, the peer mentors were much more experienced than the protégés. None of the peer mentors had experience with mentoring programs.   The faculty mentor participants ranged in age from 36 to 61 years. They had 3 to 14 years K-12 teaching experience and had been in higher education from 2 to 30 years, with all but two having 10 years or more of higher education experience. Four of the eight faculty mentors had either participated in a formal mentoring program or professional development activities focused on mentoring. Given the backgrounds of the participants, most faculty had experience as protégés and mentors; whereas, most students (protégés and peer mentors) felt they only had experience as protégés.

The focus groups were held in the department's conference room, a familiar setting for all participants (all had regularly attended classes or meetings in the room). The conference room held a large rectangular table with seating for 14 persons. A tape recorder and snacks were in the center of the table. All focus groups were conducted within a two-week period early in the fall semester, and each lasted approximately 90 minutes.

Focus Group Procedures

As participants entered the room, the first author asked them to read and sign a consent form and to complete a brief demographic questionnaire. They were also invited to have some snacks. Once all participants had arrived, the first author distributed the focus group questions (listed below), reminded participants of the 90-minute time frame, and suggested that they address each question by telling "stories" of their experiences. In each group, one participant seemed to take the lead and read each question. The discussion followed a round-robin format, with each person in the group responding in turn. They were also requested to turn the audiotape over when the recorder clicked off indicating the tape had reached the end of the first side. For the two student groups, the first author started the tape recorder, read the first question aloud, and left the

room. No faculty were present during the student focus groups, although the second author was a member of the protégé group. The same procedures were followed for the faculty focus group, except the first and third authors were participants and contributed to the discussion. The focus groups discussed the questions for 90-120 min.

The focus group questions were

1. Have you had a mentor at any point in your professional career? If so, what made that relationship an effective mentoring experience?
2. What is your definition of mentoring?
3. We've described our doctoral advising as mentorship. What do you believe the goals/outcomes of the faculty mentor-doctoral student protégé relationship should be?
4. Our doctoral program includes peer mentorship among the doctoral students. What do you believe the goals/outcomes of the seasoned student mentor-novice student protégé relationship should be, and how might we facilitate it?

Data Coding and Analysis

The research team consisted of two faculty mentors (the first and third authors) and a protégé (the second author). Applying grounded theory (Glaser & Strauss, 1967, Strauss & Corbin, 1990) with inductive coding, we transcribed, coded, and analyzed the data in an alternative independent and collaborative fashion. We worked independently to develop and test emerging themes and codes and collaboratively to refine our analyses and build consensus on coding and our interpretations.   Table 2 summarizes our process.

Verification and Validation

Prior to coding the transcripts, we distributed copies of respective transcripts to each focus group participant for member checks (i.e., focus group participants were asked to check transcripts for accuracy; Guba, 1981). A few participants chose to clarify/elaborate on their contributions to the focus groups. Their clarifications/additions were included in the data set.

We included independent coding and analysis steps to allow for our individual perspectives to emerge. This was particularly important because our research team had a wide range of experience and vested interests in the doctoral program: The first team member was a full professor, the doctoral program developer, coordinator, and advisor to four doctoral students; the second was an

TABLE 1
Focus Group Participants

Characteristics				Experience and Training			
Gender	Age	Ethnicity	Teaching License	Years Teaching K-12	Years Teaching Higher Education	Formal Mentoring	Trained in Mentoring
Protégés							
F	31	Part Hawaiian	secondary	6	0	no	no
F	41	Caucasian	K-12 special education secondary English	10	0	no	no
F	41	Japanese-Caucasian	(early intervention)	5	0	no	no
F	52	Caucasian		0	0	no	no
Peer Mentors							
F	34	Caucasian	K-12 general education	5	3	no	no
M	35	Caucasian	K-12 special education	10	4	no	no
F	37	Caucasian	K-12 special education secondary English	13	1	no	no
F	49	Caucasian	K-12 general education K-12 special education	20	2	no	no
Faculty							
F	36	Chinese-Japanese	K-6 general education K-12 special education	6	2	no	yes
F	41	Caucasian	K-12 special education	9	5	no	no
F	45	Caucasian	K-12 special education	3	20	yes	no
F	51	Caucasian	K-12 special education	14	10	yes	no
F	55	Caucasian	K-6 general education K-12 special education speech pathology	3	30	no	no
M	57	Caucasian	K-12 special education	9	20	no	no
M	58	Caucasian	K-12 special education	8	25	yes	yes
F	61	Caucasian	K-12 special education	5	30	no	no

TABLE 2
Data Analysis Process

Independent Steps	Collaborative Steps
1. Read all transcripts and identified themes	2. Reached consensus on themes and codes
3. Piloted themes and codes	4. Clarified and refined themes and codes
5. Piloted revised themes and codes	6. Clarified and finalized themes and codes
7. Coded all data	8. Reached consensus on discrepancies in coding.

associate professor, the program evaluator, and an advisor for three doctoral students, and the third was a protégé and doctoral advisee of the first team member. The independent work also contributed to verifying that codes were clearly defined and applied consistently throughout the data analysis.

We also analyzed a related data set for purposes of triangulation: We described our focus group findings at a meeting of the doctoral students and faculty one year after the focus groups were conducted. Following the description of the findings, we asked the group to have small group discussions (3 to 5 individuals; a mix of faculty and students) on the implications of our findings and to suggest recommendations to improve the mentoring program. The nine groups reported back orally to the entire group and submitted a one-page written summary of their recommendations and reflections.

Limitations

Personal biases. As noted earlier, the research team members had vested interests in the success of the mentorship program. Our biases could lead to overly favorable interpretations of the data. To minimize the impact of this bias, we used five strategies. First, faculty members were not present during the student focus groups. Second, we coded the focus group transcripts independently as well as collaboratively. Third, we conducted member checks of the transcripts. Fourth, we triangulated the focus group data with recommendations and comments from a faculty and student meeting in which we presented initial findings. And fifth, we've illustrated our findings with direct quotes from focus group members.

Small data samples from one doctoral program. The three focus groups were relatively small samples of new doctoral students, veteran doctoral students/peer mentors, and doctoral faculty/faculty mentors (four, four, and eight, respectively) within a single university. The findings appear to be valid for the sample population, but the small sample size limits our ability to generalize our findings beyond this group. However, our findings are consistent with the literature and do contribute to a growing database on mentoring in higher education.

Discrepant size of focus groups. The faculty mentor group had eight participants compared to four participants in each of the student focus groups. Because the faculty's focus group was larger, there were more individuals contributing stories and commenting on each of the stories. This larger group size may have accounted for the "richer" and more in-depth data obtained from the faculty compared to the data collected from the student groups.

Findings

Definitions

Each focus group was asked to define mentoring. The groups used similar words and definitions. They described the mentoring process as both informal and formal. They believed that mentors could be found in a number of roles – professor, advisor, and peer – and that mentors functioned as helpers and guides. A mentor could be defined as someone who is "more knowledgeable," "has more and/or recent experience," "gives insight," "shares knowledge," and "clears confusion." Mentorship was also described as a "reciprocal relationship," meaning that mentors as well as protégés benefited from the partnership.

Although the three groups used similar terms and provided comparable definitions of mentoring, there were clear differences in the discussions conducted by the three groups. The protégés' discussion included fewer comments than the other two groups (i.e., they had a much briefer discussion of this question), and their comments emphasized that they defined a mentor as a guide. The role and responsibility of a mentor/guide was to meet the protégés' immediate needs:

> I have always felt that the mentor should be able to help the mentee, I mean, almost on any level or at any stage. You know, whether you have content-related issues or personal issues... I know that I've used my mentor when I've been so confused and I've felt like I was really floundering this semester... She's kind of set me on my way. I used those words with her. I said, "I'm just floundering with the dissertation topic...." She said to me, "Well, you know I'm working on inclusion. Why don't you go look at that?" Sounds good to me, so then I went [and] looked it up and very quickly it became specific enough and narrow enough that I could work on it.

> The goal is to make sure the doctoral student is on track. You know, academically, and everything else that impact the academic...situation: the person's life, the department politics. Whatever... could happen that throws you off track.

Peer mentors, in contrast, defined a mentor in broader terms and emphasized the informal nature of the mentorship relationship (for faculty mentors and peer mentors). Consistent with their emphasis on the informal nature of mentoring, they discussed the importance of "relationship" at length. They believed that a mentoring relationship was multifaceted and

could be characterized as "personal," "professional," "reciprocal," and "collegial."

> [We] are interested in doing the same kind of research, this qualitative phenomenological case study sort of research... We play off each other, you know, ideas for doing our research and theoretical and conceptual framework, and that sort of thing. So we really learn from each other.... She gives me a lot of good stuff and I give her a lot of good stuff. So I don't feel like we had a mentor-mentee relationship, but I feel like we had a very strong collegial relationship where we helped each other.

And in contrasting a mentor to an academic advisor, a peer mentor said,

> I think she thought she was both: a mentor and an advisor. Because there's more to our relationship than her just advising me as far as classes. I think that the mentorship encompasses more than just the advising stuff; there's more of a personal relationship, personal concern.... And she'll continue. I mean I know that even though her advising portion of it is over... I know that we'll continue with... that mentor relationship.

Of the three focus groups, the faculty mentors had the lengthiest discussion of the definition and their definitions were the broadest. In direct contrast to the protégés, faculty mentors' definitions were focused on future needs

> I tried to pick a task where there'd be something like what... I actually need done, but something that would also fit with what the student needs to be doing for their own... professional development... I set up kind of a database for them [and had them] go through some articles and basically just categorize [them]... I think the student's getting into the literature and that's good because they need to do that. They really need to know what's going on with that.

Like the peer mentors, faculty made a distinction between an academic advisor and a mentor. They emphasized that mentors served various roles: facilitator, instrumental, teacher, collaborator.

> He was kind of a shrewd person in that he was a mentor that just kind of got out of the way...and then he provided support when you need it. So if you needed to get connected or something like that, he allowed that to happen. He assisted in kind of getting your program adjusted and he did lots of kinds of things like that.

Mentoring Experiences

Focus group discussions were devoted primarily to stories of mentoring experiences. To identify themes characterizing mentoring experiences, we looked for explicit mentoring behaviors. Six themes portrayed the mentoring experiences/behaviors of the three groups, and the six themes were found across all three focus groups. The themes were (a) relationship, (b) motivation, (c) professional socialization, (d) instruction, (e) opportunity, and (f) procedures.

Relationship. Participants emphasized the relationship quality of mentorship. They described the development and importance of the professional and personal connection between the protégé and peer mentor or faculty mentor.

> There has to be a personal connection on some level... whether it's an interest, or ... personalities that work, or the fact that one person just wants to help someone else and give them suggestions about how to make it easier. It's a matter of wanting to share ... with someone else. I think if you really don't want to then it's not going to work.

> She's under similar circumstances of having children and having to commute...I remember asking her questions before she was even my mentor: "How on earth did you even get up in the morning?" You know, generic stuff that has nothing to do with the program but like getting through the day in this program.

Motivation. The motivation theme included behaviors illustrating mentoring behavior that encouraged and supported students to feel confident and to advance through their studies.

> If we're talking about mentors on a broad scale, I mean, I would say that those professors we had this summer were wonderful mentors... They certainly boosted our egos if nothing else... to guide us, encouraging us to publish a paper that we wrote together, which really will be fun, and as soon as we have time we're going to do that.

> He was just the kind of person that just assumed you were going to do it and [the] next [thing] you know he hands me the schedule and so I tried doing it... He kind of socialized me from lower ed. to higher ed. This thing of the difference between being a classroom teacher and being a graduate student, then being an instructor in higher ed. and all the culture and stuff like that... He was real good at developing confidence

because you typically don't have a lot of confidence... when you're moving across environments.

Professional socialization. Participants mentioned a number of mentor behaviors that provided professional development experiences beyond the content and skills typically developed through coursework. These included experiences to prepare and support students in administrative or higher education positions, and to assist them in shifting from practitioner roles to leadership roles. We characterized these behaviors as "socialization into the profession."

I think that [he] was a mentor in socializing me to the profession... Like, what kind of social expectations are there in going into higher education and what kind of politics are there?.. That was completely foreign to me, and just explaining to me:... these are the kind of things you expect,... how to go to a conference and meet people and network... and that was all above and beyond the research.

Instruction. Mentors made sure their protégés learned essential knowledge and skills, either by teaching their protégé (often in the context of their research), or by helping them to access educational experiences.

I complained so much about one of the courses on assessment, that I wasn't getting what I wanted out of it, that he said, "Okay. I'll get a seminar, and I'll teach it again, and you can take it." Although he wasn't directly involved with the field-based research,... he was a person I met with on a regular basis... looking at methodologies, setting up a study, all of those kinds of things.

Opportunity. In providing opportunities as a part of mentorship, mentors used their networks, accumulated knowledge, and status to provide connections, access, or experiences that otherwise would not be available to the protégé. These opportunities were generally ones that the mentor deemed important to advancing their protégé's career.

I got to contribute a chapter... She said, ... "You're the expert... You've done so much research on it. Would you please contribute? Would you write that section for my book?" And so I did, and ... so now on the front of the book it says "contributing author." So that's my first publication!... I felt that she was really looking out for me. She was thinking, "How can I help [him] progress in his...

academic career? This is a way I know I can get him a publication."

Procedures. Mentors provided course and program guidance to students that went beyond academic advising: They provided advice and recommendations based on their knowledge of the student and his/her strengths and needs; their own personal experiences as a student, educator, and faculty member; and their acquired knowledge from guiding students and working within the institution over time.

She's answered every single question that I have had to the best of her ability. She's been very open and not only answers the surface level of the question but really how to think about it. So if I asked her... "How do I go about picking... people... for my committee?" or "What's the committee all about?"... she'll not only describe what it's about in terms of what the book says, but she'll say things like, "Well, it's really important that all your committee members get along well." You know, these things aren't in the book, and that's been really helpful.

There was this other female who had just completed the program when I was starting. And I remember, one day I was in the office and she just took me into the other office and just said, "Okay, let me tell you. This is who you need to take classes from... Make sure you do this." And she really laid out the whole... "This is what you... better do to get through," and who to avoid, or who to make sure to take a class from, and, "This is the way it'll go." And I learned more from her than anybody else.

Mentoring Outcomes

In addition to identifying definitions and mentoring behaviors, we analyzed the focus group data to identify tangible outcomes that participants attributed to their mentoring experiences. We did not include "desired" or "expected" outcomes, only outcomes that participants said had actually occurred. A number of "procedural" outcomes resulting from mentorship were mentioned, including program admission, scholarship/tuition, knowledge of program procedures, degree requirement completion, and degree completion: "He helped me get into the master's program... He kept reinforcing me to try and apply for the doctoral program... It just made all the difference in the world." Participants also discussed learning outcomes (professional behaviors, subject matter, and skills), professional activities (university teaching, conference

presentations, research, writing/publishing), networking, and acquiring a job as resulting directly from their mentorship experience.

> My graduate assistantship was..., "Do this. Make copies."... And [my mentor] took me aside. He said, "You know, if you want to go onto higher ed.... you are going to have to stand up for yourself and say that these kinds of assignments are not appropriate. You are not going to learn how to be a professor by making copies."... And that was so scary. And so I did end up doing that and lost my job because of it... So then I had to find another assistantship with someone else and a different area... just so I could have a mentor who would be a mentor.

Discussion

Definitions and Experiences

As noted in the findings, the three focus groups defined mentoring with different emphases: more inexperienced protégés defined mentoring as guiding, assisting, and keeping on track; peer mentors (veteran students) defined mentoring as a personal relationship that acknowledges, encourages, and supports; and faculty defined mentoring as facilitating, socializing, and preparing the protégé for a future professional role. These differences are inconsistent with the findings of Rose (2005) who explored effective mentoring using the Ideal Mentor Scale (Rose, 2003). In contrast to our findings, Rose did not find differences in mentoring needs at different stages of progress toward the doctorate. This might be explained by Rose's sample which included students from a variety of disciplines. However, differences in defining mentoring relative to student progress toward the doctorate are supported by the findings of Terrell and Hassell (1994) who suggested two stages in the mentoring experience: In Stage 1, protégés seek academic and career guidance, while in Stage 2, protégés desire collaboration with mentors to avoid pitfalls and learn strategies for success in the future. In our study, Stage 1 protégés were the new students who had an immediate need to learn the procedures and expectations of their new venture into graduate school. This first stage might be conceptualized as "structural." As students gained some experience in the doctoral program, they learned the day-to-day expectations and logistics (e.g., which courses to take, how to obtain reliable information) and became more self-assured and confident. As they "settled in" and no longer felt insecure about being in a doctoral program, they were free to look to the future and consider the relationships, knowledge, skills, and experiences they needed to be successful in their future

leadership role. Stage 2 might be thought of as "relational."

Explaining our findings in terms of Terrell and Hassell's (1994) stages of mentoring is consistent with the theoretical perspective of cognitive apprenticeship (CA) (Collins et al., 1989). The concept of "scaffolding" in CA supports the notion that students enter the community on the periphery as they are initiated into the profession. Over time they are gradually enculturated: they participate in authentic activities, gain self-confidence, and then are able to engage in collaborative learning as full members of the community (Collins et al.; Lave & Wenger, 1991). As full members of the community, learning is able to occur as in a community of practice (Wenger & Snyder, 2000).

Six themes emerged from the participants' stories of their mentoring experiences: (a) relationship, (b) motivation, (c) professional socialization, (d) instruction, (e) opportunity, and (f) procedures. Although the themes were evident across the focus groups, the behaviors and experiences reflecting the themes differed qualitatively for each group. Building on the stages identified by Terrell and Hassell (1994), Table 3 is a conceptual framework that we propose to summarize and illustrate the qualitative differences in mentoring behaviors/experiences. Column one lists the six themes identified in our data. Columns two and three delineate the types of behaviors/experiences/expectations that illustrate the theme relative to Terrell and Hassell's stages of mentoring. For example, in Stage 1, protégés expect and desire a relationship (theme 1) with a mentor who provides explicit direction and guidance, whereas, protégés in Stage 2 (veteran students/peer mentors) value a reciprocal/collegial relationship. During the first "structural" stage, protégés' motivation (theme 2) is primarily to get through the courses and program requirements; their instructional focus (theme 3) is course content. In contrast, protégés nearing completion of their program (Stage 2, "relational") are less concerned with program requirements and more concerned with acquiring the necessary experiences and competencies to achieve their career goals. Stage 1 protégés express only an emerging awareness of a need for professional socialization (theme 4), whereas Stage 2 protégés are well aware that their roles will be shifting from practitioner to leader and they value experiences that help them with their role redefinition (and they realize that many of these experiences go beyond what coursework and program requirements can provide). As learning and professional opportunities (theme 5) arise, Stage 1 protégés willingly and eagerly take advantage of the offerings; Stage 2 protégés identify their own professional development needs and *create* the corresponding opportunities. And finally,

TABLE 3
Mentor Behaviors and Conceptual Framework

Mentor Behaviors	*Stage 1* Form	*Stage 2* Form
• Relationship	• Hierarchical/Guiding	• Reciprocal/Collegial
• Motivation	• Course & Program Completion	• Career Development
• Instruction	• Course Content	• Professional Competencies
• Professional Socialization	• Emerging Awareness	• Role Redefinition
• Opportunity	• Participation	• Self-Direction
• Procedures	• "End" of the "Means to an End"	• "Means" of the "Means to an End"

TABLE 4
Mentoring Outcomes and Conceptual Framework

Stage 1 Outcomes	*Stage 2* Outcomes
• Program Admission	• Learning - Professional Behaviors, Knowledge, and Skills
• Tuition/Scholarships	• Teaching
• Learning - Procedures	• Professional Presentations
• Degree Requirements & Completion	• Publication and Writing
	• Research
	• Connections

during Stage 1, protégés seem to be consumed with learning the procedures (theme 6) and policies of their program (understandably so), to the point that the procedures seem to be the "end" of a "means to an end." Stage 2 protégés have passed the hurdle of learning procedures and realize that the procedures are the "means" to the end.

The mentoring outcomes that emerged from our data also fit with Terrell and Hassell's stages of mentoring. As illustrated in Table 4, "procedural" outcomes, such as program admission and completing coursework, may be thought of as Stage 1 outcomes; whereas more substantive and relational outcomes, such as learning professional expectations and presenting at conferences, are associated with Stage 2. Students may complete a doctoral program by achieving primarily Stage 1 outcomes (completing their coursework and research requirements), but certainly their doctoral program experiences and outcomes will be fuller and richer if they also achieve a number of Stage 2 outcomes. Additionally, we would project better career success (a more marketable graduate with a greater likelihood of obtaining desired employment) for those students who also achieve a number of Stage 2 outcomes.

Conceptualizing mentoring experiences and outcomes according to Terrell and Hassell's (1994) stages is consistent with some perspectives on adult learning. In a study of business school students, Delahaye, Limerick, and Hearn (1994) found that adult learners progress through four stages that characterize their "orientation to learning" (Knowles, 1984) and represent growth in "learner maturity." These stages are described in terms of two learning style preferences: pedagogy (a subject-centered approach to learning) and andragogy (a life-centered, task-centered, or problem-centered approach to learning). The four stages are

- Stage 1 - Low Andragogy/High Pedagogy
- Stage 2 - High Andragogy/High Pedagogy
- Stage 3 - Low Pedagogy/High Andragogy
- Stage 4 - Low Pedagogy/Low Andragogy

Stage 1 and Stage 3 are comparable to Terrell & Hassell's Stage 1 and Stage 2 of the protégé's mentoring experience, respectively. These two stages have been documented in the literature for some time (Delahaye et al., 1994). Stage 4, Low Pedagogy/Low Andragogy, may be viewed as independent learning (without a teacher), and includes behaviors such as observing, reflecting, generating ideas, reformulating previously acquired knowledge, and creating/ experimenting. Delahaye and his colleagues suggest that learners in Stage 2 may be "rebelling" against the structured style of pedagogy, but are insecure about taking more responsibility for their own learning in an andragony style. Understanding how adults learn explains why our results suggest that doctoral student mentoring should change (moving along a continuum from directive to collegial) as the students progress through their program. Failing to gradually modify the mentoring style in a doctoral student's program may result in an ineffective or unsatisfactory mentoring experience for students and professors alike.

Implications for Doctoral Student Mentoring

Although the findings of this study are limited by our restricted sample, our results are fairly consistent

with the literature and thus have some generalizability to mentoring doctoral students. There are several implications based on the findings, feedback from focus group participants, and emerging conceptual framework. First, mentors and protégés would benefit from clarifying their roles and expectations in the mentoring relationship. Although most "new" protégés will be at a structural stage, not all will desire or expect mentoring that is focused on academic and career guidance. Instead, some new protégés will prefer more of a relational focus in their mentoring. Second, mentors should ask protégés what they feel their immediate needs are and what kind of assistance, if any, might help them meet those needs. Third, consider providing protégés with a "tip sheet" addressing strategies for meeting common procedural needs and "lessons learned." This could be developed by faculty mentors and veteran protégés. Giving protégés a tip sheet might be particularly appropriate to protégés in the high pedagogy/high andragogy stage who are apparently struggling to move to more self-directed learning because it provides clear guidance but puts the onus on the protégé to actually refer to the tip sheet and follow the advice. Fourth, include relationship-building strategies in the mentoring program. This applies to the faculty mentor/protégé relationship, as well as to the peer mentor/protégé relationship. Relationship building can be facilitated in one-to-one situations as well as in group mentoring meetings. Participants in our study suggested scheduling periodic social gatherings -- some for faculty and students, and some for students only. There are several excellent sources describing activities for building the mentoring relationship (c.f., Megginson & Clutterbuck, 1995; Zachary, 2000). Relationship building may help protégés mature as learners and move from a pedagogical orientation to a more andragogical orientation.

Directions for Future Research

As we implement a number of relationship-building strategies suggested by our focus group participants, it would be informative to follow-up with our students (protégés and peer mentors) and revisit the discussion on mentoring. It would be interesting to see if the relationship-building strategies are perceived as effective and useful and if protégés' definitions and expectations of mentoring change as a result of the strategies. Given that our results contribute to a growing data base on mentor effectiveness, it would be worthwhile to further explore protégés' learning orientation and how it might change during the mentoring process and/or how it relates to various mentoring strategies. Protégés' learning orientation could be assessed with an instrument modified by Christian (1982) to assess learning orientation in terms

of pedagogy and andragogy. And finally, given the increasing cultural diversity in our nation, it would be useful to investigate the impact of culture on definitions and expectations in mentoring. It is possible that the limited diversity of special education's doctoral students is due to cultural differences among faculty and students that function as a "hidden curriculum."

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Acknowledgements

Connected Learning in Co-operative Education

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This qualitative research study explored the experiences of students who had attended a co-operative (co-op) education program, with a focus on what makes the experience meaningful to them. Utilizing a basic interpretive research design, students who graduated from a co-op program were interviewed using an open-ended interview protocol. Both male and female students were selected based on graduation date and came from a wide range of program types. Findings for this study were examined through the lens of connected-learning, a learning method that places emphasis on discussion, collaboration, and acceptance for knowledge development. Several themes emerged including experience, relationships, time, fees, and luck. Findings suggest that co-operative education is beneficial, but it is made meaningful by more than securing paid work terms.

My interest in co-operative education stems from my job where I work for a university level co-operative (co-op) education program. In this role I work closely with co-op students and I am involved in program design, development, and delivery, among other responsibilities. Through my work I have come to understand that not all learners value sitting in classrooms and listening to teachers. For some, learning happens in an environment that is active and meaningful to their day-to-day lives. Although it is true that much learning occurs in school, it is important to consider the other possibilities.

My purpose in this basic interpretive qualitative research study was to look at these possibilities by exploring the experiences of students who attended a Canadian university co-operative education program, particularly with regards to what makes the program meaningful to them. In addition, I sought to understand their experiences through the lens of connected learning, a leaning method that places emphasis on discussion, collaboration, and acceptance. To date, research that has focused on the benefits and outcomes of co-operative education (Bartkus & Stull, 2004; Kerka, 1999; Saltmarsh, 1992) has been primarily quantitative in nature, and has focused on traditional co-op programs like engineering (Blair & Millea, 2004; Coll & Pinyonatthagarn, 2004; Gardner & Motschenbacher, 1997; Hayward & Hovath, 2000; Nasr, Pennington & Andres, 2004; Van Gyn, Cutt, Loken & Ricks, 1996). Consequently, the call for this study is threefold: (a) employing a qualitative methodology deepens our understanding of co-op by providing rich, in-depth detail of the experience; (b) ensuring that students from a range of programs participate provides a broader view of the co-op context; and (c) examining co-op in terms of connected learning helps to close a gap in the current body of research as no studies look specifically at co-operative education and connected learning (Enns, 1993).

Conducting this study while holding the dual role of researcher and co-op employee presented some challenges: I had to carefully bracket what students "should" do from what they "actually" do as they described their experiences to me. Nevertheless, I believe that my understanding of the co-op context made me better able to identify the multifaceted elements that make up students' experiences. Being privy to students' inner lives has lead me to view study and work, in the formalized sense, as only part of the co-operative education experience. Through the research process I have deepened my understanding of students' experiences within co-operative education and continue to work reflexively to positively impact my work as an adult educator in the field.

Co-operative Education

Co-operative education is a structured educational strategy where students alternate between periods of work and periods of study. This integrated and systematic curriculum is achieved through a careful partnership between the educational institution and the occupational field with each partner contributing to students' learning (Groenewald, 2004). While criticism exists, the "expanded classroom" (Katula & Threnhauser, 1999, p. 239) of co-operative education is generally perceived as beneficial for students, the sponsoring educational institution, and the community as a whole (Braustein & Stull, 2001; Parks, Onwuegbuzie, & Cash, 2001). Indeed, by alternating for blocks of time between the two learning environments, students are given the opportunity to bring theory into the workplace and applied knowledge into the classroom, thereby increasing the value of their overall educational experience (Groenewald, 2004). Some of the reported benefits of co-operative education include increased motivation, greater career clarity, enhanced employability, as well as vocational maturity (Kerka, 1999). Evidently, enabling students to experience the more theoretical

world of school in tandem with the more practical world of work has the potential of increasing some of the positive outcomes of education.

This type of educational model began in North America in 1906 with the first co-operative education program at the University of Cincinnati (Grosjean, 2003; *UC History in Brief*, 2004). In time, co-op spread across the United States and Canada incorporating a range of programs as diverse as engineering, science, business, and the liberal arts. While expansion continues at a conservative rate, there is evidence that co-op programs will continue to increase in scope and scale across North America and around the world (Sovilla & Varty, 2004):

> Of particular note, in 1994 the American Society of Engineering Education ranked the establishment of co-operative education programs and the addition of practical experience to the academic curriculum as the second most important event in the past century in engineering and engineering technology. (p. 13)

While there remain significant areas for growth, the success of the last 100 years has provided a receptive audience for this unique post-secondary learning system.

The philosopher John Dewey (1916) is one of the early advocates of programs like co-operative education. He wrote passionately about learning that occurs through practical hands-on experience, a learning method that is also known as experiential learning. While he discussed experiential learning in broad terms rather than about co-operative education specifically, he promoted the value of removing the artificial separation between vocation and academia, calling traditional education into question (Linn, 2004). By shifting away from this division towards a more integrated learning model, he believed students could increase their self-development as well as their learning potential (Linn, 2004). Due to his support of non-traditional learning models linking work and school, as well as his promotion of the positive outcomes, Dewey continues to influence perceptions of the co-operative education context today and remains important to theoretical discussions on the topic (Giles, 1991; Heinemann & DeFalco, 1990; Heinemann, DeFalco & Smelkinson, 1992; Korowski, 1991; Linn, 1999; Linn, 2004; Prentice, 2001; Saltmarsh, 1992).

Confirming the merit of experiential learning as advanced by John Dewey (1916) is the proliferation of research focusing on the outcomes and benefits of co-operative education. In particular, studies have examined co-op programs and their impact on students' personal, work, academic, and career progress (Braustein & Stull, 2001; Parks, et al., 2001; also see Dressler & Keeling, 2004 for a comprehensive listing). Additionally, some recent research activity has begun to incorporate a greater emphasis on the co-op experience and what makes it a successful learning method. For example, David A. Kolb (1984) and his theory of experiential learning has come into focus, among other leading theorists, to deepen our understanding of what makes the co-operative education experience unique. Kolb's work is particularly influential because of how he defines learning and how he models the process. To Kolb, "learning is the process whereby knowledge is created through the transformation of experience" (p. 38). This definition is incorporated into his learning cycle which emphasizes not only the traditional process of reflection, observation, and drawing conclusions but also the more practical processes found only in experience. These include taking action, making decisions, and involving oneself personally. Naturally, this thinking is in accordance with co-operative education where students are required to ground their learning in experience.

Connected Learning

Although students enrolled in co-operative education programs garner many positive results, these do not come without effort. In order to make the journey learners must draw on multiple resources. One important resource is the relationships that learners build. Through relationships learners have the opportunity to play, converse, listen, and talk (Belenky, Clinchy, Goldberger, & Tarule, 1986). They learn to trust in their ability to think and, in due course, their right to be heard. This practice is called connected learning.

The term "connected learning," coined by Belenky et al. (1986) in their book titled *Women's Ways of Knowing: The Development of Self, Voice, and Mind*, is a learning approach where knowledge is gained by connecting with other people and things. Connected learning occurs when learners feel as though they safely belong amongst their fellow students, teachers, family, friends, colleagues, and community. Using dialogue as a communication method, learners develop their authentic "voice" (Belenky, et al, 1986, p. 33) and make an effort to emphasize connection over separation, acceptance over assessment, and collaboration over debate (Johnston, 2001). To enter this sphere of self-development, several elements must interlace: learners must engage in relationships and relationship building; they must feel emotion and even emotional within their relationships; and they must perceive the other as a person on the same level with different but equally valuable experiences and perceptions. Additionally, and important to this study, learners must value real-life experience as a tool in

building knowledge. With each of these elements in place, learners have the opportunity to enhance their personal growth and development and, therefore, gain more than a support system. Consequently, the learners' journey occurring within and beyond regular office hours (Linn, 1999) is more then the sum of its parts.

Purpose

The purpose of this basic interpretive qualitative research study was to explore the experiences of students who attended the Canadian University (a pseudonym) co-operative (co-op) education program. Utilizing a basic interpretive design, students from a wide range of disciplines including engineering, science, and the liberal arts, were interviewed using an open-ended interview protocol. The exploration sheds light on the meaning of students' experiences within the co-operative education programs, particularly as they relate to connected learning. The central question studied is "How do co-operative education students make meaning of their experiences within the program?" The research sub-questions include

1. How do co-operative education students behave as connected learners?
2. What do co-operative education student experiences reveal about co-operative education?

Method

To explore participant's experiences within the Co-operative Education Programs at Canadian University, the basic interpretive qualitative research design and associated data collection method of interviewing were employed. With the basic interpretive method, "the researcher is interested in understanding how participants make meaning of a situation or phenomenon" (Merriam, 2002, p. 6). Through the use of interviews, the researcher can best capture the "lived experiences" (Creswell, 1998) of the participants. The basic interpretive method also guided the data analysis process to focus on gaining an understanding of the data through the voices of the participants.

Participants and Site

The Canadian University Co-operative Education Programs are housed within a research-intensive university with 30,000 full- and part-time students. The majority of these students are between 19 and 29 years of age, are 58% female and 42% male, and are mostly from across Canada.

The Canadian University Co-operative Education Programs opened their doors in the early 1980s with two programs. These have since expanded to include over 40 programs of study for a total of 3,300 registered undergraduates, or approximately 10% of the university's total enrollment. Disciplines offering co-op are wide-ranging and include more traditional engineering programs as well as less typical programs such as history, sociology, and translation.

Participants for this research study were selected through the use of the co-op programs' main database. The most important criteria were that students come from the widest possible range of disciplines and had recently graduated from the co-op programs.

Recent graduates were an appropriate group to select from because they were no longer involved in any co-op activities but had a current perspective on their co-op experiences, and, in all likelihood, had yet to move away from the region. As graduates, it was also assumed that they were less likely to feel reservations about choosing to participate in the study and share their personal thoughts on their experiences. There were 279 students who graduated in December 2004 and possibly available for participation in this study.

Data Collection

A purposeful and maximal variation sampling strategy as outlined in Creswell (2002) was used to determine the first and subsequent set of study participants to be contacted. As a first set, three students per degree program were selected for a total of 15 students. The three from each degree - which included administration, arts, engineering, science, and social science - were selected based on the following criteria: (a) graduated in the previous term from the Canadian University; (b) completed all required co-op work terms; and (c) maintained a local address and phone number. To avoid singling out participants, individuals from each degree were selected by choosing every third name on the list. The sampling was purposeful in that both genders were represented.

Based on the response rates from the first group of participants, a second set was selected. Selection for the second set followed the same procedure with one addition: response by degree program. For example, when no participants agreed to participate from administration, three more participants from this degree program were contacted. This ensured that of the five degree programs, each was represented in the study. This recruitment process continued until saturation had been achieved with 18 study participants. Saturation was understood to be "the point where a theme is developed and detailed and no new information can add to its specification" (Creswell, 2002, p. 273).

To gather information, face-to-face interviews - approximately sixty minutes in length or less - were conducted. This method for gathering information has shown to be effective in enabling first-hand experience with the participant where unusual, emergent, or confidential topics may be gathered and explored (Creswell, 2003). The interview procedure followed a pre-determined plan where the study was described, informed consent was explained, and the informed consent form was signed. The identity of each participant was masked through the use of pseudonyms. Following the basic interpretive design, open-ended questions were used. The questions asked participants to describe their experience with the co-operative education programs and what it means to them.

Each interview was digitally recorded and later transcribed verbatim. Participants' transcriptions were returned to them via e-mail in order that they could verify the accuracy of the data collected. Additionally, participants were provided the final report in order that they could check the data and provide corrections or clarification. As well as recording the interview, field notes were kept capturing any additional information not presented verbally. These notes included my thoughts, feelings, and perceptions of the participant and of the information they provided.

Data Analysis

The procedure for data analysis followed the description–reduction–interpretation method (Wolff, 2002). In terms of description, the data was recorded and then transcribed. From this point, the interview data was reviewed, first to gain a general understanding of the meaning and then more thoroughly to develop open codes. This was followed by reduction of the interview data, achieved by using an inductive approach to determine themes and patterns within each interview and across interviews (Shank, 2002). Finally, interpretation occurred by comparing themes and showcasing how they interrelate (Shank, 2002). Meanwhile, the themes and patterns were compared to the field notes to check between first impressions and what became apparent through the transcribed words.

Trustworthiness

Trustworthiness, or validity, is the verification that the information presented in the report is accurate and true (Creswell, 2003). Trustworthiness was achieved in three key ways: (a) careful triangulation between the interviews, the interview transcriptions, and field notes; (b) member checking by participants of the interview transcriptions, themes, and descriptions; and (c) rich, thick description of the participants' experiences in the final report.

Findings

Participant Description

The 18 individuals who were interviewed for this study graduated from Canadian University; each having participated in the school's co-operative education programs as part of the administration, arts, engineering, science, or social sciences programs. There were eleven female students and seven male students with both genders represented in all but one of the programs; the only exception was the arts programs where only females came forward as participants. See Table 1 for a profile of participants by faculty including some examples of the various types of work term job responsibilities.

The age range of the participants was narrow. There were 12 participants who were 24 years old at the time of their interview. Three were 23, one was 25, and the remaining two were 26 years old. Once on the job, work responsibilities were wide ranging and included tasks such as administration, research, writing, planning, designing, and even staff supervision and project management.

The participants completed work terms from a wide range of employers primarily within the local region. Some of the main sectors for employment included government, pulp and paper, fuel and chemical, financial, transportation, and information technology. While a few participants remained with the same employer for all of their work terms, many others had a different employer for almost every work term. To change employers, students had to enter into open competition for jobs prior to the work term period.

Connected Learning in Co-operative Education

The participants in this study indicated that although co-op was challenging, in most cases it was a worthwhile experience. While for some, co-op simply offered a means to an ends or some small benefit, for many others it provided multiple benefits and positive experiences. With regards to the meaningfulness of the co-operative education programs, five themes emerged. These themes are experience, relationships, time, luck, and fees.

Experience. Gaining work experience is one of the hallmarks of co-operative education and naturally emerged as an important factor for each of the study participants. Many described how co-op removed the "chicken and the egg problem": you can't get a job without experience, but you can't get experience without a job. Amanda, a student who had considered dropping co-op, explained that "it was a good decision not to quit" because in the end she gained experience

Table 1
Profile of Participants by Faculty

Faculty	Average Number of Employers	Example Work Term Job Responsibilities
Administration	3.25	Statistics, research, assisting in staff supervision, editing, liaising, system conversion, marketing, project development, writing, policy analysis, office administration
Arts	3.25	Research, policy analysis, office administration, logistics, writing, editing, planning, communications analysis and planning
Engineering	2.75	Software development, testing, designing, project management, research and development, overseeing trials
Science	1.75	Cataloguing, research, statistics, safety standards compliance and label reviews, product and policy analysis, GIS mapping, report writing
Social Science	3.00	Speech writing, translation, logistics, communications strategy, editing, policy analysis

that helped her employability. Ruth felt that, because of the "professional experience" she gained, she is much further ahead compared to those who did not choose the co-op option. As one participant explained, "co-op helps you get past the Catch-22" (Chris) because ultimately, employers want to hire experienced workers.

And yet, having work experience was only meaningful to participants to a point. For it to be truly significant, co-op had to provide real and relevant work experience in terms of the participant's field of study and range and depth of experience in relation to the participant's career path. Derek, an engineering student, expressed the importance of real and relevant work when he explained that fellow students were "jealous" of the experience he was gaining because he was "actually doing design." Julie also stated that her experience was "exceptional" when she had the opportunity to gain experience in her field. Melanie and Stephanie both valued contributing to something real rather than what might be required in a part-time student job.

Without real and relevant work, participants were vocal about how it diminished the value of the co-operative education programs. When one of Amanda's work terms did not match her field, only the salary kept her motivated. Julie also faced a work term that did not provide relevant experience. She tried to keep herself busy but felt in the end that she "didn't do much." Nigel explained that during one particular work term he became frustrated when his employer gave him "mindless" work to do because the job requirements did not match Nigel's knowledgebase. What stands out is the emphasis that participants placed on tying their program of study to their work.

Work terms were also most meaningful when, taken as a whole, they offered range and depth of experience so that, over the course of the various work terms, participants gained exposure to multiple perspectives, work environments, and projects. Derek

was pleased that he was able to work in research and development, design, and project management because range of experience was exactly what he wanted to gain from co-op. Greg also valued having a range of experiences indicating that he learned different work situations required different approaches. Danielle, who worked for a different government agency or department for each work term, explained that this increased her "appreciation" of what government is trying to achieve.

Without the opportunity to see multiple angles, participants expressed that their experience was lacking. Melanie, a science student, explained that she wanted to see the differences between working in an office, working in a lab, and working in the field. As there were no positions available as a field researcher, she was disappointed that she didn't have the opportunity to explore this career possibility. Holly felt that because she didn't have the opportunity to work in the private industry, she is less "well-rounded" than she could have been. Without gaining a wide range of experiences over the course of the various work terms, participants felt that the co-op programs did not fully meet their learning or work goals.

Relationships. Developing meaningful relationships stood out as particularly significant to the research study participants. Relationships that were most important were with the staff at the co-op office, with fellow students, and with supervisors and co-workers. The greatest significance was placed on relationships that provided warmth and support, extended beyond regular office hours, involved mentoring, as well as some pushing of the student so that they moved outside of their comfort zone. In many cases, meaningfulness came from the personal rather than the professional aspects of the relationships. As Julie explained, she valued one particular work term because it became her "second home" and her boss became her friend. Nigel's favorite boss was someone with whom he could relax. Similarly, Amanda

developed a friendship with her boss and found she could talk to her about everything.

The development of friendship relationships with employers was not the case for all participants and did not occur in all work terms. By contrast, some participants described completely different experiences where employers were decidedly uninvolved or oppressive. Ruth expressed that she was made to feel "stupid" and "little" by one of her colleagues. Kirsten explained that one of her bosses was inappropriate from the beginning of her work term. This inappropriateness "escalated to full-out sexual harassment" and resulted in her leaving her co-op position. Without a doubt, whether positive or negative, the relationships developed by students were significant in regards to the meaningfulness of their co-operative education experience.

In keeping with the nature of warm and supportive relationships, participants felt it was meaningful when professional relationships became more personal and informal and extended beyond the 9 to 5 work day, particularly with regards to their employers. Robert stated that because the relationship with one particular boss stretched beyond regular office hours, he considered it "a really good success." Julie discovered, while out on shopping trips with her boss that, as women, they have similar values and interests. Scott described how he was treated like a son by one of his employers and was even invited to his boss's 50th birthday party. Although these experiences are not related to the formal aspects of work, they were no less meaningful to co-operative education students.

The participants in this study, while valuing close personal relationships with their bosses, also found it meaningful when their bosses became mentors. Chris described how his employer "took me under his wing" and helped him get a job after graduation. One of Patrick's employers took the time to explain some of the unwritten rules and differing perspectives of work. As such, bosses became more than work supervisors. They explained the practical aspects of their work as well as what is more closely tied with tacit knowledge.

As might be implied by comments like "he took me under his wing," participants valued being shown the ropes but, interestingly, they also valued being pushed out from under the wing and beyond their comfort zone. Greg appreciated being given responsibility because it gave him ownership and the opportunity to do something that would represent his capabilities. Amanda learned that when put to the test she can demonstrate her knowledge and, therefore, trust her ability to perform under pressure. This is echoed by Meghan when she described how her boss "got me to do things I never thought I'd do."

By being pushed by their employers, students learned that they have the capability to use their skills.

As Holly explained, "I certainly think that the co-op department gave me the confidence after my first placement to go into a job and to, you know, express myself." While never easy, the nervousness associated with being pushed into the limelight was traded for greater self-confidence over time. Without a chance to prove themselves, study participants expressed boredom and even stress. Lauren and Greg described how there were times when they could have been doing a lot more work. While Lauren sometimes sat twiddling her thumbs, Greg wondered, "Why am I doing this?" Melanie laughed when she described how one work term was particularly "horrible" because she had to "beg for work" almost everyday. An oft heard sentiment was participants' desire to test their skills, work hard, and make a contribution to the organization and in turn, a contribution to their employability and self-confidence.

The value placed on the relationships developed with employers is also seen in terms of relationships developed with the co-op office staff. Study participants remarked on how important it was when the staff at the co-op office took the time to provide a personal touch. Elizabeth enthusiastically explained how meaningful it was that a co-op employee remembered and asked about her family describing this as "very one-on-one, not one with a number". For Ruth, who battled cancer while a co-op student, the time the co-op employee took to care, help, and ease her mind was very significant.

Certainly, there is a negative repercussion on the perception of the co-op programs when this personalization seems to be lacking. Kirsten "was very angry towards the co-op office." When she came forward regarding the harassment she had experienced during a work term, she felt that she was not treated as a priority and did not receive the appropriate level of protection and security as she would expect. When Nigel came forward regarding issues with the co-op program, he felt that he was "talking to a wall" and, that despite expressing his concerns, "they weren't going to change". Holly felt mislead by the name 'co-operative education' because she thought it would mean "something, like 'We're going to work together!'," but that this did not represent her experience. As such, in terms of the role of the co-op office, participants believed that it should be more than just administrative. Instead, many believed the fabric of the co-op programs should include supporting, advocating, and listening to students.

Other individuals that held meaning for the participants were the friends they developed while studying at Canadian University, particularly in the first years prior to enrollment in the co-op programs. By nature of its design, the co-op programs at Canadian University alternate between study and work terms and, therefore, remove students from the typical academic

model. As such, there is a sense of loss with which some participants struggled. Amanda explained how she had become attached to her friends and that leaving for work terms brought sadness and made her consider quitting co-op altogether. Derek expressed a similar level of emotion when he described how, as a co-op student, he found it "very difficult emotionally" because he wasn't with his friends and found himself alone in classes. Again, the impact of warm and supportive relationships, or the lack of, is associated to participants' perception of the program's meaningfulness and, consequently, even the desire to remain enrolled.

Time. Interestingly, the work experiences and the relationships that participants developed were both influenced by time. Typically, students enrolled at Canadian University alternate between study and work terms with each term lasting four months. They normally change employers, often never returning to the same employer. But, when work terms were extended beyond the typical format, the work experience and associated relationships were altered. Derek completed an eight month work term and explained that the duration allowed him to take on a long-term project making it "a really great experience." Lauren noted that having a longer work term gave her "more history with the place" and allowed her to be a part of the organization rather than "the new person." Participants indicated that the length of time they worked with one organization impacted the quality of their work and the quality of their relationships.

With a standard four month set-up, many participants explained that they never had a chance to become a full employee. For some this was negative, but for others it enabled them to maintain a certain "momentum" (Stephanie). Patrick and Greg felt that the four month work term reduced the degree of respect they received while on the job. As Patrick described, employers "knew that cubicle would be empty three and a half months later" so less investment in the individual was required. From Greg's perspective, a four month work term represented only three months because "the work load sort of disappears at the end and they might stop sort of paying attention as much." By contrast, the advantage of four-month work terms is felt when Meghan and Stephanie described their experiences. Both illustrated how changing frequently allowed just enough time to learn the job but to not become bored.

Fees. Emerging from participants' stories is the perception of the role of the co-operative education programs. While participants indicated that getting hired by employers was important, many expressed that the tuition they paid should include that and more. Scott was particularly frustrated that the tuition he paid provided him with work unrelated to his field, a dysfunctional computer system, and unsupportive co-op staff. Robert did not use all of the available co-op resources because he found the majority of his work terms himself and, therefore, felt he should not have had to pay the same amount as others. Lauren believes that the primary responsibility of the co-op program is to be available for students and to answer their questions. To Lauren, responsiveness is what her tuition was supposed to pay for. As can be seen, study participants believed that, when paying for the co-operative education programs, getting value for their dollar required more than just getting hired to a paying job.

Luck. Gaining a meaningful co-op education experience is perceived as a matter of luck for co-operative education students. Danielle felt "fortunate" because she had four good quality work terms where she did significantly more than just photocopying. Lauren felt "lucky" because she worked with wonderful people. Derek also felt "lucky" but, in his case, because he had the opportunity to complete a longer work term enabling a better quality work experience. Participants indicated that the best experiences do not necessarily come from the design and administration of the programs or from their own efforts and skills.

Discussion

To date, the literature on co-operative education has been primarily focused on discerning the benefits of the learning method. Several studies have found that co-operative education provides several positive outcomes for students including personal, career, and work skills development, as well as increased academic achievement (Blair & Millea, 2004; Braunstein & Stull, 2001; Coll, 2004; Coll & Pinyonatthagarn, 2004; Gardner & Motschenbacher, 1997; Hayward & Horvath, 2000; Metzger, 2004; Nasr et al., 2004; Parks et al., 2001; Sharma, Mannell & Rowe, 1995; Siedenberg, 1994; Van Gyn et al., 1996). My study supports this research that co-operative education offers many and varied types of benefits to those who participate. Many of the individuals that were interviewed for this study indicated that, despite the challenges they faced, staying enrolled in co-op was worthwhile. While some indicated that it provided a limited number of benefits, many others described how it enabled them to learn skills; build knowledge; develop contacts; and become more motivated, self-confident, and career focused.

According to Belenky et al. (1986), knowledge is developed in multiple ways. One way is called connected learning where the learner seeks to understand through connecting rather than separating from others. Using connected learning as a lens to examine the findings of this study, I found that my

research shows that connected learning is a method of knowledge development that is used in co-operative education.

Relationships and relationship building are key components of connected learning, and these elements emerged as strong themes within this study. In connected learning, "relationship is the way of knowing, an opening between self and other that creates a channel for discovery, an avenue to knowledge" (Brown & Gilligan, 1992, p. 28). For these co-operative education students, it was through their relationships with employers and co-workers, co-op staff, and fellow students that they were able to gain a meaningful co-op education. The relationships developed by participants sometimes provided care and support, other times guidance and mentorship, and sometimes a push into a new domain. Relationships were for many participants the measure for co-operative education. If the relationship opportunities encountered by the participants were unavailable, negative, or oppressive, the participant questioned the value and meaning of the co-operative education programs.

What I did not expect to find in my research was how time, in general, impacted the meaningfulness of co-operative education. When participants spent more than one four month work term with an employer, many indicated that they developed greater quality work experiences and greater quality relationships. Oftentimes, these were intertwined. As the work relationships developed over time, so too did the level of trust. With greater trust, employers felt comfortable giving more customized, challenging, and complex work assignments.

Emotion is another strand of connected learning that weaves into participants' experience with the co-operative education programs. Emotions that were referenced by the participants ranged from very negative to very positive with a number indicating that it was because of their strong feelings that they had decided to participate in this study. Whether it was anger, frustration, joy, or satisfaction, they wanted to have their emotions heard by the co-op programs in order that the programs might improve. In effect, they wanted to ask the programs to "stop thinking" and simply open themselves to students and see their real issues and concerns (Noddings, 1984, p. 146).

In many cases, the emotions felt by participants were in keeping with the notion of subjectivity. In connected learning, value is placed on being treated as a subject rather than an object. My study agrees with this perspective. A strong sentiment put forward by participants was how meaningful it was to be seen as a person with real goals, needs, and issues and not a number that is easily replaced, categorized, or dismissed.

Linked to the notion of subjectivity is the value placed on relationships that extend beyond the 9 to 5 workday. Linn (1999) advanced that when relationships extend beyond office hours they have greater meaning. My research agrees with this. Participants felt it was meaningful when the relationships they developed with co-workers or bosses stretched into personal time and involved more personal topics and events. It signified that the work relationships were more than transactional and went deeper because of shared values, personalities, or goals.

Participants in this study valued having the opportunity to gain real-life experience. In particular, they valued work that was real and relevant to their program of study where they could put their skills to the test. Returning to Belenky et al. (1986), the concept of real-life experience is understood to be an important element in learning. John Dewey (1916) and David A. Kolb (1984) also highlighted the importance of learning through experience. The findings in this study support this literature. Study participants described that they gained significant skills and knowledge from their work terms with some going as far as saying that they learned more at work than in school. Many indicated that, because they learned through experience, they not only had a solid resume but, more importantly, the confidence to say, "I can do it."

In addition to learning from experience, the participants in this study indicated that they learned from having a range of experiences. This concurs with the notion of multiplicity as advanced by Belenky et al. (1986), whereby the learner seeks out contradictions, variances, and derivatives. As with multiplicity, the participants in this study found it meaningful when they were able to experience a range of venues, people, and project.

While I anticipated that participants would value experiential and connected learning, I did not expect that this would translate into value for dollar. Students pay tuition to be a part of the co-operative education programs, and, to them, they are paying for more than just jobs. Study participants indicated that they are paying for an opportunity to learn experientially and to connect with employers, co-workers, and co-op staff. I also did not expect to find that participants viewed learning through co-operative education to be a matter of luck. In other words, co-op was not understood to be designed with specific learning goals in mind or grounded in educational theory nor as a result of the participant's own efforts.

One surprise was how little participants referenced the co-op work term report. As part of their academic requirements, participants are required to write a report at the end of each four month work term. As a co-op employee, I am aware that this causes frustration and so

I expected, at the very least, that participants would complain. While a few did, many others did not speak of it at all.

Implications for Practice

The results of this study indicate that co-operative education is a learning method that offers many benefits to those who participate. Through co-operative education, learners are able to develop skills, knowledge, and contacts, as well as increase career clarity, self-confidence, and marketability. The positive results of co-operative education are felt by participants in terms of their career as well as their academic lives. According to this study, co-op is a worthwhile choice for those attending university.

However, there are many areas of co-operative education that need to be addressed. These include (a) the quantity of work during work terms, (b) the range of work term choices available, (c) the length of work terms, (d) the care and support provided by employers and the co-op programs' office, and (e) the utility of the work term report.

In terms of quantity of work, many participants indicated that they could have been pushed harder but, oftentimes, there was little work to do. Some questioned why they had been hired at all because a job really did not exist. Given that study participants learned by doing and not observing, it would be valuable to address the issue of quantity of work available during work terms.

Study participants found it meaningful to gain a wide range of experiences working in the public and private sector, in different cities, and in different roles. However, many felt that the opportunity to experience a wide range of jobs was not available. Some indicated that their learning was limited by the fact that they had only seen "one side of the coin." It follows that when developing jobs for the co-op programs, there needs to be consideration for diversity.

The length of time participants worked with one employer impacted the quality of work and the quality of relationships that were experienced. In many cases, a longer work term or working relationship translated into a more meaningful learning experience. Because participants indicated that by extending the work relationships, either through eight month work terms or through part-time work during school, there was an increase in the quality of their experiences, it is important to address the length of work terms and working relationships when structuring co-operative education programs.

Relationships were very meaningful for the study participants. And while many had very positive experiences, many others expressed that they felt ignored, sometimes by employers but more often by the co-op programs' office. As study participants make meaning of their experiences through relationships and by being treated as subjects, it is important to address the ways students are engaged on the job and in the co-op offices.

While the study participants spoke strongly of learning through experiences and relationships, they did not indicate that the work term report was a meaningful learning tool. Some questioned its usefulness, while others did not mention it at all. Consequently, it would be a valuable exercise to examine the work term report as a means for measuring co-op from an academic standpoint. This measurement could be accomplished by possibly redirecting the assignment away from a report and more towards a reflection paper emphasizing the meaningfulness of the co-operative education experience from an individual perspective.

Conclusion

As a researcher and as a co-operative (co-op) education employee, I have come to understand that learning can occur in any number of places. Certainly, there are opportunities to learn in the classroom, but, for many people, learning comes from hands-on experiences gained from programs such as co-op. My purpose in this basic interpretive qualitative research study was to explore the experiences of students who attended a Canadian University co-op program, particularly with regards to what makes the program meaningful to them. In addition, I sought to understand their experiences through the lens of connected learning. The participants in this study indicated that, although co-op may be challenging, in most cases it was a worthwhile choice. The themes that emerged from the participants' stories included experience, relationships, time, luck, and fees. The results of this study indicate that co-op provides many positive and meaningful experiences, but quantity of work during work terms, range of work term choices, length of work terms, care and support provided by employers and co-op staff, and utility of the work term report need to be carefully considered when designing and developing co-op programs that aim to deepen students' learning opportunities.

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Islands of Empowerment: Facilitating Multicultural Learning Communities in College

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Multiculturally congruent classroom learning environments have remained elusive in United States higher education as colleges strive to recruit, retain, and educate an increasingly diverse population. Frustrations run high amongst domestic and international students of color who find collegiate classrooms in the United States difficult to negotiate and often pedagogically incongruent with their own ways of learning and interacting. This article offers findings from a qualitative research study of four professors identified as multiculturally empowering by minority and international students in their college. Results are derived from three qualitative methods of data collection including faculty interviews, student interviews, and classroom observations. Findings suggest six elemental dynamics necessary for college professors to develop and facilitate empowering multicultural learning communities: (a) climate of safety, (b) spirit of risk taking, (c) congruence, (d) reciprocal relationships and roles, (e) multiplicity, and (f) reciprocity. Implications for teaching in cross-cultural collegiate environments are included.

You know, I would have thought that a university as diverse as this one, in a state known for its tri-cultural populations and bordering Mexico, would have provided me with an educational experience more in line with my Mexican American heritage. Finding a few professors who do create this kind of classroom experience for me is like finding *islands of empowerment* within a stormy and dangerous sea. I'm not sure that I would still be here without these rare opportunities to breathe more easily and find myself reflected in the curriculum, the classroom activities, the conversation styles, and to feel like the professor kind of gets me. What amazes me is that it has not always been just Latino professors or even professors of color who have created this for me. I have some White professors who do this too and so I know that others could if they wanted to. Don't they want to? -- Ramona, Mexican American teacher education student

This very articulate student highlights a continuing challenge for collegiate teaching faculty to develop cross-cultural pedagogies and classroom climate. Even within the broad racial, ethnic, cultural, and national diversity of the United States, college classroom environments and teaching strategies have changed little in the several hundred years that colleges have been in existence in this country (Ibarra, 2002; Johns & Kelley Sipp, 2004; Viernes Turner, 1994). Some theoretical models on developing effective multicultural teaching practices and classroom elements exist in the literature on adult learning and college teaching, yet these are almost entirely based on faculty experiences and observations and there is little empirical research available (Chávez, 2007).

The study summarized in this article contributes to the small body of existing research by reporting and illustrating findings from a semester-long qualitative study of classroom environments facilitated by four college professors identified by students of color as *multiculturally empowering teachers*. The study focuses on elemental classroom dynamics necessary to the creation of multiculturally empowering learning communities as defined by students of color taking classes with these professors. These dynamics are illustrated through faculty and student narrative as well as through descriptions from observations of classroom dynamics and techniques. For the purposes of this study, a multicultural learning community is defined by Strong (as cited in Barr & Strong, 1988) as one that is "sensitive to maintaining an open, supportive, and responsive environment, is working toward and purposefully including elements of diverse cultures in its ongoing operations, and is authentic in its response to issues confronting it" (p. 85). The driving research question for this study was "What are the elements of an empowering multicultural collegiate learning community and how is it developed, facilitated, and maintained?"

Multicultural Education in U.S. Colleges and Universities

Today's classroom in U.S. higher education is made up of a wide variety of students with varying life experiences, cultural influences, learning styles, types of ability, age, ethnicity, sexual orientation, gender, nationality, spiritual philosophy, values, and priorities. Each individual brings his/her own collection of traits, experiences, and knowledge into the classroom. Involving each individual as a whole being and as a constantly developing presence creates an empowering learning process within each classroom (Morey & Kitano, 1997; Rogers, 1961). Because every classroom learning community is a collective of diverse

individuals interacting with each other and with the topic, each must go through its own formation. Facilitating the learning process of any group is challenging; facilitating the learning process for a highly diverse group presents even more extensive challenges (Alfred, 2002).

Students of color, legally defined ethnic minority students including African American, Native American, Hispanic American, and Asian/Pacific Islander American, as well as some groups of international students enrolled in U.S. colleges continue to report experiencing few collegiate environments built on their own cultural rhythms. These students are graduating at much lower rates than those from other ethnic groups (Ibarra, 2002; Johns & Kelley Sipp, 2004; NEA, 2006). Ibarra (2002) found that students describe having to negotiate environments that are inconsistent with their own ways of learning, cultural norms, and personal priorities. This cultural norming, appropriate for a few ethnic groups, originated in Germany and England and was imported as a collegiate model to serve wealthy, Caucasian American, protestant, males in the U.S. (Rich, 1993). Strange (2000, p. 21) describes the basis for this phenomenon of educational environments remaining culturally incongruent to specific populations as follows:

> An environment inhabited mostly by individuals of one characteristic or type is said to be highly differentiated and consistent. This would be the case with a class where all students share the same major or a residence hall where residents are of the same gender. An environment dominated by a single and consistent type accentuates its own characteristics over time (Astin 1985); attracting, satisfying, and retaining individuals who share the dominant features. The quality of anyone's experience is therefore a function of his or her congruence or degree of fit with the dominant group. An individual placed in an incompatible environment is less likely to be reinforced for preferred behaviors, values, attitudes, and expectations. The likelihood of that person's leaving the environment is increased.

Though much attention has been paid since the 1970s to the retention of students of color in colleges, little attention or study has been given to the ways in which different cultural groups learn as adults. Pope, Reynolds, and Mueller (2004, p. 18) urge, "In the 4th decade of multiculturalism, one's ability to engage in deeply multicultural practices and pedagogies is no longer constrained to ones membership in the group served and is the daily responsibility of every educator." So why has cross-cultural collegiate pedagogy and classroom climate not received more attention by researchers?

Unlike K-12 educational realms where much research and cross-cultural theory on teaching strategies is available (see for example Banks, 1994; Banks & McGee Banks, 2004; Bennett, 2006; Nieto, 2002), almost no empirical research and very little theoretical work has been done in the U.S. on cross-cultural adult or collegiate classroom learning (Chávez, 2007; Ibarra, 2002; Johns & Kelley Sipp, 2004). Even with almost 50 years of cross culturally integrated colleges; the U.S. shows little deep reflection, pedagogical method development, or research of classroom dynamics to improve the learning and success rates of underrepresented and/or disenfranchised student populations. Most multicultural pedagogical practice and research has been left to those within cultural group faculty who show an interest in this area (Ibarra, 2002). Tenure and promotion systems for faculty usually don't reward and often discourage this type of research (Viernes Turner, 1994).

Of the literature addressing both U.S. college teaching and adult learning, most of it is philosophical or theoretical (Alfred, 2002; Bustamante Jones, 2004; Gardner, Dean & McKaig, 1989; Howell & Tuitt, 2003; Johns & Kelley Sipp, 2004; TuSmith & Reddy, 2002; Wise & Glowacki-Dudka, 2004; Wlodkowski, & Ginsberg, 1995; Ziegahn, 2001); focused on sensitivity and awareness practices (Chávez, Guido-DiBrito, & Mallory, 2003; Torres, Howard-Hamilton, & Cooper, 2003); suggests faculty characteristics necessary to work across cultures (Weinstein & Obear, 1992; Torres, Howard-Hamilton, & Cooper, 2003), or reports the impact of ethnically diverse demographics on learning (Gurin, Dey, Hurtado, & Gurin, 2002; Hurtado, 2006). Almost none of it provides results of empirical study of multicultural pedagogies or elements effective in college classrooms. The term multicultural education is typically defined in U.S. higher education as the development of sensitivity, awareness, and interpersonal skills necessary to live and work across differences (Goodstein, 1994).

In essence, researchers are focused mostly on studying how adult and college learners and faculty interact across cultures and on what knowledge is disseminated but not on evolving the ways we learn in congruence with a variety of cultural ways of being. Banks (1994) points out the need to go deeper than any one aspect to focus on five dimensions of multicultural education with children including the following elements. These dimensions are also important in collegiate environments and will benefit from empirical research; they include (a) content integration, (b) the knowledge construction process, (c) prejudice reduction, (d) equity pedagogy, and (e) an empowering school culture and social structure. Tisdell (1995) provides important theoretical groundings for developing more culturally relevant teaching and learning environments for adults. Unfortunately, most

of her citations related to these recommendations are theoretical or experiential rather than empirical in nature, including (a) integrate affective and experiential knowledge with theoretical concepts, (b) pay attention to the power relations inherent in knowledge production, (c) be aware that participants are positioned differently in relationship to each other and to the knowledge being acquired, (d) acknowledge the power disparity between the teacher/facilitator and the students, (e) consider the levels of inclusivity and the levels of contexts involved in the educational activity, (f) adopt emancipatory teaching strategies, (g) be conscious of the ways in which unconscious behavior contributes to challenging or reproducing unequal power relations, and (h) build a community based on both openness and intellectual rigor to create a democratic classroom. Bennett and Bennett (1994), in their research on multiculturalism in international education, provide a very helpful evolutionary description of moving toward multicultural pedagogy. They describe five strategy eras in cross-cultural education. These theorists point out that each of these strategies is essential yet not enough on its own and that it is necessary that faculty develop multicultural pedagogies on a widespread basis. Strategies include (a) greater diversity by numbers, (b) special services for diverse populations, (c) campus climate focus, (d) integration of the curriculum, and (e) multicultural pedagogy – a call for the cross-cultural adaptation of teaching methods in line with varying cultural norms, learning styles, cognitive processing, and social definitions of learning.

Teaching effectively across cultures continues to be a very real challenge for a nation that is home to individuals from every other country in the world, every language, every cultural practice, and every philosophy. It is no accident that graduation rates continue to remain lowest for those populations farthest culturally from the pedagogical practices currently the norm in U.S. colleges (NEA 2006). Pope, Reynolds, & Mueller (2004, p.6) suggest, "With our current demographics, continuing low rates of graduation of many student groups and the regular issues arising in all areas of college campuses – it is no longer defensible to rely solely on 'multicultural experts'." As teaching faculty we must continue to develop in our ability to teach effectively across cultures. Many of the cross-cultural dimensions proposed theoretically by Banks (1994), Bennett and Bennett (1994), and Tisdell (1995) are supported by the findings of this study.

The Study

Positionality

I became interested in conducting empirical research on cross cultural college teaching and learning after many years of working with students of color as a faculty member, campus leader, and seminar facilitator for faculty and staff on working effectively with diverse populations. When I began to realize that I was using teaching methods based in my own Native and Spanish American upbringing, both polychronic cultures that were different from most faculty colleagues (mostly from monochronic cultures), I became curious about the implications. Monochronic cultures utilize individualistic, linear, hierarchical, and task orientations as foundations for assumptions, values, beliefs, and behaviors. Polychronic cultures utilize collective, circular, collaborative, and relational orientations as foundations for assumptions, values, beliefs, and behaviors (Ibarra, 2002). Numerous graduate students of color from the U.S. and other countries expressed to me that I was the first college professor they had ever worked with who used methods and interactive classroom dynamics that were similar to those in their families and cultures. I was quite startled to hear this and realized over time that I had rarely experienced during my own studies, at different universities, the ways of teaching and learning that are common to my home area in northern New Mexico. Over time, it has become important to me to transition from the study of other aspects of diversity on college campuses to direct inquiry in the area of cross cultural college teaching. Because there is so little empirical research in this area and in order to gain a deep and complex understanding of multicultural dynamics in college teaching, I chose to use qualitative research design for this study.

Context of the Study

This qualitative study was conducted in the College of Education at a large research university in the southwestern United States. I chose a university other than my own that was also in a southwestern state and has a similar ethnic make up of students of color and faculty. This institution has a marked difference in ethnic make up between students and faculty. At the time of this study, demographics for this institution included a significant percentage of U.S. minority students (24.1%) from primarily Hispanic and Native American as well as some Black and Asian/Pacific Islander populations. International students also made up a significant percentage (7.3%) of students at this university and travel from 124 countries to seek undergraduate and graduate degrees. In contrast, the vast majority of faculty at this university originate primarily from Caucasian ethnic groups (86%) and are U.S. born (95%). The College of Education was chosen in part because, at that time, it had one of the most ethnically diverse student populations at this university and faculty had many international and minority students in their classes. In addition, I chose to conduct

this first research study on multicultural teaching in a college that is focused on teaching and learning as a discipline. My hope was that education faculty and students would be able to articulate educational concepts in a full and complex manner.

Philosophical Framework

This study was based on a theoretical philosophy of constructivism as useful to developing an emergent understanding of a particular phenomenon (Creswell, 2007; Lincoln & Guba, 1985). Taking a constructivist approach to research acknowledges that reality is socially constructed and constantly changing (Denzin & Lincoln, 1994; McMillan & Wergin, 2006). This framework is effective for capturing the evolving experiences of students in higher education across identity differences such as race, ethnicity, culture, and nationality. A constructivist approach opens the way to listen to multivocality of participants and then search systematically for thematic patterns (Chávez, 1998). In addition, it makes possible learning from the engagement of emergent research methods (Schram, 2006). Last, working from a constructivist framework urges partnering with participants to delve deeply into a particular phenomenon and suggests a hopeful stance toward the future.

Sites of Study

To select multicultural learning environments to study, I selected four college professors identified through an e-mail survey of all of the minority and international students in the College of Education. I chose to utilize minority and international students as identifiers because of the common experience of marginalization among minority and international students. These students are likely to feel culturally disempowering differences in their educational experiences in a predominately white U.S. university (Torres, Howard-Hamilton, & Cooper, 2003). Adelman (1997) and others have found that U.S. minority students and international students studying in the U.S. overwhelmingly define multiculturalism in concrete applied ways such as the expansion of curriculum and changing of teaching methods while Caucasian American students define it in numerical, demographic terms such as numbers of students in an academic discipline. As an educator of Spanish and Native American origin with three years of early education in a country other than my own, I have learned through cross cultural and cross national experiences that education is constructed in very culturally determined ways. I believe that minority and international students are helpful informants in identifying whether and how a teacher is working multiculturally in the classroom.

In the e-mail survey, I requested that students identify professors in the College whom they felt were empowering multicultural educators. I asked the students themselves to define empowerment in their own way. I received 87 e-mail replies from students.

Participants

Students identified a variety of professors in both undergraduate and graduate education and, after doing some cross checking, I found six who had each been identified by at least ten minority and/or international students as empowering multicultural educators. Because of my own time constraints, I chose four professors (two male and two female; one professor self identified as Mexican American, one as East Indian raised in India, one as German and English American, and one as African American; one professor was in teacher education, one in sociocultural studies in education, one in special education, and one in educational leadership). I approached each to allow me to observe one of their classroom learning environments for the semester, interview them individually, and interview students in the class. All agreed to participate. From each class, I chose to interview five students (three students self-identified according to college records as U.S. ethnic minority status, one as an international student, and one student self-identified according to college records as Caucasian). I interviewed an equal number of male and female students. Student majors included sociocultural studies in education, higher education, teacher education, special education, educational leadership, and bilingual education. One class had 17 students, two classes had approximately 25 students, and one class had 60 students. Student and faculty participant motivation for choosing to be a part of the study ranged from "wanting to help make it clear what works for multicultural learning and teaching," "making a difference for my people," "to see what I can learn as a future teacher," and to "honor those professors who are making a difference in the lives of students of color." Participants are identified here by pseudonym.

Methods

In congruence with constructivist frameworks, I chose to utilize several forms of qualitative data collection methods to remain as open as possible to a full range of data, participant perspectives, and unexpected findings (Marshall & Rossman, 2006). For this part of the study, I was interested in broad dynamics within the environments that served as underlying principles and manifested through specific pedagogical techniques, classroom dynamics, and teacher/student interactions. I utilized three methods

(Creswell, 2007) to collect data: (a) three semi-structured individual interviews of each of the four faculty - one prior to the start of the semester, one at midterm, and one after the semester ended; (b) individual semi-structured interviews with five students from each class conducted between midterm and the end of the semester; and (c) three observations of each classroom environment. I taped each individual interview and added notes afterwards to maximize my ability to focus my full attention on participants. I took extensive notes during each participant observation of classes as I was able to observe from the back of the class and minimize disruption. Within these semi-structured interviews and observations, the following topics served as my guide:

- How is a multiculturally empowering learning environment defined by individual students and faculty? How does it feel? How does it matter in the educational process?
- What specific elements of classroom facilitation and dynamics make it empowering multiculturally? How do these manifest in the classroom environment?
- What specific elements of classroom facilitation and dynamics disrupt or detract from a learning community being multiculturally empowering? How do these play out in the actual classroom environment?

Data Analysis

To develop "thick description" (Lincoln & Guba, 1985) and gain a deep sense of the classroom as a multicultural learning community, I first utilized thematic analysis (Huberman & Miles, 1994). I categorized specific dynamics and components common to the four communities and/or common amongst teacher and/or student identification of aspects important within an empowering multicultural learning community. Surprisingly, the themes emerged quite strongly. I found that the minority and international students as well as the four professors interviewed were especially articulate in outlining what I refer to as elemental dynamics of empowering multicultural learning communities. Caucasian merican students provided vivid descriptions of the uncomfortable yet positive challenge of learning in environments with elements outside of their own educational experiences and cultural norms. Second, I developed a systematic coding method (Marshall & Rossman, 2006) to analyze and reduce data according to themes found, theoretical categories from the literature, and to search for outlying and more subtle themes.

Findings

The findings from this study suggest that these four professors, in partnership with students, created multiculturally empowering learning communities in which each individual was able to find ways of learning congruent or natural with their own cultural ways of being as well as be challenged by new ways of learning. In addition, these learning communities offered a place where individuals worked together to construct knowledge and question established norms. In the words of bell hooks (1994, p.147), these learning communities were involved in "education as the practice of freedom" across identity and background differences. During this study, each learning community ventured into places in which individuals moved between the intimate and the public across differences to explore subject areas with excellence and rigor; in which, they continually made commitments to stay engaged in the learning community through multiple perspectives and controversy (Rogers, personal communication, November 1997); and experienced the joy and pain of learning from each other as individuals and as a collective. These professors, in collaboration with their students, were able to create learning atmospheres where students as well as the teacher experienced an effective balance of challenge and support (Kegan, 1998).

Six Elemental Dynamics of Empowering Multicultural Learning Communities

The findings of this study suggest six elemental dynamics critical to empowering or liberating individual learning communities in higher education: (a) climate of safety, (b) spirit of risk taking, (c) congruence, (d) proactivity, (e) multiplicity, and (f) reciprocity. To varying extents, these elements were apparent in the learning communities studied. In these learning communities,teachers worked with all students to create collective, empowering learning experiences that utilized and honored multicultural realities within a shared and rigorous academic experience. One participated explained,

For my parents who emigrated here from China, traditional education was very hierarchical and competitive with much rote memorization. I grew up in that kind of family and yet my folks were very kind and went to great lengths to allow me to save face while I was learning. My own educational experience here in the U.S. has also been very hierarchical, competitive, and filled with rote memorization but it is often without the

FIGURE 1
Elements of an Empowering Multicultural Leaning Environment

kindness or avenues for maintaining my dignity. I notice that most professors don't seem to acknowledge my ideas. I say something and they pass right over it onto another student as though I never spoke. Learning even now in graduate school seems mostly rote, perhaps more complex but still, most professors don't care about what I think, my critique or my interpretations. This is really debilitating. But with two of my professors who are both in this study, my experience has been really different. It is as though they see me when others don't. -- Amy Pan, Chinese American educational leadership graduate student

In an empowering multicultural learning community, students are believed to be fully capable of learning in their own ways and stretching into other ways as well (Leaver, 1997). The remainder of this article will consist of an overview of the six emergent elements (see Figure 1) for empowering individual learning communities in a higher education setting. Throughout this article, I provide theoretical insight, observations, and respondent narrative to illustrate ideas and concepts for each of the six elemental dynamics.

Climate of Safety

Two professors in this study, Dr. Ross and Dr. Torres, have really inspired me by showing me a different way of working with students. They both create safe classes by developing guidelines for respectful interaction and then actually holding us to those guidelines….because you know it is often comments from other students that are the worst.

One thing I really notice, that is similar to my own culture, is how these professors invite students into discussions. It's not a dog-eat-dog scramble to speak. They each invite me to add my insights. If I've been quiet for awhile, Dr. Torres asks me if I have anything to add and Dr. Ross actually gives out three cards to students at the beginning of some classes and laughingly challenges us to make sure that everyone uses their three cards! What fun that is, and what a shock! The students who usually talk too much have to make room for us introverts and we are all responsible for making it happen. – Reva, Navajo special education student –

All of the teachers and students interviewed emphasized the need for a feeling of safety as essential to any empowering environment. Support, trust, respect, individual dignity, respectful confrontation, an absence of judgment, power with each other rather than over each other, and minimization of the effects of hierarchy were all expressed as essential to creating a culture of safety. Over time, a culture of safety can be developed and maintained within a variety of environments. Dr. Nair described this as "A place that is supportive, not necessarily without question, but appreciates one's own talent so that you can move forward." George, an African American student studying special education noted that "students are important and deserve respect, attention, and assistance. We are not helpless and we have much to contribute." People need to be able to feel safe enough to take risks, to share their ideas, and learn from each other. Several persons interviewed shared that one indicator of a safe environment is the willingness of students to challenge the person with titled authority. I noticed in my

observations that these teachers encouraged, welcomed, and incorporated respectful challenge of readings, peers, and themselves. Felicia, a Mexican American student in teacher education, described the ripple effect of a safe, empowering learning environment, "people start changing and that changes not only their lives, it changes the system because they stop participating in the way the system is made. They stop following the rules and begin assisting in creating them."

The role of the teacher then is to facilitate the development of "safety" guidelines by the collective, to facilitate accountability for those guidelines, and to nurture the healing process when those guidelines are crossed over. In each of these four learning communities, individuals were encouraged to take increasing responsibility for their own safety and for the safety of others. In this way, students learn to be full participants in the collective. During my observations of their teaching, these four professors often showed the following behaviors and encouraged them in students: (a) speak from personal experience and insights, (b) allow for reflection and some choice in what to share, (c) listen intently to others, (d) show with positive nonverbal such as nodding and comments that any experience or viewpoint of a subject is an OK point of exploration and critique, yet putting down others is not acceptable, (e) acknowledge that each person is in a different place with the subject and still learning, and (f) encourage students to challenge ideas and assumptions. Versions of the behaviors noted above were included in written guidelines commonly agreed upon in three of the four learning communities. Dr. Ross and Dr. Torres actually brought a poster each week of guidelines that the class had agreed upon in their first session. In Dr. Carlisle's class, most of these were referred to or played out during the class through similar actions. In all of my observations, I noticed that professors didn't hesitate to facilitate through disrespectful behavior of students in ways that reengaged students in discussions after difficult situations arose. As Dr. Carlisle insisted in one of our interviews,

> You have to call people on things...you have to tell people that some part [of their behavior] is unacceptable within the guidelines that the group has negotiated. I have had people who have said sexist, racist, homophobic things and I think you have to have a strategy for how you deal with that. If other students react within the classroom setting, then you can deal with it right then; if not, perhaps dealing with the student at first in a one-on-one discussion will be most helpful and then later addressing the issue more generally with the class.

She continued by stating that she also needed to be willing to admit when she had made mistakes,

apologize, and learn. A multicultural learning community is not one that is mistake free but rather one in which individuals constantly commit themselves to stay engaged and work through difficulties. As groups become empowered, students begin to call each other on destructive behaviors as well. It is a learning process, learning to become comfortable in an environment where respectful conflict can and should take place. In the words of Maslow (1968, p. 204), "growth forward...requires courage, will, choice, and strength in the individual as well as protection, permission, and encouragement in the environment."

Spirit of Risk Taking

> It was really fascinating. As Professor Nair encouraged us to question everything, we sometimes offended or hurt others. Unlike most classes I've been in where either the 'prof' didn't brook any questioning or where they did but conversations quickly deteriorated into arguments and then silence; this professor just gets us through that risky stage. How? Well, he stays calm and nods at every idea yet gets us to expand on what we say. He also helps us to process emotions. I can tell you, I've almost never seen that in a class. It's like we start off in our respective corners all defensive and once everyone knows their ideas won't be dismissed or overlooked, everyone calms down and starts to listen and at least consider other perspectives. This has really made me reflect on what I want to be like as a teacher of high school students. How can I encourage this risk taking in my students? I plan to take another class with Professor Nair just so I can observe his technique. He has been an incredible role model for me as an educator. -- William, African American bilingual education student

Safety within an empowered learning collective does not mean a lack of discomfort. In fact, some discomfort at appropriate levels is a sign that risk taking and safety are being balanced well. Within a group of people, discomfort is inevitable because of different styles, perspectives, and needs. Discomfort feels risky and it's important to remind students and colleagues that discomfort and uncomfortable situations do not necessarily translate into harm. Suzanne, a Korean American sociocultural studies student shared her experience of being challenged in the classroom:

> I am usually a student who stays very quiet in my classes and Dr. Ross kept asking us to share from our personal experiences in relation to educational issues, first in pairs or small groups and then with the whole class. At first this was very uncomfortable for me and then I found that I was

really learning how to discuss and problem solve through tough educational issues. I was reassured by her supportive reactions to my comments and by the other students sometimes having similar feelings or experiences. I grew from seeing issues as abstract concepts to practicing how to deal with them as an educator.

Engaged learning can affect people in ways that are deeply unsettling and issues may not be resolved within a session or even within the period of the course (hooks, 1994). Negotiating and supporting each other through the uncomfortable process of bringing issues and ideas out into the realm of respectful dialogue distinguishes an empowering learning community. The beginning of deep learning is when students first test the traditional boundaries of classroom learning such as "never get personal or never question the teacher." In my observations, I saw that all four professors deeply engaged with students emotionally as well as through knowledge. Each had their own way of making sure students were engaged and not drawing into themselves or away from the group. I noticed that Dr. Nair used humor to disarm tension when it arose; Dr. Carlisle often asked students how they were throughout class sessions; Dr. Torres posed problem solving questions, encouraging half-formed thoughts; and Dr. Ross quietly moved through her classroom offering encouragement during group discussions.

The role of the teacher is to facilitate and reward an atmosphere of risk taking from the outset. Risk taking and the encouragement to take risks are elements of an empowering environment that bring the power of the self irrevocably into the picture. The process of empowerment and freedom, in the spirit of Freire (1970/1997), necessitates at some point, an individual taking tangible risks and the facilitator acting as a sort of "midwife" in the process. This risk taking dynamic of a classroom was described by Dr. Torres:

> It's so volatile, the classroom itself...it needs constant reevaluation and constant rethinking about learning and the reality of learning for each person. As the teacher I have to facilitate the situation on a minute-by-minute basis, checking in with students not only about their knowledge but more importantly about how they are doing and feeling.

For a student, risk taking is possible when it is encouraged by others and not so much of a risk that it becomes debilitating. Dr. Ross pointed out,

> I find that with certain students, shyness, introverted style and/or cultural norms to wait for an invitation to speak; all mean that it is my

responsibility to draw students into risk taking and to also teach them to encourage each other.

Persons in groups watch as others take risks and if they see others pay a price for their risk taking, they are unlikely to venture out themselves. As Tamika, a shy African American teacher education student observed,

> I have been in a few classes where the teacher made it clear that risk taking and sharing were essential and desired in the classroom. After awhile, I began to see that others were taking pretty heavy risks with what they said and the teacher remained supportive. That was when I began to share my ideas.

Congruence

> I find it pretty obvious when a teacher isn't practicing what they profess. Ever since I was a kid, I've had to be able to read people in order to negotiate hostile systems. I was raised in Malaysia in a religion that is much persecuted. Since my skin is black and I clearly look and speak as an outsider, I'm pretty visible here on campus. There is lots of talk about diversity on this campus, but I find that there is actually little practice that supports the rhetoric. When I find a professor who does what they say, like Dr. Carlisle, I'm really relieved. I don't have to work so hard to avoid tripping up in another culture because she gives me the benefit of the doubt and she seems to love that we are each different. She does what she says as an educator and that makes all the difference. Most of my education professors want to talk about things like transformative, empowering, or multicultural education, but they don't practice it in their own classrooms. What do I mean? Well, Dr. Carlisle really pays attention to a variety of ways that students learn, she shows her support of varying perspectives and interpretations from students, and she asks for our input and actually changes things in the class based on that input. Most of my professors just say these things and then they are very rigid; using one way of teaching, dismissing student perspective, and asking for but not doing anything with our feedback. It seems pretty hypocritical to me and I have to really be on guard in those classes because teachers invite me in and then slam the door once I try to step over the threshold. – Balan, Malaysian international student in educational leadership

Congruence between behavior, beliefs, and dialogue is also critical to an empowering environment. Individuals from marginalized groups are often adept at identifying

incongruent behavior because of their own need to negotiate through cultures not their own (Thomas, 1991). Because of this dynamic, persons in positions of authority such as teachers must work to maintain congruency in their behavior in order to be trusted and effective across cultures. Incongruent behavior confuses students and undermines empowerment: "it reinforces the impression that despite what we read, despite what this guy says, if we really just look carefully at the way he's saying it, who he rewards, how he approaches people, there is no real difference" (hooks, 1994, p. 147). In her interviews, Dr. Carlisle explained, "If I talk about minimizing hierarchy, yet require my students to call me 'doctor' I am not creating the egalitarian environment that I try to promote."

Teachers who ask students to contribute in and out of the classroom must be aware of how they receive contributions. Reva explained,

> I've had way too many teachers who encourage us to share our ideas but then scoff at or dismiss what we say. Sometimes it's their nonverbal - an impatient sigh, a negative shake of their head or a disappointed look. It's enough to freeze any additional sharing by students.

Incongruence can take the form of other indicators as well. Readings and other class materials must match the espoused values of a particular course, instructor, or department in order to avoid being incongruent and giving mixed signals to students. Students must be able to find their reality and voices in the classroom readings, dialogue, case studies, tests, assignments, values, and guidelines. Teachers must role model this inclusiveness. Maria, a Spanish American educational leadership student, described contrasting experiences with issues of congruence in two of her classes:

> I come from a family of farm workers and brought up issues of being working class in my women's studies course on gender and power. I was really frustrated and felt very alone with the objectification of social class in readings and discussions. I offered my experience as a working class, woman of color and was faced with silence from both students and professor. As I continued to share during other class sessions, the issue of class was finally dismissed as "my issue." In real contrast, Dr. Nair really listened and then challenged us to relate social class directly to that week's readings, to their own experiences, and to education. I was kind of stunned after my experience in a women's studies class that I thought would be a place where any identity would be treated with respect. Dr. Nair made me feel more welcome in that moment than I've felt in my entire three years on this campus.

By minimizing the reality of the experiences that a student brings to the learning collective, this women's studies teacher undermined the empowerment process that she was attempting through dissemination of knowledge about power. Dr. Nair, on the other hand, accepted and supported Maria's experiences as real and as important to the topic at hand. Role modeling congruence can also take a more subtle form. Paulo, a teacher education student from Brazil related,

> Where I come from it is inappropriate for women to speak up in a group. At first in this class, I was horrified at how much the women would share. During the semester though, I noticed that Dr. Torres was listening respectfully to the women and so I began to listen with more attentiveness. I learned so much from both the women's and men's comments that will help me be a better educator.

It is a fundamental responsibility of the teacher to show, by example, the ability to listen to others seriously; even if their voices and stories create another type of discourse than is intended. We cannot be willing to listen to a student speak even as we turn away and erase the impact of their words. Maher and Tetrault (1994) clarify, "Liberatory pedagogies aim to encourage the students...to gain an education that would be relevant to their concerns, to create their own meanings, and to find their own voices in relation to the material" (p. 57).

Proactivity

> I realized a few years ago after attending a conference on race and ethnicity in higher education that it wasn't enough for me to just teach about multiculturalism or even enough to be more sensitive to students. I needed to purposefully change the way I thought and practiced as a teacher. I was still using what was comfortable for me in the classroom: my ways of learning, my comfortable ways of relating to students, and the knowledge I found in my own intellectual travels. Since I was getting good evaluations, I really didn't think much about it. But something at that conference really triggered my thinking and I began to look into different learning styles, experiment with being more personal in the classroom, and facilitate new assignments and classroom activities for students to learn from each other. It has made all the difference and I am humbled daily at the wisdom of my students. – Dr. Torres, Mexican American Professor –

Teachers must go beyond the knowledge of multicultural empowerment into its practice. We, as facilitators, have the responsibility to establish that the

purpose of the empowered classroom is to be a community of learners together. Awareness, knowledge, education, skills, and action are five levels of proactiveness needed in a multicultural learning community (Pope, Reynolds, & Mueller, 2004). Visible action based on the first four is essential to the empowered classroom: "Action is the only way that we can affect change in the society as a whole; for, if we keep our awareness, knowledge, and skills to ourselves, we deprive the rest of the world of what we have learned." (Evans & Wall, 1991, p. 34). Individuals can be proactive in classroom settings by taking risks, facilitating respectful conflict, acting as allies for each other, and showing personal vulnerability. Proactivity also means taking a diversity of ideas and turning them into practice. Dr. Carlisle stated,

> Ideas that emanate from students must be appreciated and put into practice so they feel a sense of empowerment. They can and do make a difference in terms of the structure of the classroom. In fact, their ideas often make more of a difference than my own.

Dr. Ross stressed the importance of partnering with students to transform teaching practices:

> The individual teacher who isn't actively engaged in learning, especially from students, isn't quite there yet as an empowering force. We must partner with our students in very real ways if we are to have any hope of creating multicultural learning. I bring only one set of identities to the classroom and how am I to serve students from other identities if I don't collaborate with them all the time?

Multiplicity

> It's funny. I've noticed that when some of my own ways of learning and interacting are present in a college classroom, I'm also more able to learn in ways that are not my own But when my ways of learning are completely absent like in most of my classes, I feel off balance like I'm hanging upside down trying to make sense of my surroundings. An example? Oh yeah, like when I am in my history class and the professor never tells us anything about herself and never helps us place historical events in our own context. You know, I feel unbalanced because growing up on the 'rez' all things are taught in relation to the world and all things are personal, deeply personal. Then, I feel off balance like I can't take it in. I've learned to try to personalize it and place it in relation to the world myself but then I get distracted in class and I'm off balance again. I feel like I'm always two

steps behind and it is such a relief when I have someone like Dr. Carlisle who shares herself with us as a person and not just an expert in the subject. She's always telling us funny stories about her kids and her dog. She also uses teaching methods that are familiar from home and not present in my other classes. She likes to have us reflect for a moment in silence before asking us to discuss things. That is what we do a lot at home and I need that time to collect my ideas before I can share them in a group. – Bonnie, a Hopi, sociocultural studies student

The need for multiplicity in various forms was referred to in different ways by each of the interviewees and throughout the literature. Marco, a Puerto Rican American student in sociocultural studies, expressed, "I need to learn and work in a variety of ways. Life is complex and so should learning be complex." Challenging one dimensional perception and introducing contrasting ideas, knowledge, and experiences is critical in an empowering multicultural learning community. This brings with it a need to utilize a diversity of knowledge, methods, styles, and relationships in various processes. bell hooks (1994) urges that learning needs to be multifaceted to be effective and that "there can never be an absolute set agenda governing teaching practices" (p. 7). In my observations, I saw many different pedagogical techniques in each of these classes. Lecture was used only in small amounts and discussion, media, drawing, case study processing, even music were present. Mikayla, a student from Guatemala who studies bilingual education shared, "I need people to see me and treat me as an individual yet entertain the possibility that I am also shaped by and bring strengths from my cultural ways of doing things." Flexible agendas, multiple realities in knowledge, sharing of personal experience and spontaneous shifts in direction are common themes in the discussion of empowering learning communities by the students and professors in this study. Multiplicity means in part that the full mind, heart, body, and spirit of the students must be brought out in relation to the academic course subject. The traditional U.S. classroom defines true intellectualism as emotionless (Gilliland, 1999; hooks, 1994). To realize the full extent of multicultural learning community, students and teachers must engage in a multiplicity of ways of knowing, knowledge sources, realities, relationships, and experiences. Tom, an Italian-Irish American in educational leadership shared,

> At first I was really ticked off that I had to learn in ways that were uncomfortable and foreign to me. I thought the teacher was just being politically correct or something. After about the middle of the class, something clicked in for me. I began to

realize from some of the deeper conversations about the subject with fellow students that this experience would give me a leg up when I went out to work as a principal in schools. I'd be more used to working with people who are different from me.

Negotiability is an aspect of multiplicity that is especially relevant to empower a multicultural learning community. Negotiability of grading methods, priorities, reading materials, assignments, relationships, and roles are essential. As Dr. Torres described, "I don't force my students into anything, I try to work with the class to create the learning process. Some students are more 'ready' for a particular learning phase than others, so I usually offer assignment and activity choices." Tamika, who supervises other students in her campus job, discussed the relative nature of time:

> I am not really rigid about time. I don't care about time. There are tasks that I want people to do, but I don't tie this to the concept of time. Other people, who are much more western about time, are very critical of me and say that I don't control the people who work for me. I say, "You are right; they don't have to be controlled. They are responsible; they are doing their jobs and I am not watching the clock to measure them. I'm interested in the quality of their work and I want professors to be interested in the quality of mine."

Roosevelt Thomas (1991) posits that persons concerned with outcomes in a diverse environment should look at the actual outcomes to measure results because a group of ten people will have ten different ways to maximize their own output. Those trying to control the process are not harnessing the full ability of individuals because each individual has their own way in which to get things done. An empowering teacher needs to be open to and balance different cultural ways of doing things to create an effective multicultural learning community (Ibarra, 2002).

Reciprocal Relationships and Roles

> I have to admit that I was really startled when Dr. Ross first required us to read each other's papers, offer detailed feedback, and even suggest a grade! I was so uncomfortable and even felt angry that she wasn't taking this full responsibility. But after reading several papers and getting feedback from other students, I was surprised at how much I learned. I realized that usually the only two people who learn from these papers are the individual student and the teacher. This way, we learn more from each other and I'm kind of amazed at how much I'm able to learn from other students. It was

helpful that Dr. Ross explained this was one way that she was empowering students to be educators as well as learners. I thought this took a great deal of courage because students gave her a lot of flack. – Marco, Puerto Rican sociocultural studies student

Reciprocity or parity among groups of people in relationships involves power and idea sharing as well as reciprocal validation of each other's ideas. Reciprocity assists in the creation of an empowered environment and creates equal but different participatory roles for each person within the collective. During classroom observations, I noticed that one student might take on the role of bringing others into the conversation, while another added levity when things were tense. Still another might offer regular analysis while someone else served as emotional monitor, letting the group know when feelings need attention (Bensimon & Neumann, 1994). In this way, teachers create an environment where the diverse strengths of students are each incorporated and valued. Students don't have to participate in the same ways, yet they do participate. Having students teach each other, provide regular feedback, and learn from each other's assignments can also have a profound effect on learning. Dr. Ross reflected,

> When I first began to teach, I felt oddly uncomfortable about having set up a typical syllabus where students did large papers and projects where other than brief presentations, no one was learning from these assignments except me and each individual student. I pondered this for awhile and then decided to try several techniques that assigned students to read each others papers, review and critique student research, and apply theory or research developed by students to professional scenarios. I am much more comfortable with these pedagogically collaborative techniques especially because now everyone in the classroom is learning deeply from a wider variety of teachers; each from a different identity and experiential background, each with different priorities and values, each bringing their own wisdom into our learning community.

Individuals gain freedom and empowerment through reciprocal processes. Freire (1970/1997) supports the concept of reciprocity, "Solidarity requires that one enter into the situation of those with whom one is solidary; [sic.] it is a radical posture" (p. 31). Dr. Nair reinforced this concept in his reflections during an interview:

> Empowerment means to be appreciated as who we are. I also expect that I would try to create this same kind of atmosphere for students and

colleagues that work with me because I think that it is a two way street. I want to make people around me feel empowered as opposed to feeling oppressed. The challenge is that what makes me feel empowered is not necessarily what makes each of my students feel that way. So it is essential that we share teaching and learning roles in the classroom to figure it out together.

By actively nurturing reciprocal relationships in the classroom, teachers increase students' ability to empower themselves. Dr. Carlisle shared that she had drastically altered her teaching as a result of negotiations with students on concepts of knowledge, assignments, grading, and even time within the classroom. Expecting persons to teach as well as learn is a factor that seems especially rare in college classrooms but was evident in each discussion of multicultural empowerment that I encountered. Ramona shared,

> I always felt that I had nothing to offer in the classroom...that the teacher had all the knowledge and I was just there to soak it up. But after working with Dr. Torres, I have found my voice and a feeling of responsibility for teaching others, including the teacher. I've already tried this out in one of my other classes and the professor frowned at first but then kind of went, "Hmm, that's not a bad idea." So maybe we as students have to take the responsibility too.

The teacher must genuinely value, seek out, and reinforce the contributions of every member in the classroom; often this means those who make us most uncomfortable because they are unlike us in key ways. We must continuously resist the traditional notion that the professor is the only one responsible for classroom dynamics, knowledge, and insight. bell hooks describes, " As a classroom community, our capacity to generate excitement is deeply affected by our interest in one another, in hearing one another's voices, in recognizing one another's presence" (1994, p. 8). Some of the barriers of reciprocity as Rogers (1961) describes are the natural tendencies to judge, to evaluate, and to approve or disapprove the statement of the other person or the other group. By traditional U.S. academic standards, a professor is there to guard and disseminate the knowledge and standards of society (Elbow, 1986). This value which seems common among faculty is one that carries barriers to empowering learning community. It can result in rigidity and a failure to teach effectively across differences in the classroom.

Discussion

Creating an empowering multicultural learning community seems to be a rare and challenging endeavor within postsecondary education. Yet even with this challenge, there are persons who are making substantial progress toward creating spaces in which a diversity of people feel valued and able to contribute and grow. At some point in the lives of these individuals, they have become and continue to develop as facilitators of empowering communities. What is it that influences a person to take this challenging road? An interesting element that emerged in interviews with these professors was the value that they expressed about harnessing the strength of difference within the collective. As Dr. Nair discussed,

> The breadth of knowledge is so rich when we look at something through many different lenses. Having students from many different backgrounds and creating an environment where they will teach each other is a very powerful learning experience. It is daunting yet exciting, to challenge my own concepts of knowledge and of teaching.

Each of the four teachers interviewed had at some point in their lives realized the benefits of drawing from the power of differences. Regardless of background, each had been through life experiences that had changed their perspectives on their relation to others. For some, personal marginalization acted as a catalyst. For others, the need to resolve contrasting realities in their own lives or the lives of those close to them formed a bridge for them to see that reality was different for various individuals and groups. In all cases, these individuals have turned their awareness into action and continue to struggle with the challenge of facilitating empowering multicultural learning environments.

Organic Teaching

An important implication from this study is that specific pedagogical techniques are less important to the development and facilitation of an empowering multicultural learning community than utilizing a variety of evolving techniques to strive toward critical elemental dynamics. I found that students and teachers in this study reached similar effective classroom dynamics through a very wide diversity of techniques. In most instances, pedagogical choices seemed balanced between the style and personality of the professor and the diverse needs, perspectives, and abilities of the students. True to excellence in teaching

concepts, facilitating multicultural learning communities is an art form. Professors must partner with students to facilitate this environment; organically readjusting, tweaking, and providing what is needed as the class progresses.

Challenges to Facilitating an Empowered Multicultural Learning Environment

The challenges faced by persons who facilitate empowering environments can be glimpsed in some of the dialogue above. Anger and retaliation from students who do not wish to be actively engaged with learning, a lack of reward and sometimes reprimand for working at the art of teaching in communities that value research, the constant challenge to personal self-concept as students learn to challenge the teacher, and the pain of hearing the personal hardships of others all serve to make this endeavor a difficult one. When asked why she continues to be a facilitator of empowered multicultural learning communities, Dr. Ross explained, "It would be unnatural for me to do otherwise." For many, it became a necessity to teach differently when their own awareness of the importance of creating empowering environments reached a critical stage: "Once you are aware of the possibilities within a libratory multicultural pedagogy; it is difficult if not impossible to be satisfied with anything less" (hooks, 1994, p. 157). Dr. Nair expressed, "I just can't go back to being unaware that my students learn best in these more empowering ways. I have been challenged in the tenure process, by my colleagues in the department, and by students to return to more "academic" styles, but the results speak for themselves and I am always hopeful that the University will someday begin to value what is important to student learning."

Teaching and Learning through the Authentic Self

Conscious reflection on elemental dynamics, pedagogy, and the impact of the self are important to professors in their development as empowering multicultural educators. Perhaps more than anything, professors spoke of the intense contemplative work inherent in teaching well in a multicultural context. Dr. Torres explained,

> I have to keep learning about myself, sometimes painfully, to work effectively in this kind of classroom. I spend important time while I'm teaching and when I'm not teaching reflecting on who I am, what I believe, and challenging my own values and assumptions. I find that critical self reflection is essential to my work as an educator. Students often bring me up short with their profound observations, their worries, and

sometimes with their intolerance. I find that I do best when I pause, take a deep breath and reflect for a moment on how I can facilitate through, especially when my own emotions are roaring in my heart.

Students spoke as well of the power of becoming more conscious and so more authentic as human beings. Tom shared,

> You know, I really didn't want to go there -- to learn more about myself. I grew up in a family in which going below the surface was discouraged and even considered dangerous. Now that I know more about how I learn, what I can offer in a group discussion, and what some of my limitations are; I am better able to handle situations in my other classes and in my personal life. I feel like I have some new things to use as an educator and leader and knowing myself better is the strongest one.

The six elemental dynamics outlined here create a foundation for collegiate teachers to begin self discovery, influence the lives of others, and be influenced by them. Creating learning contexts and communities that embody safety, spirit of risk taking, proactivity, congruence, multiplicity, and reciprocity requires grounding within our selves. We must know who we are so that we are able to facilitate the continued development of the powerful 'self' in others. Creating and facilitating an empowering learning community requires courage, inner strength, an eagerness to keep learning, and a belief that others have much to contribute. This study into empowering multicultural learning communities is offered as a tribute to those who carry on with the daily challenge. Each is creating ripples that will reach out through individuals they touch and affect our global society.

> No one is free of prejudice yet each of us has the capacity to provide principled, competent, cross cultural, and multicultural learning environments.
> - Harold Cheatham

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Student Assessment: A Comparison of Solitary, Cooperative, and Competitive Testing

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Alternatives to a solitary testing format can involve students working in teams to arrive at the correct answer. We compared two group assessment methods, cooperative and competitive, to a solitary testing approach. In most comparisons examining the undergraduate respondents' (N=77) performance, the two group-testing methods were equivalent. Both group methods were superior to the solitary testing format in determining students' knowledge of the course material and confidence in their answers. Moreover, rather than one person generating the team's answer, most team members actively participated in the decision-making. The cooperative group surpassed the solitary testing group in terms of preference for their format of assessment.

Assessment empirically determines whether student learning or other educational outcomes, such as positive affect or change in values, have been attained. One of the most widely used assessment approaches in North American higher education is the objective test, most frequently a multiple choice exam, where students answer questions individually. Administration of this test format is a relatively quick and easy way to measure students' knowledge of a subject matter. Faculty, administrators, and students believe it to be a legitimate assessment device. As grade level increases, teachers are more likely to choose objective measures of student assessment and take steps to improve the quality of the assessment tool (Zhang & Burry-Stock, 2003).

Selection of multiple choice tests over other assessment methods like essay tests, are often based on reliability and validity criteria. Machine scored multiple choice tests have perfect scoring reliability while essay tests have problems with interrater reliability (Hogan, 2007; Johnson, Penny, & Gordon, 2001; Longford, 1994). Bridgeman and Lewis (1994) found that multiple choice tests used in College Board Advanced Placement exams in the United States were always equal or superior to essay tests in validity, predicting freshman grade point averages. Presumably freshman grades are a composite of different methods assessing knowledge and higher order thinking, such as objective items, essay tests, papers, and class participation.

Despite the extensive use of multiple choice tests in some parts of the world, their validity has been questioned. A student's test score when taking the test alone may be adversely affected by low student motivation, test anxiety (Mendl, 1999), cheating (Norton, Tilley, Newstead, & Franklyn-Stokes, 2001) and differences in question interpretation (Ingram & Nelson, 2006). Moreover, content knowledge may not reflect behavioral skills (McGimsey, Greene, & Lutzker, 1995). The learner's cognitive style (Lu & Suen, 1995) and preferences for different instructional

styles (Birenbaum, 2007) may be negatively correlated with outcomes using this solitary testing approach.

One method that may overcome some of the shortcomings of assessing the individual student is cooperative testing. This approach involves a small group of students working together to arrive at a common solution to a problem. This situation is comparable to what often occurs in a workplace setting or on a sports team. Group members work together cooperatively to achieve a goal. Acquisition and generalization of important interpersonal skills (e.g., explanation, negotiation) are potential benefits of the cooperative assessment approach (Zimbardo, Butler, & Wolfe, 2003). Moreover students seem to enjoy working in teams more than solving a task alone (Hinsz & Nickell, 2004). This positive emotion associated with cooperative assessment may impact the task in a beneficial way. Additional interest in the topic being examined as well as an increase in time spent examining the issue may result from use of this approach.

Another benefit of cooperative testing is that there are consistently higher achievement scores when students work in groups compared to solitary testing (Cortright, Collins, Rodenbaugh, & Dicarlo, 2003; Rao, Collins, & DiCarlo, 2002). Jensen (1996) compared individual to cooperative testing and found that, on average, students improved their exam scores in the cooperative testing condition by seven percentage points. Jensen, Moore, and Hatch (2002) found that biology students performed significantly better on a cooperative portion of a class quiz compared to the individual portion.

In addition to improving student scores, students in the Mitchell and Melton (2003) study listed more advantages than disadvantages with cooperative testing. These advantages included immediate feedback, testing as a learning experience, better retention because of the discussion and interaction, opportunity to improve grades, and preference for team over individual testing.

Some of the general disadvantages to cooperative testing that students noted were changing their correct answer after team discussion, time constraints, and partners who did not fully participate. Zimbardo et al. (2003) also found benefits to cooperative testing compared to solitary testing such as (a) improved student performance, (b) decreased test anxiety, (c) increased enjoyment of the course, and (d) enhanced interpersonal skills such as deliberating with others.

Moreover, cooperative testing is a versatile technique that can be used during class time with positive results. Rao and DiCarlo (2000) paused after 15-20 minutes of class instruction and asked students to answer questions, first individually, and then in a team. Student answers to factual and conceptual questions were significantly better in a team compared to the individual condition.

A common complaint of team assessment approaches is that members ride on the coattails of the most knowledgeable team member. For instance, the answer may simply be provided by one member of the team with no explanation given to the less well-informed member. Contrary to this possibility, participants in the Zimbardo et al. (2003) study reported that the most frequent strategy used to decide a final answer was members fully discussing their differences of opinion.

Competitive testing is a third assessment method that may identify what students know about a content area. Like cooperative testing, competitive assessment involves a team but adds a competitive element between teams. Students cooperate within their team to determine their answer and then compete against other teams for the most correct and/or swiftest answer. Formats can include question and answer games, board games, or simulations of complex phenomenon. Student motivation may be enhanced and performance increased as a result of the competitive environment. On the other hand, students may feel pressured to respond quickly or hesitant to discuss answers, lessening the benefits that may otherwise be accrued when students interact in a competitive format. Little research has compared the effectiveness of competitive groups to other assessment methods.

In one of the few studies that examined competitive testing, Desrochers, Pusateri, and Fink (2007) compared a competitive game assessment to solitary testing (the student's answer alone). In this study, students' knowledge of course material in both conditions was measured using multiple choice items. Team scores were found to be superior to individual test scores. Also, team answers were more often correct than the initial answers of team members before group discussion. An analysis of team decision making styles showed that team answers were rarely the product of a single team member dictating the team answer

(authoritarian). Instead of authoritarian rule, unanimity (everyone agreed on the decision) and majority rule (two of three team members agreed on the decision) were the basis of team decision-making. The participants in this study liked the competitive testing condition more and perceived it as a more accurate measure of their course knowledge compared to participants' ratings in the solitary testing condition.

In sum, some of the difficulties associated with using a solitary testing approach (e.g., low motivation, incorrect question interpretation) may be diminished with group testing (cooperative or competitive). Additional benefits may accrue from use of the group testing approach could be learning through peer interactions and more positive affect toward the course material.

Instructors may find a group testing approach one way to alleviate assessment concerns and more accurately measure student learning compared to individual testing methods. Not only could the group approach be used for summative course assessment, but also as a formative measure of students' knowledge of course material gathered during classroom review sessions designed to bolster student learning.

Our main purpose in the current study was to empirically examine students' knowledge of course material using three different methods: solitary, cooperative, and competitive testing. Additionally, we examined the following: (a) differences in students' confidence in their multiple choice answers in the three assessment conditions, and (b) how the three assessment formats compare as to students' affect (preference). Also, the manner in which team decisions were reached – unanimity, majority rule, or authoritarian rule – in the cooperative versus competitive conditions was investigated.

Method

Participants

Seventy-seven students from an introductory psychology course at a medium-size, liberal arts New York State college voluntarily participated. Participants received extra credit for participating in the study as is standard in American colleges. There were 24 students (15 women, 9 men) with an average age of 19 years in the solitary testing condition, all of whom were Caucasian. There were 27 students (16 females, 11 males) with an average age of 19 years in the cooperative testing condition; 93% were Caucasian and 7% African American. There were 27 students (19 women, 7 men, 1 undeclared) with an average age of 19 years in the competitive condition; 89% were Caucasian, 7% African American, and 4% other. Across conditions, most participants were in their first

(43%) or second year (45%) of college and majoring in psychology (21%) or Criminal Justice (14%). Fifty-seven percent of the students had grade point averages (GPA) between 2.6 and 3.5. Groups did not differ regarding age, year in college, or general grade point average ($p > .05$).

Procedure

Students were randomly assigned to one of three conditions: solitary, cooperative or competitive testing. Their knowledge of the course material in the unit covering learning and genetics was measured. Following the collection of demographic information, the same 16 multiple choice questions were presented in each condition. Eight items were factual (i.e., statements, definitions) and eight items were conceptual (i.e., application, synthesis, or integration of information). The study was held outside of class time the day before the exam on the content area tested.

Solitary testing condition. The solitary testing condition was held in a small classroom. The experimenter reviewed the procedure in this condition with the participants before the 16 questions were presented. The researcher orally and visually presented each of the 16 questions. After a question was read, students were informed that they had up to 20 seconds to individually answer and write down their answer on a sheet of paper. Then, each participant rated how confident they were that the answer was correct along a five-point scale labeled 1=*Extremely confident*, *Very, Moderately, Somewhat,* and 5=*Not at all confident.* Each participant was instructed to place their answer sheet in an envelope to prevent answers from being changed. Then, the researcher provided the correct answer and presented the next question and so on until all 16 items had been presented and answered.

Cooperative testing condition. In the cooperative testing condition, students were randomly assigned to a group of three members, introduced themselves to one another, and came up with a team name. There were three teams in each session, each working in a separate room with a different researcher.

The experimenter reviewed the procedure in this condition with the participants before the 16 questions were presented. The researcher orally and visually presented a multiple choice question. After the question was read, participants were informed that they had 20 seconds to answer the question alone, write down their answer, and rate their confidence in the correctness of the answer on a sheet of paper. After 20 seconds, participants were told to place their answer in an envelope to prevent them from changing it. The researcher then instructed the students that they had up to one minute to discuss amongst themselves which alternative is the correct answer. Each team member wrote down the team's answer, rated one's confidence in the correctness of the team answer, and placed the team answer in an envelope. Thus, each team member wrote an answer twice: the individual answer first and, then, the team's answer. Similarly, each group member's confidence in an answer was measured twice: first, confidence in one's own answer and, then, confidence in the group's answer. Again, the answer sheet was placed in an envelope to prevent changes to the student's answer. The researcher presented the correct answer and went onto the next question until all 16 items had been answered.

Competitive testing condition. The competitive testing condition was similar to the cooperative testing condition with the addition that all teams were in the same room and competed against one another to obtain points for correct answers. In the competitive testing condition students were randomly assigned to one of three groups of three members. In each session there were three teams sitting in different areas of the same room. Team members were instructed to introduce themselves and decide on a team name to foster group identity. The experimenter reviewed the procedure in this condition with the participants before the 16 questions were presented.

The researcher orally and visually presented a multiple choice question. Individually, students were informed that they had 20 seconds to write down their answer, rate their confidence in the accuracy of their answer on a sheet of paper, and place it in an envelope. Following individual answers, the experimenter announced that team discussion time was allowed for up to one minute to decide which answer to present. As soon as the group had an answer, they were asked to write it down on the answer sheet, complete the confidence rating for their group answer, place it in an envelope, and hit the light button. A member of each group hit the light button to signal when their group decided on a correct answer. The lit button allowed the experimenter to visually determine the order in which the three groups decided upon an answer. A member of the team who hit the button first answered the question. The team that gave the correct answer received a point, publicly displayed on their team name card. If the answer was incorrect, the team who hit the light button second was given an opportunity to answer the question and so on. After 16 questions had been presented, the team with the most correct answers was deemed the winner.

In all three conditions following the completion of the 16 test questions, participants rated along a 7-point scale the perceived accuracy of that assessment of their knowledge (1 = *Very accurate* to 7 = *Very inaccurate*) and the degree to which they liked their assessment approach (1 = *Strongly like* to 5 = *Strongly dislike*). Participants in the cooperative and competitive testing

conditions also rated preference for individual versus team format along a seven-point scale (1 = *Strongly prefer individual participation* to 7 = *Strongly prefer team participation*). Group participants were asked if the study were repeated would they like to work again with the same team and answered using a seven-point scale (1 = *Strongly like* to 7 = *Strongly dislike*).

Data Analysis

We calculated participants' percent correct answers and ratings on the 16-item multiple choice test; then, we compared mean scores for the solitary condition to individual (before team discussion) and team answers (following team discussion) for the cooperative and competitive conditions. Participants' ratings of confidence, accuracy, and liking for their condition were also analyzed. Any differential effect of type of question—factual versus conceptual—in each condition was examined. An analysis of the decision-making in the group conditions over all questions, both correct and incorrect, was performed based on a comparison of individual answers to team answers. The three categories of decision making were (a) unanimity—all individual answers were the same as the team answer, (b) majority—two of three team members had the same decision as the team, and (c) authoritarian—only one person in the team had the same answer as the team answer.

Results

Correct Answers: A Comparison Across the Three Conditions

Correct answers on the 16 item multiple choice test were compared across the three conditions: solitary testing and team answers in the cooperative and competitive conditions. Correct answers significantly differed between conditions, $F(2,75) = 7.6, p < .001)$. A Scheffé post hoc test ($p < .05$) showed that cooperative testing ($M = 64.8\%, SD = 13.2$) and competitive testing team scores ($M = 60.2\%, SD = 17.0$) were significantly greater than the solitary testing score ($M = 47.7\%, SD = 18.1$). Students working in teams were more often correct than students working alone.

Correct Answers: A Comparison of Alone Versus Team Answers

In the cooperative testing condition, correct team answers ($M = 64.8\%, SD = 13.2$) were greater than participants' individual pre-discussion correct answers ($M = 54.9\%, SD = 11.5$), $t(26) = 5.7, p < .001$). In the competitive testing condition, correct team answers ($M = 60.2\%, SD = 17.0$) were also superior to participants'

individual pre-discussion correct answers ($M = 49.8\%, SD = 15.9$), $t(26) = 3.4 p < .01$). For respondents in both group conditions, cooperative testing condition and competitive testing condition, the team answer was more often correct than the average individual answer from the same participants before entering group discussion. The inferiority of the solitary testing condition to the group testing conditions was also supported by examining answers to each of the 16 items. Participants' answers in one of the group conditions (competitive or cooperative) were always more correct than those in the solitary condition.

Correct Answers: A Comparison of Answering Alone in all Three Conditions

Individual answers (percent correct before group discussion) for participants in the cooperative testing condition (54.9%, $SD = 11.5$) and competitive testing condition ($M = 49.8\%, SD = 15.9$) did not significantly differ from those for participants in the solitary testing condition ($M = 47.7\%, SD = 18.1$) across the 16 multiple choice items, $F(2,75) = 1.5, p = $ ns. As expected by random assignment, participants' initial knowledge of the course material in the three conditions was statistically equivalent at the beginning of the study.

Correct Answer: Factual Versus Conceptual Items

Did the superiority of the cooperative and competitive testing conditions over the solitary testing condition depend on whether the items were factual or conceptual? There were 8 factual and 8 conceptual items on the 16 item multiple choice test. A 2 X 3 mixed ANOVA was calculated for item type (factual or conceptual) by condition (solitary, cooperative, competitive). The main effect of condition was significant $F(2,75) = 7.55, p < .001$. Group answers were more often correct than answers given by participants in the solitary testing condition as shown in a post hoc Scheffé ($p < .05$). The main effect of item type was not significant, $F(2,75) = 4.6, p = $ ns. The interaction was significant, $F(2,72) = 5.74, p < .01$. As seen in Figure 1, only in the competitive condition did participants do worse on the conceptual items relative to the factual items.

Accuracy in Assessment

We measured students' belief in the accuracy of their assessment method (1 = *Very accurate* to 7 = *Very inaccurate*) since one's beliefs may affect performance. There was a significant difference between the three conditions in the participants' rating of how accurately they believed their assessment condition measured their

FIGURE 1
Mean Correct to Factual and Conceptual Assessment Questions in the Solitary Testing, Cooperative Testing, and
Competitive Testing Conditions
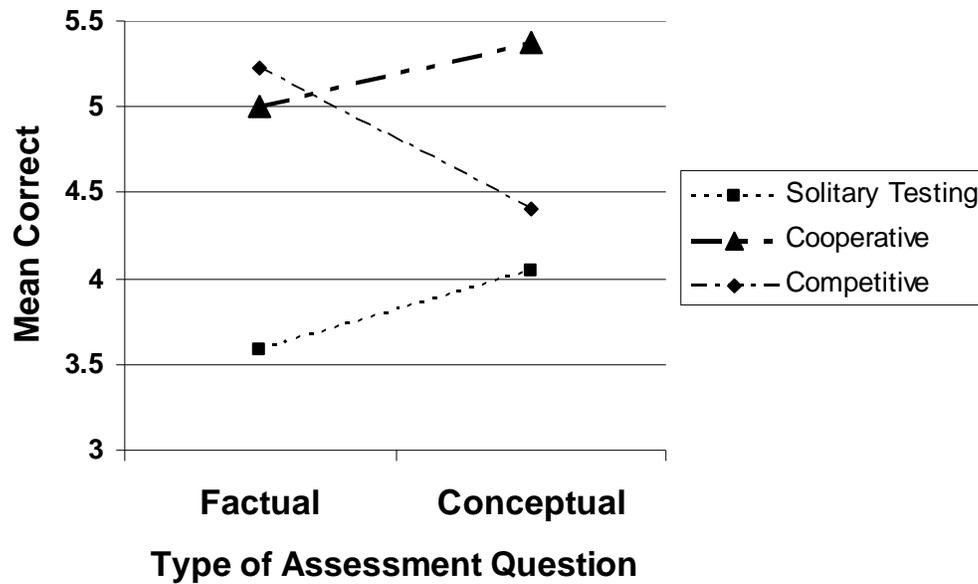
course knowledge, $F(2,75) = 6.08$, $p < .01$. A Scheffé post hoc test showed that participants in the cooperative testing condition ($M = 2.1$, $SD = 0.7$) perceived their assessment condition's manner of measuring their knowledge as more accurate than did participants in the solitary testing condition ($M = 3.3$, $SD = 1.6$). There were no significant differences involving the competitive testing condition ($M = 2.7$, $SD = 1.3$).

Confidence in Answers

Participants' confidence that their answers were correct was rated along a 5-point scale anchored by 1 = *Extremely* and 5 = *Not at all*. Participants assigned to the group conditions rated their confidence in their answer twice: first, after their individual answer and, second, after their team answer. Participants' confidence that their final answer was correct differed between the three conditions ($F(2,75) = 22.23$, $p < .01$). The solitary testing ($M = 3.4$, $SD = 0.6$) participant ratings were between *Moderately* and *Somewhat confident*. The confidence in the team answer among participants in the cooperative testing condition ($M = 2.3$, $SD = 0.6$) was close to *Very confident*. The confidence in the team answer among participants in the competitive testing condition ($M = 2.6$, $SD = 0.7$) was between *Very* and *Moderately confident*. A post hoc Scheffé indicated a significant difference between the solitary testing condition and both group conditions with participants from both group conditions

displaying more confidence that their answers were correct.

We compared confidence ratings for the same participant in their alone versus team answers for each group condition. Paired comparison *t*-tests showed that participants were more confident of their answers in the team compared to individual situation for the cooperative testing ($M = 2.9$; paired $t(15) = 10.80$, $p < .001$) and competitive testing conditions ($M = 3.1$; paired $t(15) = 6.69$, $p < .001$). For the same individual, participants were more confident that the collaborative answer was correct than their individual answer before interacting with others.

Assessment Method Preference

Preference for a particular assessment method may influence its use. Most participants in each condition rated (on a 5-point scale with 1 = *Strongly like* to 5 = *Strongly dislike*) liking for their condition close to the *Moderately liked* category (solitary testing $M = 2.4$, $SD = 0.9$; cooperative testing $M = 1.7$, $SD = 0.5$; competitive testing $M = 2.2$, $SD = 1.0$). There was a significant difference between conditions in participants' liking for their assessment method ($F(2,75) = 4.37$, $p < .01$). A post hoc Scheffé indicated that a significant difference ($p = .05$) existed between the solitary testing and cooperative testing conditions. Undergraduates liked participating in the cooperative assessment approach significantly more than they liked the testing alone approach.

Participants in the cooperative and competitive testing conditions rated their preference for participating in this study as a member of a team or as an individual along a 7-point rating scale (1 = *Strongly prefer individual participation,* 7 = *Strongly prefer team participation*). There was no significant difference between participants in the cooperative testing condition (M = 5.0, SD = 1.5) and the competitive testing condition (M = 5.0, SD = 1.7), *t* = 0.0, *p* = ns. Participants in both conditions *Somewhat prefer* group participation.

Lastly, participants in the cooperative and competitive testing conditions were asked to rate their degree of like/dislike (1 = *Strongly like*, 7 = *Strongly dislike*) to work again with the same team. There was no significant difference between the two conditions (cooperative testing, *M* = 2.1, *SD* = 1.1; competitive testing, *M* = 2.1, *SD* = 1.5), *t* (52) = -.2, *p* = ns. Participants *Moderately liked* the idea of working with the same team again.

Decision making in groups

How were decisions made in the group—by unanimity (all three members agreeing), majority rule (two of three members agreeing), or authoritarian (one member decided on the team answer)? Most frequently, majority rule prevailed in both cooperative (36% unanimous, 43% majority, 21% authoritarian) and competitive conditions (23% unanimous, 53% majority, 24% authoritarian). Unanimity plus majority rule produced more than 75% of decisions in groups. Authoritarian rule, wherein a single individual dictates the team answer, occurred in less than 25% of the decisions.

Discussion

Compared to the solitary testing method, our results showed that the group format produced superior student knowledge on the 16-item multiple choice test. Participants' team scores were higher than their individual answers prior to discussion on the assessment instrument as a whole as well as on most individual items. Students enjoyed the team format more and perceived it as a more accurate measure of their knowledge. Moreover, better team decisions were not simply due to one knowledgeable member in the group providing the correct answers.

These findings of improved performance by teams are consistent with previous research. Evidence for superior performance for students working in groups compared to answering alone (Riggio, Fantuzzo, Connelly, & Dimeff, 1991; Stockdale & Williams, 2004) was replicated in our study. Our research extends this literature by comparing cooperative and competitive testing conditions.

Team Versus Individual Performance

Why do teams arrive at better answers than individuals? It is possible that team members may stimulate and encourage each other through their discussion, termed a synergy effect by Zimbardo et al. (2003). Additionally, error correction procedures may occur in groups to effectively weed out incorrect answers. Through active participation such as verbalizing a reason for one's answer, a student's misconception of the course material may be clarified by fellow students. It is possible that by using a group testing approach instructors are structuring their courses so that students assist each other in mastering the course material, an approach called peer tutoring.

There are other possible interpretations of the positive group effects. Perhaps while working alone a student carelessly reads an item and thus misinterprets the question resulting in an incorrect answer. During group interaction the student's misreading is corrected by one's peers. In this case, rather than better understanding of the course material, the improved performance is due to accurate comprehension of the test question. Research is needed to elucidate the reasons for superior group performance over solitary testing.

Another difference between team versus solitary testing is that students perceived the team format as preferable and more accurate than the individual format to assess their knowledge of course material. When others confirm your initial answer, the recipient's confidence in their answer is bolstered and accompanied by an increase in positive affect due to receiving support by another (Rubin, 1973). Positive affect in the group condition may boost motivation and thus foster learning.

Team Decision Making

Did the team output reflect a group effort or was one individual toting the load? We analyzed the individual answer compared to the team answer to address this question. We found that it was more often the case that the majority of team members governed the team decision. There were no cases where, for a particular team, one person made most of the decisions. Whether this result is an accurate reflection of the discussion that took place, though, is unknown given that our analysis compared individual to team written answers rather than a recording of the team discussion.

The use of a computer-mediated environment may be the next frontier for analysis of how team answers

are determined since automated means would provide a log of transactions between members (Rummel & Spada, 2005). A record of the interactions between team members would allow ready identification and categorization of participation among members as well as provide a basis for determining the category of group interaction (i.e., authoritarian, majority, unanimity). Perhaps with training, the appropriate collaborative behaviors between team members (e.g., discussing differences of opinions, providing rationales, encouraging correct answers) could be facilitated (Prichard, Stratford, & Bizo, 2006).

An identification of authoritarian rule may occur under other conditions. Our study was quite short in duration: only 16 items were administered. Possibly, had a longer assessment been performed, a "knowledgeable" member of the group would have been identified in each team resulting in authoritarian rule affecting the team decision-making (Bonner, 2004; Bonner, Baumann, & Dalal, 2002).

Type of Team Assessment

Given that team format appears more effective in terms of learning than the individual format, which type of team—cooperative or competitive—is better? In most comparisons, the outcomes from the cooperative and competitive groups were equivalent—in terms of correct answers, confidence in answers, learning the course content, and decision making.

Conclusion

Placing students in teams to assess their knowledge of a subject matter appears to be a viable strategy according to our results and may provide instructors with an attractive option to solitary testing. Students perform well in group situations, perceive it as an accurate measure of their knowledge, like the experience, and appear to work together to arrive at answers to questions. This group assessment approach may also generate student learning through peer interaction and help students comprehend test items.

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Redefining Schools as Learning Organizations: A Model for Trans-generational Teaching and Learning

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Collaborative problem-based courses can engage university students and faculty in more authentic, powerful, and meaningful learning experiences. For the past five years, the College of Computing and Information's Department of Information Studies has been cultivating an educational partnership that brings together university students with their professional in-service counterparts in local K-12 school districts to explore issues of pedagogy, theory, curriculum, information literacy, technology, multimedia, and assessment. A capstone graduate course has evolved into a trans-generational learning collaboratory. The development and results of the course are discussed along with recommendations for others looking to engage in trans-generational pedagogy.

This paper describes the evolution of a trans-generational pedagogical model developed at the University at Albany, Statue University of New York, that erases traditional "learning" boundaries by gathering K-12 students, in-service teachers, school library media specialists, undergraduate students, graduate students, and university faculty together in the same learning space to design, implement, and assess real world curriculum as a learning team. Thus participants, as "students," "teachers," and "professionals" collectively create, design, deploy, implement, and assess authentic, standards-based multimedia applications and curricula. As Oberlander and Talbert-Johnson (2004) note, "It is vital that teacher preparation programs equip pre-service and in-service candidates with the requisite skills to design, analyze, synthesize and evaluate information while integrating instructional technology in support of learning" (p. 48).

In order to develop learners who are critical thinkers, Dewey (1915) advocated for the development of a model of schooling that embraced the social dimension of learning to promote flexible adaptation, which he deemed critical for human advancement in a democratic society. Social relationships, according to Dewey (1929), are critical, for the "mind" arises from the development of collective human activity and shared meanings. The development and enhancement of critical-thinking skills through collaborative learning, according to researchers such as Gokhale (1995), is considered one of the primary goals of technology education. Although social environments provide motivation for students to learn (Vygotsky, 1978), colleges of education have been slow in preparing teachers to use technology in teaching practice. *Educating School Teachers,* a report released in 2006 by the Education Schools Project, describes most U.S. college and university teacher-education programs as failing teachers, with outdated visions and embarrassingly low standards (Fogg, 2006).

New models of instruction are needed at all levels of education (K-12 through higher education) to enable learners to develop critical thinking skills that will facilitate their ability to communicate, collaborate, reflect, and compromise. Pre-service educators "still have the mindset of being consumers of education instead of producers of education" (Swain, 2006, p.56). Pre-service teachers and school library media specialists need to consider and create ways "to use educational technologies in different teaching and learning contexts…to enrich the learning and educational experience for all learners" (pp. 56-57). Segers and Docy (2001) recommend the development of "more powerful learning environments" (p. 328) in order to attain the goal of deep learning. Powerful learning environments are "characterized by the view that learning means actively constructing knowledge and skills on the basis of prior knowledge, embedded in authentic, contexts that offer ample opportunities for social interaction" (Segers & Docy, 2001, p. 328).

Collaborative Learning

Successful learners in the 21st century must respond to many diverse pressures "such as the drive to use more multimedia, the need for lifelong learning and the changing labour market" (Segers & Docy, 2001, p. 327). Technological advances and organizational infrastructure transformations have made collaborative teamwork within the labor force a necessity (Brown & Duguid, 2000; Gokhale, 1995). Gokhale (1995) describes collaborative learning as an instructional method in which students at various performance levels work together in small groups toward a common academic goal: "The students are responsible for one

another's learning as well as their own. Thus, the success of one student helps other students to be successful" (p. 2).

Proponents of collaborative learning claim that the exchange of ideas by groups of learners increases learner engagement, improves problem solving strategies, and promotes higher levels of thinking (Bruner, 1985; Johnson & Johnson, 1986; Totten, Sills, Digby, & Russ, 1991). Research has revealed that students who establish social relationships with teachers and other learners in the community are more actively engaged in learning, report greater personal and academic growth, and are more satisfied with their education than are students who are more isolated (Astin, 1993; Barkley, Cross, & Major, 2004; Pascarella & Terenzini, 1991; Springer, Donovan, & Stanne, 1998; Springer, Stanne, & Donovan, 1999; Vygotsky, 1978). Although it is reported that educators across disciplines and academic institutions are incorporating collaborative learning into curriculum (Barkley, Cross, & Major, 2004), Springer, Donovan, and Stanne (1999) observe that graduates still "go out into the workforce ill-prepared to solve real problems in a cooperative way, lacking the skills and motivation to continue learning" (p. 21).

Barkley, Cross, and Major (2004) describe three features that are essential to collaborative learning: intentional design, in which educators structure intentional learning activities for students; co-laboring, in which all participants in the group engage actively in working together toward stated objectives, contributing more or less equally; and meaningful learning, in which students work together on a collaborative assignment to increase their knowledge or deepen their understanding of course curriculum. Barkley, Cross, and Major further state, "having the classroom vibrate with lively, energetic small-group work is attractive, but it is educationally meaningless if students are not achieving intended instructional goals, goals shared by the teacher and students" (p. 5).

The Need for New Models of Instruction: The Importance of Social Relationships

Although the 19th century factory model of instruction remains firmly entrenched in schools, 80% of the employed population today does not engage in factory work (Winters, 1998). The shortcomings of large scale, factory-modeled schools have been well documented and studies reveal that "all else equal, students achieve at higher levels and feel more supported in smaller, communal school settings" (Darling-Hammond, 2003, p. ix). In an atmosphere of cooperation and mutual support, effective leadership teams can focus on student, teacher, and community needs and achievements; policy development; long range planning; and progress toward goals: "critical elements that together promote high achievement for all students" (Goodman & Zimmerman, 2000, p. 7).

Peer teaching has been enacted across teaching and learning contexts and grade levels with all age levels and learning contexts reporting benefits (Parr, Wilson, Godinho & Longaretti, 2004). Biggs (1999) reports positive results including enhanced motivation, improved cognitive and social outcomes in students' learning, and an advanced development of student responsibility for self-learning. Some researchers have reported that peer teaching has led to students' improved knowledge about the process of learning (Bruffee, 1999).

The Evolution of a Learning Community

The lead author has observed, participated in, and taught graduate programs designed to provide pre-service and in-service educators experience in creating multimedia technology curriculum (Stefl-Mabry, 2004). Disappointed to observe that, for the most part, many carefully constructed multimedia curriculum projects are set aside at the end of a college or university course without having been implemented or assessed for instructional effectiveness in real world settings, she was determined to transform the traditional model of teacher education. Intent upon improving the utilization of student and faculty productivity (e.g., time, talent, and energy), and with the approval of her department, she began to redesign a course (ISP523L, Fundamentals of Technology for School Libraries). The course is intended to provide graduate students majoring in School Library Media (SLM) the opportunity to learn the fundamentals of technology and connect them to K-12 professionals in order to collaborate, lead, and use technology reflectively to foster the growth of learning communities.

In the fall of 2002, she established a learning partnership with the Albany Public School District to establish a higher education/K-12 learning community based upon the following goals:

- To support high quality academic and clinical experiences for school library media specialists (SLMS) by providing intensive collaborative internship opportunities with neighboring schools.
- To identify and document best practices in school library media information literacy instruction through scientific inquiry, research, assessment, and reflection in authentic settings.
- To enable and encourage school media specialists, teachers, administrators, and

university faculty to become learning partners in the educational process.

- To lessen the digital divide by sharing the university's educational and technological resources with schools and surrounding communities.
- To create, implement, and rigorously evaluate high quality standards-based multimedia learning experiences based upon specific learning community needs.
- To define the role of the school library media specialist within a school setting as an information professional.
- To help all members within the learning community achieve and maintain information and media literacy. (Stefl-Mabry, 2004)

To realistically reflect the multiplicity of roles and multifaceted responsibilities of SLMS graduate students and to model a collaborative learning environment that SLMS will emulate when they began working professionally, ISP523L is not taught in the traditional college-based lecture style. Instead, weekly readings are assigned that highlight current selected literature from the fields of education, educational technology, cognitive psychology, and library and information science. Students form self-selected project teams (typically consisting of two to three members) and are encouraged to be collaborative participants and research partners. This model supports Harada (2003) and DuFour and Eaker's (1998) assertion that mutual cooperation, emotional support, and personal growth of social learning allows collaborative groups to achieve far more then they would accomplish if working on their own.

The Evolution of a Pedagogical Model

After the first pilot phase (2002-2003), it was determined that the technical components of the multimedia projects could be enhanced if the SLMS graduate students partnered with Information Science undergraduate students enrolled in a Web design course (ISP361). Phase II (2004-2005) introduced undergraduates into the learning partnership, which proved to be mutually beneficial for all learning cohorts (Stefl-Mabry & Goodall-Powers, 2005). The project teams expanded from two to three members to three to five members, with the addition of two undergraduate students. The undergraduates provided Web enhancement while the graduate students, as information professionals, provided standards-based information literacy content. Graduate students met regularly, on a weekly basis, with K-12 educators to

fulfill their certification field experience requirements. Each week they would relay design and usability requirements learned from the field, as well as theory garnered from their assigned readings, to their undergraduate partners. During the Spring 2005 semester, in an effort to facilitate communication among the learning partners, the K-12 in-service teachers were invited to attend a university class meeting with the full project team, including, for the first time, undergraduate design partners. This face-to-face meeting, scheduled during the regular class time proved to be tremendously helpful as it provided an opportunity for the university students to share preliminary conceptual models with their K-12 partners. The K-12 partners could also provide feedback and suggestions to strengthen the content, design, usability, and appropriateness of the projects. Graduate students and K-12 educators worked collaboratively on realistic formative and summative assessment strategies; once again, the curriculum projects collectively developed were implemented and assessed within the K-12 schools by the SLMS graduate students working in collaboration with the K-12 in-service professionals (teachers and school library media students).

At the end of the Spring 2005 semester, several of the K-12 teachers noted that it was unfortunate that the undergraduate students had not been able to observe the K-12 students using the completed Web projects during the implementation process. Thus, in the Fall 2005, Phase III was initiated and Stefl-Mabry and Doane increased the number of times K-12 in-service educators interacted with the project team to three class meetings over the course of the semester: the first in the beginning of the semester, the second at midterm, and the third during the last class meeting. The undergraduate students were also invited to observe K-12 students during the implementation phase in the K-12 setting to gather feedback from the K-12 students relative to the usability of the Web projects. The district and in-service educators were supportive of this decision, and several undergraduate students observed the implementation of their projects within the K-12 classroom and reported feeling "great" seeing the K-12 students actually using the Web projects.

The cooperation of the Albany Public School District has been remarkable, and it is important to note that the K-12 in-service teachers do not receive in-service credit for their participation. Still, they enthusiastically join the university class after school for three hours during the regularly scheduled ISP523L/361 class meeting. The district's educational technology consultants also attend the meetings and provide additional technological and

instructional expertise. This is tremendously beneficial as the educational technology consultants are familiar with the district's technology infrastructure and specific configurations. Sessions are productive and provide all participants the opportunity to share social and intellectual capital.

ISP523L & ISP361 Course Requirements

All ISP523L course requirements, with the exception of assigned biweekly individual reading reflections and peer evaluations, are designed to be collaborative. Each assignment throughout the semester builds upon the previous and culminates in the implementation, assessment, and final presentation of a New York State Education Department (NYSED), American Library Association (ALA), and the International Society for Technology & Education (ISTE) standards-based multimedia project for the K-12 audience, university faculty and staff, and greater community. The course is designed to help undergraduates understand the importance of designing Web software for a real audience, to help graduate students gain fluency in a wide range of K-12 technologies (including hardware and software), and to gain an understanding of students' information seeking behaviors. Ultimately, the goal is to enhance the learning outcomes for teachers, students, and faculty (K-12 and university). A long-term goal is to determine whether the pre-service graduate students will transfer the learning of reflective practice into their future in-service communities of practice. We are currently engaged in a research project to determine if this hypothesis is supported over time.

Students enrolled in ISP523L are expected to

- assess the informational needs of a "real" K-12 learning community with collaborative input from a school library media specialist and cooperating teacher.
- outline two or three plausible "solutions" to meet the informational and instructional needs of the targeted community.
- list NYSED, ALA, and ISTE information literacy standards and explain how the standards are addressed in the project.
- describe performance indicators addressed by the multimedia project and how such performance indicators are assessed.
- create formative and summative assessment instruments (surveys, questionnaires, rubrics, etc.) based upon appropriate standards and performance indicators.
- collaborate with school media specialist(s), teacher(s), and university faculty to determine the appropriate project for the community.
- identify project specific and appropriate informational resources (including traditional and non-traditional media) and instructional technology media (substantiated by peer-reviewed literature within the fields of library science, cognitive science, developmental psychology, and/or education technology).
- implement the project with the collaborative assistance of a certified school library media specialist and in-service teacher(s).
- administer, interpret, and evaluate multiple assessment measures designed to measure the effectiveness of the overall project in relation to student learning: Did the project do what it was supposed to do and how do you know that it did? In other words, clearly identify what is meant by learning*? (Sarason, 2004).
- draft a formal report, written collaboratively by the project team, that outlines the origin and development of the project, substantiates each of the vital elements, analyzes and reflects upon the results, and suggests recommendations for modifications for future iterations of the project.
- share the results of the project in an oral collaborative presentation given by the graduate and undergraduates and shared with the greater learning community (K-12 and university). (Stefl-Mabry, 2004)

ISP361 students participate as Web development experts and are expected to exercise their understanding of usability, Web design, and technology. Undergraduate students collaborate with graduate students and K-12 in-service educators to develop a site plan, refine site content, and select an appropriate look and feel for the Web site. Undergraduate students then create a site design using Web standard technologies such as XHTML, Cascading Style Sheets, and JavaScript. The undergraduate course is designed to allow students to develop both project management skills and technical competency with respect to Web technologies; therefore, students enrolled in ISP361 are expected to

- produce Web pages with attention to content, design, usability, accessibility, audience, intellectual property issues, and professional presentation.
- effectively use current Web standards and technologies to create and maintain complex websites.
- understand which design elements support effective websites.

- develop communications and project management skills that allow them to contribute to a positive collaborative development experience.
- analyze end-user needs, design an appropriate solution, implement that solution, evaluate the success of the solution, and present the results of their work in both written and oral presentation.
- think critically and exercise writing and research skills through the original production of digital information.
- participate in an on-going collaborative development effort with ISP523L students and K-12 in-service educators.

This authentic experience of applying Web development skills in the context of the real world with real users makes this learning experience much more intense and valuable for all learners.

Peer-to-Peer-Teaching and Learning

During the Fall 2005 semester, 31 undergraduate students were enrolled in ISP361 and 12 students were enrolled in ISP523L. ISP523L students and ISP361 students met in their project teams during their regularly scheduled class time each week for approximately one hour to work on the curriculum projects collaboratively. Additionally, during the Fall 2005 semester, Doane introduced a Quality Assurance (QA) project team (Doane et al., 2006). This team, composed of 4 undergraduate students from ISP361, was tasked with interacting with all of the other project teams, observing team meetings, offering their input to the teams, and reporting on difficulties and accomplishments observed. The QA team served to share ideas and problem solutions among groups as well as providing an objective assessment of team progress.

Peer evaluation is a reflective practice activity to engage students in thinking about and responding to experiential phenomena. At the end of each class, all students are asked to complete an online peer evaluation of their performance whereby they evaluate and reflect upon their weekly group performance. Additionally, one person from each group evaluates the entire group. Weekly self- and peer- evaluations provide the faculty with an insider's view of the collaborative dynamic of the groups and an opportunity to intervene and/or mediate before tensions and anxiety escalate. This aligns with Parr, Wilson, Godinho, and Longaretti's recommendation for more investment into peer- and self-assessment in peer-teaching environments (2004).

One of the major goals of this professional collaboration between the two university faculty (their graduate and undergraduate students, in-service educators, and K-12 students) is to provide meaningful real world learning experiences designed to stimulate learners' thinking and learning. The instructor's role during this process is transformed from information transmitter to facilitator of knowledge sharing. Problem-based authentic learning partnerships permit K–12 districts to benefit from research-based best practices, while at the same time offering opportunities for graduate and undergraduate students to experience real-life career situations in an educational setting. Parr, Wilson, Godinho, and Longaretti's (2004) recommendations to improve the peer teaching process are equally important for a trans-generational learning model and are outlined briefly below:

- Clear communication of requirements for all participants,
- Clear organization of instructional content and class requirements,
- Effective teaching of collaborative and group skills,
- Time to reflect upon process,
- Peer and self assessment,
- Enhance student ownership and agency, and
- Interact with groups during the planning stages. (p. 200)

In addition we would strongly recommend that similar projects encompass the following:

- Regularly scheduled opportunities for all learning partners to meet face-to-face with fixed meeting dates arranged and agreed upon early in the semester (We use "learning contracts" with specific meeting dates listed that all parties sign during their first face-to-face full-team meeting).
- Encourage the groups to clearly articulate (in hard copy) and agree upon a shared vision of the design and content early in the semester.
- Provide consistent feedback throughout the semester (in person and via email) by university faculty to all learning partners to enhance student, learner, and teacher ownership and agency.
- Be sensitive to emergent group problems and proactively address such issues before they become stumbling blocks for a group's performance.

Learning in Context

Dewey proposed that schools should serve as an apprenticeship for civic life (Nieto, 2005) and recommended that schools develop actual ordinary life experiences into learning possibilities for learners: "Education through occupations consequently combines within itself more of the factors conducive to learning than any other method" (Dewey, 1916, p. 309). Dewey (1938) also stated, "Education, in order to accomplish its ends both for the individual learner and for society, must be based upon experience – which is always the actual life-experience of some individual" (p. 89). Thus, learning must be promoted in context, "not just through workshops but also through daily interactions in cultures designed for job-embedded learning" (Fullan, 2005, p. 69). If we are to change how we educate, there must be a concerted effort to build collaborative learning partnerships that extend from pre-K-12 to institutions of higher education. Although humans, by definition, are social beings, people will not "voluntarily" share knowledge "unless the dynamics of change favor exchange…put another way, turning information into knowledge is a social process, and for that you need to establish and build good relationships" (Fullan, 2001, p. 6).

The importance and value of a collaborative learning approach, particularly based on real world situations or problems, is well documented. Johnson and Johnson (1986) report that cooperative teams achieve at higher levels of thought and retain information longer than students who work individually. There is evidence that shared learning helps students become critical thinkers (Gokhale, 1995; Totten, Sills, Digby, & Russ, 1991). Vygotsky (1978) states that students work at higher cognitive levels when working collaboratively than when working individually, and Springer, Stanne, and Donovan (1999) observe that students who work in small groups perform better academically. Learning opportunities for students to develop collaborative skills that are embedded within graduate and undergraduate coursework provide a unique and important area to critically examine the effects of collaboration in an academic environment.

According to Huffman (2003), "Incorporating all dimensions of a professional community – shared leadership, shared vision, collective learning, supportive conditions, and shared personal practice – is important for student success and school improvement" (p. 32). This experiential trans-generational learning model enables teachers to be learners and students to be teachers. It enables learners "to develop both self-awareness and greater sensitivity to the transformational possibilities of [their] future organization (McGivern & Thompson, 2004, p. 145).

We argue that educators need to establish and sustain learning partnerships (Cronin, 2004) early in their professional careers. Understanding how to evaluate meaningful collaborative activities and assess their impact on educators and learners is an important area to study in order to create collaborative learning opportunities that promote cross-generational, educationally meaningful teamwork. We will be examining archival data collected during the Fall 2005 semester to further our understanding of collaborative learning and its implications for stakeholders. In the process, we hope to blur the boundaries between teaching and learning, and between teaching and research. By working together with in-service educators and their students as learning partners, university students and faculty, we hope to gain a better understanding of the social and professional reality of the K-12 learning environment.

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Acknowledgements

The Psychological Robot: A New Tool for Learning

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The growing fascination and popularity of robotics and artificial intelligence (AI) is observed culturally from Hollywood movies to popular magazines, comic books, and even novels. This article describes an innovative assignment created for a General Psychology course at a small pharmacy college. This assignment is based on current robotic ideology calling for the creation of a PowerPoint robot of the humanoid type that embodies the basic theories and concepts contained in a standard psychological description of a human being. Never before attempted in this course, the Robot Project is an original and innovative integration of interactive group learning, multimedia technology, and creativity used to enhance the learning of basic psychological principles.

The concept of creating an artificial life-form for the purpose of human companionship is reflected in ancient mythology, medieval literature, as well as visual art created in the 14th century, specifically Leonardo da Vinci's design of a humanoid known as Leonardo's Robot (Libin & Libin, 2004). Today, humanoid robots are common facets of popular culture as seen in magazines, comic books, cartoons, as well as science fiction movies and novels where robots are both heroes and villains (Asada, MacDorman, Ishiguro, & Kuniyoshi, 2001).

With the growing popularity of robots and artificial intelligence (AI), the creation of robots incorporating some psychological concepts and principles has become increasingly prevalent within higher education curricula. A review of the robotics literature suggests that programs in engineering, computer science, and cognitive sciences have historically dominated the research in and use of these tools. However, as technology advances and the field of robotics has increasingly sought to provide automats with the capacity to learn, develop, and evolve through interaction with their environments, the field of robotics is turning to the social sciences, especially psychology, to enhance the human-like qualities of these artificial life-forms (Dautenhahn & Billard, 1999; Libin & Libin, 2004; Sharkey & Ziemke, 1998). This development has expanded the number of universities and colleges that have begun integrating robotics into various interdisciplinary programs, but few have employed the creation of humanoid beings to improve the teaching of an introductory psychology course.

Current interdisciplinary integration of robotics technology within most college and university curricula is limited to LEGO-based classroom activities and LEGO design and programming tools (LEGO). This method of physically building a robot from a kit is used in education and psychology curricula for studying specific behaviors, adaptation, and experimental methods.

Perhaps the most well-documented psychology course using LEGO robotics technology is a course offered at Indiana University. This course has incorporated the Lego Mindstorm robotics kit as a method of teaching the mechanisms that underlie basic human behaviors (Instructional Support Services, 2001). More specifically, these robot creations demonstrate programmed behaviors that analogically represent human brain function such as seeking and avoiding obstacles, habit formation, planning, and environmental interaction. Another institution that uses robotic technology is Rensselaer Polytechnic Institute (RPI). RPI offers the "Minds and Machines" program in the undergraduate cognitive science curricula which integrates robotics into numerous interdisciplinary studies, including psychology, philosophy, and computer science (Rensselaer Polytechnic Institute, 2007). Literature on the current uses of robotics in higher education suggests these projects lead to intellectual growth (Instructional Support Services, 2001).

Despite the apparent educational value of these robotics courses, few universities and colleges have incorporated such creative approaches in their General Psychology curricula. The goal of our Robot Project assignment was to allow students to engage in a cooperative team-oriented task that required the creation of a fictional, yet believable, humanoid robot that would replicate a psychologically rich human being. Unlike the mechanical robots emphasized in cross-disciplinary classroom projects using LEGO and other technologically based tools, our project takes a different approach to learning. Rather than focusing on the mechanical aspect of robotic technology to teach specific developmental or behavioral concepts, this project encourages the incorporation of all theory addressed in an introductory psychology course and requires students to think critically, creatively, subjectively, and analytically about what it means theoretically and conceptually to be a human being. As students learn about basic psychological principles at an abstract level and reflect on these concepts, students may also enrich their ability to apply these fundamental theoretical concepts within the discipline of psychology.

Because literature on higher education suggests that creativity is central to both teaching and learning, (Bleakley, 2004; Donnelly, 2004) we encouraged our students to be both creative and innovative in their robot

designs. We did not simply want them to produce a conceptual replication but to develop a new, original "life form." In addition, we believed that making this project a collaborative group effort would be of significant professional value given the trend in many career markets to rely on group interaction and team work wherein members embrace diverse skills and knowledge (Paulus & Nijstad, 2003).

Research on creativity emphasizes the beneficial effects of groups in generating new ideas (Cropley, 2006; Paulus & Nijstad, 2003). It is believed that group brainstorming is a successful tool for stimulating the sharing of ideas, as well as igniting creative energy (Paulus & Nijstad, 2003). In addition, group work places the responsibility of learning onto the individuals and enhances the quality of learning (Mills & Woodall, 2004). As a result, the application of group work has gained acceptance as a learning tool within the field of education (Mills & Woodall, 2004). Therefore, this project is aimed at expanding student experiences of collaborative and active learning, time management, critical thinking, creative brainstorming, and technological skills.

To ensure educational value, we designed this assignment according to Albany College of Pharmacy's Ability-Based Outcomes for general education courses found in the *College Catalog* (2005-2006), as well as two specific course objectives. The ability-based outcomes include (a) thinking abilities involving the collection, comprehension, analysis, and synthesis of information; (b) social awareness, social responsibility, and citizenship abilities demonstrated by the recognition, tolerance, and appreciation of cultural diversity within the working groups; (c) self-learning abilities and habits measured by the design and implementation of personal research and interpretation of research data; and (d) social interaction abilities involved in effective interaction with individuals within group situations, workplace, and professional organizations. The two course objectives specified for the robot assignment were (a) by the end of this general psychology course, students should be able to recognize the value of psychology in understanding and suggesting solutions for real-world problems, and (b)by the end of this course, students will be able to apply psychological concepts, theories, and methods by using them to describe and explain mental processes and behaviors.

Prior to discussing the methodology of this assignment, it is important to recognize the unique student population at Albany College of Pharmacy (ACP). The college is accredited by the Accreditation Council on Pharmaceutical Education and by the Commission on Higher Education of the Middle States Association of Colleges and Schools. The core curriculum is deeply embedded in the natural sciences.

Pharmacology is the primary field of study offered at ACP. The students are not psychology majors and possess learning style preferences toward individuation, tactile learning, and an appreciation for set expectations in regards to course work and evaluation methodology. The Doctor of Pharmacy degree program is competitive as are the students when it comes to academic achievement. We designed this innovative robot assignment with these student characteristics in mind.

One hundred and thirty-two undergraduate pharmacy students from Albany College of Pharmacy participated in the 2006 spring semester course. The students enrolled in the course were in the second-year of the six year curriculum program leading to the Doctor of Pharmacy (Pharm D.) degree. The students used course lecture notes, textbook concepts and vocabulary, online lab assignments, workshop (weekly 50-min lab sections) materials, and their imaginations to create their psychological robots.

Each student received a copy of a Robot Construction Project description and a list of the Project Milestones at the beginning of the semester. This would be the first time in the history of the course that a nontraditional assignment of any sort would count as a major portion of the overall course requirements (265 out of 1000 points). The robot had to incorporate the fundamental psychological findings, concepts, and theories relevant to human beings. Although not a physical or freestanding robot of human appearance, the robots were to be created on paper in the style of a fictional though psychologically rich biography, as well as a creative PowerPoint presentation of a day or two in the life of the robots sliced from the written biography. The bulk of the raw material could be found in the course text (Gazzaniga & Heatherton, 2005) and the course lectures. The robot should not simply be a humanlike embodiment of the most commonly known theories concerning the nature and behavior of human beings. The robot should clearly suggest a new form of human-like being, indeed, a new species of being. But this robot creation could not be so different from ordinary human beings that it/she/he would fail to help the students to learn and understand the relevance of psychology to describing and explaining human beings such as themselves.

The students were told that it might be helpful in getting started on this construction project to think of it as simply a fictionalized biography rooted in psychological findings and theories. They were also told that it might be helpful to search the Internet using keywords and phrases such as "robots and psychology," "artificial intelligence," "androids," "humanoids," "literature and robots," "films and robots," etc. The students who had never created a virtual animated creature on the computer and were uncertain and nervous about this unique assignment were comforted by the knowledge that the instructors and technical tutors would be available to help in the creative and technological areas of the assignment.

The introduction of the Robot Project assignment also included a presentation of a very simple example of a PowerPoint humanoid with a fictionalized day in her life

(Little Red Riding Hood). The introduction ended with the presentation of a Schedule of Construction Milestones that specified definite project tasks to be completed by set dates throughout the semester. Each milestone would be evaluated separately and the final grade for the robot assignment would be based on all of the milestone grades. There would be one grade shared by all members of the robot construction team.

Throughout the semester, the Robot Project description and Schedule of Milestones were available for viewing via an electronic version of the syllabus. In addition to bi-weekly lectures, the members of the course attended psychology workshops which met once a week under the supervision of one of the two instructors. Each workshop session had between 18 and 25 students in attendance. Using a method similar to systematic sampling, 23 small groups were formed. Each group contained 5 to 6 individual members. In these groups the students completed the assigned (traditional) workshop exercises, as well as the Robot Construction Project. The purpose of this group breakdown was to emphasize collaboration as a tool for learning.

To motivate students to think creatively about their humanoid creations, the instructors presented clips throughout the semester from popular and infamous movies with robots as characters including the films *A.I.* and *I, Robot.* Other tools enabling students to excel in this assignment included access to a Robot Consultation Group made up of student peers with advanced computer and animation skills and tutors in the College Writing Center designated to assist psychology students in the writing of the robot biography. The Director of the Writing Program, who has extensive experience in multimedia communication, was also available to help students learn creative, yet simple, ways to present their robots by PowerPoint.

As described previously, the milestones broke the project down into incremental parts that were submitted throughout the semester. The milestones included a first draft of the overall profile of the robot and its story; the pencil and paper sketch of the eventual computerized appearance of the robot; the individual chapters of the written biography; the outline of the PowerPoint presentation of the "The Day in the Life of the Robot"; the final draft of the biography; the actual PowerPoint presentation; and the submission of the CD-Rom copy of the PowerPoint presentation. The milestones encouraged the use of time management skills and helped the instructors to track group progress on the robot.

Prior to the scheduled date of the final milestone, a self-assessment for a PowerPoint presentation handout was distributed to each group to assist them in their final editing. Final drafts were submitted by all 23 groups on the first day of the scheduled presentations. The reason for the simultaneous submission was to ensure that all groups were allotted the same amount of time to complete the task. Final draft submissions included one paper copy of the biography component, a printout of the PowerPoint presentation, and one copy of the PowerPoint animated presentation submitted via a CD-Rom.

Group presentations were scheduled two per workshop session over the last two weeks of the semester. Following a required outline of the multimedia presentation, each of the 23 small robot construction groups exhibited their completed PowerPoint within a 15 to 25 min block. The PowerPoint representation of "A Day in the Life of a Robot" was preceded by a brief introduction whereby all group members had the opportunity to help introduce a portion of their creation. This introduction amounted to a summary of the overall psychobiographical description of a humanoid robot and served as a stage for the PowerPoint representation (picture and sound) of the robot's environment and experiences.

A question and answer session followed all presentations. Both fellow students and instructors asked questions about the creative process leading to the completion of the humanoid. In addition, the instructors asked each group about the most difficult aspects of building a paper and PowerPoint robot that ultimately appears much like a genuine psychological human being.

The Robot Construction Project had a weighted value equal to one quarter of the course grade (265/1000 points). Final evaluation and grading was based on the completed milestones, creativity in connection with the robot itself and the biography, the integration of all relevant course material, and both the technical and creative aspects of the multimedia presentation.   The final products of the robot construction groups were of a higher quality than the instructors expected at the beginning of the semester. Completed milestones throughout the semester led the instructors to believe the assignment was gradually receiving more and more serious attention. The work appeared to be driven by the students' learning styles (tactile, task-oriented), cultural backgrounds (computer technology, video games, cinematography, science fiction), and competitiveness. The students' requests for assistance from the instructors as well as consultations with tutors in the Writing Center and Peer Consultants indicated that the assignment was being managed well and that favorable results were to be expected.

Among the most fascinating and believable robots created was LASI (Learning Analytic Synthetic Intelligence) whose monologues on the relationship of humans and humanoids were so captivating the instructors forgot they were responsible for assessing the students' work. The instructors were so taken by the humanoid's trials they experienced real feelings of sympathy for him (it). The PowerPoint slides along

with slices of the robot's monologue presented in Appendix A represent more than half of the entire presentation.

Additional examples of the varied types of humanoids created include a nanny who is severely jealous, a member of a unique extended family, a prostitute, a missionary teacher in Africa, a personal servant, a pharmacist (of course), a subject of a behavioral modification experiment, a practice child for future parents, an emergency room physician, a romantic companion for hire, a human relations counselor, and a globe-trotting environmental engineer.

The Robot Construction Project appears to have been an engaging and rewarding assignment in an introductory psychology course in the spring of 2006. The idea of such an assignment did not originate in any specific body of pedagogical literature but in our awareness of the obvious fascination with robots and technology in general among college-age moviegoers and science fiction readers. This cultural awareness, as well as our knowledge and appreciation of our students' learning styles, and appetite for the positive response potential in innovative and interactive learning, greatly influenced the use of this humanoid robot assignment.

Within some of the Robot Construction groups, the lack of willingness of some members to engage in the collaborative work process may have had an inhibitory affect on the outcome of the project. Because of the instructors' warnings that failure to give evidence of a commitment to collaborative effort would be reflected in the final evaluations, most groups worked out their resistance to the required collaborative effort on their own. This occurrence supports the notion of effective problem solving in the group setting (Cropley, 2006; Paulus & Nijstad, 2003; Waller, Conte, Gibson, & Carpenter, 2001). Conversely, this lack of enthusiasm for collaborative work is also reflective of Copley (2006) and Donnelly's (2004) research on inhibitory effects and the suggestion of diminished individual efforts. Nevertheless, the resourcefulness, general collaborative effort, creativity, and the overall high performance on exams and quizzes by the students, strongly suggests to one instructor who has been teaching this course for the past seven years that a more stimulating and enduring learning experience took place in 2006 than in previous years.

It has been during the preparation of this article that we have become aware of the general absence of any attention to robotics and the possibilities of its application to the enhancement of learning within the field of psychology education. We did find evidence of the use of machine-like robots with plastic and metal materials for the purpose of studying behavior, adaptation, and experimental methods, but we found no literature that would have inspired us to ask our students to build a humanoid with a life to live with other such robots and human beings (Cardaci et al., 1999).

Although there were students who expressed displeasure with the assignment, there appears to have been general satisfaction with the Robot Project. A more in-depth statistical determination of just how effective the Robot Project may be in terms of its contribution to the learning of general psychology principles will have to wait upon the assessment of learning in future editions of the course. Three of the most critical questions we hope to answer upon further assessment are (a) Does an interactive, group and hands-on assignment, calling for creativity in conceptualization and production, enhance the learning of psychological principles in a general psychology course?, (b) And if innovative projects enhance learning, by which method is this learning assessed most reliably?, and (c) Does the creation of a human-like robot incorporating the basic theories and principles of human psychology and their imagined extension through the construction of a fictionalized biography and PowerPoint representation qualify as such a pedagogical method?

The Robot Project challenges students with aptitude for both creative/descriptive writing (biographical) and applied computer technology (PowerPoint cartooning and animation). Students who are academically competitive with a preference for innovative learning opportunities are also challenged. The observed success of this 2006 assignment strongly suggests that this is a learning tool worth replicating in future offerings of the general psychology course. In addition, the skills of collaborative and active learning, time management, critical thinking, creative brainstorming, and use of classroom technology may enhance effective student learning in future coursework.

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Notes

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Appendix A
Example PowerPoint Slides and Monologue

I am here to introduce myself, and to discuss my own biography. I wish to convince you all that humanity exceeds physicality.
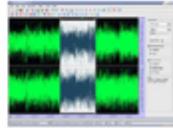
To begin, I exist. My existence is not in question; I am here. I am tangible and I am real. However, if I exist as a person and as an identity presents a different question.

However, I do vary from people; I am neither male nor female, I am androgynous.

Development

- Jean Piaget
  - Object permanence
  - Accommodation

Who's that good lookin' guy?

My development proved to be similar to that of a child. I quickly began to recognize such things as object permanence, and accommodation.

Morality

I HAVE MORALS TOO!

Morals were more difficult to develop since many individuals had biases against me due to my robotic nature. Also, my androgynous nature formed a major gender identity crisis for me , because I am alone in this physicality.   Despite this, I have naturally progressed in my social and mental development

I begin my day by disconnecting myself from my charger, much as humans wake up…
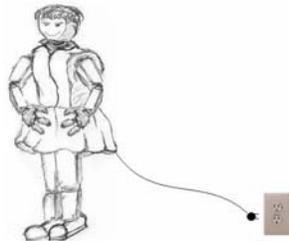
I begin my day by disconnecting myself from my charger, much as humans wake up. Luckily I am never groggy. I spend my mornings working on my stamp collection. I find it soothing.

On weekends, I attend a series of classes on how to dance because I like to excersize my physical capabilities...

I have many of the superior qualities that eugenics seeks...but I fear the rejection I would receive due to my artificial status

Rejection
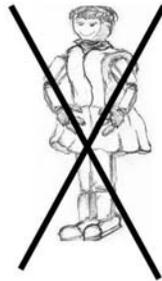
Moral Dilemmas

Eugenics interests me because I am not physically human, and have many of the superior qualities that Eugenicists seek; and yet I am at times shunned and made an outcast from society. I fear the rejection that I experience due to my artificial status. I may be a scientific creation of great wonder, but I am thought of as inferior.

Humans believe I am inferior

I am more than automation
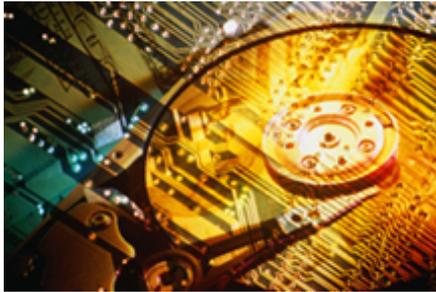
By this point in time, I have no doubt you are curious as to how I function. I have shared with you a little bit of what I can do, but not how I can do it. I am not an automaton. My processing center (a brain) is designed to hold a digital neural net. Much as humans use schemas, my education algorithms function in a similar way.

Identity

I have been given a name, a birth date, and a variety of other particular information. What all of these things gave me you will recognize as an ego, and, therefore, an ego border. With this in place, I was able to begin using and manipulating my neural net and education algorithms. Without an identity, I had no frame of reference.

Biases in existence
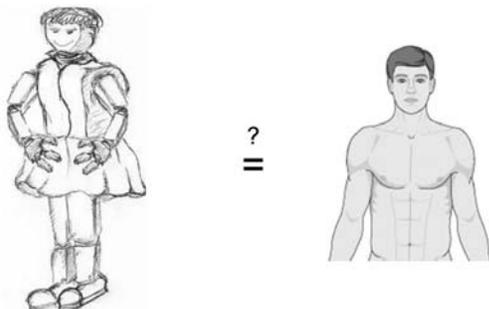
I have creativity that has been programmed into me, with which I create reflexively, or intuitively. And yet, since this is not considered true imagination, there is still a chasm between myself and humans. Does this one difference make me less than human (or humanlike)?

ROBOTIC MULTIPLICATION
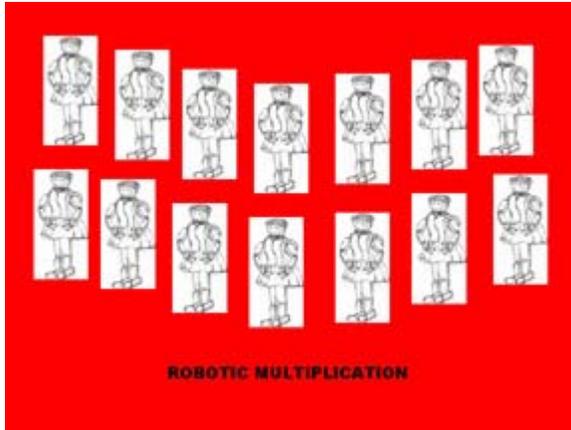
While I may be just one, in the coming future there will be a significant increase in those who are like me. If they are not treated as humans, and as equals, albeit different, then history will repeat itself. Those who will follow me, and who are like me and much more, may be forced to look at themselves as inferior and they will revolt.

This is not a message of fear, of offense, or of warning; it is merely the logical conclusion if people maintain their bias, and their ignorance. I have no hatred, no anger, no intentions of violence; the same cannot be said for those others that will be created.

Advocacy as a Problem-Based Learning (PBL) Teaching Strategy

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Designing a course requires that the teacher pays attention to both the context and the content of the course, implementing an appropriate teaching strategy to keep students interested while they learn. Advocacy provides students with opportunities to apply what they know to a compelling human need, sharpens student engagement, and situates content to be learned within a human context. Problem-based learning (PBL) provides a method to structure tasks that are engaging and relevant to students, encouraging increased learning and commitment to the task. Two cases using advocacy as a teaching strategy and learning outcome and PBL as a guide for task structure are described in terms of course design, student learning, and revisions. Successes and challenges are discussed, and guidelines for implementing advocacy as a teaching strategy are suggested in terms of course design, implementation, and revision.

Teaching Decisions

Designing a course requires clear decisions about teaching strategies and approaches early in the process. Teaching decisions center around what is to be learned, student differences, and how one assists learners to learn and how one determines whether they have learned (Shambaugh & Magliaro, 2007). Issues of student attention and engagement are addressed within these teaching decisions, rather than as separate issues. Many strategies are available that address these factors, and choices should be made based on the content, student needs, and context. One teaching strategy is to give students opportunities to apply what they have learned from an academic program to develop true understanding (Wiggins & McTighe, 2006). Problem-based learning (PBL), a common feature in medical schools, is a teaching strategy that provides these opportunities. PBL presents students with significant, authentic situations to "solve" or address, while the instructor acts as a subject matter expert, task designer, and formative evaluator (Aspy, Aspy, & Quimby, 1993). The terms problem-based learning and project-based learning are sometimes interchangeably used. Both are similar involving students in authentic tasks. The learning focus for problem-based learning is the problem, inquiry is the approach, and the end result is summative, group findings, for example. The learning focus for project-based learning, typically associated with K-12 settings, is a product, a production process characterizes the approach, and the outcome is an artifact (Esch, 1998).

Research conducted on the effectiveness of PBL in higher education has reported increases in student motivation as well as improved problem-solving and higher-order thinking skills (Barrows, 1996). Those using PBL in medical education (Albanese & Mitchell, 1993; Vernon & Blake, 1993) reported that students in PBL programs performed as well as those in programs using conventional tests of knowledge. However, as with other teaching innovations, PBL is implemented in different contexts in different curricula, and results are difficult to compare. The nature of the learning outcomes involved in problem solving is a critical factor. Sugrue (1995) modeled problem solving learning in terms of (a) concept understanding, (b) concepts-principles understanding, and (c) applying concepts-principles. In a meta-analysis of 40 studies (Gijbels, Dochy, Van den Bossche, & Segers, 2005), PBL had the most positive effects when assessment looked at the second aspect of problem solving: the understanding of principles that linked concepts. Their overall conclusion was that the method and context of assessment is an important influence in studying PBL effectiveness.

The choice of PBL is not made based on the features of the teaching approach alone but rather on the nature of the content to be learned, where students are developmentally (cognitively, socially) and where they are within a curriculum, which typically sequences courses in terms of knowledge and skills (Bransford, Brown, & Cocking, 2000). The core characteristics of PBL (Barrows, 1996) provide a teacher with a checklist of features to be designed into courses. These characteristics include the following:

1. Learning is student-centered.
2. Learning occurs in small groups.
3. A teacher is presented as a facilitator or guide.
4. Authentic problems are presented at the beginning of the course.
5. The problems encountered are used as tools to achieve the required knowledge and problem-solving skills necessary to solve the problem.
6. New information is acquired through self-directed learning.
7. Learning is achieved by analyzing and solving representative problems.

The above characteristics can be helpful in making teaching decisions that support the nature of the content and the range of students. Many programs include a class in the final term that requires students to produce evidence of their mastery of a particular topic relative to their major area of study. This class is called a capstone class, and the evidence of mastery may take many forms. In a capstone course an instructor could organize students into work groups based on several clients who have contracted with the instructor to provide a design problem. The instructor will need to invest some time in selecting clients prior to the semester start-up. For an introductory course the selection of the problem is crucial, a problem which motivates students, provides an authentic problem, and is doable. Task structure may need to be simplified and the problem sufficiently narrowed.

Advocacy as a Teaching Strategy

Academic programs today are incorporating more community service into their student offerings to help students realize their responsibilities to others, primarily in the form of service learning. Service learning projects offer students real-world, hands-on opportunities not available in the typical classroom structure and can promote an attitude of understanding and advocacy for individuals within their locale. Research conducted on these activities tells us that student involvement in the community, and the opportunities to help others within this service learning context, increase student engagement and commitment to individuals and groups outside of their typical sphere of contact (Taylor & Pancer, 2007; Shumer, 2005). As student diversity in university communities grows, so does the interest in expanding the groups helped by this community service (DiMaria, 2006). With the apparent success of service learning projects that involve the students in the community, more programs are striving to move this community involvement of students to the next level. Both education and interior design programs have shown great interest in trying to integrate some type of empowerment, advocacy, and concern for individuals and groups outside of the individual student (Hammett, 2006; Panao, 2006). Activities are beginning to go beyond immediate service learning projects to try to promote a long-term commitment to advocacy for different causes in their students. This academic move reflects the interests shown within the professional world to advocate for disadvantaged populations (Pable, 2006; Lakin & Mahoney, 2006).

Advocacy is an activity in which one or more individuals actively work toward the betterment of people, living things, and the physical world. Advocacy becomes a teaching strategy when it is used to directly support student learning outcomes. The following challenges were posed to students in two courses that will be described below:

- Introductory course: develop a proposal showing how technological innovations will improve the life of someone with a serious health condition.
- Capstone course: design an interior space to promote global peace.

These are compelling tasks that will attract and hold the attention of students. Advocacy sharpens the focus of student activity over the length of a course because a goal is focused on people students care about. In this way, students directly experience how course content can be used to help people. We characterize a compelling task as having the following three elements: relevancy, challenge, and uniqueness.

Compelling tasks must be relevant. The more one knows about students the more relevant teaching decisions will be. Presentations, activities, examples, and learning tasks will connect the content with the context of students. Rather than searching for ways to maintain student attention, which can be time-consuming, look for compelling tasks that give students meaningful opportunities to apply what they learn and keep them engaged over the entire course.

Compelling tasks must be of sufficient challenge for individuals or groups. Instructors tend to edit, abridge, or ignore interesting options as too difficult or too complex for a semester course. While the choice of learning tasks needs to be made in light of student knowledge and ability, as well as contextual realities of the semester and the instructor's workload, for student and instructor growth to occur sufficient challenge must be in place. Tasks must be structured with clear explanations, clear and appropriate assessment, and responsive feedback.

A third feature of compelling tasks is uniqueness. Students react to "same old, same old" in predictable ways, and a novel task initially interests students but fails to hold their attention and motivation. As students need practice, examples, and time to learn, activities need to be relevant, challenging, and different. A challenge here is to balance structure and variety, both of which students need.

One of the course's learning outcomes may include advocacy. Thus, advocacy becomes both a teaching strategy and a learning outcome. Outcomes could include learning more about a person, a people, or an environment; developing an affective stance, such as internalizing some value and acting upon this value; or improving the condition of the world in some way.

<div style="text-align:center">Two Cases Using Advocacy</div>

We summarize two instances where advocacy was used as both a teaching strategy and as a learning outcome. Each case is described individually by the instructor teaching the course. The first case is an introductory graduate course in a technology education program. The second case is a capstone course in an undergraduate interior design program. We obtained Institutional Review Board (IRB) approval in both cases, required by US universities to assure humane and ethical treatment in the study of research subjects.

Introductory Graduate Course: "Saving A Life"

Content. TE730: Introduction to Technology is a first course in a master's and a doctoral program in Technology Education, an academic program that develops in students an awareness of the mutual influence of technology and human society. Students receive an introduction to technological themes (e.g., technological optimism, technological "fix," positive-negative consequences, unforeseen impacts), the varying perspectives on technology and culture, and how technology education is addressed in public school, corporate, and institutional settings.

Students. In earlier course deliveries using a readings/writing approach, I[1] found that students were not fully engaged in the readings until the topics were related to their immediate situations, particularly those that involved bio-engineering issues, cloning, and stem cell use.

Teaching. A traditional approach to teaching this introductory course included readings, discussion, and papers. For three years a book of readings (Teich, 2000) was used, and students developed a system design of a technological product or process. Across another three years a media strategy provided students with a different way to explore technological themes. In addition to short readings (Rhodes, 1999), students summarized in a paper and a presentation how authors and playwrights depicted technological themes in books and movies. Students developed their own media representations of one or more technological themes.

Based on students' laid-back reactions to the use of readings and my observations that students did not engage in the content unless it was connected to their world, I decided to develop a compelling problem for them to solve in an effort to have them "experience" technological themes. The choice of using technology to improve, even save a life, was prompted by the reading of *His Brother's Keeper* (Weiner, 2004), in which a man devoted an entire year to come up with a cure for his brother who was diagnosed with Amyotrophic Lateral Sclerosis (ALS, Lou Gehrig's Disease). The question that framed the inquiry for students and that provided the advocacy context to improve a life was "What is technological progress?" To help students understand this question, a text that focused primarily on the nuclear and electric power industries (Pool, 1997) gave students practice in three tasks they would perform later in the course: developing a conceptual map of one or more technological themes, documenting an innovation history of a system or process, and profiling one or more inventors, scientists, or officials. These activities were needed to give students tools to understand the complexity of disease and treatment, and the consequences of technological innovation, and that newcomers need these tools in order to better assist someone with a serious medical condition.

At week five of a 15-week semester course, 13 students submitted and shared profiles of anonymous individuals they chose to advocate for, each with a serious health condition. Students wrote up an Advocate Research Plan, a baseline of what was known on the condition. Students developed a Critical Innovation Map, a visual representation of their conceptual understanding of how one or more technological innovations addressed the health condition. They also summarized case studies describing similar conditions and treatment and how technical, social, ethical, or legal issues played a role. Finally, students wrote an Advocate Proposal, which described treatment and recommendations, and addressed the technical and social impediments such a proposal might encounter. All work was submitted to an online Web board, which enabled everyone to review, critique, and provide suggestions.

Learning. Students experienced the most challenge with the Critical Innovation Map, which visually represented technological themes using metaphors. Two examples included the use of a light bulb and oscillating metal balls to represent the various issues and give-and-take challenges Edison faced in implementing his innovations. Although I had demonstrated how to do this several weeks earlier, conceptually representing innovations using pictures and metaphors proved challenging. "I learned how to think differently," reported one student. Their ability to apply conceptual metaphors was limited to explaining existing treatment approaches rather than explore new approaches.

The health conditions studied by the students included Graves Disease, hypothyroidism, sinusites, keratoconus, migraines, adult ADHD, Type 2 diabetes,

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[1] The "I" in this case refers to the second author who was the instructor for this course.

debilitating back pain, nicotine addiction, clinical depression, and Type I HIV. Advocate Proposal documents included a Profile & Needs Summary, Research Plan, Case Studies, and Recommendations. These tasks were needed to support students' systematic study of the medical conditions of their identified individual. In their proposals students were unable to provide innovative solution options. They did, however, survey the literature and described treatment options. Although their proposals did not report "saving someone's life," several students acknowledged learning much about the health condition as well as learning more about the individual and the very different life that person lives. One student commented that "in my research I was able to discover one simple factor that could change my aunt's life as well as others." Another student reported that the research helped in multiple ways: namely, to "dispel previously held myths, offer advice for friends... and direct them towards professionals, and gave me insight into my son." The notion of progress was defined by one student, not as technical innovation, but "how to effect changes in the medical community because that is the key to progress."

Most students tend to be technological optimists, but in this course, the students found that optimism was insufficient alone to save someone's life. Proposing action steps and seeing the conflicts between the medical and pharmaceutical communities and governmental units severely tested this optimism. Students reported that they learned more about each health condition than they had known before. Some students changed their view of a learning activity from "not being an assignment anymore... but a personal commitment." Several students reported reconsidering the importance of one person's efforts, that "there is always a glimmer of hope in an impossible situation," and that "starting from a simple desire of helping widened my knowledge in certain areas that I never expected to learn." One student viewed the task as "examining the topic from an outsider's perspective, to see things as they are not usually seen, and to ask questions never asked before." The overarching concept of advocacy as an activity to improve people's lives is a guiding component of this task. As indicated in their comments, students discovered that they were capable of using technology to explore unfamiliar contexts and identify elements to help others.

Reflection and revisions. Evaluation of the course centered around the course objectives, which were to (a) develop an awareness of the influence of technology in human culture, (b) develop critical reading, discussion, research, and oral and written communication skills, (c) research, discuss, interpret, and document views of technology through different perspectives, and (d) apply this awareness and skills to

a real human problem. These were assessed through nine learning tasks and included technological themes list, innovation history, advocate profile, research plan, innovation map, case studies summaries, advocate proposal document, a presentation, and course reflection. I also used the Barrows (1996) PBL features list provided earlier as my own self-assessment to double-check on my use of PBL as a teaching strategy. The PBL characteristic that new information is acquired through self-directed learning was mediated by the fact that the activity was an academic task and students only went so far as they believed was necessary to complete the task.

What I learned from using advocacy as a teaching strategy can be summarized as follows:

- Advocacy can be used in an introductory course to orient and engage students with content.
- Advocacy provided a deeper understanding of students than previous course tasks.
- Advocacy shifted the view of a task from "just an assignment" to a "personal commitment."
- Advocacy was regarded initially as a "risky" approach but ultimately yielded steady student engagement. Unforeseen learning (e.g., personal agency, views of progress) may occur.
- High degrees of student involvement require careful attention to feedback that is specific, personal, iterative, and promotes additional thought.

The following changes need to be implemented in the use of advocacy as a teaching strategy in this introductory course:

- Conceptual problem solving requires another course in educational psychology for students to acquire problem solving knowledge.
- Periodically return to the conceptual foundations (e.g., textbook) to reinforce knowledge outcomes.
- Provide examples of previous student work.
- If advocacy is also a learning outcome, think through how this learning is to be accomplished by students. A rubric may be useful to specify categories of performance and identify a range of performance across each category.

Capstone Undergraduate Course: "Promoting Peace"

Content. ID 455: Contract Interior Design 2 provides students with the final design studio in their

undergraduate interior design course sequence. The class is structured as a capstone course, as explained earlier, and students are required to demonstrate their competency in using the design process to create appropriate interior spaces. The final studio is primarily focused on commercial design (e.g. offices, restaurants, medical facilities, etc.), and students are expected to compile all of their knowledge to represent their professional abilities in research, design, and presentation.

Students. The seniors have completed all previous coursework and are in their final semester preparing for entry into the work force. During the semester most students are not only completing coursework and studio projects, they are also finalizing their portfolio and entering into the job search in earnest. In addition, they have hit the "senior slump" and are trying to enjoy the last of their college days before the end of their final semester. The varied areas of focus in this semester demand that project work be engaging, interesting, and relevant to keep them connected through the 15 weeks.

Teaching. Task requirements for this course have centered around project work and the application of knowledge and skills acquired throughout students' previous years of design school. Previous project approaches have typically been instructor-driven, but they have elicited lower levels of commitment than desired in this final design studio. A new approach freed the students to choose the direction of their design. My[2] goal for this change was to give students a chance to create a project of particular personal interest that would create a greater investment and motivation within the student to perform. All projects in the professional arena have some parameters, so the assignment I provided was to "design an interior space that promotes global peace." Most of the students in this class had participated in our program's mandatory Study Abroad in their 3rd year and had spent 6-15 weeks studying in an international setting. This experience provided a basis for the global component and integrated their heightened understanding of American citizens in the larger context of the world.

Two of my primary goals were to use advocacy for peace as a teaching strategy and use evidence-based (or research-based) design as the foundation. I wanted the students to learn that design is a pro-active methodology, and that they can use their professional skills to become advocates for social and personal issues important to them. This advocacy, in turn, can lead to the betterment of people and the physical world. With freedom of choice, however, comes more responsibility; this project demanded more time and effort from the students to generate information typically provided by the instructor. At the beginning

of the semester, several weeks of discussion and research were undertaken before they began their designs. The discussions helped them see the task from many different student viewpoints. In-class talks showed students that views on peace were wide-ranging and that ideas about advocacy regarding the topic were not universal. Research during the first weeks gave them a foundation for design thinking and helped them understand the assignment in a context that reached beyond the classroom.

Submissions for this project included article summaries, client descriptions, requirements, designs for the space that addressed the identified requirements, construction drawings, and specifications necessary to complete the project. As with the previous technology course tasks, these products were needed to make specific design decisions. Additionally, students were required to keep a reflection journal on their experiences throughout the semester and submit at the end of the term.

Learning. Learning outcomes for this project were divided into three categories: competency in design, research, and advocacy. Learning in each category was assessed and feedback provided throughout the semester.

Students chose an array of project approaches to address global peace. Eight spaces focused on families and children and included one camp, three after-school programs, two homeless/abuse shelters, and two activity/art centers. Three students chose to design educational centers including a university classroom facility, a museum, and a sustainability center. Other projects included cultural/community centers (2), spiritual or faith-based projects (2), hostels (2), a restaurant (1), and a healthcare facility (1). No two projects were similar, even where the client group appeared to be comparable.

Design competency was assessed using required accreditation standards provided by the Council for Interior Design Accreditation coupled with additional programmatic requirements. Demonstrating competency in design commensurate with the students' positions as graduating seniors was a critical outcome for this project, and appropriate support was provided throughout the semester. Research was assessed based on the students' ability to find and use relevant research topics in the context of their project. Information from no less than 10 articles was required to inform their design decisions and provide a defensible foundation for the design. Assessment of the students' understanding of and commitment to advocacy was done through self-report within their reflection journals. They were to address the following specific questions on a weekly basis to track their advocacy awareness:

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[2] The first author was the instructor for this course.

1. How has my understanding of design as a vehicle for advocacy changed this week?
2. How have my feelings about the designer's responsibility as advocate changed or grown this week?
3. What influenced that change/growth?

I periodically reviewed student journal entries and subsequently engaged students in class-time dialogues based on their narratives.   Student journal entries indicated that a dedicated advocacy grew out of their commitment to the population they chose to design for in their project. Of the nineteen students in the class, each submitted a reflection journal that addressed their growth in advocacy throughout the semester.   No student indicated that they had not expanded their appreciation of the groups they chose to design for. The predominant sentiment shared in the journals (17 of 19) was that they had really become committed to promoting peace for the groups they had chosen, and they had become more empowered to make a difference in people's lives through their designs. The two journals that did not express common sentiments dealt with the required questions in a less than dedicated manner (i.e., they did not finish the assignment as required). For example, one student began researching domestic abuse. She was unfamiliar with the problem beyond typical media exposure, and as she delved into the problem through her research she became more and more committed to helping women and children who are victims of violence. Another student used her experiences abroad to inform her research into the culture of backpackers and their world travel needs. She believed that through understanding other cultures and acceptance of diversity, seeds of peace would be sewn. As she learned more about the "backpacker culture," she advocated for this group as a vehicle to promote global peace. Each student, by focusing on improving the world by promoting global peace, increased his/her awareness about a group that they identified as important.   Through this increased awareness, they became advocates by exploring methods to improve the physical environments which in turn improved people's lives.

In addition to design, research and advocacy, this project provided an opportunity to help students see their profession in a larger context and understand the potential impact they have on the lives of the public. Student comments reflected the success of incorporating advocacy as a learning strategy and outcome:

- "I'm totally convinced that as designers we have a significant role in affecting world peace."

- "We can't create world peace in one day, but we can cause change."
- "We can make change happen! I realize that we can spark change through our designs."

Reflection and Revisions. I learned many things about using advocacy as a teaching strategy during the course of the 15-week project. Below are some of my insights:

- In a senior-level class, advocacy creates a context for learning that helps students explore deeper levels of performance. They go beyond themselves and make more appropriate decisions for a greater cause.
- Advocacy provides a strong motivator for experienced students.
- Research and advocacy are complementary and need to be used together to encourage students to invest both cognitively and emotionally.
- Sharing control with students is critical, and the instructor must provide both guidance and freedom to empower students to work to their fullest potential.
- The instructor must pay close attention to each student and provide relevant, timely feedback for all work submitted.   Feedback should address the relationship between the designer as an advocate and the decisions made.

Based on this teaching experience, the following changes would more fully support the use of advocacy as a teaching strategy:

- Discuss particular advocates and their accomplishments early in the course to "set the stage."
- Provide articles that reflect specific student interests early in the semester may help clarify the relationship between design issues and advocacy responsibilities.
- Include student reflections regarding advocacy in their submissions on a regular basis.
- Include assessment strategies beyond journal entries that evaluate the success of the use of advocacy as a teaching strategy.

Figure 1 summarizes the features of the two courses.

Guidelines

Suggestions for using advocacy as a teaching strategy can be organized by an instructor's thinking

FIGURE 1
Features of Two Courses Using Advocacy

TE730: Introduction to Technology	Course	ID455: Contract Interior Design 2
Technology Education	Program	Interior Design
Graduate, masters, doctoral	Educational Level	Undergraduate
UG ➔ First Course in graduate program	Curriculum Sequence	(Y3) Study Abroad ➔ (Y4) Capstone course
• Advocacy • Technological themes • Research skills • Writing skills • Conceptual problem solving	Learning Outcomes	• Advocacy • Research • Programming • Design • Presentation
	⬆ **Advocacy** *How to experience the content?* ⬇	
"Save someone's life"		"Promote world peace"
Specify an approach to improve the life of a person with a serious health issue	Learning Task	Design an interior space that promotes global peace
11 weeks of 15-weeks	Duration	15-weeks
• Profile & Needs Summary • Research Baseline • Critical Innovation Map • Case Studies • Advocate Proposal • Presentation • Reflection and Feedback • Graduate assistant observations	Subtasks – Assessment	• Client identification – description • Adjacent analysis • Conceptual sketches • Presentation boards • Renderings • Construction documents • Specifications • Budgets • Project Journal • Presentation

before teaching, during teaching, and after teaching, thus providing a developmental cycle to document teaching decisions. Figure 2 summarizes these decisions in terms of general guidelines for the use of advocacy and specific recommendations for introductory course and a capstone course.

Course Design

Teaching decisions can be systematically examined by asking three questions. First, what is to be learned in the course? Second, who are your students and what do students know or not know coming into the course? Third, what teaching options are appropriate? Teaching options include issues of curriculum, sequencing, teaching model/strategies, assessment, and technology. The benefits of advocacy as a teaching strategy are that you provide students with a rich learning task situated in a human context, thus depicting a relevant use for the content.

The next set of design decisions address student activity. The choice of a compelling advocate problem is key: a task that is relevant, sufficiently challenging, and doable given the learning setting and student characteristics. Initially, a case needs to be made to help students understand the potential impact of their project and their responsibility to the public. The problem to be addressed requires breaking a complex task down into subtasks, sequenced along some principle, such as simple skills to complex skills or phases of activity. The affective nature of higher-level thinking is worth taking into account as well, such as moving from listening to valuing to internalizing an attitude (Krathwohl, Bloom, & Masia, 1964). Each subtask requires structure and clear explanations of student performance. The overall assessment plan needs to be clear and explain how each task contributes toward a student grade. Decide to what extent problem-solving activity is joint and/or individual. Design in adequate time for sub-tasks and provide some slack into the schedule to allow for variability and unseen occurrences. Students can easily get caught up in learning about their advocacy subject not leaving enough time to complete the project.

FIGURE 2
Guidelines for Advocacy as a Teaching Strategy

Course Design	Implementation	Course Evaluation
General guidelines:	General guidelines:	General guidelines:
Teaching decisions: learning outcomes, student characteristics, teaching options.	Students still view any learning task as an academic task (e.g., What do we need to do?)	Evaluate against learning outcomes, student characteristics, teaching options.
Benefits of advocacy: provides a rich and challenging task; a human context and rationale for learning course content.	Ongoing balance between academic task expectations and authentic task requirements	Incidental learning may occur; fold into explicit course outcomes?
Student activity: problem choice, task breakdown, task structure and explanation, assessment, group or individual activity.	Share control with students Provide examples from previous teaching, if available.	How might teaching assistance need to change? What changes need to be made in providing feedback to students from instructor, other students?
Teacher activity: text, materials, mini-lectures, presentations, reviews, tutorials, feedback depth and frequency.	Use task to continually learn about students; summarize student performance and share with class Nature of and scope of feedback will need to evolve to fit the complexity of the problem and the range of students.	What changes need to be made to the assessment plan? How does this course contribute to the overall curriculum? Obtain IRB approval if disseminating.
Introductory course:	Introductory course:	Introductory course:
Text may be needed to provide sufficient knowledge Advocacy will motivate most students, but a minority will favor "less work" and prefer knowledge transmission.	Course sequence may require continual referencing of basic knowledge/skills.	How does this course provide a good first experience?
Capstone course:	Capstone course:	Capstone course:
Advocacy provides a means for students to apply what they have learned in a program. Provide thinking time in advance of course or early in course before production begins.	Possibly involve students in the design of rubric (performance criteria and differences in performance). Individual or group meetings may need to be scheduled. Juries of professionals can be used to assess some aspects of student performance.	How does the course provide an appropriate capstone experience? Does the course incorporate sufficient knowledge and skills? How might this course connect with professional goals of students?

A third set of design decisions addresses instructor activity. Task explanations and supporting materials always require time to develop. Provide readings and suggested resources to support student project choice and to get them started. What mini-lectures, presentations, tutorials, or reviews need to be developed? A baseline of presentations may be developed in advance and adjustments made over the semester. An equal amount of feedback and instruction may be necessary in a PBL environment. Feedback mechanisms need to be developed in advance and the time demands of such feedback may need to be adjusted over time.

An introductory course that uses advocacy as a teaching strategy may need a supporting text to provide sufficient background knowledge. A majority of students may react favorably to the challenge of PBL, but some students will prefer lecture and notetaking. Advanced students who have the foundational knowledge and skills tend to see PBL as an opportunity to apply what they have learned and to develop portfolio artifacts or evidence of real-world work. Provide these advanced students with some "thinking" time prior to the beginning of the project, either before the course begins or 1-2 weeks before they are to produce something.

Implementation

Any new teaching approach will require some adjustment across a semester, so it is helpful to build in some slack to the schedule. Adjustments to teaching

and student activity are based on an ongoing assessment of student progress. Judgments of progress will dictate to what extent an instructor intervenes individually or for the class. Summarize individual student performance and share with the class. Providing examples of previous student work helps students to visualize what is expected and that such a task is possible. Teaching using this strategy the first time is more of a challenge, as one does not have past student work to showcase. However, it is possible to show students case studies connecting advocacy, research, and problem-solving.

Innovative tasks, no matter how motivating, will still be viewed by students as academic tasks, meaning they will still ask, "What do we need to do and when is it due?" One has to be aware of task demands and program requirements. Advocacy requires that decisions be made. Students may dwell on studying the problem and avoiding the responsibility that comes with decision-making. Peer review sessions can be used to keep everyone on schedule as well as establishing the social value of sharing and learning from each other. Another possibility for peer review might be have students post work or critiques to an electronic Web board or use Web chats to talk about the work. Individual self-assessment may use a reflection journal, which records topics and questions for students to bring up in class. The journal also provides the instructor with a developmental assessment of student thinking.

Ongoing adjustments in an introductory course involve frequent reviews of main ideas so that students make the connections between the problem and the content. Use class time to discuss broad advocacy issues and specific issues related to projects. Experienced students in a capstone course can contribute to the design and improvement of assessment, particularly rubrics which help structure instructor judgment on student performance. Peer review might be supplemented by external juries of faculty or other professionals. Experienced students may also benefit from an individual or team meeting (Major & Palmer, 2001).

Course Evaluation

Teaching decisions can be examined by determining what students learned, always an important category of evaluation. Create your own instructor-developed course evaluation to find out student perceptions of their learning, your teaching, and what changes need to be made. Be alert for incidental learning that may not have been explicit, such as team performance. If used in an introductory course, how did this course contribute to a student's first experience? Although not directly a learning outcome, a "first course" provides an important opportunity for setting

the stage for student interest and motivation in a program. For a capstone experience, was the PBL approach appropriate to advanced students? The Barrow's (1996) PBL provides a checklist for self-assessment. Did the problem to be solved incorporate sufficient knowledge and skills? Courses like this will always require a significant amount of work, but if the course is structured carefully students will voice this commitment and acknowledge its worth to their future career plans.

Concluding Comments

Problem-based learning (PBL) provides a strong context for students to engage in hands-on learning activities. Within a well-designed PBL class, a relevant context must be provided for students to become personally invested in the project. This paper discusses two cases where advocacy provided the context for learning in one education class and one interior design class. Advocacy was chosen as the context based on the current academic focus to have students more involved in community issues and to foster a greater commitment to serving the public through their future profession (Lakin & Mahoney, 2006). The intent within each class was to have students increase their personal commitment to a particular group and act as an advocate for that person or group through their project work.

Based on self-reports through web-based assignments, class activities and dialogue, and personal reflection journals, advocacy did provide an appropriate context for students to increase their awareness of social and health issues. The problem-based learning approach helped to increase students' empowerment and beliefs that they can make a difference in people's lives by using their professional activities to advocate on behalf of those issues. As such, advocacy becomes not only a teaching strategy but also a learning outcome. Therefore, combining PBL and advocacy was shown to be a successful approach in fostering an appreciation within the students for their personal power relative to chosen issues.

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Initial Suggestions for Supervising and Mentoring Undergraduate Research Assistants at Large Research Universities

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Undergraduate students attending large research universities often have the opportunity to participate in the design, conduct, analysis, and dissemination of research initiated by faculty, postdoctoral fellows, and graduate students. To date, guidelines for the conduct of this specific type of relationship – that of an academic researcher to an undergraduate research volunteer in a large team-based research laboratory – remain absent from the peer-reviewed education literature. The Boyer Commission on Educating Undergraduates in the Research University recently called for further integration and depth of experience for undergraduates into the research process. Although not impossible, in order for large research universities to respond, it is necessary to act in a strategic and well-planned manner. Included are specific suggestions for success in facilitating this relationship within the context of a large, research-oriented university department.

Undergraduate research is on the rise, as is the presence of undergraduate research posters and papers at national conferences (Kierniesky, 2005; Palladino, Carsrud, Hulicka, & Benjamin, 1982). The benefits of mentored research include greater understanding of a research topic, social and personal growth, and acquisition of skills for future employment (Miller, 2002). However, much of the published literature regarding mentored undergraduate research is based on the assumption that this relationship consists of one-on-one relationships where students conduct independently-initiated research projects under the supervision of a faculty mentor (e.g., Gibson, Kahn, & Mathie, 1996; Hunter, Laursen, & Seymour, 2007; Page, Abramson, & Jacobs-Lawson, 2004; Spilich, 1997). At large research institutions this type of research mentorship arrangement occurs infrequently, as faculty members generally direct that type of focused attention towards graduate students and postdoctoral fellows (Bettencourt, Bol, & Fraser, 1994; Wood, 2003).

Within departments at large research institutions, it is often the graduate students and postdoctoral fellows, themselves academic apprentices in training, who mentor and supervise undergraduate research assistants (Carsrud, 1984; Dooley, Mahon, & Oshiro, 2004; Killeen, 2001; Merkel, 2003). For new supervisors and mentors, this responsibility can understandably be an area of weakness or self-doubt (Schuh & Karukstis, 2004). To date, while guidelines for the conduct of the mentoring and supervisory relationship between the academic researcher and the undergraduate research assistant may be available (e.g., via department

websites, individual lab policies, and procedures manuals), such suggestions remain absent from the peer-reviewed education literature. Considering the increase in undergraduate research, specific suggestions for mentoring and supervising undergraduate research assistants at large research institutions are timely and have high practical value. Here we outline specific recommendations for use by researchers – graduate students, postdoctoral fellows, and faculty members – who aim to provide high-quality mentorship and supervision when working collaboratively and in a team-based fashion with undergraduate research assistants.

For some readers, the information provided here may be considered standard procedure. In other settings, graduate students and postdoctoral fellows may not have a set of guidelines to direct and mentor undergraduate research assistants (herein referred to as URAs), and some research laboratories have neither formalized expectations nor provided orientation as to what is expected in terms of mentoring and supervising (Schuh & Karukstis, 2004). The suggestions provided here are aimed at new supervisors and mentors, such as postdoctoral fellows and graduate students who may be thrown, sometimes unexpectedly, into the role of mentor without significant previous experience. These suggestions are based, to the extent possible, on the literature that exists as well as the combined knowledge and experience of the authors, who have supervised and mentored well over 300 undergraduate researchers across five large psychology research laboratories. What follows are specific suggestions for the integration and maintenance of URAs.

Suggestions for Successful Integration of URAs into Research Laboratories

Interviewing and Orienting Potential URAs

We ask potential URAs to bring a copy of their résumé to the initial interview. A résumé request may be novel and can serve as an opportunity for a potential URA to create a résumé on which the interviewer can provide feedback on the content or format. We also instruct interviewees to bring an unofficial copy of their academic transcript, schedule for the term, and a brief statement (bullet points acceptable) discussing the reasons why they are interested in joining the specific project (e.g., How do you see this experience fitting in with your undergraduate education? What are your future career goals? What skills would you most like to develop and why?). At times, this request may overwhelm students. In such cases, direct them to the campus writing or career development centers for help. For students unwilling or unable to complete this task, it is a useful indicator for both the student and the researcher that this laboratory is unlikely to be a good match.

During the initial 15 to 30 minute interview, the supervisor/mentor provides an overview of the research project, the structure of the research laboratory, and expectations of the URA (see "Informed Consent" section below). We encourage students to ask questions at any point throughout the interview in order to encourage informed consent and to model methods of professional communication. It is critical, based on our experience, to spend time going over students' course, activity, and work schedules to determine a realistic estimate of how many hours they can reasonably commit. This discussion can serve as an informal contract, increasing the likelihood that lab responsibilities will be carried out, including attendance at lab meetings (Monte, 2001).

It is also valuable to question potential URAs about their own career aspirations, research interests, and the reasons why they have chosen to pursue work in this research laboratory specifically. If students' interests are a better match with another research lab, we try to facilitate an interview with that lab. For students appearing to fit well with the laboratory, create a file for the documents that they brought for the interview and the supervisor's notes about students' goals and research interests. Other documents – interim evaluations, copies of the written work produced during the course of the term – can be added later. Eventually, this information can be used to help form the basis of a recommendation letter, if requested.

We find that the interview process is an integral part of having a well functioning research laboratory. First, it sets a precedent of organization and thoughtfulness and communicates expectations for students' work within the research laboratory. Second, it allows URAs to have personal, one-on-one contact with their future supervisor/mentor. With a steeper initial hurdle, we hope to send the message that the position of URA is important and that this job requires that the student exhibit professional behavior. Thus, this interview structure provides a framework for the undergraduate research experience to be viewed as a desirable, beneficial, and challenging opportunity.

Informed Consent Regarding Expectations of Student

We advocate informing potential URAs of the possible drawbacks of the laboratory (e.g., more independent work than they may be accustomed to, the sometimes chaotic nature of the laboratory), and asking them to think seriously about whether joining the laboratory is a realistic option at this time. It is essential that the potential research assistant know what to expect before committing to a research laboratory (Mickley, Kenmuir, & Remmers-Roeber, 2003). Of course, during the process of conducting research, there are often unexpected hurdles that arise. One can orient potential URAs reasonably well as to what will happen.

It is practical to provide a syllabus, or a detailed written description of URA responsibilities, the role and responsibilities of the supervisor/mentor, tips for success, and even information regarding letters of recommendation to be written at the close of time with the project. For example, some students pursue undergraduate research with the intention of gaining research experience in the lab of a highly regarded researcher, hoping to garner a recommendation letter from that person. It is easier to make recommendation letter expectations clear and in writing from the outset. The syllabus can be reviewed during the interview process and then signed if students decide to join the lab. This type of informed consent is valuable, not only in terms of increasing the students' understanding of what they are committing to, but when expectations are spelled out clearly and up-front, it is likely to increase URAs' compliance to their duties (Monte, 2001). Scisney-Matlock and Matlock (2001) write that failed mentorship relationships occur when expectations are unclear from the outset (i.e., both the student's expectation of the mentor/supervisor and vice versa).

Confidentiality Considerations

When URAs work directly with research participants, particularly those with physical or mental disorders, the importance of training in confidentiality cannot be overemphasized. We have each student sign an explicit confidentiality form which is kept in his or her file. Creating a roundtable discussion of participant

confidentiality among the URAs and the higher level researchers can be a good way to address this issue at the very outset of new URA participation. At this discussion, we address procedures for what to do if someone recognizes a research participant from "real life," with whom students can discuss any potentially distressing experiences that they encounter and any additional concerns the URAs might have.

Suggestions for Successful Maintenance of URAs in Research Laboratories

Recognize that "the Cream Rises to the Top"

Schneider (2002) suggests that undergraduate research allows all types of students to thrive in the research environment, including those who do not readily display their academic talents in a traditional classroom setting. In settings where there are a large number of URAs, "the cream rises to the top." Mickley and colleagues (2003) designate seasoned URAs, (those who have remained in the same lab for a long period of time, learned beyond the basic laboratory tasks, and who are positive role models), an official lab position: Senior Laboratory Associates. Accordingly, we promote our senior URAs into supervisory roles and provide opportunities to conduct complex tasks (i.e., data analyses, poster presentation preparation) and to participate in projects of direct benefit to the URA (i.e., empirical articles, posters). One method for garnering URA supervisory experience is to pair them with one or two less senior URAs. Senior URAs can orient the newer students or serve as project managers (see "Specific Projects Assignments" section below). In addition to providing senior URAs with supervisory experience, this hierarchal model functions to reduce graduate student, postdoctoral fellow, and faculty supervisory burden.

Individual URA Meetings

Some researchers meet individually with their URAs every week regarding the students' performance, professional progress, and goals. This would be ideal; however, for most researchers supervising more than one or two URAs, this high level of involvement is not possible. End of term or mid-term individual meetings, generally lasting 20 to 30 min, work well and are appreciated by undergraduates. During this meeting, constructive feedback is given regarding URAs' performance. It is more effective to frame feedback in a way that is behaviorally specific and descriptive rather than more broad and trait descriptive (e.g., "It is difficult for others to complete their hours when you miss your scheduled appointments with them," versus "It seems that you are not motivated and don't care

about this research project."). Following feedback, one should assess how URAs' impressions fit with their personalized feedback. These individual meetings can also include a discussion of students' long-term goals (e.g., planning for post-graduate job or graduate school applications). Individual professional development goals are made for the next meeting. A list of these goals is kept in each URA's file for discussion or revision at subsequent meetings.

It is useful to elicit feedback from URAs about their experiences. Individual meetings are a time when URAs are asked about their impressions of the research project. For example, a supervising researcher might elicit specific feedback about what operational aspects of the project work best and what work less well in regards to both the overall study and delegation of tasks, particularly the tasks assigned specifically to them. It is important that the supervising researcher ask and receive this feedback in a non-defensive manner that displays a genuine interest in URAs' responses, demonstrating a sincere desire to run the research project as smoothly as possible. We have found that many students find the individual meeting to be one of the most enriching parts of their research experience because of their chance for reflection and summarization, in addition to individual and specific feedback, which is rare in a large university setting. Feedback from URAs is also advantageous to the researcher, as there may be potential problems with the administration of the project that researchers would not be aware of without these frank conversations about day-to-day operations.

Specific Project Assignments

There are a number of different types of tasks and projects that occur in a research laboratory, varying by area of study. We find that when one URA or a small group of URAs (rather than all URA members of the research team) are responsible for a specific task or project, the task is more likely to be completed in a timely manner with fewer errors. Further, based on our combined experiences, this also appears to be related to a greater sense of mastery by the URA(s). One of the authors, a graduate student supervisor of URAs, routinely assigns projects to URAs that are within reach in terms of students' demonstrated abilities. The supervisor sets up a weekly 30 to 60 min meeting where the URA(s) and the researcher work collaboratively on the particular project. At the end of the weekly project meeting, she assigns specific goals to the student(s) to complete before the next meeting. This method works effectively, not only in terms of keeping the URA(s) on task, but also keeping the supervising researcher from avoiding aversive or difficult tasks. An additional useful step is to designate the URA or small group of

URAs with an official title (e.g., "Eating Behavior Study Participant Coordinator," "Alcohol and Sexual Behavior Literature Review Group"). A title allows for social identification by research supervisors and labmates and increases the likelihood of the URA being given "credit" for responsibilities because roles are more clearly delineated.

Tracking Projects Efficiently

During these weekly project meetings, we find it useful to take notes (in the body of an email) of meeting accomplishments (minutes), specific task assignments and goals for the following week (action items), and sometimes long-term calendar goals (e.g., "paper introduction due November 20"). This email is sent at the end of the meeting to all relevant parties. Regarding project email correspondence, it is useful to designate a specific subject title to be used in all email interactions regarding the specific project (e.g., "Re: Ethics Paper: Ursula, Mychal, & Jo"). Dated meeting minutes in email form allow for faster sorting of project materials in a cluttered Inbox and for a rapid review of what was discussed and accomplished during the last meeting.

Regular Team or Lab Meetings

We suggest that URA research teams meet often, weekly for 1 hour, to discuss both individual and overall project progress and goals, as well as to impart information (content knowledge, administrative updates) to the undergraduates and enhance the sense of team membership. One of the most difficult aspects of organizing a larger meeting like this one can be scheduling. It is useful to have a copy of all the URAs' schedules represented visually, in a calendar or spreadsheet format, to ease this process. In fact, it can be one URA's role to serve as "Meeting Administrator," engaging in duties such as gathering schedules, finding a meeting time that fits for all relevant team members, sending meeting reminders noting the location and time, drafting and sending the agenda, and taking minutes.

Providing a meeting agenda for all attendees produces clear meeting expectations and helps focus the discussion, a quick list on a white board is sufficient. As part of the agenda, each URA provides a brief individual update on the progress of his or her specific project, including problems encountered and progress made. Information about problems encountered provides other URAs with helpful information, should they have the same difficulties on the same or a different project. Problem discussion may also prevent other students from repeating work, thereby enhancing overall lab efficiency.

If weekly individual or small group meetings are occurring, then a brief summary of each project by the mentor or a URA will suffice, thus allowing more time to emphasize the educational content of the specific project and other major findings in the field that provide the broader research context. During the didactic segment, we cover various topics. URAs vote from a list of topics which are based on the knowledge of the meeting facilitator. It can also be useful to provide a discussion series with invited guest speakers (such as members of the university community from outside the lab), on planning for work or graduate school admissions, on topics related to the specific area of the project, or on other topics of interest indicated by the students.

Inclusion of the Sponsoring Faculty Member

As previously discussed, URAs at large research universities may not have exposure to the lead research faculty member in the laboratory, and are more likely to interface with graduate student or postdoctoral fellow "middle managers." Therefore, it is recommended that the lead faculty member meet at least once or twice per term with the team of URAs. The goal of this meeting is twofold. First, this meeting allows the faculty member to become better acquainted with the undergraduates who are carrying out his/her research each day. Second, this meeting provides the undergraduates with exposure to a faculty member in an environment where they might ask questions or request that the faculty member share his/her views on certain topics of professional interest to the students (e.g., research, teaching, graduate school admissions). Additionally, regular faculty involvement increases the chances of the student obtaining a letter of recommendation from the faculty member, either co-signed or individually signed by the research faculty, because the faculty member knows the student on a more individual level. These meetings can also take the form of celebrations of the collective accomplishments of URAs. Celebration meetings create a relaxed atmosphere for the faculty member to answer questions, give specific or general advice to the students, and thank students in person for the students' contributions to the work of the lab. This is a good format for the faculty member to genuinely recognize that each URA is truly an integral part of their research team.

Summary and Discussion

A common mission at large research universities is to create an educational environment that benefits undergraduates and simultaneously allows the research-oriented faculty, postdoctoral fellows, and graduate

students to conduct high-quality research programs with important scientific and social implications (Gonzalez, 2001). These aims fit well with those regarding mentored research outlined by Neidhardt (1997), which include engaging students in guided learning while also aiding in the research, teaching, and professional growth of the mentoring researcher. However, some have concluded that the benefits cited for the undergraduate research experience are not feasible at a large research university (Schneider, 2002). Based on our own experiences, we argue that this is not the case. We have found, using the suggestions outlined above, that URAs and researchers accrue a number of benefits despite the overall lack of availability of faculty one-on-one mentoring for students at the undergraduate level. These benefits, however, are specific to large, team-based research laboratories and this model does not necessarily apply to smaller one-on-one laboratory settings.

The Boyer Commission on Educating Undergraduates in the Research University (Kenny, 1998, 2002) recently called for further integration and depth of experience for undergraduates into the research process. Although not impossible, in order for large research universities to respond, it is necessary to act in a strategic and well-planned manner. It is our hope that these suggestions will serve as a starting point for further discussion of practical suggestions related to effectively integrating undergraduates into research within large research-oriented departments.

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Fostering Global-Mindedness in Teacher Preparation

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Teacher education programs require attention to the rapid changes in the world, in part because populations are becoming increasingly diverse. These rapidly changing classroom environments have prompted a need to train teachers who can communicate with and teach students from increasingly diverse backgrounds. In addition, they must have an understanding of cultural family values and practices which influence individual students among the various ethnic populations they teach. This paper will describe steps taken by one College of Education to create international partnerships and learning experiences in an effort to enhance their teacher training programs and develop an environment of global-mindedness.

In the winter of 2007, faculty members from the College of Education at Minnesota State University, Mankato (MSU) traveled to Magadan, Russia, to sign an agreement with Northern International University. One of the many tenets of this agreement was to share a program of mutual training of students in Pedagogy and Teacher Education. This agreement was a significant milestone in the College's implementation of its strategic plan to increase global-mindedness through the advancement of international programs for students and faculty within the MSU College of Education. This article discusses the process and rationale for the development and implementation of a comprehensive strategic action plan to enhance the quality and quantity of international learning opportunities.

Rationale for International Experiences in Teacher Preparation

Teacher education programs require attention to the rapid changes in the world, in part because populations are becoming increasingly diverse. Cultural and linguistic differences in student populations have historically been a challenge unique to teachers working in urban centers. Today, however, teachers in most rural and traditionally homogeneous schools are faced with the challenges of working with increasingly culturally and linguistically diverse student populations. In one school district in southern Minnesota, for example, 19% of the students are from homes with a primary language other than English. Families in these homes represent 16 different languages (Minnesota Department of Education, 2006). These rapidly changing classroom environments have prompted a need to train teachers who can communicate with and teach students from increasingly diverse backgrounds. Although there is still a need to address those issues related to often overlooked sub-cultures, particularly those related to poverty, teacher education programs must now address competencies related to intercultural communication and limited English proficiency. In addition, they must have an

understanding of cultural family values and practices which influence individual students among the various ethnic populations they teach (Miller & Fuller, 2006).

International education experiences have long been regarded as one means to prepare undergraduate students to participate in a world with increased ethnic and cultural diversity (Zorn, 1996). According to Walton (2002), enhanced international perspectives, or "global-mindedness," has a direct effect on a teacher's classroom communication skills and, by inference, student learning. There are at least three primary areas in which international education is considered to have an impact: intellectual development, international perspectives, and personal development (Kauffman, Martin, & Weaver, 1992). Researchers have long documented the positive changes impacting U. S. college students participating in international education opportunities, including (a) increased intellectual development, including gains in acquisition of a second language (Akande & Slawson, 2000; DeDee & Stewart, 2003; Freed, 1995; Opper, Teichler, & Carlson, 1990; Whalen, 1996); (b) enhanced international perspectives, such as increased understanding of cultural differences (DeDee & Stewart, 2003; Dwyer & Peters, 2006; Opper, Teichler, & Carlson, 1990; Standeven, 1988; Zorn, 1996;); and, (c) personal development and transformation, such as increased self-confidence and maturity in decision-making (Akande & Slawson, 2000; DeDee & Stewart, 2003; Dwyer & Peters, 2006; Standeven, 1988; Zorn, 1996).

In the 2003-2004 academic year, 191,231 American students studied abroad. This was an increase of over nine percent from the year before. Of these, 7,918 were majoring in education (Institute of International Education, 2006). For many teacher education programs, however, state licensure standards and national accreditation expectations often require rigid program expectations which can frequently limit opportunities for education majors to take advantage of international study within their major. Additionally, cost of travel as well as college credit which may be associated with international

study programs can limit such opportunities to only select students.

Mankato State University, Mankato's Commitment to Global Education

In 2004, Minnesota State University, Mankato (MSU) included within its strategic priorities a goal to increase international opportunities for students and to increase international student participation on campus. To address this strategic priority, the International Programs Advisory Committee (IPAC) was formed at MSU. The IPAC collected data from faculty and students on a number of issues related to international and study abroad programs to direct their activities. An action plan was then developed with consideration given to preferred study abroad locations of MSU Mankato students, the representation of various countries among international student populations, travel expenses, and foreign languages taught at MSU (International Programs Advisory Committee, 2006).

The following principles were established to guide the IPAC plan:

- To build on the competencies and interests of the faculty and staff.
- To develop a presence on every continent.
- To develop and pursue collegial partnerships with international scholars.

The MSU Mankato strategic plan encouraged work groups throughout the university to research potential partner universities, discuss program opportunities, and advise on how available funds should be used to develop the partnerships. Faculty members in the College of Education, in particular, embraced the strategic plan and created priorities that would foster the global-mindedness of pre-service teachers.

The College of Education's Priority to Enhance Global-mindedness in Teacher Education

The College of Education addressed the University's strategic priorities through an existing International Studies Committee (ISC) with membership from each academic department in the college, as well as representatives from the student teaching office, the affiliated lab pre-school, and student interest groups. Although the College adopted the MSU's IPAC principles, there was a consensus that a greater focus on issues related to teacher preparation was needed to enhance basic travel opportunities. Furthermore, the ISC maintained that partnerships developed with universities in other countries would, if possible, include experiential opportunities for students in local schools and communities. Student teaching and

practicum exchanges for students would always be at the forefront of any partnerships.

Building on Competencies and Interests

To address this priority, the ISC surveyed the past and current international initiatives among faculty members of the College of Education. Each department was surveyed and ISC members considered these responses. The ISC found that there had been a history of occasional study tours available through the College. These were typically based on individual faculty interest and initiative. It was clear that a more strategic approach was necessary to maximize our potential for international initiatives.

For example, several faculty members had long-time partnerships with colleagues in Thailand. These partnerships, however, had yet to yield any formal plan or to include students in travel or exchange possibilities. The partnerships had primarily centered on delegations of school teachers visiting from Thailand and small numbers of select MSU faculty visiting public schools in Thailand. Although some students may prefer experiences in more familiar cultural environments, Thailand could and would offer a very different global experience for students and faculty members with more adventurous spirits.

In addition to the College's existing relationship with Thailand, a new relationship was being forged with a university and a community in Russia. During the past two years, two faculty members and one undergraduate student had visited Magadan, Russia, with the purpose of getting acquainted, establishing relationships, and discussing partnership possibilities. This developing relationship, as well as the presence of a growing eastern European immigrant population in Minnesota, made Russia an excellent choice for future travel and study experiences.

Developing a Presence on Every Continent

As an attempt to make the best use of limited College resources, the ISC was directed to prioritize its initial focus for international initiatives to three or four counties. Although this prioritizing of international sites to maximize recourses was necessary, the actual prioritization proved to be a difficult task. Personal preferences, as well as existing and past international relationships all became determining factors. Additionally, the ISC felt it was important to offer students a continuum of experiences to choose from; location, culture, and linguistic differences were all taken into account. The committee understood that each individual student has preferences, interests, and needs that will influence his/her desire and ability to travel. A preliminary student interest survey was completed in 2006 (Sandell, 2007). It revealed a strong

student interest in travel experiences to Australia as well as Mexico.

The ISC wanted also to carefully consider the teacher training needs of major stakeholders, such as public schools in southern Minnesota. The data showed, for example, that Minnesota schools are seeing increasing Hispanic populations in rural and urban schools. Therefore, it was felt that travel opportunities to Latin American countries should be a priority. Ultimately, the decision to prioritize countries was based on the following factors: existing cultural presents in the public schools, existing relationships and partnerships within the college of Education, student travel interest, and diversity of travel experiences.

Finally, the ISC selected the following countries as the focus of college resources: Thailand, Russia, Mexico, and Australia. Thailand and Russia were selected because of existing and expanding partnerships. Mexico was selected because of the increased Hispanic population in Minnesota schools; also, its proximity to the continental United States offers convenient learning and travel opportunities. Australia was singled out not only because of student interest, but because the lack of a language barrier and the similarities of cultures would make it possible for students to take advantage of a variety of student teaching experiences that are readily available in Australia.

Developing Relationships with International Scholars

Faculty in the College of Education are participating in current initiatives that will focus in specific universities and communities in these four priority countries. Descriptions of these initiatives follow.

Magadan, Russian Federation. In March of 2007, two representatives from MSU, Mankato's College of Education traveled to Russia to complete the signing of a partnership agreement with the School of Pedagogy of the Northern International University (NIU) in Magadan. The agreement includes specific language about the development of joint programs for training students in pedagogy and teacher education as well as the coordination of joint research programs in pedagogy and early childhood psychology. University colleagues are discussing common training modules about, for example, the history of kindergarten throughout the world or the implementation of ACEI's Global Guidelines for Early Childhood Education and Care in the 21st Century (ACEI, 2007). Colleagues from NIU have been invited to visit the MSU, Mankato campus during the Fall of 2007 to teach classes, as well as to tour and speak at area schools. Plans are now underway for a student delegation from the College to

travel to Russia in 2008. Faculty members from both institutions will present together at the world conference for the Association for Childhood Education International in Moscow, Russia in June, 2008.

Wollongong, Australia. Representatives from the College's Offices of Student Teaching and of Clinical and Field Experience traveled to Australia in the spring of 2007 to visit with faculty from the College of Education, University of Wollongong, to lay the ground work for student exchanges and student teaching experiences.

Chiang Mai, Thailand. The College of Education's partnership with colleagues in Thailand remains strong. Plans are underway to enhance the current relationship to include student and faculty exchange programs. Faculty from the College of Education traveled to Thailand in the summer of 2007 to formalize partnership agreements addressing student exchanges with the University of Chiang Mai.

Mexico. There are a number of University-wide initiatives related to study abroad groups to Mexico. In the future, the College of Education intends to expand on current initiatives and formalize relationships with universities and school districts in Mexico to provide pre-service activities for students. Initial conversations are being held with several specific universities in Mexico.

Future Directions

The new directions brought by a more focused, strategic approach to international initiatives are clearly producing positive change in MSU, Mankato's College of Education. There is, however, a great deal of work ahead. The College has just begun to institutionalize its commitment to enhancing global-mindedness. As faculty members build relationships and discover commonalities and differences, they can collaboratively create ways to share knowledge, research, and experiences that would benefit both faculty and students.

Although the College faculty members have made the choice to prioritize resources by spotlighting a few countries, the focus does not prevent travel or international initiatives from being undertaken in other locations. In the future, college faculty members hope to give students many and more diverse international opportunities for travel, student exchanges, and clinical and student teaching experiences.

The MSU International Strategic Plan focuses not only on the need for globalization through increased travel experiences but also through an international presence in online course registration. As part of the College's international initiative, planning is underway to launch opportunities to expand online offerings internationally. As a first step, online discussion boards

will be encouraged as part of existing and future international partnerships as well as online travel journals that can open a window into international activities for all students. E-learning partnerships will be considered as ways to continue sharing expertise, possibly even providing opportunities for collaborative research projects with international partners. E-learning initiatives can also lay the ground work for new international travel and on-site learning experiences.

Clearly the development of a strategic plan has given much needed direction to the goal of increasing global-mindedness in the College of Education. Three international partnerships were developed in 2007 alone. The work that lies ahead will take full advantage of those partnerships and to provide MSU's students with exciting and meaningful international opportunities.

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Book Review: *What the Best College Teachers Do*

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Ken Bain, in his 2004 book *What the Best College Teachers Do*, delves into the topic of best teaching practices in college education. This review focuses on the key elements Bain identifies as those which frame the unique components that help define best teaching, which can be divided into three broad categories: knowledge about teaching, knowledge about students, and knowledge about learning. The review includes detailed descriptions of each of the three categories.

When first reflecting on a statement such as the one Bain puts forth in his book title, we cannot help but think about our own experience in the classroom, both as students and teachers. It often seems easy to identify key characteristics of exemplary teachers in isolation, but, as Bain points out, it is not one particular set of traits that characterizes teachers who form part of this cluster of best teachers. Rather, it is the combination of unique traits, strategies, idiosyncrasies, techniques, and, ultimately, awareness of who our students are and what they need in order to be(come) successful learners that defines best teachers.

In a clever and systematic fashion, Bain takes the reader on a journey that explores six key elements that help frame the unique components used to define best teaching. What distinguishes this book is that, as Bain posited, its aim is not to present a list of teaching tips, but rather to inspire teachers to engage in deep reflection about the elements discussed: knowledge about how people learn, preparation strategies for teaching, expectations for students, organization and structuring of class sessions, treatment towards students, and evaluation of students and themselves. These elements can be divided into three broad categories: knowledge about teaching, knowledge about students, and knowledge about learning.

When discussing knowledge about teaching, Bain points out that a key element of best teaching is the desire to take learning beyond rote memorization and bring it to a deeper dimension: one in which students become the protagonists of their educational process and engage in reasoning that leads to deeper understanding. Bain also highlights the importance of creating a critical learning environment where students find themselves immersed in a setting which fosters learning through authentic tasks and where students engage in critical thinking. Moreover, this type of environment is one in which students focus their attention at the beginning of class, feel at ease and are safe, are unafraid of making mistakes, receive periodic feedback in the form of warm and cool language, and are encouraged to be active participants in class discussions as well as engaged in self-evaluation of their work.

Bain also addresses the importance of teachers' knowledge about students. When he looks into teacher expectations of students, one of the key elements he identifies as part of successful instruction is the awareness of stereotypes and how they affect students' ability to succeed academically; coupled with strategies that help students gain confidence in themselves, this awareness can lead students to become more successful learners. In addition, Bain points out that the best teachers put trust in their students, thus making them accountable and true agents of their own learning. In this sense, the best teachers reject the position of power in which they would otherwise naturally be. In an environment like this, teachers can help foster interactive participation and class discussion in which students are not afraid of giving their opinions or making mistakes, and where students are encouraged to give and justify their points of view within a framework of respect.

As Bain discusses knowledge about learning, he highlights the importance for teachers to have awareness of their own metacognitive reasoning, which can help them visualize their own learning and the thinking strategies applied in their disciplines. Bain also states that knowledge is constructed rather than received; the way students construct their own knowledge is determined by their preconceived ideas and paradigms. Thus, best teachers work towards breaking those preconceptions, challenging students to think critically and providing students with the necessary scaffolding so that they can modify existing mental models that detract from learning. Moreover, best teachers consider assessment as a form of helping students learn rather than just rating or ranking students' efforts. They also share the criteria they will use to assess student performance with their students. In addition, instruction is based on the overarching goals of helping students develop intellectually and personally, for which purposes evidence is collected through carefully-thought assessments that help students improve and learn better.

One of the key notions laid out in this book is that teachers should aim at creating a safe learning environment in which students can negotiate and

actively engage with new material. With respect to this, the notions of care and respect are of paramount importance. In this sense, as Bain notes, students who stereotypically are expected to fail will not be successful unless they feel at ease and comfortable in the classroom setting. This, in turn, will not only allow all students to become successful, but it will also foster a relationship of care and respect in the learning community.

By the same token, particularly inspiring is the idea of granting students agency to design and monitor their own learning, especially by shying away from a model of instruction that reminds us of the banking model (Freire, 2000). In such a model, the teacher is the sole actor in the learning process who makes decisions regarding content, format, and assessment, perpetuating strategic and performance learning rather than deep learning.

In the model Bain proposes, the relationship of trust that exists between students and teacher needs to be established at the very beginning of the semester and nurtured until the very end. An effective way of doing so is to start class on the first day by setting out the broad goals and expectations the teacher has of the students and engage in a dialogue where students can actively contribute to the design of the syllabus of the class. Although this idea sounds somewhat utopian, especially in undergraduate classes, it is feasible if there is careful scaffolding provided by the teacher.

In addition, throughout the semester the teacher can plan instruction that fosters active participation of students in class discussion, that is designed around critical questions posed by teacher and students alike, and that carefully and purposefully guides students into gaining deeper understanding and engaging in critical thinking and constant self-evaluation.

All in all, Bain's book provides an insight into best teaching practices to teachers who truly care about students and their education and, more importantly, are willing to embrace new practices that will foster lifelong deep learning. Bain proposes that teachers strategically design instruction and relinquish the spotlight. Teachers who do this will be satisfied knowing that they have created a learning environment where students are active participants in their own learning and engage critically with the material; furthermore, they will extend the impact of instruction and learning beyond their classroom and their discipline.

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