JoSoTL

Journal of the Scholarship of Teaching and Learning

Volume 13, Number 1, February 2013 *josotl.indiana.edu*

JOSOTL
JOURNAL OF THE SCHOLARSHIP OF TEACHING AND LEARNING

Journal of the Scholarship of Teaching and Learning, Vol. 13, No. 1, February 2013, pp. 1 – 23.

The difficult transition? Teaching, research, service: Examining the preparedness of communication faculty entering the academe

Toni Selena Whitfield[1] and Corey Hickerson[2]

Abstract: This study, based on a survey of graduate students seeking employment, examines the categories and levels of preparedness of new professors/instructors as they enter academe. Preparedness was examined in several ways--specifically knowledge about higher education requirements and their preparation for teaching, advising, and service in the field of communication. In general, the future communication faculty reported that most had participated in teaching preparation activities. Few reported participating or having access to preparation in other academic areas. In hindsight, most respondents would have liked more preparation opportunities in all areas. Even though they did not have extensive preparation in any area, except for teaching, most reported they were confident in their ability to perform the skills of a future faculty member.

Keywords: preparation, faculty, graduate education

I. Introduction.

New faculty members in higher education have numerous roles to fulfill in their position as a professional educator. Academia has become a chief employer for doctoral graduates, but many graduate programs have unsuccessfully prepared future faculty members (Adams, 2002). Out of 3,500 colleges and universities in the U.S., only 102 turn out 80 percent of all doctoral graduate degrees given every year (Gaff & Lambert, 1996). This could mean that graduates are typically socialized into the values of the university from which they received their degree and may remain politically out of sync with the values of institutions where they may be employed (Gaff & Lambert, 1996). Graduate training does not seem to coincide with the academic responsibilities expected of new faculty among colleges and universities (Adams, 2002). Problems often arise when new faculty become employed and are expected to fulfill non-curricular responsibilities they have not been prepared for (Adams, 2002, Gaff, 2002). This study seeks to examine the preparation and expectations of new communication faculty members, ways in which graduate students are prepared for teaching in higher education, as well as some problems and concerns with preparing new faculty members to determine whether or not future faculty members are in fact prepared for the many facets of a career in higher education.

The study is exploratory and directed to the following specific areas:

1. What types of faculty preparation activities are available for communication future faculty?
2. What types of faculty preparation activities are utilized by communication future faculty?

[1] Associate Professor and Assistant Director in the School of Communication Studies at James Madison University.
[2] Associate Professor in the School of Communication Studies at James Madison University.

3. What level of confidence do future communication faculty have in performing faculty roles?

A. Review of Literature.

As the literature is sparse in the specific area of communication and in other areas of higher education as well (Gaff, 2002), the following review of literature examines disciplines and the university in general. For the purpose of this study, we examined expectations, preparation, suggestions for preparation and problems and concerns relating to entering the academia.

Expectations of New Faculty Members.

When new faculty members are hired by higher education institutions a variety of skill sets are expected of them. Teaching takes up a great deal of the new faculty member's energy (Boise, 1992; Adams, 2002). Institutions expect their new employees to be fully equipped and capable to teach. However, the methods of learning how to teach vary among colleges and universities. Adams (2002) found that more creative techniques were expected in the classroom beyond a typical, well-structured lecture—these include teaching general education courses, utilizing various pedagogical styles and addressing multiple learning styles, to name a few.

In addition teaching, another important expectation or criterion for new faculty members is their responsibility to perform research (Adams, 2002). Since faculty members need to remain well-informed in their field and work toward tenure, research skill, perseverance and the effort that goes into research is important. As each institution has differing research requirements varying from no requirement or flexible to the well-defined for its faculty members, preparing future faculty for this responsibility may be difficult. One aspect that all institutions can agree on is that its faculty are expected to create a research program that fits with the university's mission and focus (Adams, 2002). Most institutions view scholarly research as a vital way that faculty members remain connected to their discipline and dedicated to its teaching and the learning of its students, and thus is a key expectation for the faculty (Gaff & Lambert, 1996). Austin and McDaniels (2006) found that faculty members have expectations to help students gain new knowledge, by having the ability to present their expertise to a diverse audience. Faculty are expected to teach students and relate their knowledge skills to the world in which they live in, recognize the connection with other fields of study, and have the ability to present their expertise to a diverse audience.

Faculty members are also expected to adjust to the "academic life" of the institution in which they are employed (Adams, 2002). This could include advising numerous students, serving on various committees, collaborating with colleagues, working with a mentor, etc. The pursuit of a new academic career can take its toll in both personal and professional ways and faculty often have very little preparation for all the details involved with academic life. In addition to adjusting, new faculty members are also expected to have the ability to assure that their new job is the best fit for their educational training. (Adams, 2002; Gaff, 2002). In one study graduates commented regarding their lack of preparation for professional development and job seeking (Nerad & Cerney, 2000). Without the proper understanding of the requirements of surviving a job in academia, preparation for the requirements involved, and adding the complexity of tough economic times, finding the right institution to fit ones needs may be difficult for recent or upcoming graduates.

Preparing Future Faculty.

A number of institutions offer a seminar for future faculty members focusing on preparing them for their role as a future educator. In 1993, the Association of American Colleges and Universities and the Council of Graduate Schools, created the national Preparing Future Faculty program (Koblinsky, Kuvalanka, & McClintock-Comeaux, 2006). The program was designed to help to prepare graduate students with important aspects of working as a college instructor at various institutions (Jones, Davis, & Price, 2004). This program focused on the sciences, mathematics, humanities and social sciences (including history, political science, psychology, sociology, communication and English). Weekly seminars were available for students that entailed group discussions, classroom duties, presentations, issues of service and research and other aspects of careers in the academic role (Gerdeman, Russell, & Eikey, 2007). Several institutions have implemented this model to help better prepare students for careers in academia at both the masters and doctoral levels. The co-director of the Preparing Future Faculty Project stated that a bridge was still lacking between graduate education and preparation for the academic role (Gaff, 2002). The Preparing Future Faculty Project (PFF) suggests six specific principles that graduates should be taught:

1. The graduate experience should include
   a) increasingly independent and varied teaching responsibilities,
   b) opportunities to grow and develop as a scholar, and
   c) opportunities to serve the department and campus.
2. Apprentice teaching, research, and service experiences should be planned developmentally so that they are appropriate to the student's stage of development and progress toward the degree. These experiences should be thoughtfully integrated into the academic program and sequence of degree requirements.
3. PFF programs should build upon and go beyond teaching-assistant (TA) orientation and development programs. While TA orientation is crucial, graduate students should not be sent the message that preparation is a one-shot activity. The establishment of ongoing, discipline-based professional development seminars, the involvement of graduate students in departmental governance and decision-making, and the development of active strategies for advanced graduate students to find academic employment are examples of ways departments, and PFF, may build upon the most common teaching assistant training activities.
4. The graduate program should include a formalized system of mentoring in teaching and other aspects of professional development. This should be as integral to the degree as the supervision of the dissertation.
5. Graduate students should learn about the academic profession and have direct and personal experience with the diverse kinds of institutions that may become their professional homes.
6. The graduate experience should prepare future faculty for the classrooms and campuses of tomorrow. This includes becoming familiar with the role of technology in the delivery of instruction, dealing with the diverse needs of students, and using some of the more active and collaborative methods of teaching and learning. (Gerdeman, Russell, and Eikey, 2007, pg.2)

The Preparing Future Faculty program reports success in helping to inform future educators and appears to be a program that continues to improve. One of the more recent advancements is an "electronic conferencing system called First Class (FC)" (Cody & Hagerman, 1997). The system allows all PFF members to exchange information and materials in a relatively simple manner and to allow students and faculty mentors to communicate openly and effectively (Gaff, Pruitt-Logan, Sims, & Denecke, 2003). The electronic connection appears to be a good opportunity for those who may not have a seminar or program in their institution

Some believe that preparing future faculty for higher education institutions in their specific discipline should begin at the graduate level (Nelson & Morreale, 2002). Each academic discipline is different and acknowledging this is useful in ensuring accurate preparation for future faculty members. Some programs allow students the opportunity to "shadow" a faculty member in their field providing the students with a view of what is expected (Nelson & Morreale, 2002). Some institutions have implemented a three credit pedagogical course that is specifically dedicated to teaching a college course in their discipline (Wimer, 2006). These classes focus on designing a course and have been offered online for those who are planning a career in teaching in higher education and are not enrolled at an institution that offers the course in their discipline (Wimer, 2006).

When preparing future educators, many graduate and doctoral programs have adopted the learning community model (Richlin & Essington, 2004) (often called faculty learning communities) where faculty and graduate students focus on cohort or topic-based teaching seminars, courses, and "brown bag" luncheons. The faculty learning communities offer a realistic model of what the career as an educator should resemble while providing specific pedagogical methods and focus on teaching issues. These communities allow future faculty members to gain knowledge about teaching, scholastic life, and faculty responsibilities in a safe environment (Richlin & Essington, 2004). There appears to be much work in preparing future faculty. Faculty are often used as instructors at the institutions in which they are completing their graduate work. While this is good, once hired in the academic arena, these faculty need to be aided into the transition of academic professionals. There is very little that relates to preparation programs for faculty in their first year of the job. Many new faculty members are included in formal and informal mentor programs (Walker, Golde, Jones, Bueschel, & Hutchings, 2008). However, in the studies listed, no specific preparation for new faculty was noted.

Problems and Concerns.

Certain knowledge is needed to perform suitably as a higher level educator that includes understanding the differences in the culture and expectations of the institution at which one is employed. Comprehensive universities have different missions in comparison with other institutions, thus making preparation to be an educator more difficult. Teaching at a comprehensive university typically requires a large teaching load, the probable research requirements, and the ability to provide a service to the institution and to the community (Henderson & Buchanan, 2007). Henderson and Buchanan (2007) found that faculty members at comprehensive universities tend to be less satisfied with their careers, especially in the first year due to the amount of responsibilities expected of them. Another problem for future faculty members is the huge emphasis on research during their graduate studies. Henderson and Buchanan, 2007, reported that research preparation in graduate school has been found to not

always coincide with the research expectations at comprehensive universities. Meyers, Reid, and Quina (1998) found that graduate students rarely learn to be successful educators, learn the rules of the academic world, or fit into the "college community."

Richlin and Essington (2004) identified important elements needed to effectively prepare future faculty members. Currently there are three important areas that are classified as not being addressed during the education process. These include the lack of an understandable tenure system, "a lack of community, and a lack of integration of their academic and personal lives" (Richlin & Essington, 2004). Clearly graduate students need to understand the scholastic process in order to choose the institution that will work best with their needs and interests.

In addition to the above, some changes in the Preparing Future Faculty model are also suggested. Although the program attempts to effectively help prepare students for their future careers in academia, Furniss, Blomquist, Butler, McDougall, and O'Bannon (2002) reported that some of the following improvements could be made. These improvements include assuring that graduate students receive an institution-specific perspective for teaching in higher education while helping them to focus on the different types of institutions and the requirements as an academician. Future faculty could become more informed if they were aware of the missions of different types of institutions (Furniss et al, 2002). Effective and valuable teaching is in demand among current and future faculty members, therefore a greater emphasis should be placed on teaching during the students' graduate studies (Furniss et al, 2002).

The prospect for independent teaching opportunities would be useful in helping to prepare future faculty members. Masters and doctoral students have the chance to become teaching assistants during their academic careers, however these roles as graders or attendance takers often times do not reflect the experience needed to become an effective educator (Sales, Commeau, Liddle, Perrone, Palmer, & Lynn, 2007). Gaining real teaching experience while following the research-based criteria will in fact help to better prepare future faculty members for their teaching roles. In many cases most responsibilities of teaching assistants' consist of grading assignments or simply assisting the instructor, which offers little preparation for a future career in academia (Sales et al, 2007).

New Faculty Development.

Educational training improvements are not the only ways to help prepare future faculty. In the first few years of their careers, institutions should implement ways to help new faculty members adjust to academic life. Preparing them could include providing a formal or informal mentoring program. This would allow new faculty to network and become acclimated to the institutions' culture (Solem & Foote, 2006). Most institutions require new faculty to go through an orientation, but having someone (a mentor) with experience to help them acclimate more comfortably in to the academic setting can effectively help to better prepare new faculty members for their careers at that institution (Solem & Foote, 2006). If institutions provide a mentor program, it is important that the mentor has "wide knowledge of procedures and current instruments to document effective teaching" (Border, 2002).

The literature that has been review shows that graduate and doctoral programs are implementing effective ways to help prepare future faculty members for teaching in areas of higher education. The research that has been conducted has also found that more efforts could be done to improve future faculty members' preparation for that academic role. Very little research was identified from the communication world of academia. More research is needed to gain

insights, to determine the preparation received, as well as changes or additions to the educational programs for preparing future faculty. Assessing current faculty, new faculty, and students, on their perceived preparation would be useful in determining how effective these programs are and what the types of programs that prepare faculty for working in the academic setting might be. Furthermore, in a time when budgets are being scrutinized and state governments are asking for more accountability, it is important to know how best to spend limited preparation dollars and then how to report it to the government. It is not difficult to imagine that universities facing budget shortfalls will reduce preparation activities. For these reasons, this exploratory study aims to make an important contribution to the literature.

II. Method.

A. Design.

The project was completed in two phases. Phase one used two focus groups with recent hires to explore their experiences when transitioning to full-time faculty. From the focus group information, four areas of preparation were found: knowledge of field, teaching, advising, and service preparation. A survey was developed to address these four areas of preparation and was administered to job-seeking graduate students; the survey inquired about their preparation and concerns about entering the academic role in higher education.

B. Population and Sampling.

The target population for this research was graduate communication students completing their degrees within one year and actively searching for their first academic jobs. A non-probability purposive sample was acquired by recruiting participants at the 2007 National Communication Association Conference's job fair. Additionally, recruitment emails were sent to national and regional communication listservs requesting participation from people who met the research criteria. Furthermore, faculty members in graduate programs were asked to forward the recruitment email to their graduate students.

The survey was completed by 83 anonymous participants. Most participants were Ph.D. candidates (68 participants), and 15 were master's students. Almost all started their advanced degrees in 2000 or later (95%), and all expected to receive their degree in 2008. Additionally, most of the participants were recent recipients of undergraduate degrees. Eleven received their bachelor's degrees before 1989, 31 between 1990 and 1999, and 40 between 2000 and 2008. The mean year for the awarding of the participants' bachelor's degrees was 1997. The mean year of birth for the participants was 1974. The majority of participants were female (71%). They were evenly split between married/partnered and single (52.5% married/partnered; 47.5% single). All were U.S. citizens, and they were primarily Caucasian (94%).

The population for the focus groups consisted of recently hired communication faculty. All communication faculty hired in the last three years at a comprehensive mid-Atlantic university were invited to participate in a focus group about entering academe. A total of 12 faculty members participated in two 90-minute structured focus groups. The focus group discussed the topics of faculty preparation and their first jobs in academe. These discussions were used to inform the resulting questionnaire for this study.

C. Survey Instrument.

After reviewing the relevant literature and the responses from the focus group a 27- question survey was constructed that asked questions related to the preparation for entering academia, career plans and respondents' backgrounds. Participants were queried about what preparation opportunities they had participated in and what were their areas of knowledge of the field including: teaching, research, advising and service. Additionally, the respondents were asked to self-report their confidence, interest, and preparation levels for common faculty tasks in the same areas. The survey used both multiple choice and open-ended questions and had a Cronbach's alpha of 0.809. See Appendix for survey.

D. Survey Procedure.

As the survey was available on paper and online, both versions were identical except for formatting required by the medium. After agreeing to an informed consent document, participants completed the survey and returned it to the researcher or submitted it online. The paper version of the survey was used only at the National Communication Association job fair. The university institutional review board approved both versions of the survey and the overall procedure. The online survey was available for six months and was accessible via an online link.

III. Results.

A. Preparation Activities.

Participants responded to questions in four areas regarding their preparation in becoming a faculty member (see Table 1). The four areas included knowledge of field, teaching, advising, and service. Respondents also indicated if the preparation task was available on their campuses and if they participated in the task. By a large margin, the most used preparation task occurred in the area of teaching. For all but one of the teaching preparation tasks, more than half of the respondents had participated in the activity. The highest percentage obtained of all distracters revealed a 95.2% for receiving written evaluations from students. Visiting a teaching development center was the only teaching preparation activity to measure below half with 35.4% of respondents using this resource.

Interestingly, 70.3% of respondents reported having a teaching development center on campus. This is the largest difference between having the task available and participating in the activity as asked about in the questionnaire. In general, the participants' campuses had numerous teaching preparation tasks available and the participants took advantage of them. All teaching preparation tasks were available at over half of the respondents' campuses. The most available tasks reported were receiving written student feedback (94.4%) and assisting a faculty member with a class (90.1%). The least available activities reported were working on another campus (54.2%), enrolling in a formal communication/pedagogy course (65.3%), and having a teaching mentor (68.1%).

Fewer respondents indicated they had participated or had the task available in the area of knowledge of field. The most commonly available and participated task was a career-planning workshop on academic job search; 58.7% of participants responded that the item was available to them and 46.3% participated in the activity. Completing an annual performance evaluation had

similar percentages; 49.3% had it available and 50.6% participated[3]. In the middle of percentages was participating in a job-shadowing program with 21.5% having it available and 16.7% participating. The lowest three sets of responses revealed the following: a class on the history, mission and purpose of higher education (17.1% had it available, 11.3% participated), an organized trip to another campus (15.4% had it available, 11.3% participated), and a workshop or seminar about the history, mission and purpose of higher education (16.7% had it available, 9.2% participated).

Respondents' participation in service preparation tasks was low. The highest percentages reflected participating in a workshop or seminar on faculty roles and responsibilities with 50.6% having it available and 37.5% participating. Participation in and availability of a workshop or seminar on the organization and administration of colleges and universities was similar with 44.9% having it available and 33.8% participating. The lowest scoring items were serving on a campus or department committee. Being a non-voting committee member was available to 27.6% of the participants and, of those who had the option available, 28.7% participated in this task. Acting as a voting member was less common with 15.2% having it available and 15.2% participating.

The final area was advising preparations. This had the lowest participation of the four areas. The largest percentages were reflected for those having advising training and that was only available to 13% of the respondents and 11.3% participated in the training. The other two items were serving as a formal academic advisor (9.2% had it available, 10% participated) and working on another campus in an advising role (11.4% had it available, 5.1% participated). As with the other areas, the percentage participating in the activity was close to the percentage that had the task available.

B. Hindsight.

When asked, if they could start their degree programs over, what types of information and training they would seek, a majority of respondents indicated that they would definitely or maybe seek more information about teaching, university structure, advising students, research, and promotion and tenure (see Table 2). The largest positive percentage response was about seeking more information about teaching (53.7% yes, 29.3% maybe). The smallest positive response related to seeking more information about promotion and tenure information (35.8% yes, 23.5% no). The other items are similar with around 7 out of 10 participants responding positively to seeking more about university structure, advising and research.

C. Confidence, Interest and Preparation for Faculty Tasks.

Respondents indicated how confident, interested and prepared by their programs they were for a variety of faculty activities (see Table 3). The activities covered teaching, advising, service, and research. Teaching is the area where the most respondents were confident, interested and prepared. Of all the teaching activities, but one, only 6% or less were not at all confident in their ability to do the task. Additionally, large percentages reported that they were very confident. For

[3] There are a few instances in the data where the percentage participating is larger than the percentage that had it available. It is possible that the activity was not formally available to everyone, but this respondent received special consideration and could participate. The qualitative responses support this.

Table 1. Participation and Availability of Preparation Opportunities in the Areas of Knowledge of Field, Advising and Service by Percentage.

	I participated.	The item was available.		
	Yes	Yes	No	Don't Know
Teaching Preparation				
Participated in workshop/seminar on teaching in your discipline	67.5	73.6	18.1	8.3
Visited a teaching development center	35.4	70.3	14.9	14.9
Taught a free-standing course in which you were the sole teacher	89.2	88.9	9.7	1.4
Taught a lab section of a course	59.0	72.6	23.3	4.4
Assisted a faculty member in teaching or administering a class	78.0	90.1	7.0	2.8
Enrolled in a teaching assistant training course, lasting at least one term	57.8	61.6	26.0	12.3
Created a teaching portfolio	75.9	76.4	12.5	11.1
Received written feedback/evaluation from faculty and/or peers while teaching a lab or course	74.4	73.2	16.9	9.9
Received oral feedback/evaluation from faculty and/or peers while teaching a lab or course	79.5	77.1	14.3	8.6
Received written feedback/evaluation from students in the course while teaching a lab or course	95.2	94.4	5.6	0
Received oral feedback/evaluation from students in the course while teaching a lab or course	77.1	76.1	18.3	5.6
Had a teaching mentor (formal or informal)	69.5	68.1	19.4	12.5
Enrolled in a formal communication education/pedagogy course	48.8	65.3	22.2	12.5
Worked on another campus in a teaching role (i.e., as an adjunct)	43.9	54.2	26.4	19.4
Knowledge of Field Preparation				
Participated in a career-planning workshop on academic job search.	46.3	58.7	14.7	26.7
Participated in a workshop/seminar on the history, mission and purpose of higher education.	9.2	16.7	42.3	41.0
Enrolled in a class on the history, mission and purpose of higher education.	11.3	17.1	38.2	44.7
Participated in an organized trip to another campus to learn about being a faculty member in another setting.	11.3	15.4	56.4	28.2
Participated in a job shadowing program for prospective faculty	16.7	21.5	49.4	29.1
Completed an annual performance evaluation	50.6	49.3	29.3	21.3
Service Preparation				
Participated in a workshop/seminar on faculty roles and responsibilities.	37.5	50.6	20.8	28.6
Participated in a workshop/seminar on the organization and administration of colleges and universities.	33.8	44.9	35.9	19.2
Served on a campus or department committee as a voting member	15.2	15.2	40.5	44.3
Served on a campus or department committee as a non-voting member	28.7	27.6	32.9	39.5
Advising Preparation				
Served as a formal academic advisor	10.0	9.2	61.8	28.9
Had training in academic advising	11.3	13.0	64.9	22.1
Worked on another campus in an advising role	5.1	11.4	73.4	15.2

N=84

Individual items are listed in the order presented in the survey.

example, 85.5% reported they were very confident in teaching lecture courses and 84.3% were very confident in teaching discussion sections and courses. The exception to this was in teaching laboratory courses with 27.5% not at all being confident in their abilities and 37.5% being very confident. The respondents' interest in teaching mirrors that of their confidence in teaching. With the exception of teaching lab courses, only 7.2% or less reported not being interest in the teaching tasks. 34.2% were not at all interested in teaching lab courses. Furthermore, a majority of participants reported that their programs had prepared them for teaching. The lowest not at all prepared percentages were found in teaching lecture courses (12.0%) and teaching discussion courses (15.9%). The highest not all prepared items were found in teaching lab course (48.1%) and incorporating technology into the classroom (42.2%).

Table 2. Participants Seek More Information/Training If Restarting Their Degree by Percentage.

	Yes	Maybe	No
Seek more information/training about teaching	53.7	29.3	17.1
Seek more information/training about university structure	45.1	23.2	31.7
Seek more information/training about advising students	42.0	27.2	30.9
Seek more information/training about research	44.4	30.9	24.7
Seek more information/training about promotion and/or tenure	35.8	23.5	40.7

N=84

D. Advising.

In general, advising was the lowest in confidence, interest and preparation. Almost 1 in 10 (9.8%) had no confidence in advising undergraduates and 1 in 5 (19.5%) had no confidence in advising graduate students. More than two-thirds of respondents reported that their program did not prepare them for advising. Even without specific preparation, over a majority of respondents were interested in advising students.

E. Service.

In the area of service, respondents were asked about serving on departmental/university committees, working in the community, and serving the discipline. The responses indicate that most do not think they were prepared by their program for service. 55.6% were not prepared at all to serve on departmental/university committees, 57.5% were not prepared at all to serve the community, 35.4% were not prepared at all for disciplinary service. The respondents were interested in serving in these areas with only 7.3% not being interested in disciplinary service, 6.1% not interested in departmental/university service and 2.4% not interested in community service. Though the respondents did not report they were prepared for service by their programs, most were confident in their ability to perform this service with only 13.4% not being confident in departmental/university service, 6.1% in disciplinary service, 3.7% in community service.

Table 3. Confidence, Interest and Preparation for Faculty Activities by Percentage.

	I am confident			I am interested			I was prepared by my program		
Task of faculty job:	Very Much	Some what	Not at all	Very Much	Some what	Not at all	Very Much	Some what	Not at all
Teaching									
Teach lecture courses	85.5	12.0	2.4	62.7	34.9	2.4	43.4	44.6	12.0
Teach discussion sections and courses	84.3	13.3	2.4	81.7	14.6	3.7	52.4	31.7	15.9
Teach laboratory courses	37.5	35.0	27.5	29.1	36.7	34.2	32.9	19.0	48.1
Teach specialized graduate courses	42.2	51.8	6.0	78.3	18.1	3.6	18.1	39.8	42.2
Incorporate information technology in the classroom	61.0	39.0	0.0	65.9	31.7	2.4	20.7	47.6	31.7
Develop and articulate a teaching philosophy	74.7	24.1	1.2	71.1	21.7	7.2	33.7	38.6	27.7
Create a classroom climate inclusive of a diverse population of students and diverse learning styles	77.1	21.7	1.2	87.8	9.8	2.4	36.6	42.7	20.7
Effectively manage a classroom	78.3	20.5	1.2	84.1	13.4	2.4	33.7	48.2	18.1
Advising									
Advise undergraduates	45.1	37.0	9.8	52.4	36.6	11.0	7.4	24.7	67.9
Advise graduate students	34.1	46.3	19.5	54.9	35.4	9.8	8.5	24.4	67.1
Service									
Serve on departmental and institution-wide committees, help craft policy and engage in university governance	31.7	54.9	13.4	39.0	54.9	6.1	11.1	33.3	55.6
Apply my expertise to service to the community beyond campus	57.3	39.0	3.7	67.1	30.5	2.4	20.0	22.5	57.5
Review papers, serve on disciplinary society committees and engage in other forms of service to my profession	50.0	43.9	6.1	64.6	28.0	7.3	24.4	40.2	35.4
Research									
Conduct research	58.5	39.0	2.4	67.1	28.0	4.9	56.1	35.4	8.5
Publish research findings	43.2	48.1	8.6	64.6	32.9	2.4	35.8	49.4	14.8

N=84

F. Research.

Respondents were asked about conducting and publishing research. The positive responses in these areas were not as high as in teaching, but still affirmed they believed they were prepared for research. Most respondents thought they were prepared for research responsibility by their programs. Over half (56.1%) were very prepared by their programs to conduct research. Additionally, the respondents were interested in conducting and publishing research with about two-thirds of the respondents being very interested in both conducting (67.1%) and publishing (64.6%) research. Research was an area where the respondents were confident with only 2.4% not being confident in conducting research and 8.6% not being confident in publishing research.

IV. Discussion.

A. Types of faculty preparation.

According to this data, most of the participation activities are aimed at teaching preparation. With percentages ranging from 54.2% to 90.1%, it would appear that graduate programs are giving many opportunities for future faculty to gain experience in teaching. For example, most graduate students gain the experience of being the sole teacher for a course (90.1%). Additionally, most graduate students are given tools, such as the use of a teaching development center, seminar(s) on teaching, and multiple feedback opportunities, to develop and improve their teaching. The least available activities are working on another campus (54.2%) and enrolling in a teaching assistant training course (61.6%). These two activities point to areas that campuses who want to improve teaching preparation could focus upon. Both provide additional training and experiences that could improve teaching skills before fully entering academia.

In the knowledge of field preparation, the only activity--participating in a career-planning workshop--was available to a majority of participants. According to this data, future communication faculty received little information about academe in general. This is problematic in that faculty enter the academic role not fully understanding what is involved in their profession.

In the area of service and advising, the amounts of preparation activities that are available are dismal. Only one activity was available to more than half of the participants, a workshop on faculty roles (50.6%). Very few opportunities to learn about service and advising were available with more activities only being offered to less than 20% of the participants. This is a significant shortcoming in their preparation. From the beginning of their first jobs, advising and service will be expected, and they will not have the necessary training. These skills will have to be learned on the job, and that will diminish the time they can put into teaching and research. These data illustrated the phenomenon of faculty arriving at their first jobs and becoming overwhelmed with all that is required of a faculty member. For the entirety of their graduate education, these faculty were prepared to be an expert in communication, but now they are being asked serve to on committees and help students pick classes. Those unprepared for obligations could lead to feelings of exasperation and beleaguerment and future loss of retention in the academic role.

B. Utilization of faculty preparation.

As already mentioned, most of the preparation opportunities students receive are for the role of teacher. In general, graduate students often take the opportunities they are offered to improve their teaching, but do not use the opportunities to prepare in other areas. This is a positive finding for faculty preparation in teaching and points out that graduate students see teaching as an important part of their future profession and see the value of improving their teaching skills. It also implies that additional preparation opportunities could be well received and utilized. The one teaching opportunity that was not used by a majority of participants was visiting a teaching development center. Only 35.4% of participants engaged in this activity, while most (70.3%) had access to a center. Many reasons could exist for these discrepancies. Graduate students are exceptionally busy and a voluntary activity like this could be pushed to a low priority. These findings suggest that the importance of utilizing teaching centers need to be encouraged. Participation may even need to be made more formal with specific requirements. If participation

is not increased, the financial and other resources required by a teaching center might be better used in other areas.

In the areas of knowledge of field, service, and advising, students participate in fewer activities. The opportunities are extremely limited and those minimal opportunities are not being utilized. Service and advising can easily take up a third of a faculty member's work time, and people are entering their first jobs unprepared for these activities. The low participation rates could mean that graduate programs not only need to provide training activities in these areas, but also need to encourage students to use these activities. For example, only 15.2% of graduate student had the opportunity to serve on a committee, and of that limited group, only 15.2% choose to do so. Service and advising may not appear on the comprehensive exam, and that may be why these become low priorities, but both are vital to future job success in academe.

The need for additional preparation activities is corroborated by the participants responding that they would seek more information about teaching, university structure, advising, research, and promotion. These students at the end of their academic degrees realized in hindsight that more preparation would have been beneficial to their careers. Interestingly, most respondents stated they wanted more training about teaching even though that was the area of highest confidence in preparation.

C. Confidence in performing faculty roles.

The results of this study provide areas of confidence for the respondents. They state that they are confident in their ability to teach and conduct research but are less confident in advising and service. In addition, the respondents are confident even in the areas that they self-report little preparation, yet, in hindsight, they desire more information and preparation. The researchers question whether the self-reporting is overconfidence or a lack of real understanding. We believe also that there exists a graduate school mentality of always saying 'yes' that might carry over into answering the questions posed. Also, we do not want to rule out that the respondents could have been in job search mode believing in the mentality of 'I am applying for these jobs, hence I must be able to do these tasks.'

In the area of service, the majority did state some confidence in their preparation. The question remains, if they are confident, why would 82.9% seek more information in hindsight? Service duties, like serving on committees, are largely unknown areas and may create a lack of confidence and lack of knowledge when once in place at their first academic jobs. How to behave or what is expected of committee members is not an area of discussion in most committee work that we have ever encountered. If this is the case for all those who enter academia, where does this learning/skill come from? Identifying how this knowledge is acquired is an area for future consideration.

Since respondents have received little preparation in advising, service and the field in general, we noted that they wanted more, participated in what little training was offered, took advantages of preparation activities, and would do more if available. This might be explained by the finding that few graduate students ever advise, serve on committees, or even observe faculty mentors in these roles. The overall lack of understanding the mission of higher education, begs the question that perhaps overviews of higher education are not included in communication pedagogy courses or at least not covered in detail. More methods to improve their knowledge and confidence could be addressed in the fashion of more structured mentoring by faculty. Stronger mentoring programs appear to be an area that is needed. Future professionals would

benefit to see their mentors functioning in these roles or at least hear anecdotal evidence of these activities. In addition, mentoring would assist with questions of professionalism, understanding the aspects of higher education, and perhaps even academic advising. Since advising was an area that was lowest in confidence, interest and preparation, more access to the role of advisor would be beneficial.

D. Recommendations and Conclusions.

Knowledge of what candidates need and have in their professional arsenal is important to the future of the academic role, especially in a time where candidates proceed through the academic process without gaps or other work experience that aid them in their academic careers. While participation in teaching preparation activities is high, participation in other areas is low. Many reasons could exist why these activities are not utilized more, but more faculty promotion of these activities could be beneficial. We recommend that faculty promote all preparation activities uniformly across teaching, research and service. Additionally, faculty could discuss the importance of the preparation activities and how these activities will help them develop essential skills for the students' future jobs.

Furthermore, it might be beneficial to explore what might be restraining faculty from recommending these activities. This might be the result of faculty not valuing activities beyond teaching and research. For example, advising may be seen as an unimportant part of their job and thus they don't see the need for graduate students to learn about advising. Faculty may be so focused on preparing students for teaching and their research agendas, the absence of the other areas could be unnoticed. University structure may be another compounding factor. Advising may be centralized; differing ranks having different advising requirements; and FERPA regulations limiting access to student information. Considering lack of knowledge of committee work, size and content might be exclusionary of graduate students serving on committees.

Beyond promoting existing participation activities more, we recommend additional preparation activities be made available. This study did not explore which types of activities are most beneficial, but it does show that students in hindsight wanted more activities. These expanded offerings could take the forms of traditional courses or experiential learning. At minimal levels, graduate students could be allowed to observe committee work, advising and day-to-day faculty work. This may violate the norms of faculty life. Faculty members may be guarding students from the mundane aspects of faculty life or perpetrating an idealized vision of faculty life. Graduate students could also be allowed to just observe and, where appropriate, given active roles and allowed to participate. For example, graduates students could take on advising roles with the faculty member mentoring the graduate student. This would give students more experience without increasing faculty workloads. We worry that lack of faculty promotion of preparation activities combined with the lack of preparation opportunities communicates to future faculty the unimportance, or even, contempt for these activities.

Based on the data, teaching centers are common across college campuses, but not well attended by graduate students. This discrepancy may by beneficial when deciding future preparation activities. The study did not ask about why students did and did not participate, but the usage of teaching centers was the least frequent activity used in the teaching area. Possibilities could include the center being sponsored by the university instead of department limiting student access and knowledge of the center. Additionally, the center's value may be minimized, or even stigmatized, by faculty in that only teachers with problems go there. The

availability of teaching centers implied that campus administration and faculty see these organizations as useful, but this data questions that assumption. These centers may truly be a great preparation asset that is underutilized, or these centers might be a draw on resources that could be used elsewhere.

E. Limitations and Future Research.

In looking at the areas of academic preparation, the researchers agree that more follow up is needed. The exploratory nature of this study points to limitations in studying graduating students who are actively seeking employment. Access was limited due to their busy schedules. Additionally, their responses may have been shaped by the job search process. The purpose of the study was to describe the current situation with communication faculty preparation. With additional research that identifies best practices, recommendations for preparation programs could be produced. In addition, the researchers would like to conduct pre-first-job interviews and follow those up with post-first job interviews at the end of the faculty member's first full year in academia.

Future research could be expanded to include other disciplines beyond communication. Follow-up also is needed to learn if the expectations of preparation match their actual experiences in academia. Interviews of the respondents of this survey and even interviews of candidates after their first year of work in the academic role would provide important information that could assist those who provide training for future academicians in the field of communication and for those who hire those candidates.

F. Conclusion.

Many roles are expected of new faculty in higher education. Participants in this study highlighted the efforts that have been made in preparing them as teachers, but the other roles such as service participant, committee member, and advisor, are largely ignored in graduate education. New faculty state they are confident in their abilities to practice the many roles expected of them, but without preparation the confidence may be unfounded. Most time in graduate school is focused on content knowledge and may not allow introduction of many non-curricular experiences. However finding time and opportunities for future faculty to practice, or minimally, observe glimpses of future responsibility will create a better-prepared faculty.

Appendix

Survey Instrument

Thank you for participating in a survey about your preparation to enter academia. In this survey, we want to learn about how you were prepared for a job in academia. We are also interested in how confident you are in that preparation. Your input will help inform us about current graduate education and how to make future improvements. No special expertise is needed to complete this anonymous survey, and it should take about 15 minutes to complete.

When you have completed the questions, please place the survey and the consent form in the appropriate box.

PREPARATION
Following is a list of opportunities and experiences that some campuses have to help student prepare to enter academia.

- For each item listed below, did you use /participate in the item?
- Next, tell us if it was available to students like you.

	I participated.		The item was available.		
	No	Yes	No	Yes	Don't Know
KNOWLEDGE OF FIELD PREPARATION					
Participated in a career-planning workshop on academic job search.					
Participated in a **workshop/seminar** on the history, mission and purpose of higher education.					
Enrolled in a **class** on the history, mission and purpose of higher education.					
Participated in an organized trip to another campus to learn about being a faculty member in another setting.					
Participated in a job shadowing program for prospective faculty					
Completed an annual performance evaluation					
TEACHING PREPARATION					
Participated in workshop/seminar on teaching in your discipline					
Visited a teaching development center					
Taught a free-standing course in which you were the sole teacher					
Taught a lab section of a course					
Assisted a faculty member in teaching or administering a					

class					
Enrolled in a teaching assistant training course, lasting at least one term					
Created a teaching portfolio					
Received **written** feedback/evaluation from faculty and/or peers while teaching a lab or course					

Received **oral** feedback/evaluation from faculty and/or peers while teaching a lab or course					
Received **written** feedback/evaluation from students in the course while teaching a lab or course					
Received **oral** feedback/evaluation from students in the course while teaching a lab or course					
Had a **teaching** mentor (formal or informal)					
Enrolled in a formal communication education/pedagogy course					
Worked on another campus in a teaching role (i.e., as an adjunct)					
ADVISING PREPARATION					
Served as a formal academic advisor					
Had training in academic advising					
Worked on another campus in an advising role					
SERVICE PREPARATION					
Participated in a workshop/seminar on faculty roles and responsibilities.					
Participated in a workshop/seminar on the organization and administration of colleges and universities.					
Served on a campus or department committee as a **voting** member					
Served on a campus or department committee as a **non-voting** member					

HINDSIGHT

If you could go back in time and start your degree program over, knowing what you know now, which decisions would you change?

If I did it over, I would:	No	Maybe	Yes
Seek more information/training about teaching			
Seek more information/training about university structure			
Seek more information/training about advising students			
Seek more information/training about research			
Seek more information/training about promotion and/or tenure			

Below are some short-answer questions that deal with hindsight.

> Knowing everything that you know now, what advice would you give others entering or in the early years of graduate school?

> What didn't you get that you wish you had gotten in your education?

> If applicable, what surprised you about your first job in academe?

CAREER PLANS

Now we would like to learn about your plans and dreams for the future. Students consider a wide range of career options. Furthermore, their plans change over time.

- First, consider what you currently hope and plan to pursue as a career after you complete your degree and any post-graduate school training you anticipate.
- Currently, how strong is your interest in or desire for each of these career options.
- Since you began your program, has your interest in this option decreased, stayed the same or increased?

	My current interest and desire			Change in interest since I began program		
	Not at all	Possibly	Definitely	Decreased	Stayed the same	Increased
To become a professor in a college or university						
To teach, but not in a college or university setting						
To conduct research in a college or university (non-faculty job)						
To become an administrator in a college or university						

TASK PREPARATION

Faculty member do many tasks. As you look forward to these tasks, to what extent would you say:

- I am comfortable and confident in my ability to do this task.
- I am interested in and looking forward to doing this task.
- I have been prepared by my program to do this task.

	I am confident			I am interested			I was prepared by my program		
Task of faculty job:	Not at all	Some what	Very much	Not at all	Some what	Very much	Not at all	Some what	Very much
Teach lecture courses									
Teach discussion sections and courses									
Teach laboratory courses									
Teach specialized graduate courses									
Incorporate information technology in the classroom									
Develop and articulate a teaching philosophy									
Create a classroom climate inclusive of a diverse population of students and diverse learning styles									
Effectively manage a classroom									
Advise undergraduates									
Advise graduate students									
Serve on departmental and institution-wide committees, help craft policy and engage in university governance									
Apply my expertise to service to the community beyond campus									
Review papers, serve on disciplinary society committees and engage in other forms of service to my profession									
Conduct research									
Publish research findings									

BACKGROUND

In this last section, help us to know a little more about you.
For each question, check the selection that best applies to you.

What advanced degree have you most recently completed or are currently completing?

- ☐ M.A.
- ☐ M.S.
- ☐ Ph.D.
- ☐ Ed.D
- ☐ Other _____

When did you begin your current advanced degree?
Month _____ Year _____

From what institution did you receive your advanced
degree?

_____

During academic years, I have primarily enrolled:

- ☐ Part time
- ☐ Full time

For the items below, check all that apply to you.

- ☐ Female
- ☐ Male

- ☐ Single
- ☐ Married or partnered

- ☐ No children
- ☐ Have dependent children living with me

- ☐ US Citizen
- ☐ Permanent Resident
- ☐ Non-US Citizen

If US Citizen, what is your ethnic background?

- ☐ African American
- ☐ Asian American – Pacific Islander
- ☐ Chicano/a – Hispanic – Latino/a
- ☐ Native American – Alaska Native
- ☐ Caucasian
- ☐ Other _____

What year were you born? _____

What year did you receive your bachelor's degree? _____

If applicable, what year did/will you receive your master's degree? _____

If applicable, what year did/will you receive your doctorate degree? _____

FOLLOW-UP

We plan to interview some of the participants.
Would you be willing to be interviewed?

- ☐ Yes. You may contact me to discuss in interview.

- ☐ Maybe. I need more information; you may contact me to talk further.

If yes or maybe, please give your contact information.

You can reach me at this e-mail address: _____

or at this phone number:

_____

- ☐ No. I am not interested in this interview

References

Adams, K.A. (2002). What Colleges and Universities Want in New Faculty. http://www.aacu.org/pff/PFFpublications/what_colleges_want/index.cfm.

Austin, A.E., & McDaniels, M. (2006). Using doctoral education to prepare faculty to work within Boyer's four domains of scholarship. *New Directions for Institutional Research, 2006*(129), 51-65.

Border, L.L.B. (2002). The Socratic portfolio: A guide for future faculty. *PS - Political Science and Politics, 35*(4), 739-742.

Cody, J.A., & Hagerman, M.E. (1997). Transforming graduate education: A new vision of the professoriate. *Journal of Chemical Education, 74*(5), 525-528.

Furniss, N., Blomquist, B., Butler, M., McDougall, H., & O'Bannon, B. (2002). Preparing future faculty at the Indiana cluster. *PS - Political Science and Politics, 35*(4), 733-736.

Gaff, J.G. (2002). The disconnect between graduate education and the realities of faculty work: A review of recent research. Liberal Education. Summer. Found at: http://aacu.org/liberaleducation/le-su02/le-su02feature.cfm.

Gaff, J.G., & Lambert, L.M. (1996). Socializing future faculty to the values of undergraduate education. *Change, 28*(4), 38-46.

Gaff, J.G, Pruitt-Logan, A.S., Sims, L.B., & Denecke, D.D. (2003). *Preparing Future Faculty in the Humanities and Social Sciences: A guide for change.* Council of graduate schools and the association of American colleges and universities. Washington DC.

Gerdeman, R.D., Russell, A.A., & Eikey, R.A. (2007). A course to prepare future faculty in chemistry: Perspectives from former participants. *Journal of Chemical Education, 84*(2), 285-291.

Golde, C.M., & Dorey, T.M. (2001). At cross purposes: What the experiences of today's doctoral students reveal about doctoral education. Survey initiated by Pew Charitable Trust. Found at www.csc.wisc.edu/~oliver/soiology/PhDEducationreport.pdf.

Henderson, B.B., & Buchanan, H.E. (2007). The scholarship of teaching and learning: A special niche for faculty at comprehensive universities? *Research in Higher Education, 48*(5), 523-542.

Jones, A.L., Davis, S.N., & Price, J. (2004). Preparing future faculty: A new approach at North Carolina State University. *Teaching Sociology, 32*(1), 264-275.

Koblinsky, S.A., Kuvalanka, K.A., & McClintock-Comeaux, M. (2006). Preparing future faculty and family professionals. *Family Relations, 55*(1), 29-43.

Meyers, S.A., Reid, P.T., & Quina, K. (1998). Ready or not, here we come: Preparing psychology graduate students for academic careers. *Teaching of Psychology, 25*(2), 124-126.

Nelson, P. D., & Morreale, S. P. (2002). Disciplinary leadership in preparing future faculty: The humanities and social sciences. *Liberal Education, 88*(3), 28-33.

Nerad, M., & Cerney, J. (2000). Improving doctoral education: Recommendations from the Ph.D.s--Ten Years Later Study. *The Communicator*, XXXIII: 2.

Richlin, L., & Essington, A. (2004). Faculty learning communities for preparing future faculty. *New Directions for Teaching and Learning, 1*(97), 149-157.

Sales, J., Comeau, D., Liddle, K., Perrone, L., Palmer, K. & Lynn, D. (2007). Preparing future faculty: An interdisciplinary, undergraduate science course taught by graduate and postdoctoral teacher-scholars. *Journal of College Science Teaching,*
36(4), 24-30.

Solem, M.N., & Foote, K.E. (2006). Concerns, attitudes and abilities of early-career geography faculty. *Journal of Geography in Higher Education, 30*(2), 199-234.

Wimer, D.J. (2006). Raising the bar for training college teachers: An interview with Victor Benassi. *Teaching of Psychology, 33*(2), 148-152.

Walker, G. E., Golde, C.M., Jones, L., Bueschel, A.C., & Hutchings, P. (2008). The Formation of Scholars: Rethinking Doctoral Education for the Twenty-first Century. The Carnegie Foundation for the Advancement of Teaching. Stanford. p.119.

Journal of the Scholarship of Teaching and Learning, Vol. 13, No. 1, February 2013, pp. 24 – 44.

Designed for learning: A case study in rethinking teaching and learning for a large first year class

Lisa Goldacre,[1] Susan Bolt[2] and Michael Lambiris[3]

Abstract: This paper presents a case study in which the principles of scholarship were applied to designing an approach to learning suitable for large classes. While this case study describes an Australian first year Business Law unit, the findings presented in this paper would be relevant to a wide range of teachers faced with large enrollments in first year higher education courses. In the present case, the teacher had the challenge of teaching very large first year classes comprising students from diverse linguistic and cultural backgrounds, many of whom were enrolled in the course not from choice but because it was compulsory for their degree. In this paper the authors describe how the teaching of the course was designed to enhance and encourage student learning. The authors' focus is on implementation of first year curriculum design principles; use of computer-based tutorials and audience response systems; and a team approach to teaching. The teaching practices discussed in this paper are underpinned by references to relevant literature and contextualized within an ethics approved research project. The findings presented in this paper are likely to be of interest to teachers of law, teachers of large classes, and to curriculum and academic developers.

Keywords: case study; curriculum design, large class teaching, computer-based learning, team teaching

I. Introduction.

In recent times traditional transmissive teaching methods have been challenged and student-oriented approaches to teaching and learning advocated (Keyes & Johnstone, 2004; Kift, 2008; Trigwell & Prosser, 2003). In 2009, Kift conducted a seminal study that resulted in the development of a transition pedagogy designed to enhance student learning in first year university courses. Kift (2009) identified six First Year Curriculum Principles: transition; diversity; design; engagement; assessment; and monitoring and evaluation. Whilst all six of these principles were relevant to the redesign of the first year Business Law unit offered by Curtin University, this paper focuses on the principles of design, engagement, and monitoring and evaluation because these were most critical to the renewal process undertaken. The authors believe that curriculum design and delivery in a manner that enables student engagement is closely linked to the strategies used for monitoring and evaluation, for example, by providing formative and summative assessment tasks and feedback at appropriate levels and times, and by carefully evaluating and monitoring the implemented strategies.

Consistent with current global trends in higher education, the first year Business Law unit referred to in this paper attracts a large and diverse student cohort (Altbach, Reisberg, & Rumbley, 2009). It should be noted that, in Australia a 'course' is often referred to as a 'unit' so

[1] Curtin University, GPO Box U1987 Perth Western Australia 6845, lisa.goldacre@cbs.curtin.edu.au
[2] Curtin University, GPO Box U1987 Perth Western Australia 6845, susan.bolt@cbs.curtin.edu.au
[3] The University of Melbourne, Victoria 3010, m.lambiris@unimelb.edu.au

in this paper the word 'unit' will be used to describe a twelve week study period with a time allocation of three contact hours worth 25 credit points within a 600 credit point three-year degree program. The unit discussed in this paper is managed by the 'unit coordinator', who is based at University's main campus in Western Australia. According to the Curtin Business School Unit Coordinator Role Statement (2011):

> Unit coordinators are responsible for the overall management and delivery of units in accordance with University policies and procedures, and quality assurance. They are responsible for designing and facilitating the best teaching and learning experience for staff and students. They also have a critical role in the leadership, development, and mentoring of sessional and other casual staff who are appointed to work with the unit coordinator to deliver units.

A large teaching staff of approximately 40 people is employed by Curtin University to deliver the first year Business Law unit. It is taught in multiple locations within Australia and overseas. This particular unit is one of eight common core business units within a three-year Bachelor of Commerce Degree program comprising 24 such units. Each year about 3500 students enroll in the first year Business Law unit. In 2008, when the unit was reviewed, 1500 students were taught at the main campus using a face-to-face mode of teaching while another 1000 students were taught through distance education, online and through Open Universities Australia (OUA). A further 1000 students were taught through associated colleges and branch campuses in Sydney, Sarawak, Singapore, and other diverse locations. In 2012, the enrollments and diversity of locations remained largely unchanged. The student cohort included school-leavers and mature-aged students studying full-time or part-time by means of online, face-to-face, or distance modes of delivery. The students came from diverse cultural and linguistic backgrounds (Curtin University, 2011). Table 1 shows a breakdown of course activity for the Bachelor of Commerce, of which the unit under discussion is a part:

Table 1. Bachelor of Commerce Course Total Student Enrollment 2008 – 2012.

130099 Bachelor of Commerce	**2008**	**2009**	**2010**	**2011**	**2012 YTD**
Domestic Commonwealth supported students	4247	4432	4238	4354	4380
Domestic full fee paying students	75	46	24	10	7
International fee paying students Onshore	3255	3542	3765	3584	3056
International fee paying students Offshore and partners	4082	4225	4481	4147	3715
Total Students	**11659**	**12245**	**12508**	**12095**	**11158**

The staff teaching the unit was similarly diverse and situated in multiple locations and time zones. Some of the teaching staff may not have had regular contact with colleagues because of their widespread locations. The size and diversity of the student body and the geographical separation of the various campuses presented special challenges in the delivery of the course.

Considering the complexities described, the unit coordinator believed it was essential to apply principles of scholarship and Kift's (2009) transition pedagogy to the review and redesign

this unit (Glassick, 2000). In 2007 Curtin University initiated a systematic comprehensive review of all units. As a result of institutional imperatives and informed by the student voice, which indicated students wanted more engaging, flexible learning opportunities and resources, the unit coordinator investigated strategies to improve delivery of the course. As a result of these investigations, the unit coordinator decided to reorganize the delivery of the unit, in particular by using computer-based tutorials, an audience response system, and a team teaching approach.

The purpose of this paper is to explain the strategies used by the first author who was the unit coordinator in redesigning the delivery of a large first year Business Law unit. Teaching and learning related data, collected by the unit coordinator, form the basis of this case study which the authors believe will be useful to other academics interested in curriculum design for large classes. The unit coordinator also participated in a pilot study about teaching practices in higher education settings conducted by the second author. Data from the pilot study were collected by means of videoed teaching observations, semi-structured interviews, and a focus group. The preliminary results of the pilot study, which were aligned with peer review of teaching, have informed the development of this case study and are referred to in the section on monitoring and evaluating. The third author developed the computer-based resources and provided advice regarding the use of computer-based tutorials in teaching large first year Business Law classes. The results of this case study were significant and contribute to the existing literature because they describe a complex and potentially unusual teaching situation in which recognized good practices and theory in undergraduate education and curriculum design were implemented (Chickering & Ehrmann, 1996; Chickering & Gamson, 1987; Kift, 2009). The focus of this paper is on the design, engagement, and monitoring and evaluation elements of Kift's (2009) transition pedagogy and how it was applied in face-to-face, distance, and online teaching situations on and away from the main campus.

The individual case study illustrates answers pertaining to the unit coordinator's research question which asked "How can curriculum in a first year Business Law unit be designed to engage large numbers of students and provide them with flexible opportunities for learning?" The results are integrated throughout this paper as a narrative account. Hence the reader will not find a "section" on results. Please note that the individual case presented in this paper was part of a larger case study involving 29 participants and using a range of evidence from multiple sources (Yin, 2009). According to Tight's (2003) analysis of research in higher education, although research at the individual case level was less common and could lack credibility due to the use of a small sample size, nevertheless, it could be "illuminating" and "exemplifying" (Tight, 2003, p. 203). The account presented in this paper is likely to be of interest not only to teachers of law, but to all teachers of large classes regardless of discipline and to curriculum and academic developers generally.

II. Designed For Learning: A Review of the Literature.

Traditionally, university courses have been delivered by giving lectures and tutorials. Typically, lectures are given to very large groups of students, particularly first year students in cross-disciplinary courses such as Law, which is taught in both Law and Commerce degrees (Fitzpatrick, 2009; Mulryn-Kyne, 2010; Owens & Wex, 2010). Although lecturing is commonly used, its effectiveness is very much dependent on the quality of teaching, and research has shown that student-oriented approaches were preferable (Harvey, Drew, & Smith, 2006; Trigwell & Prosser, 2003). Good teaching was characterized, for example, by active learning, rapport,

feedback, resourcing, and management (ALTC & TEDI, 2003; Cannon & Knapper, 2011; Chickering & Ehrmann, 1996; Chickering & Gamson, 1987; Good & Brophy, 2003; Louden, Rohl, Barratt Pugh, Brown, Cairey, Elderfield, House, Meiers, Rivalland, & Rowe, 2005; Louden, Rohl, & Hopkins, 2008). Seeking to improve the quality of teaching, Bligh (2000, as cited in Mulryn-Kyne, 2010) and Costin (1972, as cited in Mulryn-Kyne, 2010) found that the effectiveness of traditional lectures could be enhanced by integrating them with other approaches, for example, online teaching and other interactive and cooperative learning activities. Also, Karp & Yoels (1976, in Mulryn-Kyne, 2010) noted a link between students' in-class participation and their engagement with course reading materials. Thus for lectures to large classes to be used effectively, educators must mindfully consider curriculum design elements that best promote active learning and student engagement through the integrated use of cooperative learning and technology.

Over the last 15 years considerable use has been made of computer-based learning materials, notably in science and medical education and training. The related literature that describes and evaluates the effectiveness and potential of computer-based learning provides useful insights and advice. For example, Young (2003) draws the important distinction between computer-based materials that provide no more than decontextualized passive knowledge from those that require application and utilization of knowledge, arguing that computer-based materials should aim to be of the latter type. Millheim (1996) suggests that, to best achieve the benefits of computer-based instruction, the materials should be interactive, provide comprehensive navigation options, and give the student relevant feedback. Wills and McNaught (2002) explain how systematic, lifelong learning is encouraged by computer-based learning materials that use dynamic, context rich examples to foster anticipative reasoning and self-explanation of solutions. Baillie and Percoco (2000) weigh the advantages of using computer technology against the problems of doing so, and discuss the logistical aspects of providing computer-based learning. Leuthold (1999) suggests that students respond differently to computer-based learning depending on their individual learning preferences, so that students with "sequential" learning styles are more likely to prefer computer-based learning than students with "random" learning styles. Cook (2005) discusses the difficulties of evaluating the effectiveness of computer-based learning against traditional teaching methods that do not involve computers but suggests comparisons between different computer-based materials and models can usefully be made. The findings and suggestions put forward in the literature generally suggest that properly designed and appropriately integrated and supported computer-based materials can be an effective component of higher-level learning, but that the outcomes cannot be assumed and need to be monitored and evaluated in an appropriate way. Furthermore, effective design of first year university curriculum requires the selection, sequencing, and integration of knowledge, skills, and values, in ways that scaffold and support student learning and engagement (Kift, 2009).

As previously noted, first year Business Law units often attract a large and diverse student enrollment. Curriculum designers must therefore plan teaching and learning strategies that successfully engage large numbers of students with varying preference, abilities and needs. One of the constraints often apparent in teaching large classes is the inability of teachers and students to get to know one another. Disengagement has been linked to lack of connection between teachers and students, and between students themselves. Therefore curriculum designers should consider ways of providing opportunity for meaningful interaction (Cannon & Knapper, 2011; Chickering & Ehrmann, 1996; Chickering & Gamson, 1987; Louden et al., 2005, 2008). In

the next section the authors describe how first year curriculum design principles were effectively implemented in the first year Business Law unit; particularly in relation to revising delivery of the course through the introduction of computer-based tutorials and deployment of teaching staff to build rapport and enhance student learning.

III. Rethinking Teaching and Learning in a Business Law Unit.

The redevelopment of the Business Law unit was based on extensive research and a review. In the second half of 2007, at the same time that the first author became the coordinator of this unit, the University initiated a university-wide curriculum review, *Curriculum 2010* ("C2010"). This was implemented in 2008–2010. A key part of C2010 was the systematic comprehensive review of all courses and programs. The C2010 process involved a review of the program learning outcomes and structure, and course information such as the unit name, credit value, syllabus, course learning outcomes, assessment, and tuition pattern. The specific outcomes for the C2012 process required that learning outcomes, derived from Curtin's graduate attributes, be related to professional competencies and appropriate higher order thinking skills. Further, the collective experience of individual units was required to contribute to the achievement of overall course learning outcomes. As part of the review of every subject, issues and challenges identified in feedback from current and past students were identified and addressed to ensure more effective learning in the future. Changes to the renewed curricula were approved on the basis that it was appropriate to graduate and industry needs and where assessment and learning experiences were directly aligned to the achievement of unit and course learning outcomes. The Business Law unit discussed in this paper underwent its C2010 curriculum review in 2008 (Curtin University, 2009). Significant consideration was given to the requirements of discipline specific knowledge through a benchmarking process with other Australian universities that deliver equivalent courses. This ensured compliance with appropriate professional competencies. In addition, regard was had to student feedback data to identify existing issues affecting teaching and learning. This review provided the unit coordinator with reliable information on which to base curriculum renewal and achieve the three goals that are outlined in the next section.

Since Semester 2, 2006, Curtin University has collected student satisfaction data by means of online evaluation surveys known as *e*VALUate. The survey comprises eleven quantitative questions and two qualitative questions. These questions elicit responses from students about their teaching and learning experiences in each unit. As a further measure in reviewing the Business Law unit, the unit coordinator reflected on student feedback collected in the *e*VALUate surveys. Quantitative survey data indicated students were generally very satisfied with the course: 80% of students reported satisfaction in all areas of teaching and 90% in relation to overall satisfaction. By contrast, however, students' responses to qualitative survey questions indicated they wanted more engaging learning opportunities and greater flexibility with learning resources. An analysis of the qualitative comments revealed that students liked the format of the in-house study guide provided as a primary source of information. They also liked the flexibility of resources available through the Blackboard learning management system. However, they did not want to purchase the prescribed textbook. The reasons given included a perceived lack of relevance of the textbook readings to the assessment tasks, as the other resources were sufficient to achieve success in the course; and the relatively high cost of the text. These factors, and the results of a benchmarking exercise against other Australian universities, informed the decision of the teaching team to implement changes to achieve three basic goals:

1. To base the new syllabus on commercially relevant topics that would be perceived as useful to business students, at least half of whom undertook no further legal studies after the first year unit.
2. To devise a curriculum that was relevant to industry that was set in an international context and included the University's graduate attributes as required by the C2010 initiative.
3. To deliver the course in a way that would effectively engage students whose learning experiences, expectations, and needs differed from previous generations.

In accordance with best practice in the delivery of transnational education (International Education Association of Australia, 2006; Mahmud & Sanderson, 2011) all of these goals were applied equally to each mode of delivery used in teaching the unit, whether face-to- face; online; or at campuses located outside of Australia.

To promote these aims, the teaching team undertook a review of available textbooks and resources. Learning resources that incorporated computer technology were favored because the team believed this aligned with students' learning preferences and that it would promote pedagogical transformation. As noted above, properly designed and appropriately integrated and supported computer-based materials can be an effective component of higher-level learning, but the outcomes cannot be assumed and need to be monitored and evaluated in an appropriate way. Therefore, the role of computer based materials was seen as a means to scaffold and support student engagement and provide an opportunity for more innovative methods of delivery. The relevance of the text and computer based materials would also be readily discernible to students. As a result of their review, the teaching team selected Lambiris' (2009) *First Principles of Business Law*, which comprised computer-based tutorials and a Source Book. These materials appeared to have provided a welcome degree of flexibility for students as well as promoting independent, self-directed learning.

Thus, in the present case study, the principles of scholarship were clearly applied (Glassick, 2000). The unit coordinator had clear goals for the redevelopment of the course, and undertook adequate preparation to ensure appropriate changes were made to the curriculum to enhance student learning in this context. The unit coordinator used appropriate methods to reach these decisions: C2010 course review, results of the *e*VALUate student satisfaction surveys, national benchmarking, and a review of available resources. In order to achieve significant results, the teaching team then utilized Kift's (2009) transition pedagogy to design curriculum to enhance student learning and engagement, and ensure successful learning outcomes through monitoring and evaluation. The three key elements of design, engagement, and monitoring and evaluation are discussed in the following sections.

A. Design.

> First year curriculum design and delivery should be student-focused, explicit and relevant in providing the foundation and scaffolding necessary for first year learning success. This requires that the curriculum must be designed to assist student development and to support their engagement with learning environment through the intentional integration and sequencing of knowledge, skills and attitudes (Kift, 2009, p. 41).

Prior to the C2010 curriculum review and selection of the *First Principles of Business Law* resource, the first year Business Law unit was delivered by means of a two-hour lecture and one-

hour tutorial each week. This required two large lecture streams with up to 600 students per lecture and more than 50 tutorial sessions per week. However, the Business Law teaching team considered the "lecture plus tutorial" design a poor use of human resources and an ineffective use of time. Moreover, this model did not effectively promote student engagement. Typically student attendance at tutorials was poor and those who did attend were often unprepared. In the redesigned unit, students attending face-to-face classes each semester at the main campus were divided into five groups of approximately 200. These groups attended a weekly three-hour seminar facilitated by a lecturer and a number of teaching assistants (actual numbers varied according to enrollment and the availability and size of venues). This teaching model was also adopted at the associated colleges and branch campuses, although the seminar sessions were smaller, usually comprising one lecturer and 40 students. Consequently, the delivery of the unit outside of the main campus did not necessitate the introduction of teaching assistants in class as the lecturer alone was able to effectively promote student engagement with seminars of this size.

This one design change would have been insufficient to reap the desired outcomes of efficiency and effectiveness in terms of student learning and use of resources. Further design changes were therefore implemented, to include a range of learning activities within the three-hour seminar, and to support students' independent learning outside of timetabled classes through the use of computer-based tutorials and a change of staffing to deliver the course. In general, students responded well to these changes. Typical comments from students are:

> I have found the structure really helpful. I really enjoy having the teaching assistants around. [In] the more relaxed atmosphere, I seem to be able to concentrate really well, even if the lecture is three hours, and am able to learn, apply and remember the content! So thanks for being brave enough to deviate from the "classic/traditional" lecture (Student 2009, post to discussion board).

> The new structure was great. The revision for each lecture allowed us to see where we need to focus. The work examples allowed us to apply the knowledge of the lecture. Gave the feeling of why and how to use the information in the lecture. The teaching assistants were a great help too. Getting the one-to-one help allowed us to understand some of the little problems (Student 2009, Semester 1 *e*VALUate comments Business Law 100).

It must be acknowledged that there was some initial resistance when the new structure was first implemented (see Appendix 1). However following refinement of delivery techniques, through improved staff training and development, and with clearer directions provided to students regarding resources and linkages to assessment tasks, students were overwhelmingly in favor of the structure as one that supported and enhanced their learning experience by an estimated ratio of approximately 3:1 (see Appendix 2).

The computer-based tutorials provided important follow-up to each week's seminar. The *First Principles of Business Law* tutorial software is loaded directly onto the student's own computers, so tracking actual usage is not possible. However students' willingness to use these materials is reflected in number of students who purchased them (taking into account their reluctance to purchase the previously prescribed materials) and the improved pass rates as noted in Table 3.

The interactive tutorials provided students with access to relevant, clear, and concise information on which to build further the knowledge acquired in seminars. The interactive nature

of the tutorials, involving questions, answers and feedback, helped students to test their grasp of topics and broaden their understanding. Students reported their satisfaction with the interactive nature of the computer-based tutorials.

> I mostly found the computer-based tutorials helpful. After attending a lecture and reading the text book chapter, the computer tutorials allowed me to test what I knew and what needed to be improved on (Student 2010, Semester 2 *e*VALUate comments Business Law 100).

Students also appreciated the flexibility afforded by this resource.

> The at-home tutorials were convenient and I would consider them a lot more helpful than some of my tutorials for other units, as they allowed me to work at my own speed and linked exactly to the lectures (Student 2010, Semester 1 *e*VALUate comments Business Law 100).

Moreover, the computer-based tutorials provided students with a realistic model of the legal reasoning process: the description of specific facts from which legal issues arose; explanations of relevant legal principles and rules; and accounts of decided cases or legislative provisions that provided authority for rules. Thus, students were immersed in the "four step" process that was modeled in the tutorials. Additionally, one seminar was dedicated to teaching the four step process to ensure students could apply it.

> Some of the most helpful parts of Business law this year would be the case studies and how we can go about doing the four step process. I believe that this practical application of the four step process helps us as students remember how to use this process effectively and correctly (Student 2009, Semester 1 *e*VALUate comments Business Law 100).

Students were required to submit written answers for 60% of assessments using the four-step process. The authors acknowledge that although the four step process is a commonly used problem-solving technique, there is some criticism of its use (Taylor, 2006).

Weekly seminars commenced with 30 minutes for revision of the previous topic. Questions in the revision quiz were selected from "focus questions" from the relevant chapter of *First Principles of Business Law* Source Book and as well as from the computer-based tutorials. Students used *Keypad*, a Turning Point Technologies audience response system, to respond to questions embedded in a PowerPoint presentation, in which anonymous student responses and correct answers were subsequently displayed. Students quickly realized the benefits of completing the independent learning component of the course provided by the computer-based tutorials. The revision sessions also helped students to see how the different elements of their learning were connected and allowed them anonymously to reflect on their own learning in comparison with their peers. The feedback from students in the subsequent student survey correlated with literature regarding the benefits of using audience response systems including improved feedback for staff and students, allowing for more responsive teaching and active engagement in class (Easton, 2009; Herried, 2006; Masikunas, Panayiotidis, & Burke, 2007) Typical comments illustrate this.

> Love the clicker revision sessions—get feedback without having to be confronted about being wrong (Student 2009, Semester 1 eVALUate comments Business Law 100).

> I love the "clickers," that instant feedback on how you are going and how everyone else is going it a great incentive to keep aiming high (Student 2009, Semester 2 *e*VALUate comments Business Law 100).

The 30 minute revision sessions were followed by a lecture. This was aimed at providing an overview of the weekly topic. The lecture was followed by discussion and analysis of a case study. The logistics of engaging large cohorts of students through the implementation of student-centered activity-based interactive three-hour seminars are discussed in the following section.

B. Engagement.

> Learning, teaching and assessment approaches in the first year curriculum should enact engaging and involving curriculum pedagogy and should enable active and collaborative learning. Learning communities should be promoted through the embedding in first year curriculum of active and interactive learning opportunities and other opportunities for peer-to-peer collaboration and teacher-student interaction (Kift, 2009, p. 41).

Active learning was embedded in the first year Business Law unit. As previously noted, the unit coordinator used *Keypad* to engage students in revision at the commencement of each seminar. *Keypad* was also used throughout the lecture to test students' understanding of content. For example, after giving an explanation of a rule and providing practical examples of its application, the lecturer posed questions and students responded using *Keypad*. Feedback from *e*VALUate surveys indicated students enjoyed using *Keypad*; attendance improved and students were actively engaged in learning.

> Even though it is three hours long, it is one of the most effective lectures and I never want to miss it because I feel like I actually learn in these lectures. There is no time to drift off or let my mind wander as the topics are clear, to the point and explained well (Student 2010, Semester 1 *e*VALUate comments Business Law 100).

In each seminar, the lecture was followed by a discussion and analysis of a case study. This allowed the concepts outlined in the lecture to be applied, reinforced, illustrated, and explained in greater depth. In this part of the seminar, students' learning was supported by roaming teaching assistants. The assistants were typically final year law students from other local institutions. They were able to answer questions and give advice to individual students in the group. The four teaching assistants assigned to each seminar were consistently stationed in particular zones of the lecture venue and students were asked to sit in roughly the same zone each week. Thus the teaching assistants and students were able to develop a rapport that enhanced interaction and encouraged student engagement.

> The way the unit is set out, with the 3 hour lecture and the online tutorials is extremely helpful. Having the lectures split up with the first half being lecture material and the second half being a case study, ensures I am able to grasp what has been taught in the first half of the lecture. Also the use of the "clickers" at the beginning of the lecture for revision ensures that I have understood what was taught in the lecture and the online tutorial from the week before. The help the lecturers and TAs [teaching assistants] provide online and in class is invaluable (Student 2010, Semester 1 *e*VALUate comments Business Law 100).

This strategy also increased efficiency. For example, even allowing for the significant presence of teaching assistants in seminars and for marking written assessments, fewer sessional staff were needed than before. The reduction on spending on sessional staff allowed for additional spending to provide "just in time" help for students. This cost has not been fully calculated yet but, as a rough indication, in Semester 1, 2008, there were 13 tutors to conduct 53 weekly tutorial groups. The first 13 of these tutorials were paid at a higher rate and the remainder at a "repeat" rate. In Semester 1, 2009, there were nine tutors who attended at five weekly seminars in groups of three or four, totaling 23 hours. The first attendance at the seminar by the tutor was paid at the higher rate, with subsequent hours in the seminar paid at the lower repeat rate. However, an additional lecturer was required for two of the three-hour seminars, but the costs still amounted to approximately half the previous payments to sessional staff for teaching. Therefore, additional monies were available for extra consultation and revision sessions.

From 2010 teaching assistants were also allocated a group of students for whom they had responsibility to "check-in" with via email and be their assigned teaching assistant as a first point of call for any queries. Students studying other than at the main campus were also supported in addition to the local teaching staff. Irrespective of how they were enrolled, all students could email the generic course email account and have their queries answered by the unit coordinator or participate in discussion board forums moderated by teaching assistants.

Engagement of students in learning outside of formal classes was facilitated by the *First Principles of Business Law* computer-based tutorials. Students were required to complete a designated tutorial each week, in their own time. The computer-based tutorials present students with short practical examples and questions. On answering the questions, students receive immediate on-screen feedback that explains the relevant law and how it applies in the circumstances of the example. Students appear to find this type of active learning more attractive, manageable and effective than simply reading traditional written texts. A discussion outlining the evidence-based approach adopted by the unit coordinator, substantiating such claims of student engagement, is provided in the next section.

C. Monitoring and Evaluation.

> Good first year curriculum design is evidence-based and enhanced by regular evaluation that leads to curriculum development and renewal designed to improve student learning. The first year curriculum should also have strategies embedded to monitor students' engagement in their learning and to identify and intervene in a timely way with students at risk of not succeeding or fully achieving desired learning outcomes (Kift, 2009, p. 41).

Following the 2008 curriculum review of the first year Business Law unit that was conducted in collaboration with the University's Office of Assessment Teaching and Learning (OATL) appropriate monitoring and evaluation strategies were identified and implemented. Student satisfaction and achievement measures were embedded within the unit through summative assessment and online course and teacher evaluation surveys. At the conclusion of each semester the teaching team reflected on student achievement and satisfaction and responded by adjusting teaching and learning activities where appropriate.

At the end of the first year of implementation, the unit coordinator reflected on the effectiveness of the new teaching methods and resources against criteria recommended by legal educators (Johnstone, Patterson, & Rubenstein, 1998; O'Donnell & Johnstone, 1997; Lambiris &

Royall, 2000). The teaching and learning were also investigated and evaluated through student satisfaction surveys and a range of peer review processes. In 2011 the unit coordinator volunteered to participate in a quality teaching practices pilot study, which incorporated peer review of teaching processes (Atkinson & Bolt, 2010; Bolt, Kerr, & Wauchope, 2011). By these means, data about teaching and learning in the Business Law unit were collected through direct observation, video analysis, and a semi-structured interview, which yielded documentary evidence and a first-hand experiential account. Direct observation confirmed that the use of an audience response system informed students and the teaching team about student learning strengths and weaknesses. Video analysis enabled the researchers to compare teaching practices with an observation schedule derived from previous research, which had identified six dimensions of effective teaching—all of which were evident in the teaching practices described in this paper (Louden et al., 2005). The semi-structured interview provided documentary evidence of the unit coordinator's teaching excellence, which was recognized by the Australian Learning and Teaching Council, Curtin University, and Curtin Business School. Further findings are discussed in the following section. Overall findings from analysis of the data showed that a "teacher/student interaction strategy" had been successfully adopted and students were actively engaged through the use of an audience response system, a team teaching approach, and implementation of computer-based tutorials (Keyes & Johnstone, 2004; Trigwell & Prosser, 2003, p. 188).

IV. Discussion and Further Findings.

In this paper the authors have described the pedagogical transformation of a first year Business Law unit from a teacher-centered approach structured around the typical large lecture followed by a smaller tutorial, to a more student-oriented seminar approach characterized by active learning and supported by a team teaching approach, the integration of technology, and computer-based tutorials. As noted by Good and Brophy (2003) and Louden et al. (2005; 2008), the authors have also recognized the significance of the implementation of quality teaching practices in achieving successful student learning outcomes. Quotes from students attesting to their experiences of quality teaching in this course have been provided throughout this paper. These quotes have been extracted from student surveys and unsolicited comments posted to the unit learning management system Blackboard. The selections of quotes are representative of the types of comments made by students. In any one survey period in excess of 300 students have provided comments. Further quantitative results from the 2008–2010 *e*VALUate surveys indicated student satisfaction was 9.3% higher in this Business Law course than across the University.

Importantly there was significant improvement in student pass rates. Data obtained from the University Office of Planning showed the pass rate averaged for all locations in Semester 2, 2007 was 68%. In 2010, after implementation of the interventions and strategies previously described in this paper, the average for both semesters for all locations improved to 83%. There was an 8% increase in the pass rate for domestic students and, significantly, 20% or more for international students studying either at the main campus or at associated colleges or branch campuses.

Table 2. Summary of eVALUate data Business Law 100 across location and mode 2008 – 2010 showing percentage of students who agreed with the statements. Please note: Open University Australia students [one distinct online cohort] and Curtin College student enrolments are not included in the enrolment figures for eVALUate in all Tables, hence the annual enrolment numbers total less than the approximately 3000 total student enrollment for Business Law 100. Results extracted from the Common Core Course Portfolio, internally published document compiled by the Curtin Office of Teaching and Learning 2012.

Semester and student numbers **eVALUate statements**	**2/2008** **1009**	**1/2009** **1713**	**2/2009** **1229**	**1/2010** **1509**	**2/2010** **1187**
Response Rate	**34%**	**41%**	**32%**	**36%**	**36%**
The learning outcomes in this unit are clearly identified.	95	95	95	99	95
The learning experiences in this unit help me to achieve the learning outcomes.	88	91	90	96	92
The learning resources in this unit help me to achieve the learning outcomes.	90	93	91	96	93
The assessment tasks in this unit evaluate my achievement of the learning outcomes.	89	90	89	95	93
Feedback on my work in this unit helps me to achieve the learning outcomes.	83	82	88	93	89
The workload in this unit is appropriate to the achievement of the learning outcomes.	89	91	89	94	90
The quality of teaching in this unit helps me to achieve the learning outcomes.	88	92	91	96	92
Overall, I am satisfied with this unit.	89	92	92	95	94

Table 3. Overview of enrollment numbers and pass rates of first year Business Law 100 students from all locations 2007-2010.

Locations	**2007**		**2008**		**2009**		**2010**	
	Jan-Jun	Jul-Dec	Jan-Jun	Jul-Dec	Jan-Jun	Jul-Dec	Jan-Jun	Jul-Dec
Domestic students	80% (837)	75% (473)	79% (826)	76% (826)	83% (943)	83% (492)	88% (819)	84% (359)
International onshore	52% (369)	62% (231)	62% (373)	72% (254)	76% (364)	67% (270)	77% (368)	76% (229)
International offshore	61% (483)	64% (432)	70% (572)	76% (457)	80% (536)	79% (438)	80% (548)	85% (558)
Average pass rates	68% (1689)	68% (1136)	73% (1771)	75% (1205)	81% (1843)	78% (1200)	83% (1735)	83% (1146)

While the provision of prompt effective feedback has been recognized as essential to student learning, many educators have struggled to satisfy students' demands in this area (Chickering & Ehrmann, 1996; Chickering & Gamson, 1987). Providing feedback during the learning process to very large numbers of students could be hampered by logistical, budgetary, and time constraints. In this case, one of the main ways of providing feedback to students was through the computer-based tutorials, which provided clear, detailed, and immediate feedback to students as they worked. As asserted by Karp & Yoels (1976, as cited in Mulryan-Kyne, 2010), student engagement with course reading was linked to their in-class participation; for example, students received further feedback when they were asked to use *Keypad* to respond to questions

related to the computer-based tutorials in the weekly revision sessions—this in turn encouraged students to engage more with the computer-based tutorial material and actively involved them in learning during seminars. In this first year Business Law unit students received additional computer-based forms of feedback through the use of a dedicated email account and through discussion forums via the Blackboard learning management system, which was monitored closely by teaching assistants. In 2010 the unit coordinator implemented the use of audio voice files to provide feedback on assignments and mid-semester tests. Audio feedback (Lunt & Curran, 2009; Butler, 2011) in the form of a recorded MP3 file using the *Audacity* software was accessible through students' grade center on Blackboard, or embedded in their assessment and returned by email. This provided a remarkable opportunity to provide rich and personalized feedback to large numbers of students in a timely and efficient way.

> Thank you for the feedback. This is invaluable to my understanding of this subject. I compare the quality in the delivery from Curtin School of Business Law with another university I am doing a subject concurrently where I have only received the raw score ... it really is like comparing chalk and cheese (Student 2009, Semester 1 *e*VALUate comments Business Law 100).

In the context of personalizing the large group experience, this also provided a connection to a "real" person, someone has called students' by their name and "spoken" to them about their work and progress and ways they can improve. The use of the audio voice file feedback importantly connects with students studying online.

> The audio feedback is fantastic!! I wish all of my units provided the same. I know exactly where I went wrong and the areas I need to improve—whereas in some units I've felt completely left in the dark. Thank you for the additional time and effort you guys are putting into assisting the people who can't have face–to-face discussions; it helps break down the isolation barrier of studying externally (Curtin external Student 2010, post to discussion board Semester).

> I received my assignment back last night and was absolutely blown away with both the result and the feedback—fantastic! This is my 12th subject with OUA but my first with Curtin and I am so impressed with the Curtin system of teaching long distance and the professional manner in which we as students are treated. I really want to congratulate all the tutors on their great work, it's the first time I have really felt like I was part of a "Uni" and not just sitting at home learning stuff in my own little world. This really shows in the results I received and I am now really looking forward to doing assignment 2 (OUA Student 2010, post to discussion board Semester 1).

Significantly, early indications suggest that not only has the use of audio feedback led to an improvement in the student experience, but it has also produced real improvement in student results, particularly for online students. Open University Australia (fully online) students' results increased significantly when audio feedback was used in 2010 instead of traditional methods. The average final mark for OUA students in 2007 and 2008 was 51%. In 2009 after the implementation of the teaching strategies and new materials described above it was it was 54%. Following the introduction of audio voice file feedback in 2010 the average mark increased further to 58%. Table 4 shows an exponential improvement in Open University Australia fully online students when audio feedback is used instead of traditional methods.

Table 4. Assessment scores of OUA students 2009-2010 shown as percentages. Student enrollment numbers for each study period are in excess of 200.

	SP1 2009	**SP 3 2009**	**SP1 2010**	**SP 3 2010**
	Average mark	Average mark	Average mark	Average mark
Assign 1	12.91	13.4	13.6	12.9
Assign 2	14.94	13.4	16.03	15.3
Exam	25.81	27.26	29.72	28
Final Mark	53.66	54.4	59.35	56.2

In teaching, one of the most important factors for success is the ability to personalize the curriculum, thus providing connection and challenge for students (ALTC & TEDI, 2003). The ability to build relationships between students and teachers and between students themselves impacts on student retention, course completion, graduation, and ultimately employability (Cannon & Knapper, 2011). To facilitate such relationships in the teaching on the main campus, where there were approximately 200 students in each seminar group, the students were encouraged to sit in the same place each time they attended seminars and the four teaching assistants were consistently stationed in the same locations. In addition to this, students and teaching assistants could interact through designated support and consultation channels. Thus students and teaching assistants could get to know each other, overcoming the anonymity so frequently associated with large classes. Students were further able to personalize the curriculum through self-directed learning facilitated through the computer-based tutorials. This was particularly important for students from diverse linguistic and cultural backgrounds as it enabled them to set their own pace and provided them with a firm foundation.

In the overseas venues, class sizes are smaller and the relationships between students and their teachers are easier to achieve. But the students may find that the prescribed materials do not specifically relate to their own countries. One way of addressing this issue is to contextualize the materials. For the Business Law unit this has been done by writing a supplementary chapter, in collaboration with the local lecturers, on matters pertaining to the various jurisdictions, in Mauritius, Singapore, and Malaysia. This additional chapter is published with the prescribed materials. One week in the syllabus is then set aside for these students to make a comparative analysis of their own jurisdiction. Responses have been positive.

> It's not just theory and theory again...there's a real opportunity to practice what we learn and see how things work in real life. Learn best like that (Student 2009, Semester 1 *e*VALUate comments CTI student Mauritius Business Law 100).

> The Business Law Unit will be far more challenging for our B.Com Students. It is fantastic that Curtin has found this clever way of including local content in the unit (Program Director email, CTI Mauritius 2008).

Another way to engage students is to use discussion boards and emails to foster greater connectedness with the wider student cohort. Regular contact with all students enhances the experience and builds confidence, especially important for first year students.

> Thank you for your kind thoughts towards us throughout this semester. It's a simple yet empowering gesture of love and concern for your students. It's

> received with much appreciation and gratitude (Curtin Singapore student 2011 email Semester 2).

V. Conclusion.

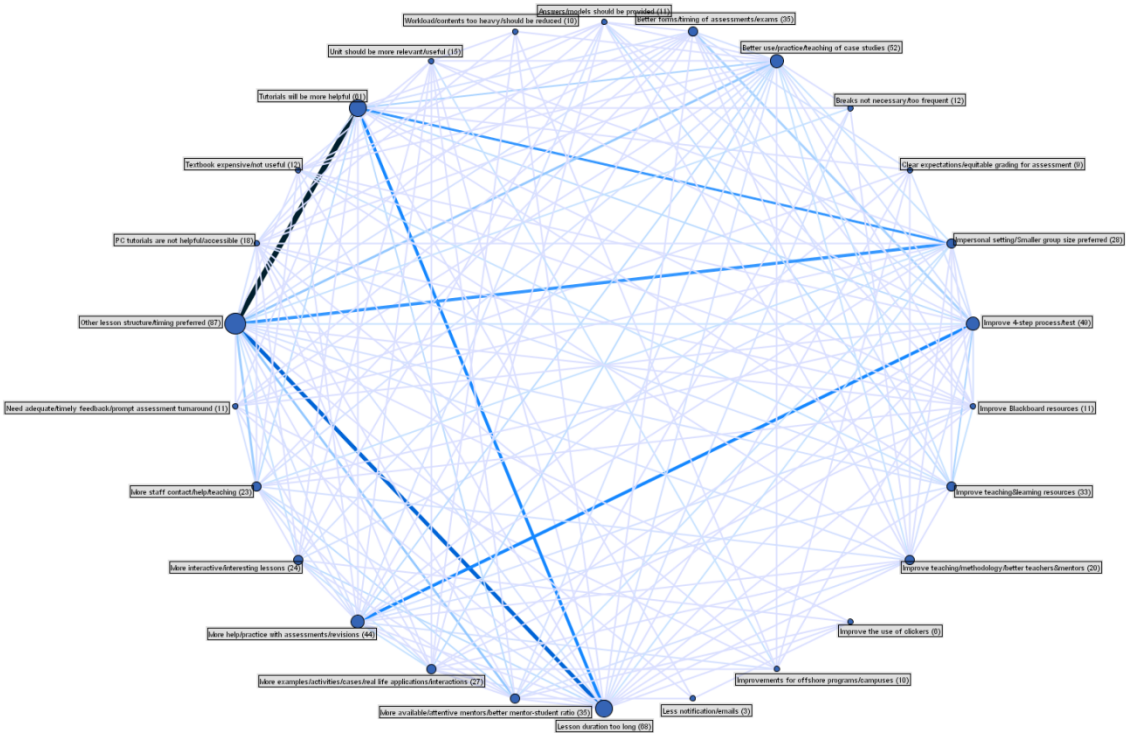
Preliminary research findings indicated that students were actively engaged in learning in the new first year Business Law unit. There was effective linkage between the seminars and computer-based tutorials, and quality teaching practices were identified, chosen and employed. The application of relevant first year curriculum design principles result in improved student engagement and active learning. Further improvements will need to be made. For example, qualitative analysis of recent student comments on the unit satisfaction survey has indicated some resistance to a three-hour seminar, with a third of students perceiving it as being "too long." And, in the future, further research could be conducted to investigate additional ways to enhance engagement. For example the current teaching team has adopted the use of animated slides and the use of Twitter for question and answer sessions may be trialed.

The authors have sought to make an effective presentation of this case study, by presenting the findings as a narrative and substantiating the conclusions with relevant data from sources such as documentation, interviews, direct and participant observation, physical artifacts, and archival records. Student satisfaction data were collected over several years from large cohorts of students studying in this unit in multiple locations. The teaching initiatives and outcomes achieved by the unit coordinator have been recognized through numerous and rigorous peer review processes. Just as the unit coordinator engaged in reflective critique in relation to the unit, resources, student learning, and the teaching team, the authors have engaged in reflective critique in presenting this case study. The findings may be of interest to academics in higher education concerned with making a shift from teacher-centered to more student-oriented learning approaches.

The ideas presented in this paper may also be of interest to teachers experimenting with "flipped classrooms" which, currently, is a popular strategy to create more student-centered active learning environments (Educause Learning Initiative, 2012). In this case, the unit coordinator "flipped" the tutorial session by utilizing computer-based learning that students could access at their own pace and receive immediate feedback on their answers to stimulus questions. In the seminar, the unit coordinator used *Keypad* to generate active learning in a large class setting. To diminish isolation and increase rapport in a large class setting team teaching strategies were implemented in this case. Other teachers of large classes could adopt similar strategies in their own settings to promote active learning and student engagement. It has been suggested that strategies which focus on making large group teaching more active, such as the ones described in this paper, may go some way to addressing the problems inherent in teaching courses with large enrollment numbers (Mulryan-Kyne, 2010; Fitzpatrick, 2009). Also, this case study may be of interest to academics seeking an example of how the principles of scholarship and first year curriculum design were applied in a large class setting in multiple locations (Glassick, 2000; Kift, 2009).

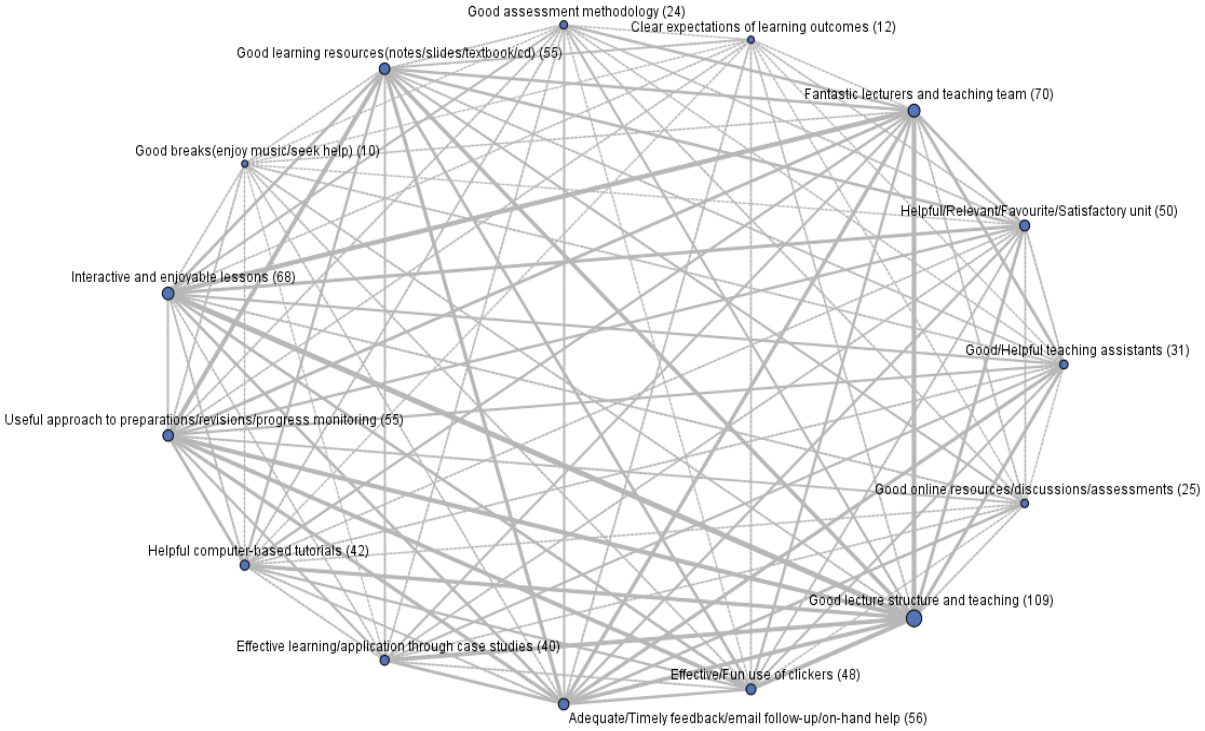
Appendix

Appendix 1. Spider graph of student responses about what needs improving in Business Law 100



Students commented that the three-hour seminar was too long, and would prefer other lesson structure, particularly tutorials (which offer smaller group settings and allow students to interact/ask questions within the class. In conjunction with this suggestion, students felt that case studies would be better taught and discussed outside the seminar context (discussion time too long with lags, lack of teaching/feedback as mentors move between groups/individuals, inadequate examples/answers, etc). Students would also like to receive more help on the four-step process.

Appendix 2. Spider graph of student responses about what they liked best in Business Law 100



Students were overwhelmingly enthused about the format of the three-hour lectures/seminars, particularly paying tribute to the lecturers and the teaching assistants and to the interactive and fun nature of the learning process. The teachers were further credited for being available to provide timely and adequate follow-up and feedback, through the following means:

- Emails reminders
- Audio feedback on assignments
- Guidance during lectures/breaks

Students were also very satisfied with the learning resources provided, ranging from the online resources (such as computer tutorials, audio feedback, iLectures) to the revision notes, textbook and the accompanying CDRom.

References

Altbach, P.G., Reisberg, L., & Rumbley, L.E. (2009). *Trends in global higher education: Tracking an academic revolution.* Executive Summary: A report prepared for the UNESCO 2009 World Conference on Higher Education. Paris: UNESCO.

Atkinson, D., & Bolt, S. (2010). Using teaching observations to reflect upon and improve teaching practice in Higher Education. *Journal of Scholarship of Teaching and Learning, 10* (3), 1–19.

Australian Universities Teaching Committee & Teaching and Educational Development Institute ("ALTC & TEDI") (2003). *Teaching Large Classes Project 2001 Final Report.* Canberra: ALTC.

Baillie, C., & Percoco, G. (2000). A study of present use and usefulness of computer-based learning at a technical university. *European Journal of Engineering Education*, *25*(1), 33–43.

Bligh, D.A. (2000). *What's the use of Lectures?* San Francisco: Jossey-Bass.

Bolt, S., Kerr, R., & Wauchope, V. (2011). Using video analysis software to create innovative teacher professional development. *ICICTE 2011 Conference*, Rhodes, July 7–9. http://www.icicte.org/ICICTE11Proceedings.htm

Butler, D.A. (2011). Closing the loop 21st century style: Providing feedback on written assessment via MP3 recordings. *Journal of Australasian Law Teachers Association*, *4*(1&2), 99-107.

Cannon, R., & Knapper, C. (2011). HERDSA Guide: Lecturing for better learning. Higher Education Research and Development Society of Australasia.

Chickering, A., & Ehrmann, S. (1996). Implementing the seven principles: Technology as a lever. *The American Association for Higher Education Bulletin*. Retrieved November 15, 2011, from http://www.tltgroup.org/prgrams/seven.html

Chickering, A., & Gamson, Z. (1987). Seven principles for good practice in undergraduate education. *The American Association for Higher Education Bulletin*. Retrieved November 15, 2011, from http://www.2honolulu.jawaii.edu/facdev/guidebk/teachtip/7princip.htm

CBS Teaching and Learning Role Statement (2011). Retrieved from http://blogs.curtin.edu.au/cbs-staff/files/2010/07/Role-Statement-Unit-Coordinator_FINAL-v12.pdf

Curtin University. (2011). Future Students. Retrieved November 3, 2011, from http://futurestudents.curtin.edu.au/school-leavers/

Curtin University. (2009). Retrieved August 16, 2009, from http://c2010.curtin.edu.au/local/docs/courserenewalprocess.doc

Cook, D.A. (2005). The research we still are not doing: An agenda for the study of computer-based learning. *Academic Medicine, 80*(6), 541–548.

Costin, F. (1972). Lecturing versus other methods of teaching: A review of research. *British Journal of Educational Technology, 3*(1), 4–30.

Easton, C. (2009). An examination of clicker technology use in legal education. *Journal of Information, Law & Technology* (JILT), 3, retrieved 3 November 2011 http://go.warwick.ac.uk/jilt/2009_3/easton

Educause Learning Initiative. (2012). 7 things you should know about … flipped classrooms. Retrieved from http://net.educause.edu/ir/library/pdf/ELI7081.pdf

Fetherston, T. (2010). Artichoke video analysis software. T.fetherston@ecu.edu.au

Fitzpatrick, S. (2009). The challenge of teaching law subjects with large and diverse student cohorts. *Journal of the Australasian Law Teachers Association (JALTA), 2*, 113–119.

Glassick, C.E. (2000). Boyer's expanded definitions of scholarship, the standards for assessing scholarship, and the elusiveness of the scholarship of teaching. *Academic Medicine, 75*(9), 877–880.

Good, T., & Brophy, J. (2003). *Looking in Classrooms* (9th ed.). New York: Macmillan.

Harvey, L., Drew, S., & Smith, M. (2006). *The First Year Experience: A Review of Literature for the Higher Education Academy.* Centre for Research and Evaluation: Sheffield Hallam University.

Herreid, C.F. (2006). "Clicker" cases: Introducing case study teaching into large classrooms. *Journal of College Science Teaching, 36*(2), 43-7.

International Education Association of Australia. (2006). *Outcomes of universities transnational education good practice projects (Final report).* Commissioned by the Australian Education International & Department of Education, Science and Training, Commonwealth of Australia.

Johnstone, R., Patterson, J., & Rubenstein, K. (1998). *Improving Criteria and Feedback.* Australia: Cavendish Publishing.

Karp, D.A., & Yoels, W.C. (1976). The college classroom: Some observations on the meaning of student participation. *Sociology and Social Research, 60*, 421–439.

Keyes, M., & Johnstone, R. (2004). Changing legal education: Rhetoric, reality, and prospects for the future. *Sydney Law Review*, *26*, 537–564.

Kift, S. (2008). 21st century climate for change: Curriculum design for quality learning engagement in law. *Legal Education Review, 18*, 1–30.

Kift, S. (2009). Articulating a transition pedagogy to scaffold and to enhance the first year student learning experience in Australian higher education. *Final Report: Australian Learning and Teaching Council Senior Fellowship Program*, 1–58.

Lambiris, M. (2009). *First Principles of Business Law Interactive Tutorials and Sources Book.* Australia: CCH Australia.

Lambiris, M., & Royall, B. (2000). Evaluating computer-assisted teaching materials: The Australian law courseware project. *ALTA 2000 Conference*, Australia.

Leuthold, J.H. (1999). Is computer-based learning right for everyone? Proceedings of the *32nd Annual Hawaii International Conference on System Sciences*, 1015–1022. Retrieved 12 April, 2012, from http://www.computer.org/portal/web/search/simple?action=simplesearch&yearTo=2010&yearFrom=1960&monthTo=12&monthFrom=01&sortField=DocWeight&sortOrder=descending&checkAbstract=yes&searchDatabases=proceedings&queryText1=Is+computer-based+learning+right+for+everyone%3F++&queryOption1=DC_TITLE

Louden, B., Rohl, M., Barrett Pugh, C., Brown, C., Cairney, T., Elderfield, J., House, H., Meiers, M., Rivalland, J., & Rowe, K. (2005). *In Teachers' Hands: Effective Literacy Teaching Practices in the Early Years of Schooling.* Mount Lawley: Edith Cowan University.

Louden, B., Rohl, M., & Hopkins, S. (2008). *Teaching for Growth: Effective Teaching of Literacy and Numeracy.* Nedlands: University of Western Australia.

Lunt, T., & Curran, J. (2010) 'Are you listening please?' The advantages of electronic audio feedback compared to written feedback. *Assessment & Evaluation in Higher Education*, *35* (7), 759 — 769.

Mahmud, S., & Sanderson, G. (2011). Moderation for fair assessment in transnational learning and teaching. *Final Report, Australian Teaching and Learning Council.*

Masikunas, G., Panayiotidis, A., & Burke, L. (2007). The use of electronic voting systems in lectures within business and marketing: A case study of their impact on student learning. *ALT-J*, *15*(1), 3-20.

Millheim, W.D. (1996). Interactivity and computer-based instruction. *Journal of Educational Technology Systems, 24*(3). Retrieved April 12, 2012, from http://www.metapress.com.dbgw.lis.curtin.edu.au/content/9v8j48tx461cdxvg/?p=252aeaf6431f4e21bc012e6a6ec02756&pi=2

Mulryan-Kyne, C. (2010). Teaching large classes at college and university level: Challenges and opportunities. *Teaching in Higher Education, 15*(2), 175–185.

O'Donnell, A., & Johnstone, R. (1997). *Developing a Cross-Cultural Law Curriculum*. Australia: Cavendish Publishing.

Owens, A., & Wex, I. (2010). What are the challenges involved and the strategies employed in teaching Australian law to non-law students from non-English speaking backgrounds and cultures? *Journal of the Australasian Law Teachers Association* ("JALTA"), *3*, 89–98.

Renkl, A., & Atkinson, R.K. (2002). Learning from examples: Fostering self-explanations in computer-based learning environments. *Interactive Learning Environments, 10*(2), 105–119. Retrieved April 12, 2012, from http://www.tandfonline.com.dbgw.lis.curtin.edu.au/doi/pdf/10.1076/ilee.10.2.105.7441

Taylor, G. (2006). Structured problem-solving: Against the 'step-by-step' method. *Deakin Law Review, 11*(1), 89–101.

Tight, M. (2003). *Researching Higher Education.* England: Society for Research into Higher Education & Open University Press.

Trigwell, K., & Prosser, M. (2003). Qualitative difference in university teaching. *Access and Exclusion, 2*, 185–216.

Yin, R.K. (2009). *Case Study Research: Design Methods*, (4th ed. Vol. 5) USA: Sage Publications Inc.

Young, L.D. (2003). Bridging theory and practice: Developing guidelines to facilitate the design of computer-based learning environments. *Canadian Journal of Learning and Technology, 29*(3). Retrieved April 12, 2012, from http://www.cjlt.ca/index.php/cjlt/article/view/90/84

Journal of the Scholarship of Teaching and Learning, Vol. 13, No. 1, February 2013, pp. 45 – 56.

Cooperative learning and peer evaluation: The effect of free riders on team performance and the relationship between course performance and peer evaluation

Molly J. Dingel[1], Wei Wei[2], Aminul Huq[1]

Abstract: Cooperative learning has gained popularity in higher educational settings. However, assigning grades equitably to all team members in a way that rewards them for their contributions remains challenging. In this paper, we ask whether having free riders on a team lowers the quality of submitted work, and whether students' course performance correlates with peer evaluations. In an introductory sociology course, 101 students were organized into 20 teams; each team completed a set of three papers. Students were evaluated by the quality of work submitted and peer evaluations. For statistical analysis, we organized the teams into one of three groups, among which we compared average paper grades: group one contained teams with free riders, group two contained teams that may have free riders, and group three contained teams with no free riders. We found that teams with free riders did not submit significantly lower quality work than teams without free riders. We also statistically analyzed the relationship between student course performance and their peer evaluation, and found that students' performance in the course showed little correlation with their peer evaluations. Our results indicate that free riders do not depress the grades of non-free rider students. We also found that students' peer evaluations do not correlate with their course performance, a finding which warrants further research.

Keywords: cooperative learning, collaborative learning, project based learning, peer evaluation.

I. Introduction.

Many teachers and scholars emphasize the importance of collaborative learning. However, it is a challenge to assess team work in an effective and equitable way. In this article, we describe a unique, interdisciplinary project that required teams of students to write a set of three papers. We investigate how to best reward students for their contributions to collaborative assignments by exploring the usefulness of peer evaluations. As such, we ask whether having a "free rider," someone who does little or no work on team projects, lowers the overall quality of submitted project papers. We also explore whether students' peer evaluation correlate with their course performance.

[1] Center for Learning Innovation, University of Minnesota Rochester, 300 University Square, 111 S. Broadway, Rochester, MN 55904
[2] Mathematics Department, Metropolitan State University, Saint Paul, MN 55106

A. Collaborative learning.

A large body of research has demonstrated the benefits of collaborative learning strategies (Schroeder, Scott, Tolson, Huang, & Lee, 2007). These benefits include student reports that team work is beneficial, motivating (Bartle, Dook, & Mocerino, 2011), and confidence- and responsibility-building (Caulfield & Persell, 2006). In addition, evidence suggests that collaborative learning strategies, like discussing material in teams, can increase both students' test scores and their connection to classmates (Rau & Heyl, 1990). Some evidence indicates that collaborative learning may be beneficial specifically towards the aim of improving quantitative literacy (Caulfield & Persell, 2006).

Collaborative educational work can be conceptualized along a continuum from casual classroom use, to intentional and structured activities, to those designed to support "high-performance" teams that "engage in significant learning tasks" (Fink, 2002, p. 8). As collaborative activities move from "casual" to "team-based," instructors integrate the work into the course structure and devote increased attention to team formation and to accountability within the team. The most structured collaborative strategies are called "team-based learning" (Fink, 2002), or "cooperative learning" (Johnson, Johnson, & Holubec, 1986; Millis & Cottell, 1998). Millis and Cottell (1998) describe "cooperative learning" as establishing positive interdependence, which allows students to achieve mutual goals and rewards through structured tasks and interdependent roles.

B. Evaluating collaborative learning.

Some teachers argue that all group members should be assigned one grade. These teachers argue that in the workplace, teams are often rewarded for the quality of the project, and not for individual contributions to the project (Kagan, 1995). In addition, they argue that assigning one grade should motivate students to work together by creating "positive reward interdependence" (Johnson et al., 1986; Kagan, 1995). However, some evidence suggests that students easily become frustrated with group work when all group members earn the same grade regardless of effort (Conway & Kember, 1993). This frustration can cause students to lose motivation and become disengaged from class activities (Ruel, Bastiaans, & Nauta, 2003).

There are other good reasons to reject the arguments that all team members should receive the same grade (Kagan, 1995). Especially in more structured learning teams like those engaging in cooperative learning, peer evaluations[3] provide a way for students to be held accountable for their participation in, and contributions to, the teamwork. Given the importance of engagement from all group members, many scholars argue that peer evaluations are an essential part of successful cooperative learning strategies (Cheng & Warren, 2000; Conway & Kember, 1993).

As Kane and Lawler (1978) point out, there are different methods of peer assessment: peer nomination, where team members nominate the highest and lowest performing team member for a variety of particular characteristics; peer ranking, where each group member ranks all others from best to worst on a variety of factors; and peer rating, where each team member rates all other team members on a scale. In their review, they found that peer rating was most

[3] In this paper, we distinguish "peer evaluation" from "peer assessment," where peer assessment involves "grading" or providing feedback on a student's work or presentation, while peer evaluation involves rating the relative contribution and effort of peers working together in a team.

useful for collecting feedback about team members' specific behaviors. In this paper, we focus on peer ratings because of their usefulness in providing feedback about student participation in a group, and because peer ratings are commonly used in conjunction with collaborative learning projects. Throughout this paper, we use the term "peer ratings" synonymously with "peer evaluations."

Many peer evaluation strategies involve weighted peer evaluations (Cheng & Warren, 2000; Conway & Kember, 1993; Gatfield, 1999), which are calculated by dividing a student's individual effort rating with an average effort rating for the team. The resulting individual weighting factor controls for situations where all team members are evaluated particularly high or low. Other authors recommend single-item behaviorally anchored assessment (Kaufman, Felder, & Fuller, 2000; Oakley, Felder, Brent, & Elhajj, 2004), which has been shown to be as statistically reliable as a ten-item instrument (Ohland, Layton, Loughry, & Yuhasz, 2005).

While the research described above explores the question of how to integrate peer evaluations into students' final grades, to our knowledge, no research exists that explores whether the presence of a "free rider"—a student who fails to shoulder their part of the work load—decreases the quality of the team product. This question is pertinent because instructors use peer evaluations for the purpose of assigning grades to individuals in an equitable way. Peer evaluations help instructors adjust grades to ensure that students receive credit consistent with their contributions. In other words, peer evaluations help instructors assign higher grades to students who do more work on a project, compared to those who did very little on the project, and therefore foil the attempt of a student to reap unearned rewards (Roberts & McInnerney, 2007).

The presence of a free rider causes workload to shift onto the other group members, and this is a pertinent issue. However, even more concerning is that if the *product* of team work declines in teams with free riders, then, above shouldering additional work, students' grades may suffer as a result of other's (in)actions. If confirmed, this result may cause many instructors to question whether it is acceptable to ask students to engage in cooperative learning even if they use peer evaluations to modify individuals' grades. We believe that the issue of product quality is as important as the issue that some students put in more time and effort on group projects, because even if course assessment includes *no* team work, some individuals in classes will work harder than other students. Given that students are graded on the quality of their work, it is not usually of concern for instructors that some students put more time and effort into assignments with potentially higher learning outcomes (Huang, Yang, Kuo, & Yang, 2007; Webb, 1993). Assuming that within teams, students have similar ability to score full points on a particular assignment, some students working harder for more points within teams (via positive peer evaluations) should not generally raise concern among instructors. Indeed, many scholars recommend constituting teams with enough people, generally between three and six members (e.g., Oakley et al., 2004; Rau & Heyl, 1990) so that if one student is a "no-show," there remain enough team members to balance out the loss of effort from that team member. Further, evidence suggests that peer evaluations relieve students' frustration about shouldering more work because of free riders. In their study of 123 nursing students, Shiu and colleagues (2012) found that students had generally positive attitudes about peer evaluations and believed that peer evaluations reduced free riding among peers.

For instructors who use peer evaluations, another important question is whether the peer evaluations are valid and reliable. Though there are a number of studies that examine inter-rater reliability of peer evaluations in the work place (c.f. Conway & Huffcutt, 1997), there is very

little research that explores correlations between a variety of variables and peer evaluation in the context of educational team work. Therefore, an open question is: what influences student evaluation of their peers? Persons (1998) found that students with high grade point averages (GPAs), higher participation grades, and higher homework grades received higher peer evaluation ratings than students with lower GPAs. This finding indicates that students are accurately identifying and evaluating students relative to their course performance, but little other research has been done in this area.

In this paper we explore group projects and peer evaluations through two questions. First, does the presence of free riders negatively affect the quality of the paper the team submits? In other words, are papers of lower quality if team members evaluate each other, or even one member, poorly? Second, do students who perform better in the course have higher peer evaluations? We explore this latter question by examining whether those who had low peer evaluations had low course grades.

II. Methods.

A. Project overview.

Students who participated in the project were enrolled in an introductory sociology class in the Center for Learning Innovation at the University of Minnesota Rochester. The vast majority of the students in this department are pursuing a Bachelor of Science in the Health Sciences. In their first year, students enroll in a common set of courses, including statistics, sociology, and a one-credit writing course. This structure allows faculty to work closely together to create integrated assignments that require students to draw on knowledge from multiple courses. Institutional Review Board (IRB) approval and student consent were obtained at the beginning of the fall 2011 semester. The study included 101 (of 106) students enrolled in one of two sections of an entry-level sociology course (one student declined to participate in the study, and their team was omitted from analysis).

In creating this set of assignments, we as instructors were driven by a pedagogical desire to create a learning environment where students had to work together to actively ask questions, test a hypothesis, and engage with course concepts. We organized students into teams of four to six, such that, when possible, all team members were in the same section of sociology, statistics, and writing. Beyond this criterion, teams were randomly constituted. A total of 20 teams were formed for the project.

Students were given a subset of census data with several variables. In their teams, they chose two variables about which to hypothesize a relationship. They then wrote a series of three papers: in the first, administered and graded in the sociology course, students articulated their hypothesis and statistically described each variable. In the second paper, administered through the statistics course but counting towards their grade in both sociology and statistics, students tested the hypothesis using skills learned in their statistics course. In the third paper, administered and graded in the sociology course, students contextualized their statistical findings with sociological concepts. For each paper, each student evaluated themselves and each of their teammates. Students also spent time in their writing course doing peer review of and revising these papers. In the sociology course, these cooperative data papers made up 20% of students' course grades. Individual assessments (in-class exams, essays, quizzes, and participation) made up the remaining 80% of their grades.

B. Grading.

Each team paper was assigned a "team grade" by the instructor. For peer evaluations, we used the process described by Oakley and colleagues (2004). Students were asked to rate themselves and each of the peers on their team using a behaviorally anchored, nine scale rating (Excellent = 100, Very good = 87.5, Satisfactory = 75, Ordinary = 62.5, Marginal = 50, Deficient = 37.5, Unsatisfactory = 25, Superficial = 12.5, No show = 0) that was converted into numbers. From these, we averaged the peer evaluations for each student, and calculated the team peer evaluation average. For each student, we calculated an "adjustment factor," capped at 1.05, by dividing the individual average evaluation by the team average evaluation. Individual students' grades were calculated by multiplying their adjustment factor by the team paper grade. This way of grading helps ensure that the free riders receive lower grades than the team paper grade.

C. Free riders and analysis methods.

To evaluate whether a free rider lowers the quality of the team project, we divided the 20 teams into three groups according to the standard deviation of peer evaluations of each team. We then performed a statistical analysis to compare the average paper grades among the three groups. Note that throughout, we use "teams" to refer to the student teams of 4 to 6; "groups" refers to sets of teams grouped by standard deviation of peer evaluations. We consider free riders to be students whose peer evaluations were significantly lower than their team members. Teams with free riders therefore had larger standard deviations of peer evaluations because some team members received high peer evaluations and others received low evaluations.

Based on the peer evaluation data, we observed that the standard deviation of the peer evaluations of a team was larger than or equal to 10 if at least one team member was rated lower than 70 and most other team members were rated much higher than 70, except that one team had a standard deviation of 9.3 (<10) but one member was rated at 68.8 for the last paper. The other observation was that the standard deviation of the peer evaluations of a team was smaller than 5 if all the team members were rated higher than 90.

Based on the above two observations, we divided the 20 student teams into three groups according to the standard deviation of peer evaluations: group 1 contains the teams whose peer evaluations' standard deviation is larger than or equal to 10; group 2 contains the teams whose peer evaluations' standard deviation is larger than or equal to 5 but less than 10; and group 3 contains the teams whose peer evaluations' standard deviation is less than 5. In other words, teams in group 1, with large standard deviations of team member peer evaluations, had at least one free rider; teams in group 2, with moderate standard deviation of team member peer evaluations, may or may not have had a free rider; and teams in group 3, with small standard deviation had no free riders. Statistical analyses including the D'Agostino-Pearson normality test and Analysis of Variance (ANOVA) were performed to compare the average paper grades for the three groups.

D. Analysis of peer evaluation and course grade.

We calculated and recorded each student's overall course performance, which included the evaluation of student work in homework, quizzes and exams before the due date of paper 1 and

between the due date of paper 1 and paper 2. Prior to the due date of data paper 1, students took 11 quizzes, 1 exam, and wrote 1 essay. Between data papers 1 and 2, students took 3 quizzes, 1 exam, and wrote 1 essay. Between data papers 2 and 3, students only took one quiz. After data paper 3, students took two quizzes, and either wrote one additional essay or took a final exam.

Because there was minimal formal assessment between the due date of paper 2 and paper 3, we only analyzed the relationship between the overall course grades and peer evaluations for the first two papers. We performed the D'Agostino-Pearson normality test and calculated the Spearman correlation coefficient to test whether a correlation existed between the peer evaluations and student overall course grades. All analyses were conducted using the Statistical Analysis Systems (SAS 9.2) software (SAS Institute Inc., Cary, NC).

III. Results.

A. Free riders and team performance.

For each paper, all 20 student teams were assigned to 1 of 3 groups according to the standard deviation of the peer evaluations. The D'Agostino-Pearson normality test, on the basis of an examination of the skewness and kurtosis, showed that the paper grades for each group follow normal distributions. Therefore, the assumption of normality for performing a two-way analysis of variance (ANOVA) was satisfied. We then calculated the mean and standard deviation of paper grades for each group (table 1) and conducted a two-way ANOVA, including the factors of group and paper, to assess whether there were statistically significant differences of average paper grades among the three groups.

Table 1. Group average (mean) and standard deviation (SD) of paper grades.

Teams grouped by standard deviation of peer evaluation	Paper 1 (Mean ±SD)	Paper 2 (Mean ±SD)	Paper 3 (Mean ±SD)
Group 1 (at least one free rider)	84.50 ±7.84	84.55 ±8.57	89.60 ±5.03
Group 2 (may or may not have a free rider)	84.44 ±8.53	91.35 ±7.99	90.17 ±4.79
Group 3 (no free riders)	87.00 ±8.54	86.06 ±6.09	87.22 ±4.89

Table 1 shows no consistent pattern that any group performed significantly better across all the three papers. The results of the two-way ANOVA showed no interaction between the factors of paper and group (p=0.6074), no significant effects of the factor paper on average group grades (p=0.1422) and no significant effects of the factor group on average group grades (p=0.9165). In other words, at a significance level of 0.05, the average paper grade for any one group was not statistically significantly different from any other group and the average group grade for one paper was not statistically significantly different from any other papers. Therefore, a free rider does not statistically significantly affect the quality of the submitted paper (figure 1). Figure 1 shows that the average paper grades are very similar among the three groups.

B. Peer evaluation and course grade.

To test whether there is a strong correlation between the peer evaluations and the overall course performance for each student, we first conducted the D'Agostino-Pearson normality test to examine whether the course grades and the peer evaluations followed normal distributions. The

results of the normality test showed that the peer evaluations of the whole class did not follow a normal distribution. Therefore, we calculated the nonparametric Spearman correlation coefficient with the two factors: course overall grade and peer evaluation (tables 2 and 3). We only conducted the analysis for paper 1 and paper 2 because there was minimal formal course assessment between papers 2 and 3.

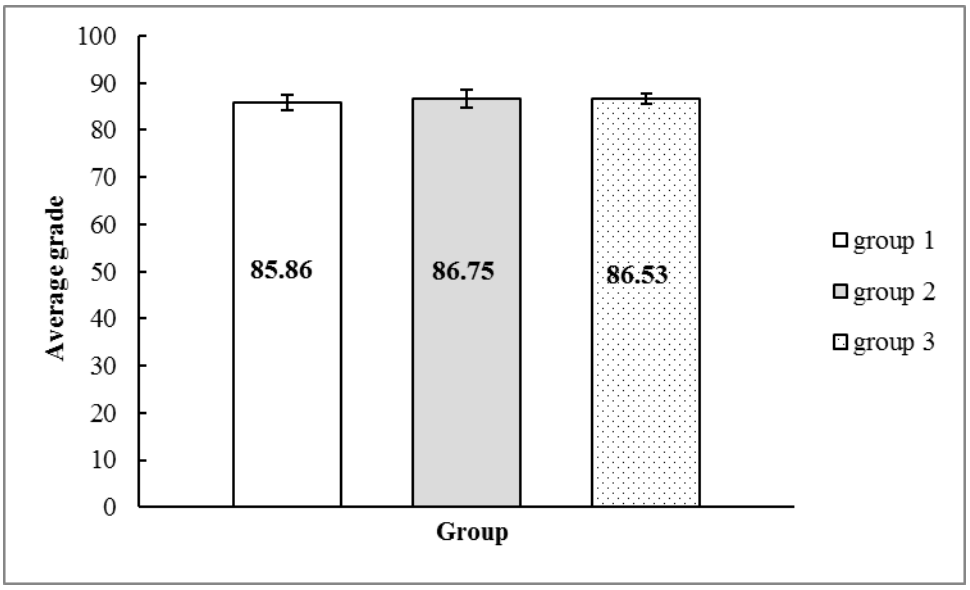


Figure 1. Average grade by group. The white bar represents the average grade of three papers for group 1, the grey bar represents the average grade of three papers for group 2 and the dotted bar represents that for group 3. The error bar represents one standard error or the average. The numbers on the bars represent the mean grade from each group.

Tables 2 and 3 show that the correlation coefficients between the overall course grade and peer evaluation are 0.4758 and 0.3626 for paper 1 and paper 2. Both of the correlation coefficients are very small (a coefficient of 0.7 is usually considered a moderate correlation), thus there is no strong correlation between the overall course performance and the peer evaluation.

Table 2. Spearman correlation coefficient between the course grade and peer evaluation for paper 1.

	Course grade	Peer evaluation
Course grade	1.0000	0.4758
Peer evaluation	0.4758	1.0000

Table 3. Spearman correlation coefficient between the course grade and peer evaluation for paper 2.

	Course grade	Peer evaluation
Course grade	1.0000	0.3626
Peer evaluation	0.3626	1.0000

Figures 2 and 3 represents scatter plots between peer evaluation and course overall grade for both paper 1 (figure 2) and paper 2 (figure 3) for every student. There are points showing

very high peer evaluations but very low course grade, or very low peer evaluations but high course grade for both papers. Those points verified the very weak correlation between peer evaluation and overall course performance.

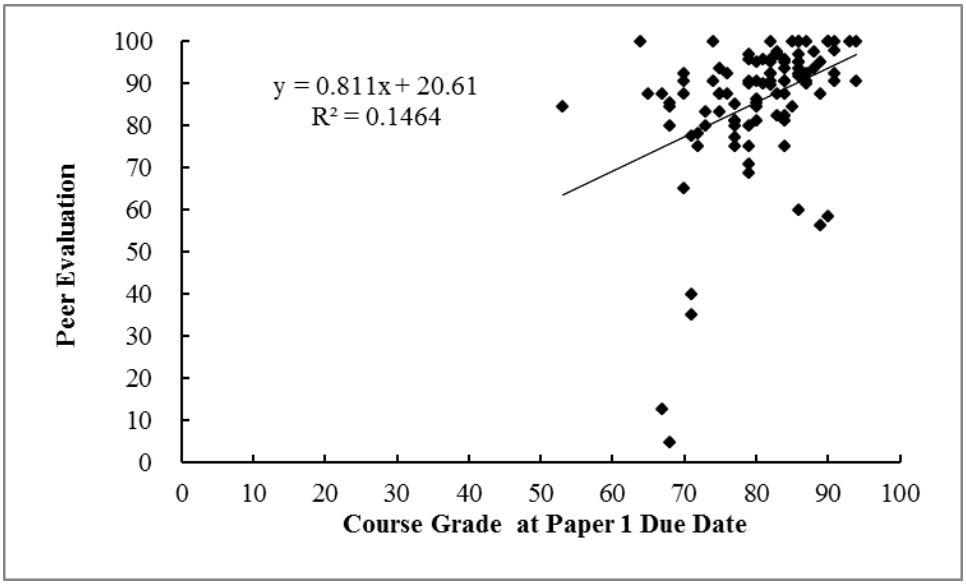


Figure 2: Average student peer evaluations for paper 1 versus course grade at paper 1 due date

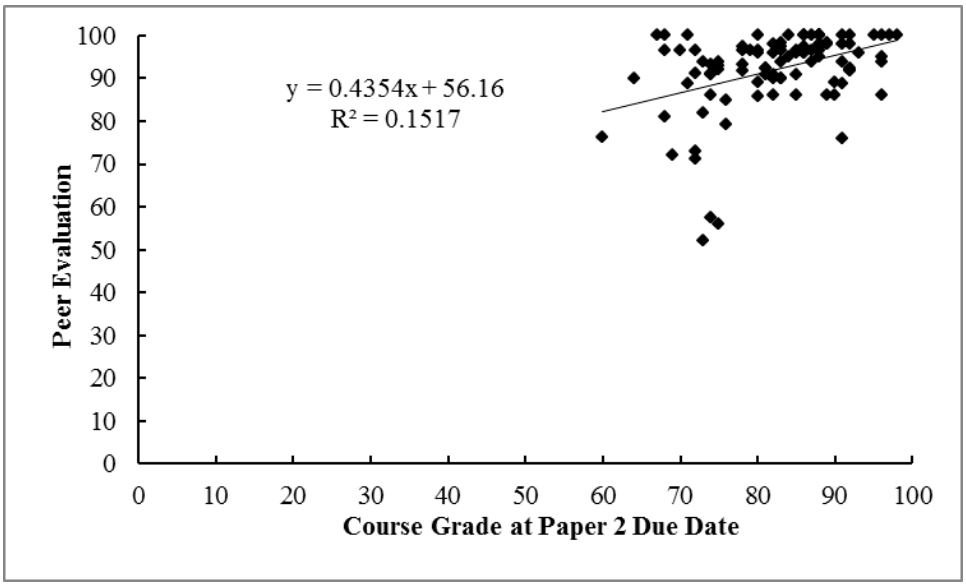


Figure 3: Average student peer evaluations for paper 2 versus course grade at paper 2 due date

IV. Conclusion.

Collaborative learning is a strategy with much empirical support (Schroeder et al., 2007), and is beneficial even in larger classes (c.f., Longmore, Dunn, & Jarboe, 1996; McKinney & Graham-Buxton, 1993). Collaborative learning includes a variety of activities spanning from instructors

pairing up students and having them share with one another or complete simple cooperative exercises (Rao & DiCarlo, 2000) to creating "learning teams" that work together for an extended time to complete more complex learning activities. However, using learning teams for complex activities that make up a non-trivial part of a student's grade creates challenges for instructors seeking to equitably assign grades for these projects. Peer evaluations in the form of peer rating provide a good way to collect feedback about the involvement of individual students in team activities (Kane & Lawler, 1978). Grading schemas that do not account for individual variability may undermine student motivation and violate individual accountability (Kagan, 1995).

In this paper, we begin to explore whether individual students can be graded equitably when engaging in collaborative learning. We first investigate whether free riders decrease the quality of team papers. Based on the statistical analysis of project performance for the three groups (teams with at least one free rider, teams that may or may not have a free rider, and teams without free riders), we concluded that there are no significant differences among the performance of those three groups. Hence, free riders do not decrease the quality of project papers.

We then explore whether students' evaluation of their peers accurately mirrors those peers' performance in the course. Based on the correlation analysis between peer evaluations and student course performance, we found that students' evaluations of their peers do not accurately mirror the students' course grades. Students also provided brief qualitative feedback about their peers. Anecdotal evidence from this feedback suggests that students evaluated their peers based on *effort.* Common feedback about students with high peer evaluations include statements like: "Helped with the organization of the group and worked very well with everyone to get her section done" and "[Student] was always on time to meetings. She was active in group discussions and offered advice and opinions in an effective way." Common feedback about students with low peer evaluations include statements like: "Didn't get the section done when needed. Didn't seem very into the project. But helped edit the paper" and "Never showed up to any meetings beside final submission meeting nor contributed to group efforts outside meetings." These statements lend support to the claim that students evaluate their peers based on effort instead of skill, and presents a plausible reason why students' peer evaluations do not correlate with their grade in the course. These statements also support the claim that peer evaluations create equitable individual grades, because students seemed to evaluate their peers based on their efforts on the team project.

Our findings suggest that grades on collaborative activities can be equitably assigned. In that way, instructors should feel emboldened to use collaborative learning techniques, provided they use peer evaluations to adjust students' grades. Our findings also suggest that additional work needs to be done to explore what factors students use to evaluate their peers. These findings provide a sound basis to build upon and identify factors that influence peer evaluations and collaborative learning.

V. Discussion and Implications.

Team projects may inspire frustration in students (Ruel et al., 2003), who are often used to working individually and being awarded grades based on work that they alone produce (King & Behnke, 2005). Instructors (and students) may question whether free riders sabotage the final product of team-based classroom endeavors, therefore decreasing a students' grade, for which

individual students cannot compensate. Evidence suggests that in the absence of peer evaluation, free-riding can increase the perception of inequality in team project grades (Ruel et al., 2003).

Our data support the use of team projects. Though engaged students in teams with free riders undoubtedly have to shoulder additional work, our analysis indicates that final paper grades do not suffer from the presence of free riders. This result should be encouraging to faculty who use or hope to use cooperative learning techniques. We therefore argue that peer evaluations protect the equity of individual grades by ensuring that free riders do not benefit from their lack of participation. Being engaged in classroom activities and "working harder" for a higher grade are generally not considered to be problems for individual projects, and, especially for teams of 3-6 students, we believe that a similar logic should also be applied to team projects. Future research should explore students' perception of free riders and whether peer evaluations quell students' concerns about free-riding peers (Shui et al., 2012).

If the skills and knowledge of students who are actively engaged increase more than free riders, then that would provide additional justification for the use of team projects and peer evaluation. In fact, some evidence indicates that learning outcomes are different for students who are actively engaged when compared to those who are not: Huang and colleagues (2007) found that, when compared to free riders, students who were actively involved in collaborative activities better assimilated knowledge and developed stronger leadership skills. In a similar study (Webb, 1993), middle-school students worked in groups to solve math problems, and then were subsequently individually tested on those problems. Webb found that the students who actively participated in the problem-solving groups earned higher individual test scores than those who had "loafed" during group work. Both studies indicate that students who actively participate in teams reap educational benefits, and therefore support the use of peer evaluations to adjust individual grades.

Given that peer evaluations are commonly used by instructors to reward individual students for good work within teams, in order to ensure the fairness of peer evaluation it is important to understand what factors students use to evaluate their teammates. To begin to explore this issue, we asked whether students' peer evaluations correlate with course grades. In our sample, students are not evaluating their peers consistently with their peers' grades in the course. This finding runs counter to other research (Persons, 1998), and could result from a variety of reasons: 1) students may be evaluating each other based on *effort*, which does not necessarily correlate with grade; 2) students are basing evaluation on other, as yet unknown, factors (King & Behnke, 2005). While we present anecdotal evidence that suggests peers evaluate one another on effort, there is little research that explores this issue. One study suggests that important factors that may influence peer evaluations are a student's age, race, and tendency to help others (Watson, BarNir, & Pavur, 2010). It is also possible that sociometry—someone's attraction, aversion, or neutrality towards another person—influences their evaluation (Kane & Lawler, 1978). This area is ripe for additional research and is an important area to continue to study.

References

Bartle, E.K., Dook, J., & Mocerino, M. (2011). Attitudes of tertiary students towards a group project in a science unit. *Chemistry Education Research and Practice, 12*, 313-311.

Caulfield, S.L., & Persell, C.H. (2006). Teaching social science reasoning and quantitative literacy: The role of collaborative groups. *Teaching Sociology, 34*, 39-53.

Cheng, W., & Warren, M. (2000). Making a difference: Using peers to assess individual students' contributions to a group project. *Teaching in Higher Education, 5*(2), 243-256.

Conway, J.M., & Huffcutt, A.I. (1997). Psychometric properties of multisource performance ratings: A meta-analysis of subordinate, supervisor, peer, and self-ratings. *Human Performance, 10*(4), 331-360.

Conway, R., & Kember, D. (1993). Peer assessment of an individual's contribution to a group project. *Assessment & Evaluation in Higher Education, 18*(1), 45-57.

Fink, L.D. (2002). Beyond small groups: Harnessing the extraordinary power of learning teams. In L. K. Michaelsen, A. B. Knight & L. D. Fink (Eds.), *Team-based learning: A transformative use of small groups* (pp. 3-25). Westport, CT: Praeger.

Gatfield, T. (1999). Examining student satisfaction with group projects and peer assessment. *Assessment & Evaluation in Higher Education, 24*(4), 365-377.

Huang, H., Yang, S., Kuo, Y., & Yang, S. (2007, September 3-7). *The study of "Free-rider" In problem-based learning situation*. Paper presented at the International Conference on Engineering Education, Coimbra, Portugal.

Johnson, D.W., Johnson, R.T., & Holubec, E.J. (1986). *Circles of learning: Cooperation in the classroom*. Edina, MN: Interaction Book Company.

Kagan, S. (1995). Group grades miss the mark. *Educational Leadership, 52*(8), 68-71.

Kane, J.S., & Lawler, E.E.I. (1978). Methods of peer assessment. *Psychological Bulletin, 85*(3), 555-586.

Kaufman, D.B., Felder, R.M., & Fuller, H. (2000). Accounting for individual effort in cooperative learning teams. *Journal of Engineering Education, 89*(2), 133-140.

King, P.E., & Behnke, R.R. (2005). Problems associated with evaluating student performance in groups. *College Teaching, 53*(2), 57-61.

Longmore, M.A., Dunn, D., & Jarboe, G.R. (1996). Learning by doing: Group projects in research methods classes. *Teaching Sociology, 24*(1), 84-91.

McKinney, K., & Graham-Buxton, M. (1993). The use of collaborative learning groups in the large class: Is it possible? *Teaching Sociology, 21*(4), 403-408.

Millis, B.J., & Cottell, P.G.J. (1998). *Cooperative learning for higher education faculty*. Phoenix, AZ: American Council on Education and The Oryx Press.

Oakley, B., Felder, R.M., Brent, R., & Elhajj, I. (2004). Turning student groups into effective teams. *Journal of Student Centered Learning, 2*(1), 9-34.

Ohland, M.W., Layton, R.A., Loughry, M.L., & Yuhasz, A.G. (2005). Effects of behavioral anchors on peer evaluation reliability. *Journal of Engineering Education, 94*(3), 319-326.

Persons, O.S. (1998). Factors influencing students' peer evaluation in cooperative learning. *Journal of Education for Business, 73*(4), 225-229.

Rao, S.P., & DiCarlo, S.E. (2000). Peer instruction improves performance on quizzes. *Advances in Physiology Education, 24*(1), 51-55.

Rau, W., & Heyl, B.S. (1990). Humanizing the college classroom: Collaborative learning and social organization among students. *Teaching Sociology, 18*(2), 141-155.

Roberts, T.S., & McInnerney, J.M. (2007). Seven problems of online group learning (and their solutions). *Educational Technology & Society, 10*(4), 257-268.

Ruel, G., Bastiaans, N., & Nauta, A. (2003). Free riding and team performance in project education. *International Journal of Management Education, 3*(1), 26-38.

Schroeder, C., Scott, T.P., Tolson, H., Huang, T.-Y., & Lee, Y.-H. (2007). A meta-analysis of national research: Effects of teaching strategies on student achievement in science in the United States. *Journal of Research in Science Teaching, 44*(10), 1436-1460.

Shui, A., Chan, C., Lam, P., Lee, J., & Kwong, A. (2012). Baccalaureate nursing students' perceptions of peer assessment of individual contributions to a group project: A case study. *Nurse Education Today, 32*(3), 214-218.

Watson, W.E., BarNir, A., & Pavur, R. (2010). Elements influencing peer evaluation: An examination of individual characteristics, academic performance, and collaborative processes. *Journal of Applied Social Psychology, 40*(12), 2995-3019.

Webb, N.M. (1993). Collaborative group versus individual assessment in mathematics: Processes and outcomes. *Educational Assessment, 1*(2), 131-152.

Journal of the Scholarship of Teaching and Learning, Vol. 13, No. 1, February 2013, pp. 57 – 67.

Academic achievement in first generation college students: The role of academic self-concept

Stacie Craft DeFreitas[1] and Anne Rinn[2]

Abstract: This study examined whether verbal and math self-concepts could help explain the academic performance of first generation college students. Participants were 167 ethnically diverse students at an inner city, commuter, open-enrollment, four-year university in the southwestern United States. Results indicated that students with lower verbal and math self-concepts had lower grade point averages. Furthermore, there were ethnic differences among first generation college students in grade point average with Whites performing better than African Americans and Latinos. In addition, Asians and Latinos had higher math self-concept than African Americans. The potential for academic self-concept as an important factor in increasing the academic performance of first generation students is discussed.

Keywords: first generation college students, academic achievement, math self-concept, verbal self-concept

I. Introduction.

First generation college students—those whose parents did not graduate from college—have a more difficult time successfully completing college than other students. First generation college students receive lower grades (Chen, 2005), earn fewer academic credits (Pascarella, Wolniak, Pierson, & Terenzini, 2003), and are less likely to graduate from college (Martinez, Sher, Krull, & Wood, 2009) than students whose parents attended and graduated from college. However, a definitive reason for why first generation college students have poorer academic performance than other students has not been discovered. One hypothesis for the lower levels of achievement among first generation college students is that they have lower academic self-concepts than other students.

Self-concept can be defined as an individual's evaluation of self that is based on his or her experiences and interpretations of those experiences (e. g., I am good at math; Schunk & Pajares, 2005). Shavelson, Hubner and Stanton (1976) were among the first to assert that self-concept is both multifaceted and hierarchical. Self-concept is multifaceted "in that people categorize the vast amount of information they have about themselves and relate these categories to one another" and is hierarchically arranged "with perceptions of behavior at the base moving to inferences about self in sub areas (e.g., academic-English, science, history, math), then to inferences about self in general" (Marsh & Shavelson, 1985, p. 107).

Self-concept becomes more differentiated with age. As individuals get older, moving from childhood to adolescence and the college-aged years, they are better able to determine their strengths and weaknesses in specific areas (e.g., math, English, social skills). This study focuses on academic self-concept, specifically math and verbal self-concept. The primary goal of this study is to determine whether math and/or verbal self-concept influences the academic achievement of first generation college students.

---

[1] Assistant Professor of Psychology, Department of Social Sciences, University of Houston-Downtown, 1 Main Street, Houston, TX 77002, DeFreitas@uhd.edu

[2] Associate Professor, Department of Educational Psychology, University of North Texas, 1155 Union Circle #311335, Denton, TX 76203, Anne.Rinn@unt.edu

A. Achievement among First Generation College Students.

Numerous researchers have observed lower academic achievement among first generation college students as compared to non-first generation students (e.g., Engle, 2007; Majer, 2009; Martinez et al., 2009; Pascarella et al., 2003). To illustrate, Chen (2005) found first generation college students had lower grade point averages (GPA) than non-first generation college students. Furthermore, Martinez and colleagues (2009) found that a lower grade point average was much more likely to cause a first generation college student to drop out of college than it would other students. In other words, students who were not first generation in college were more likely to persist in the face of poor academic performance. Other researchers have found similar findings, namely that belief about one's academic abilities affects academic performance, which in turn affects persistence and retention in college (Vuong, Brown-Welty, & Tracz, 2010).

Lower academic achievement and lower rates of persistence among first generation college students may stem from a variety of sources. In general, first generation college students are less academically prepared to enter college. They often have taken fewer higher level mathematics courses while in high school (Chen, 2005). In addition, first generation college students tend to perform worse on academic placement tests (Chen, 2005; Martinez et al., 2009). However, it is important to note that first generation college students are still less likely to graduate from college, even after taking into account their academic preparation before arriving in college, their performance while in college, and various types of demographic information (Chen, 2005; Strayhorn, 2006). Other possible explanations for the lower achievement of first generation college students may lie in reduced time for studying and interacting with faculty (Engle, 2007), which may be a result of higher rates of employment while in college within this population (Chen, 2005).

B. Ethnicity and Achievement.

A number of empirical studies have demonstrated that Latinos and African Americans have lower academic achievement in college than their White peers whether or not they are first generation college students (e.g., Culpepper & Davenport, 2009; Good, Masewicz, & Vogel, 2010; Walton & Cohen, 2011). Much research on this "achievement gap" notes significant differences between the academic achievement of African Americans and Whites from pre-kindergarten (e.g., Yeung & Pfeiffer, 2009) to college (e.g., Walton & Cohen, 2011) and beyond (e.g., Taylor, 1995). While there is less research focusing on the achievement of Latino students, research also shows that Whites generally have higher academic achievement than Latinos (Good et al., 2010; Reardon & Galindo, 2009). Generally, research demonstrates that GPA does not differ between Asian and Whites students or that Asians have higher achievement than Whites (Konstantopoulos, 2009).

C. Academic Self-Concept and Academic Achievement.

Overall academic self-concept is a cognitive and affective evaluation of the self that can influence actual academic performance. Academic self-concept has generally been shown to be related to grade point average among university students (Choi, 2005; Gerardi, 2005; Lent, Brown, & Gore, 1997). Among a sample of African Americans at a historically Black college, for example, higher academic self-concept was related to higher GPA (Awad, 2007). Further, Choi found that more specific types of self-concept (self-concept for the particular course examined, e.g., mathematics) was more predictive of GPA than general academic self-

concept. A meta-analysis that included 69 data sets also found a significant relationship between math and verbal self-concept and math and verbal academic performance in the general college student population (Möller, Pohlmann, Köller, & Marsh, 2009). These findings suggest that examining verbal self-concept and math self-concept instead of general academic self-concept may be more predictive of college grade point average.

Some researchers (e.g., Caslyn & Kenny, 1977; Garg, 1992) have found that a student must first do well in school to have a high academic self-concept, while others (e.g., Marsh, Trautwein, Lüdtke, Köller, & Baumert, 2005; Valentine, DuBois, & Cooper, 2004) support the notion that a high academic self-concept is necessary before a student can do well in school. Research evidence exists for both sides, suggesting the relationship between academic achievement and academic self-concept is probably reciprocal (Hamachek, 1995; House, 2000; Pinxten, Van Damme, & D'Haenens, 2010). Indeed, in their meta-analysis of 128 studies, Hansford and Hattie (1982) found an average correlation of .21 between various self-measures and measures of achievement and performance. Therefore self-concept likely both influences and is influenced by academic achievement.

D. The Current Study.

The purpose of this study is to further elucidate the relationship between academic self-concept and academic achievement for first generation college students, specifically to understand whether math or verbal self-concept can help explain why the academic performance of first generation college students is not similar to that of their non-first generation peers. Furthermore, it examines ethnic differences in verbal and math self-concept as well as GPA in a rarely studied population, namely students at an open enrollment, four-year institution. Identifying malleable factors, such as math and verbal self-concept that can influence the relationship between generational status and achievement is the first step in the development of interventions that can improve first generation college students' academic performance. We hypothesize that verbal and math self-concept scores will both be related to GPA for this sample of first generation college students. In addition, we hypothesize that there will be ethnic differences in verbal and math self-concept scores, as well as GPA.

II. Methods.

A. Participants.

The current study included 167 (48 African American, 86 Latino, 14 White, and 19 Asian) first generation students (see Table 1). One hundred thirty-three (79.6%) of the first generation college students were female. The mean age for the sample was 23.97 years (SD= 8.56). All participants were enrolled in courses at a 4-year public university in the southwestern United States.

B. Materials.

*Demographic information***.** A demographic questionnaire was administered to assess participants' age, ethnicity, gender, income and self-reported grade point average. Participants reported income and grade point average as ranges coinciding with a score on a scale, not specific numbers (e.g., income of 2 = between $25,000 and $40,000). One potential limitation of this study is the fact that students reported their own grade point

averages. However, researchers (Herman, 2003; Noftle & Robins, 2007) have found college students have moderate to highly reliable ratings of self-reported grade point average.

*Self-concept***.** The Self Description Questionnaire III (SDQ-III) was designed to measure the self-concepts of late adolescents and young adults, and was created in response to a need for high quality measurement instruments with a strong theoretical basis that provide support for the multidimensionality of self-concept (Marsh, 1989). The SDQ-III is based on the Shavelson model of self-concept, which supports the notion that self-concept is both multifaceted and hierarchical (Shavelson, Hubner, & Stanton, 1976). The SDQ-III contains 136 items and measures 13 facets of self-concept (Marsh & O'Neill, 1984). Each facet is measured by 10 to 12 items, with responses ranging from 1 (*definitely false*) to 8 (*definitely true*). Half of the items are negatively worded (Marsh, 1989). Scores reported in this study are percentiles calculating from a norming sample of 2,436 respondents (Marsh, 1989). The SDQ-III assesses four areas of academic self-concept (math, verbal, general academic, and problem solving), eight areas of nonacademic self-concept (physical ability, physical appearance, relations with the same sex, relations with the opposite sex, relations with parents, spiritual values/religion, honesty/trustworthiness, and emotional stability), and general self-concept. For the purposes of this study, we only used data from the math self-concept subscale and from the verbal self-concept subscale. Sample items from the math self-concept subscale include, "I have hesitated to take courses that involve mathematics", "I have generally done better in mathematics courses than other courses", and "I am quite good at mathematics." Sample items from the verbal self-concept subscale include, "In school I had more trouble learning to read than most other students", "Relative to most people, my verbal skills are quite good", and "I can write effectively."

Marsh (1989) provides strong psychometric support for the SDQ-III, including scores of reliability, correlations with external criteria, and self-other agreement. Scores of internal consistency range from $\alpha = .74$ to $\alpha = .95$ for the subscales of the SDQ-III. Studies of discriminant validity are extensive. For example, the relationship between one's math self-concept score and math achievement score has been noted as $r = .58$, $p < .01$ and the relationship between one's verbal self-concept score and English achievement score has been noted as $r = .42$, $p < .01$ (Marsh & O'Neill, 1984). For this sample, both math ($\alpha = .94$) and verbal ($\alpha = .84$) self- concept scores were reliable.

C. Procedure.

Institutional Review Board approval was given for the study prior to data collection. Participants were recruited through introductory and upper level psychology courses that offered extra credit for participation in research studies. Invitation to participate in this study was posted on a psychology study board website and students volunteered to become participants, thus resulting in a convenience sample. At the beginning of study participation, participants were asked to sign an informed consent form and then complete the various questionnaires.

III. Results.

Means, standard deviations and correlations of the variables of interest are included in Table 1. Percentile scores for verbal and math self-concept are in the average range indicating that the sample did not have abnormally high or low self-concept scores. Correlations were calculated to analyze basic relations among study variables. Verbal self-concept and grade

point average were correlated ($r = .25$, $p < .01$), indicating that those with higher verbal self-concept scores had higher grade point averages.

Table 1. Means, standard deviations, and correlation table of main study variables

Variable			**1**	**2**	**3**	**4**
	M	*SD*				
1. SES	2.02	.83	--	-.08	-.09	.04
2.Verb. SC	51.18	30.28		--	-.03	.25*
3.Math SC	33.67	27.18			--	.14
4.GPA	5.05	1.29			.	--

* $p < .01$, *Note.* SES of 2.02 = between $25,000 -$40,000 per year; GPA of 5.05 = GPA between 2.51 and 3.0.

Hierarchical linear regression analyses were conducted to determine whether verbal and math self-concept scores predicted GPA (see Table 2). In the first step, socioeconomic status and ethnicity were included due to previous research findings that suggest their relation to academic achievement (Leventhal & Brooks-Gunn, 2000). Of these two only ethnicity was a significant predictor of GPA, F (2, 156) = 4.57, $p < .05$. In the second step, verbal and math self-concept were examined as a predictor of grade point average. The results indicated those who had higher verbal and math self-concept were likely to have higher GPAs, F (2, 154) = 5.85, $p < .01$.

Table 2. Hierarchical regression summary for ethnicity, verbal and math self-concept predicting GPA

Variable	*B*	*SEB*	β	R^2	ΔR^2
Step 1				.06*	
SES	.02	.13	.01		
Ethnicity	-.31	.11	-.23**		
Step 2				.12**	.07**
SES	.06	.12	.04		
Ethnicity	-.29	.10	-.22**		
Verbal SC	.01	.003	.22**		
Math SC	.01	.004	.15*		

Note. *$p < .01$, ** $p \leq .001$

To better understand the impact of ethnicity on achievement and academic self-concept for first generation students, additional analyses using a univariate analysis of variance (ANOVA) and multivariate analysis of variance (MANOVA) were completed. First, ethnic differences in GPA were analyzed and demonstrated significant variability in GPA due to ethnicity using ANOVA, F (3, 160) = 3.54, $p < .05$. Post hoc examination using Hochberg's GT2 due to the unequal ethnic group sizes demonstrated that Whites had higher GPAs (M = 6.07, SD = .73) than African Americans (M = 4.98, SD = 1.34) and Latinos (M = 4.87, SD = 1.31). The effect size was $r = .25$. No other ethnic differences were significant. In addition, the relations between ethnicity and verbal and math self-concept scores were examined using MANOVA. Box's test of equality of covariance was not significant, Box's M = 14.05, F(9, 160) = 1.50, $p = .141$, suggesting that the assumption of homogeneity of variance had been met. Further analysis of homogeneity was examined with Levene's test of equality. Verbal self-concept did not violate the assumption of homogeneity of variance, therefore Pillai's Trace, which is robust when sample sizes are unequal, was used to further

examine the relations between verbal self-concept and ethnicity. There was a significant effect of ethnicity on verbal self-concept, $F(3, 163) = 3.77$, $p < .05$, partial eta squared =.06. Post hoc analysis using Hochberg's GT2 to examine the data revealed no significant differences in verbal self-concept scores based on ethnicity.

When examining math self-concept, Levene's test of equality was significant, $F(3, 163) = 5.022$, $p < .01$, suggesting that the assumption of variance was violated for math self-concept, for that reason, further analyses with math self-concept were conducted using Kruskal-Wallis. The overall Krusall-Wallis score was significant, H = 11.93, $p < .01$ suggesting ethnic differences in math self-concept scores. Further exploration was conducted using Mann-Whitney with a Bonferonni correction so that significance would be indicated for $p < .008$. Both Asians, U = 220, z = -3.29, $p < .001$, M= 43.51, SD =23.20 and Latinos, U = 1443, z = -2.88, $p = .004$, M = 36.90, SD = 29.12 had higher math self-concept scores than African Americans (M = 28.78, SD = 25.16). Whites' math self-concept scores (M = 32.36, SD= 28.04) did not significantly differ from the other ethnic groups' scores.

IV. Discussion.

This study demonstrated that higher verbal and math self-concept scores are related to better academic achievement for this ethnically diverse sample of first generation college students. This study shows that factors like having little confidence in one's abilities such as writing effectively, comprehending well when reading, or solving math problems are related to lower academic performance. Perhaps focusing on improving one's beliefs about these abilities would also lead to improved achievement in college.

As found in other research (e.g., Masewicz & Vogel, 2010), Whites have higher GPAs than African Americans and Latinos, even among a first generation college student sample where the achievement gap is still an issue. When examining ethnic differences in verbal self-concept scores, no clear ethnic differences could be found, however there were differences with regard to math self-concept scores. Asians and Latinos were found to have higher math self-concept scores than African Americans. Whites' math self-concept scores did not differ from other ethnic groups and were only higher, though not significantly higher than African Americans scores. Past studies have shown that African American students are less likely than White and Asian students to have access to advanced math and science courses while in high school (May & Chubin, 2003; Tyson, Lee, Borman, & Hanson, 2007), so it is not surprising that African American first generation college students have lower perceptions of their math self-concepts than Asians but surprising were the lack of difference between African Americans and Whites as well as the presence of significant difference between African Americans and Latinos. Future research should be conducted to examine these relationships further in first generation college students as it appears that their math self-concepts differs from the general college population.

The findings in this study indicate that first generation college students who have high verbal and math self-concept scores are also likely to have higher academic achievement. University personnel can use this information to assist first generation students in being more successful in their academic endeavors. Gerardi (2005) suggests that positive academic self-concept may be particularly important for overcoming the poorer academic preparation of minority, lower SES populations such as the one in this study. If we know that higher verbal and/or math self-concept is related to academic achievement, then interventions can be utilized to focus on these factors. There are a number of interventions that can be conducted in order to improve the academic self-concepts of first generation college students. Positive interaction between faculty and students is related to higher self-concept (Cokley, 2000;

Cokley et al., 2004). Specific interventions could include faculty calling students by name, personally inviting students to their office hours, having lunch/coffee with individual or small groups of students, and noting signs of improvement in performance or effort by students. Furthermore, if faculty members arrive just 5 to 10 minutes earlier for class, they will have time to greet individual students and ask questions such as how they are feeling about the course material or if they have any concerns about the class. Osborne and Jones (2011) note other interventions that can be used by faculty and administrators to assist in the development of academic self-concept. They discuss a variety of ways to improve academic self-concept including: 1) empowering students by allowing them to have some control in the academics such as giving them choices in selecting readings or assignments; 2) demonstrating how the material is relevant to real life which engenders interest; 3) giving constructive and individualized feedback; and 4) developing a sense of community and caring in the academic space. Many of these interventions can easily be worked into how classes are taught and how faculty members interact with their students.

Because first generation college students are most at risk as they are transitioning into college (Engle, 2007), it is necessary to begin intervention as soon as they begin college. A low grade point average has a much more negative impact on first generation students than other students, such that they are more likely to drop out of college without a degree when performing poorly (Martinez et al., 2009). This suggests that first generation students must experience academic success early in their college careers in order to graduate. Interventions for first generation college students during high school and throughout college that challenge them in academic courses while also facilitating academic success and building in encouragement would work to improve verbal and math self-concept, which would in turn, create greater success in college (Osborne & Jones, 2011).

V. Directions for Future Research and Conclusion.

It is important to note that the students of this sample attended an ethnically diverse university and many are first generation college students who are also likely to have learned English as a second language. The uniqueness of this sample may account for the lack of significant findings when examining verbal self-concept. Researchers should specifically examine the impact of verbal self-concept for those who are native English speakers and those who have learned English as a second language separately to determine whether there are distinct differences in the relationships. Furthermore, we were unable to examine gender as a moderator of the relationship between math and verbal self-concepts and first generation status due to the low number of males among the participants. Examining gender in the future would be useful due to the fact that math and verbal self-concepts often vary by gender (Furnham, 2001; Heller & Ziegler, 1996; Marsh &Yeung, 1998; Steinmayr & Spinathm, 2009). It is important to note that there are a variety of reasons other than academic self-concept that may make successful academic achievement less likely, including such factors as inadequate high school preparation; however belief in oneself as being academically able is a valid intervention target that can be obtained with small efforts on the part of faculty.

References

Awad, G.H. (2007). The role of racial identity, academic self-concept and self- esteem in the prediction of academic outcomes for African American students. *Journal of Black Psychology, 33*(2), 188-207. doi: 10.177/0095798407299513.

Carpenter, D., & Ramirez, A. (2008). More than one gap: Dropout rate gaps between and among Black, Hispanic, and White students. *Journal of Advanced Academics*, *19*(1), 32-64. Retrieved from http://www.eric.ed.gov/PDFS/EJ786605.pdf

Caslyn, R.J., & Kenny, D.A. (1977). Self-concept of ability and perceived evaluation of others: Cause or effect of academic achievement? *Journal of Educational Psychology, 69*(2), 136-145. Retrieved from http://web.ebscohost.com/ehost/pdfviewer/pdfviewer?sid=69d92624-a6c7-4e38-8ba9-0213831781bc%40sessionmgr11&vid=2&hid=21

Chen, X. (2005). *First generation students in postsecondary education: A look at their college transcripts* (NCES 2005-17). U.S. Department of Education, National Center for Education Statistics. Washington, D.C.: U. S. Government Printing Office. Retrieved from http://nces.ed.gov/pubs2005/2005171.pdf .

Choi, N. (2005). Self-efficacy and self-concept as predictors of college students' academic performance. *Psychology in the Schools, 42,* 197-205. Retrieved from http://onlinelibrary.wiley.com/doi/10.1002/pits.20048/pdf

Cokley, K. (2000). Perceived faculty encouragement and its influence on college students. *Journal of College Student Development, 41*, 348-352.

Cokley, K., Komarraju, M., Patel, N., Piedrahita, S. Rosales, R., Castillon, J., ...Pang, L. (2004). Construction and initial validation of the student-professor interaction scale (SPIS). *The College Student Affairs Journal, 24(1),* 32-50.

Culpepper, S.A., & Davenport, E.C. (2009). Assessing differential prediction of college grades by race/ethnicity with a multilevel model. *Journal of Educational Measurement, 46*(2)*,* 220-242. Retrieved from http://onlinelibrary.wiley.com/doi/10.1111/j.1745-3984.2009.00079.x/pdf

Engle, J. (2007). Postsecondary access and success for first generation college students. *American Academic, 3*(1)*,* 25-48. Retrieved from http://www.aft.org/pdfs/highered/academic/january07/Engle.pdf

Furnham, A. (2001). Self-estimates of intelligence: Culture and gender difference in self and other estimates of both general (g) and multiple intelligences. *Personality and Individual Differences, 31,* 1381-1405. Retrieved from http://www.sciencedirect.com/science/article/pii/S0191886900002324

Garg, R. (1992). Academic and nonacademic self-concepts: Influence of recent life-change experiences and demographic, social, and health variables. *NACADA Journal, 13*(1), 43-52.

Gerardi, S. (2005). Self-concept of ability as a predictor of academic success among urban technical college students. *The Social Science Journal, 42*, 295-300. doi:10.1016/j.soscij.2005.03.007.

Good, M., Masewicz, S., & Vogel, L. (2010). Latino English language learners: Bridging achievement and cultural gaps between schools and families. *Journal of Latinos and Education*, *9*(4), 321-339. doi:10.1080/15348431.2010.491048

Hamachek, D. (1995). Self-concept and school achievement: Interaction dynamics and a tool for assessing the self-concept component. *Journal of Counseling and Development, 73*(4), 419-425. doi: 10.1002/j.1556-6676.1995.tb01775.x

Hansford, B.C., & Hattie, J.A. (1982). The relationship between self and achievement/performance measures. *Review of Educational Research, 52*(1), 123-142. Retrieved from http://rer.sagepub.com/content/52/1/123.full.pdf+html

Herman, W.E. (2003, August). *College student awareness of current G.P.A.* Paper presented at the Annual Meeting of the American Psychological Association, Toronto, Canada.

Heller, K.A., & Ziegler, A. (1996). Gender differences in mathematics and the sciences: Can attributional retraining improve the performance of gifted females? *Gifted Child Quarterly, 40,* 200-210. Retrieved from http://gcq.sagepub.com/content/40/4/200.full.pdf+html

House, J.D. (2000). The effect of student involvement on the development of academic self-concept. *Journal of Social Psychology, 140*(2), 261-263. Retrieved from http://www.tandfonline.com/doi/pdf/10.1080/00224540009600467

Konstantopoulos, S. (2009). The mean is not enough: Using quantile regression to examine trends in Asian–White differences across the entire achievement distribution. *Teachers College Record*, *111*(5), 1274-1295.

Lent, R.W., Brown, S.D., & Gore, A. (1997). Discriminant and predictive validity of academic self-concept, academic self-efficacy, and mathematics-specific self-efficacy. *Journal of Counseling Psychology, 44,* 301-315.

Leventhal, T., & Brooks-Gunn, J. (2000). The neighborhoods they live in: The effects of neighborhood residence on child and adolescent outcomes. *Psychological Bulletin, 126*, 309-337. Retrieved from http://web.ebscohost.com/ehost/pdfviewer/pdfviewer?sid=4c522de9-ec43-4e4a-996e-5920d8e27e80%40sessionmgr15&vid=2&hid=21

Majer, J.M. (2009). Self-efficacy and academic success among ethnically diverse first-generation community college students. *Journal of Diversity in Higher Education, 2*(4), 243-250. doi: 10.1037/a0017852

Marable, M. (2003). *The Great Wells of Democracy: The Meaning of Race in American Life.* Cambridge, MA: Basic Civitas Books.

Marsh, H.W. (1989). *Self Description Questionnaire (SDQ) III: A Theoretical and Empirical Basis for the Measurement of Multiple Dimensions of Late Adolescent Self-Concept: An Interim Test Manual and a Research Monograph.* New South Wales, Australia: University of Western Sydney.

Marsh, H.W., & O'Neill, R. (1984). Self Description Questionnaire III: The construct validity of multidimensional self-concept ratings by late adolescents. *Journal of Educational Measurement, 21*(2)*,* 153-174. Retrieved from http://www.jstor.org/stable/1434540

Marsh, H.W., & Shavelson, R. (1985). Self-concept: Its multifaceted, hierarchical structure. *Educational Psychologist, 20*, 107-123.

Marsh, H.W., Trautwein, U., Lüdtke, O., Köller, O., & Baumert, J. (2005). Academic self-concept, interest, grades, and standardized test scores: Reciprocal effects models of causal ordering. *Child Development, 76*(2), 397-416. Retrieved from http://onlinelibrary.wiley.com/doi/10.1111/j.1467-8624.2005.00853.x/pdf

Marsh, H.W., & Yeung, A.S. (1998). Longitudinal structural equation models of academic self-concept and achievement: Gender differences in the development of math and English constructs. *American Educational Research Journal, 35*, 705-738. Retrieved from http://www.jstor.org/stable/pdfplus/1163464.pdf?acceptTC=true

Martinez, J.A., Sher, K.J., Krull, J.L., & Wood, P.K. (2009). Blue-collar scholars? Mediators and moderators of university attrition in first-generation college students. *Journal of College Student Development, 50*, 87-103. Retrieved from http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2742431/

May, G.S., & Chubin, D.E. (2003). A retrospective on undergraduate engineering success for underrepresented minority students. *Journal of Engineering Education, 92,* 27-40. Retrieved from http://www.jee.org/2003/january/753.pdf

Möller, J., Pohlmann, B., Köller, O., & Marsh, H.W. (2009). A meta-analytic path analysis of the internal/external frame of reference model of academic achievement and academic self-concept. *Review of Educational Research, 79,* 1129-1167. Retrieved from http://rer.sagepub.com/content/79/3/1129.full.pdf+html

Noftle, E.E., & Robins, R.W. (2007). Personality and predictors of academic outcomes: Big five correlates of GPA and SAT scores. *Journal of Personality and Social Psychology, 93*, 116-130. Retrieved from http://web.ebscohost.com/ehost/pdfviewer/pdfviewer?sid=428c0cb0-c3d1-40c5-830a-94e440f33e86%40sessionmgr11&vid=2&hid=21

Osborne, J.W., & Jones, B.D. (2011). Identification with academics and motivation to achieve in school: How the structure of the self influences academic outcomes. *Educational Psychology Review, 23*(1), 131-158. Retrieved from http://www.springerlink.com/content/47j24662v4672883/fulltext.pdf

Pascarella, E., Wolniak, G.C., Pierson, C.T., & Terenzini, P.T. (2003). Experiences and outcomes of first-generation students in community colleges. *Journal of College Student Development, 44,* 420-429.

Pascarella, E., & Terenzini, P. (1991). *How College Affects Students.* San Francisco: Jossey-Bass.

Pinxten, M., De Fraine, B., Van Damme, J., & D'Haenens, E. (2010). Causal ordering of academic self-concept and achievement: Effects of type of achievement measure. *British Journal of Educational Psychology, 80*, 689-709. Retrieved from http://web.ebscohost.com/ehost/pdfviewer/pdfviewer?sid=c718038d-7378-48eb-a09c-519635a976cd%40sessionmgr4&vid=2&hid=21

Reardon, S.F., & Galindo, C. (2009). The Hispanic-White achievement gap in math and reading in the elementary grades. *American Educational Research Journal*, *46(3)*, 853-891. Retrieved from http://aer.sagepub.com/content/46/3/853.full.pdf+html

Schunk, D.H., & Pajares, F. (2005). Competence perceptions and academic functioning. In A. J. Eliot and C. S. Dweck, (Eds.), *Handbook of Competence and Motivation* (pp. 85-104). New York: Guilford Press.

Shavelson, R.J., Hubner, J.J., & Stanton, G.C. (1976). Self-concept: Validation of construct interpretations. *Review of Educational Research, 46*, 407-441. Retrieved from http://www.jstor.org/stable/1170010

Steinmayr, R., & Spinath, B. (2009). What explains boys' stronger confidence in their intelligence? *Sex Roles, 61*, 736-749. Retrieved from http://www.springerlink.com/ content/d57k212522317257/fulltext.pdf

Strayhorn, T.L. (2006). Factors influencing the academic achievement of first-generation college students. *NASPA Journal, 43*, 82-111.

Taylor, R.L. (1995). Black youth in the United States: An overview. In R. L. Taylor (Ed). *African American Youth: Their Social and Economic Status in the United States* (pp 3-34). Westport, Connecticut: Praeger.

Tyson,W., Lee, R., Borman, K.M., & Hanson, M.A. (2007). Science, technology, engineering, and mathematics (STEM) pathways: High school science and math coursework and postsecondary degree attainment. *Journal of Education for Students Placed at Risk, 12,* 243-270. Retrieved from http://www.tandfonline.com/doi/pdf/10.1080/10824660701601266

Valentine, J.C., DuBois, D.L., & Cooper, H. (2004). The relation between self-beliefs and academic achievement: A meta-analytic review. *Educational Psychologist, 39*(2), 111-133. Retrieved from http://www.tandfonline.com/doi/pdf/10.1207/s15326985ep3902_3

Vuong, M., Brown-Welty, S., & Tracz, S. (2010). The effects of self-efficacy on academic success of first-generation college sophomore students. *Journal of College Student Development, 51*(1), 50-64. Retrieved from http://muse.jhu.edu/journals/ journal_of_college_student_development/v051/51.1.vuong.pdf

Walpole, M. (2003). Socioeconomic status and college: How SES affects college experiences and outcomes. *The Review of Higher Education, 27*, 45-73. Retrieved from http://muse.jhu.edu/journals/review_of_higher_education/v027/27.1walpole.pdf

Walton, G.M., & Cohen, G.L. (2011). A brief social-belonging intervention improves academic and health outcomes of minority students. *Science*, *331*(6023), 1447-1451. Retrieved from http://www.sciencemag.org/content/331/6023/1447.full

Yeung, W., & Pfeiffer, K.M. (2009). The Black–White test score gap and early home environment. *Social Science Research*, doi:10.1016/j.ssresearch. 2008.11.004

Yeung, A., & Wong, E. (2004). Domain specificity of trilingual teachers' verbal self-concepts. *Journal of Educational Psychology*, doi:10.1037/0022-0663.96.2.360

Journal of the Scholarship of Teaching and Learning, Vol. 13, No. 1, February 2013, pp. 68 – 76.

Discussion as a bridge: Strategies that engage adolescent and adult learning styles in the postsecondary classroom

Hope Smith Davis[1]

Abstract: This essay examines areas where literacy researchers in secondary and postsecondary contexts have explored the use of classroom discussion for extending critical thinking and content comprehension among students. It provides an argument for the use of strategic conversations in postsecondary classrooms and outlines specific methods for planning and implementing class-based discussions aligned with areas of convergence between adolescent and adult learning theories.

Keywords: postsecondary instruction, pedagogy, andragogy, adult-learning theory, classroom discussion, literacy, engagement, critical thinking

Postsecondary classes include a range of students across developmental levels. Especially in introductory courses, instructors may find students of both traditional and non-traditional ages demonstrating learning characteristics described in both adolescent and adult learning models. Because of the range of levels that may be represented in these classes, it is of particular importance for postsecondary instructors to be aware of areas of theoretical convergence in developmental learning, and learning strategies that can be used across developmental levels to encourage student growth and comprehension of classroom material. One specific, but frequently under-used strategy that has benefits at both the adolescent and adult learning levels is strategic classroom discussion.

I. A Convergence of Needs.

Early research in the field of adult education, described by Knowles (1978), sought to make a distinction between *pedagogy*, or the teaching of children and *andragogy*, the instruction of adults. However, Knowles (1980) noted that *youth*, learners between the ages of childhood and adulthood, also may fit some of the characteristics described in his adult-learning model. As adolescent literacy researchers have become more cognizant of the importance of individual and social construction of knowledge (Vygotsky, 1978), a nexus of learning needs between adult and adolescent learners has become perceptible, even if the parallels between andragogy and the needs of adolescents have not fully been explicitly acknowledged by those developing engaging in research based on related theories (e.g.,, Adler, Rougle, Kaiser, & Caughlan, 2003).

Adult learners are self-directed and independent, with a wealth of experience from which to draw when learning, and a need to see immediate relevance in their education as it relates to their current social roles (Knowles, 1980). They benefit from being directly involved in the development of their learning activities, and often seek help from others they see as more knowledgeable when they approach new tasks. (See McGrath, 2009, for a discussion about Knowles' model as theory or framework.). Adolescent literacy researchers indicate that, although

[1] Department of Foundations of Education and Secondary Education, Indiana University South Bend, 1700 Mishawaka Ave., P.O. Box 7111, South Bend, IN 46634, hsdavis@iusb.edu

they have fewer experiences to draw upon, adolescents similarly need to be actively engaged in their own learning experiences (O'Brien & Dillon, 2008; Sweet & Snow, 2002), and require more independence and choice (Smith & Wilhelm, 2002) as they progress through school. Additionally, adolescent learners, effectively learn through social engagement and interaction, especially when they see the activities in which they are engaged as relevant and relating to their lives outside of school (Irvin, Buehl, & Klemp, 2007; Smith & Wilhelm, 2002; Tovani, 2000)

Adults, according to Knowles (1980), are on a journey of learning that relates directly to their current interests and social roles. As such, they are more "performance-centered" in their approach to learning, than "subject-centered," and they look toward instructors who are knowledgeable, but who are also able to allow the adults to self-direct their learning. Because they identify themselves as adults, and traditional schooling as something that is done for children, adults prefer to learn in contexts that are less like traditional school, and Knowles recommended that learning in adult contexts be as little like "school" as possible. Similarly, Smith and Wilhelm (2002) found in their study of the literacy needs of boys at the secondary level, the adolescents frequently engaged in self-directed non-school literacy activities that focused on their personal interests, and they avoided activities that appeared to be too "schoolish" (83-84).

II. Why Both Adults and Adolescents Need to Talk.

Avoiding that which is *schoolish* is seemingly applicable to both adults and adolescents. As such, classroom activities must be seen as *meaningful* to participants. Meaningful classroom discussions require students to actively participate (Alvermann et al., 1996), and to critically ask and respond to open-ended questions (Nystrand, Wu, Gamoran, Zeiser, & Long, 2003) as they negotiate meaning across texts and in relation to their individual experiences (Carico, 2001). Researchers in middle and secondary schools have shown that strategic classroom conversations enhance and extend student learning while also facilitating engagement and motivation (Alvermann et al., 1996; Carico, 2001; Lenihan, 2003; Nussbaum, 2002). At the postsecondary level, classroom conversation has also been linked to student engagement (Gunnlaugson & Moore, 2009), stronger academic achievement (Smith, Wood, Krauter, & Knight, 2011), and improved critical thinking skills (Garside, 1996); however, lecture remains the main form of instruction in secondary (Nystrand et al., 2003) and postsecondary (Garside, 1995) classrooms. Although Mulryan-Kyne (2010) noted that the presence of lecture-based instruction in large college classes seems to be on the decline internationally in recent years, lectures still tend to dominate postsecondary educational contexts.

Adults and late adolescents in postsecondary classrooms need to talk for a variety of both affective and cognitive reasons. From the affective perspective, classroom conversation and discourse help lead to group affiliation and development of academic identity (Gee, 1996). Furthermore, sometimes peers are more able to use shared connections and experiences to explain and build upon concepts from class in ways instructors cannot. One argument made for greater use of meaningful discussion in secondary classrooms is that the process of meaning-making through open exchange of dialogue appeals to adolescents' emergent sense of independence and need for social connection with peers (Adler et al., 2003; Alvermann et al., 1996; Carico, 2001; Irvin, Buehl, & Klemp, 2007; McLaughlin, 2010; Nussbaum, 2002; Smith & Wilhelm, 2002). Researchers in middle and secondary schools also indicate that strategic classroom conversations can enhance and extend student learning while facilitating engagement

and motivation (Alvermann et al., 1996; Carico, 2001; Lenihan, 2003; Nussbaum, 2002). These specific learning needs, independence and social interaction, also factor into Knowles' (1980) andragogical learning model.

Cognitively, classroom discussion provides an opportunity for students to gain deeper understanding of the content covered in the course (Chandler-Olcott, 2008; McLaughlin, 2010; Smith et al., 2011), as well as to practice the language and ways of thinking that are specific to different fields of study (Zwiers, 2008). Additionally, students who participate in classroom conversations invoking personal connections or experiences may gain insight into the relevance of those topics as they relate to their own lives outside of school (Gunnlaugson & Moore, 2009; Tatum, 2008). When students are able to collaboratively talk about classroom topics with their peers, they engage in activities that are more reflective of "real-world" problem-solving events within those fields, fulfilling adult learners' need to find relevance in their studies (Knowles, 1978).

Although there are parallels between Knowles' (1980) model and the needs of adolescent learners, one important potential divergence centers on the concept of experience. Adults have acquired a wealth of experiences from which to draw when learning, whereas adolescents, whether in secondary or postsecondary contexts, have not yet had the opportunity to amass as many experiences. However, personal experience, according to literacy researchers at both developmental levels, is where a social construction of knowledge through classroom discussion may provide a direct benefit to learning (Adler et al., 2003; Alvermann et al., 1996; Irvin et al., 2007; Smith et al., 2011; McLaughlin, 2010, Zwiers, 2008). Adult learners have a lifetime of experience upon which to build (Chan, 2010; Knowles, 1980), and conversations in class provide a structure for adult postsecondary students to make sense of new information in relation to what they already know. Because postsecondary classes may include students at both developmental levels, classroom conversations incorporating the lived experience of the adult learners may help to support the learning of those with less experience. As Wells and Arauz (2006) stated, "not only does [working with peers] harness the social orientation of students' interests, but it also enables them to achieve together more than any of them individually could have achieved alone" (p. 415).

IV. General Guidelines for Effective Classroom Discussion.

Drawing from Bakhtin's work with discourse patterns, Nystrand et al. (2003), explored the concepts of monologic and dialogic conversation in classroom discussion. Monologic classroom conversation emphasizes *teacher talk,* and is directed by the teacher, with little input from students beyond recitation (Nystrand et al., 2003) or clarification of the teacher's (or author's) ideas. One common example of monologic discussion is the ineffective and mechanical Initiation-Response-Feedback (IRF) structure (Wells & Arauz, 2006). In an IRF format, the instructor asks a question of the students for which there is already an established or anticipated answer. When the expected response is provided, the instructor makes a brief, evaluative statement with little instructional value (for example: "Good"), and then moves on to the next question. Consistent IRF episodes masquerading as classroom discussion often do little to encourage further student thought or consideration (Zwiers, 2008). Dialogic conversation, conversely, requires an exchange of ideas, and expansion or modification of the "contributions of others as one voice 'refracts' another" (Nystrand et al., 2003, p. 139), and a de-emphasis on the instructor as the distributor of knowledge, with students as passive recipients. Dialogic

discussion formats invite students to thoughtfully consider and respond to complex, disciplinary-based questions, even when there may not be a single correct response. Monologic conversation is the method for conveying information and establishing topics, but "it is dialogic discourse that opens the floor to discussion and the negotiation of ideas and new understandings" (Nystrand et al., 2003, p. 141). Moving traditional classrooms from monologic to dialogic discourse, however, requires planning and flexibility on behalf of both the instructor and the students, and authentic accounts of this type of discourse in the classroom are not often observed in research studies (Nystrand et al., 2003).

In order to participate in discussion at a level beyond Nystrand et al.'s (2003) concept of recitation, students must be oriented for authentic participation. From an andragogical (Knowles, 1978, 1980) perspective, guidance would begin by allowing students to draw on their own, personal, and out-of-school experiences negotiating meaning through discussion. In addition to drawing from learner's own experiences, orientation to meaningful classroom discussion may be aided by specific formats and structures that guide students toward organizing their ideas, creating and responding to student-generated questions, and actively listening to and drawing from the participation of others in the conversation.

A. What to Do Before Discussions Start: Orienting Students for Meaningful Talk.

The first step in strategically planning for a classroom conversation is to determine the overarching purpose and expectations for the discussion. Instructors, in conjunction with the students, decide what the students are expected to learn and do as they discuss, and how the process will directly connect to the larger goals of the course (Wells & Arauz, 2006). For example, one purpose for a conversation early in the introduction of a topic may be to help students access background knowledge in order to activate their analogical reasoning skills (Lakoff & Johnson, 1980). Another purpose may be for students to uncover personal biases and assumptions. Later in the course, conversation may be invoked to help students to wrestle with questions and ideas that arise as they learn more in a particular field. Knowing the ultimate purpose of the conversation in advance will help to determine the appropriate format for the ensuing discussion.

It is important to plan for an open discussion of the expectations for the conversation itself. As part of this *metadiscussion* (Zwiers, 2008) students and the instructor generate guidelines and expectations for participation. The metadiscussion may also include a demonstration modeling the specific format and structure selected. Sharing this decision making process with the students will help them understand why discussion is an important task that requires their active involvement and participation. It relates directly to Knowles' (1980) model, as adults have a need to know the value of their learning and, by extension, the value their educational activities.

Plans for classroom conversation should include strategic attempts by the instructor to ensure that all students actively participate. This may include a plan for breaking the class into smaller groups for talk, or finding ways to limit the contributions of some students who tend to dominate conversations, while also encouraging more reticent students to become involved. If all students are expected to participate during classroom conversations, they should be forewarned. Ideally, in a true dialogic setting, the questions and ideas discussed during conversation will be generated through active listening and response among the students; however, it may also helpful

to generate a list of potential topics and questions with students ahead of time, so that they have the opportunity to adequately prepare.

B. What to Do During Discussion: Facilitating Conversation and Encouraging Participation.

Once students are sufficiently oriented to discussion expectations, another general guideline for encouraging meaningful discussion is to ensure that sufficient *wait time* is provided as the conversations take place. When questions invoke higher-level cognitive responses, students may need a longer period of time to organize their thoughts than many instructors may initially expect. Appropriate wait-time allows students to access their knowledge and process ideas in order to critically respond to discussion topics. Traditionally wait time is considered a responsibility of the instructor; however, in a dialogic exchange aligned with adult learning models, students and instructor assume more egalitarian roles, thus the concept of waiting and pondering must be intentionally discussed, practiced and developed for all members of the classroom community. Although some participants may be uncomfortable with extended periods of silence in class, Gunnlaugson and Moore (2009) indicated that silence is an important part of dialogue and discussion, and chose to encourage their students to consider silence as a time for meditation and reflection on complex topics prior to participating in the general conversation.

Instructors can employ a variety of techniques to facilitate rich conversations, while also modeling ways of thinking and use of academic language specific to the field. An important component of effective modeling is developing and asking questions that help the students access higher-levels of thinking, and then providing opportunities for students to craft similar questions of their own. Drawing on Freire (1970) and other critical theorists, McLaughlin (2010) indicated that effective question generation by students leads not only to greater comprehension of ideas and texts, but also to their evolution as more active and critical participants, both in class and in the world. Examples of types of questions that encourage thoughtful classroom discussion include requests for clarification of student statements, support of claims through disciplinary-supported forms of evidence, and further elaboration of ideas. Responses and feedback from the instructor during classroom discussions should consistently be directed toward helping students construct their own understanding of the content.

Discussion strategies. Because of an increased level of intimacy, group discussions may provide more opportunity for involved participation from a greater number of students than whole-class conversations. As fewer people are included in each conversation, some students may feel as though it is less risky to contribute, and discussion may also delve more deeply into the topic (Zwiers, 2008).

Providing a structure for discussions may also be beneficial. Disenchanted with discussions on student self-selected journal articles in her pre-service teaching classes, Taylor (1998) developed a method for evoking more dialogic classroom conversations using a question grid to guide students as they selected and read their articles. Students were required to select at least three points for discussion from each page of an article read, and to write a brief comment about each. During presentations, students shared each point they selected, and listened to the comments from their peers. To complete the table, they then had to fill in a final space, summarizing what the other group members said. This specific strategy led to richer conversations among the students, and higher quality of articles selected for presentation.

Similar to Taylor's (1998) method, another general small-group discussion strategy developed by Short, Harste, and Burke (as cited in McLaughlin, 2010), is called "Save the Last

Word for Me". In this strategy, students are assigned a text-based assignment prior to the class session. As they read, they note quotes, phrases, or ideas that pique their interests, remind them of personal connections, or about which they have questions. On one side of an index card, the students write and cite a single quote or phrase they've identified, and on the other side they indicate why they chose that item. During class, each student individually presents the text-information in a small group, allowing the group members to respond to the information cited. When all group members have responded, the student who introduced the text flips the card over to share why it was selected. At this point, conversation may continue, or students may move on to the next group member's contribution.

Accountability. Regardless of strategies used for group discussion, one way to encourage students to stay on task and to have meaningful encounters is to require some form of tangible evidence documenting their conversations. This can be as simple as having each group report back to the entire class, or by asking students to write a brief exit slip or reflection on the discussion. Evaluation can also be more complex, again depending on the goals of the course and the conversation. In some cases, instructors may choose to develop general rubrics for assessing participation in group conversations, which can then be used as a self- or group-assessment tool by the students in each of the groups.

C. What to Do When They Get it Wrong.

Determining how to appropriately handle inaccurate statements made by students during classroom conversation may be difficult for some instructors, especially because an important aspect of meaningful discussion is the development of a community of willing participants who trust that their participation will be welcome and valued by everyone. If the students feel as though they will be ridiculed when they are wrong, they may be less apt to participate in the future; yet, it is counter-productive to allow misconceptions to be unaddressed, lest other students are influenced to adopt the same misinformation. Fisher, Frey, and Lapp (2010) developed a method for instructors to deal with student misconceptions based on the Gradual Release of Responsibility Framework. Using this method, when students provide inaccurate information during discussion, instructors proceed through several stages of metacognitive guidance, allowing the speakers to reconsider inaccuracies and misconceptions, and to have the opportunity to self-correct. In the first step of the strategy, instructors open conversation by asking students if have any questions about the topic, allowing them an opportunity to clear up any confusion about the topic they may have. The second step occurs after a student has actually made an incorrect or inaccurate statement during discussion. Instead of immediately correcting the student, the instructor is advised to respond with a question like, "What evidence do you have to support that idea?" or "Where did you come across that information?" Asking students to provide evidence allows them the opportunity to reconsider gracefully. If, however, asking for general evidence doesn't eliminate the misconception, the next option is to redirect the student or students to specific evidence from the class. For example, "Take a look at the chart on Page 9. Does the information there support your idea?" Though the third step is more proscriptive than the previous two, it still allows the students to make corrections themselves. If none of the previous three approaches seem to correct the misconception, the final option in the process is for the instructor to step in with a direct clarification.

V. Conclusion

Classroom conversations provide a wealth of opportunity for activating higher-order thinking in a way that aligns with aspects of both adult and adolescent learning theories. Holding effective classroom conversations, however, requires instructors to do more than just ask a few spontaneous questions in the middle of a planned lecture. In order to better foster postsecondary students' ability to think critically about course content and topics, and to increase interest and engagement in class, instructors must involve students in decision-making around classroom conversations, carefully consider goals for discussion, select effective formats based on those goals, monitor student participation and involvement, and actively model ways of thinking and the discipline-specific language of the field.

References

Adler, M., Rougle, E., Kaiser, E., & Caughlan, S. (2003). Closing the gap between concept and practice: Toward more dialogic discussion in the language arts classroom. *Journal of Adolescent and Adult Literacy, 47,* 312-322.

Alvermann, D. E., Young, J.P., Weaver, D., Hinchman, K. A., Moore, D. W., Phelps, S.F., Thrash, E.C., & Zalewski, P. (1996). Middle and high school students' perceptions of how they experience text-based discussions: A multicase study. *Reading Research Quarterly, 31,* 244-267.

Carico, K.M. (2001). Negotiating meaning in classroom literature discussions. *Journal of Adolescent and Adult Literacy, 44,* 510-518.

Chan, S. (2010). Applications of andragogy in multi-disciplined teaching and learning. *Journal of Adult Education, 39*(2), 25-35.

Chandler-Olcott, K. (2008). Humanities instruction for adolescent literacy learners. In K. A. Hinchman, and H. K. Sheridan-Thomas (Eds.), *Best Practices in Adolescent Literacy Instruction*, (pp. 212-228). New York, NY: The Guilford Press.

Fisher, D., Frey, N., & Lapp, D. (2010). Real-time teaching: Responding when students don't get it. *Journal of Adolescent and Adult Literacy, 54*, 57-60. doi: 10.1598/JAAL.54.1.6

Freire, P. (1970). *Pedagogy of the oppressed*. New York, NY: Continuum.

Garside, C. (1996). Look who's talking: A comparison of lecture and group discussion strategies in developing critical thinking skills. *Communication Education, 45*, 213-227.

Gee, J.P. (1996). *Social Linguistics and Literacies: Ideology in Discourses* (2nd ed.). New York, NY: Routledge Falmer.

Gunnlaugson, O., & Moore, J. (2009). Dialogue education in the post-secondary classroom: Reflecting on dialogue processes from two higher education settings in North America. *Journal of Further and Higher Education, 33*, 171-181. doi: 10.1080/03098770902857395

Irvin, J., Buehl, D.R., & Klemp, R.M. (2007). *Reading and the High School Student: Strategies to Enhance Literacy* (2nd ed.). Boston, MA: Pearson.

Knowles, M.S. (1978). Andragogy: Adult learning theory in perspective. *Community College Review, 5*(3), 9-20. doi: 10.1177/009155217800500302

Knowles, M.S. (1980). *The Modern Practice of Adult Education: From Pedagogy to Andragogy*. Englewood Cliffs, NJ: Cambridge Adult Education.

Lakoff, G., & Johnson, M. (1980). *Metaphors we live by.* Chicago, IL: University of Chicago Press.

Lenihan, G. (2003). Reading with adolescents: Constructing meaning together. *Journal of Adolescent and Adult Literacy, 47,* 8-12.

McGrath, V. (2009). Reviewing the evidence on how adult students learn: An examination of Knowles' model of andragogy. *Adult Learner: The Irish Journal of Adult and Community Education,* 99-110.

McLaughlin, M. (2010). *Content Area Reading: Teaching and Learning in an Age of Multiple Literacies*. Boston, MA: Pearson.

Mulryan-Kyne, C. (2010). Teaching large classes at college and university level: Challenges and opportunities. *Teaching in Higher Education, 15*(2), 175-185.

Nussbaum, E. M. (2002). The process of becoming a participant in small-group critical discussions: A case study. *Journal of Adolescent and Adult Literacy*, *45*, 488-497.

Nystrand, M., Wu, L.L., Gamoran, A., Zeiser, S., & Long, D.A. (2003). Questions in time: Investigating the structure and dynamics of unfolding classroom discourse. *Discourse Processes, 35*, 135-198.

Smith, M.K., Wood, W.B., Krauter, K., & Knight, J.K. (2011). Combining peer discussion with instructor explanation increases student learning from in-class concept questions. *CBE-Life Sciences Education, 10,* 53-63. doi: 10.1187/cbe.10-08-0101

Smith, M.W., & Wilhelm, J.D. (2002). "*Reading don't fix no Chevys": Literacy in the lives of young men.* Portsmouth, NH: Heinemann.

Sweet, A.P., & Snow, C. (2002). Reconceptualizing reading comprehension. In C.C. Block, L. B. Gambrell, and M. Pressley (Eds.), *Improving Comprehension Instruction: Rethinking Research, Theory, and Classroom Practice* (pp. 17-53). Newark, DE: International Reading Association.

Tatum, A.W. (2008). Discussing texts with adolescents in culturally responsive ways. In K. A. Hinchman, and H. K. Sheridan-Thomas (Eds.), *Best Practices in Adolescent Literacy Instruction*, (pp. 3-19). New York, NY: The Guilford Press.

Tovani, C. (2000). *I Read it, but Don't Get it: Comprehension Strategies for Adolescent Readers*. Portland, ME: Stenhouse.

Taylor, G. (1998). A discussion, not a report, if you please. *Journal of Adolescent and Adult Literacy, 41,* 561.

Vygotsky, L.S. (1978). *Mind in Society*: *The Development of Higher Psychological Processes* (M. Cole, V. John-Steiner, S. Scribner, S., and E. Souberman, Eds). Cambridge, MA: Harvard University Press.

Wells, G. & Arauz, R.M. (2006). Dialogue in the classroom. *The Journal of the Learning Sciences, 15*, 379-428.

Zwiers, J. (2008). *Building Academic Language: Essential Practices for Content Classrooms.* Newark, DE: International Reading Association.

Journal of the Scholarship of Teaching and Learning, Vol. 13, No. 1, February 2013, pp. 77 – 86.

Community matters: Social presence and learning outcomes

Carol Hostetter[1] and Monique Busch[2]

Abstract: The study examines the relationship between social presence and students' learning outcomes. An emerging body of research connects social presence with learning outcomes in online coursework. Social presence is the "degree to which a person is perceived as a 'real person' in mediated communication" (Gunwardena & Zittle, 1997, p.9). The study of 121 student participants addresses the following questions: What is the evidence of social presence in students' communication in an online discussion forum and in an attitudinal survey? 2) What pedagogical methods affect students' perceptions of social presence? and 3) What is the relationship between social presence and students' learning outcomes? The regression model revealed that students with higher demonstrations of social presence in discussion forum posts had statistically significantly higher ratings on the CAT. This seems to indicate that social presence influences student outcomes on written assignments.

Keywords: Social Presence, online community, Classroom Assessment Techniques

I. Introduction.

The internet has become an established part of higher education. Web access has increased dramatically over the last ten years, with 79% of adults and 93% of teenagers online in 2009 (Pew Internet & American Life Project, 2010). More than one in four college students take classes online and the percentage of students enrolled in internet coursework grew by 17% in 2008 (Allen & Seaman, 2010). Universities are experiencing increasing demands for online courses (Allen & Seaman, 2010), in the era of web 2.0. Modern college students are used to an interactive experience with the internet, where knowledge is mutually constructed (Greenhow, Robelia, & Hughes, 2009). This has created a preference for learning experiences that incorporate interactive media (Greenhow et al., 2009). As a result, instructors and faculty members have become increasingly interested in assessing the factors that make a successful learning environment for students online.

As learning environments have moved increasingly to computer-mediated formats, instructors have become concerned with the quality of the online educational experience (Hostetter & Busch, 2006). Researchers have become increasingly interested in how to apply the hallmarks of successful face-to-face interaction in online formats. A theory that is increasingly seen as useful is social presence theory. Biocca and associates sent a strong call for more research and theory development of social presence in mediated environments (Biocca, Harms, & Burgoon, 2003). What followed is a variety of

[1] Assistant Professor, School of Social Work, Indiana University Bloomington, chostett@indiana.edu
[2] Licensed Clinical Social Worker/Therapist

recent publications on the topic (e.g., Kehrwald, 2010; Ponkanen, Alhoniemi, Leppanen, & Hietanen, 2011; Portnoy, Smoak, & Marsh, 2010; Schultze, 2010).

Social presence is the "degree to which a person is perceived as a 'real person' in mediated communication" (Gunwardena & Zittle, 1997, p.9). Social presence addresses the amount of salience one person has in interaction with another (Richardson & Swan, 2003; Tu, 2002). Gunawardena's early work found that "…users of computer networks are able to project their identities whether `real' or `pseudo,' feel the presence of others online, and create communities with commonly agreed on conventions and norms …" (Gunawardena, 1995, p. 151). The ability to establish one's identity, perceive the identity of the other, and build online communities has been well-documented since the work in the 1990s (Coomey & Wilczenski, 2005; Garrison, 2007). The important issue at this point is whether community leads to increased learning.

There is an emerging body of research that connects social presence with learning outcomes in online coursework. Picciano (2002) evaluated the link between social presence and student performance in a graduate course for education. Twenty-three students participated in the study, eight of whom had taken an online class previously. Students were measured on satisfaction and perception of social presence, as well as a written assignment and examination. Students with higher levels of social presence did better on a written assignment, but not significantly different with the examination (Picciano, 2002). In a sample of 228 students enrolled in online classes, students were surveyed about course perceptions, peer interactions and perceived learning outcomes. Self reported peer interactions were strongly related to self-reported learning outcomes (LaPointe & Gunawardena, 2004). Swan and associates developed and tested a 34-item instrument to measure the relationship between social presence and learning at four higher education institutions, with encouraging results (Swan, Richardson, Ice, Garrison, Cleveland-Innes, and Arbaugh, 2008). Increasingly, the call for expanding inquiry on social presence in online courses is for researchers to study the possible relationship between social presence and learning outcomes (Biocca et al., 2003; Garrison, 2007). It is no longer sufficient to examine whether a feeling of belonging to an online learning community exists, rather, we need to learn whether this perception matters for students' learning.

II. Purpose of Study.

The study examines the relationship between social presence and students' learning outcomes. Building on previous work (Author, 2006), we examine data from four sections of online courses. The previous work demonstrated that students perceived and valued the instructor's course design that supported the creation of a safe learning community, which is purported to help students take risks and think critically (Bonk & Cunningham, 1998, Wegerif, 1998). In this work, we seek to understand the connection between the feeling of community and the knowledge gained in the course. The study addresses the following questions:

1) What is the evidence of social presence in a) students' communication in an online discussion forum and in b) an attitudinal survey?
2) What pedagogical methods affect students' perceptions of social presence?

3) What is the relationship between social presence and students' learning outcomes?

III. Method.

A. Procedure.

Over a period of two years, 121 students participated in a mixed-methods study examining the amount of social presence they perceived, the amount of social presence they demonstrated, and the relationship between those factors and their achievement on a Classroom Assessment Technique measure (Angelo & Cross, 1993). Multiple methods were used in order to balance some of the disadvantages of one method with the advantages of others (Padgett, 1998). Combining quantitative and qualitative methods provided data triangulation and a more complete viewpoint (Padgett, 1998). Social scientists have promoted the use of the multi-method approaches (Bisman & Hardcastle, 1999; Grinnell, 1997; Sherman & Reid, 1993). An established survey on perception of social presence was used (Richardson & Swan, 2003), and students' postings were analyzed using a method devised by Rourke, Anderson, Garrison, and Archer (1999).

B. Participants.

Out of a possible 142 students in four sections of an online seminar, 121 learners participated in all aspects of the study. Participants were selected purposively, in that all students in the four sections observed in this case study were offered the opportunity to participate. The resulting response rate was 85 percent. All students were female, which is not unusual in our discipline. There were nine students of color, five in one online class and four in a second online class. Because the students of color could easily have been identified since they were so few, the university's Institutional Review Board did not give us permission to link their demographic background to their responses. The average number of online courses taken by students was about two.

C. Instruments and Procedures.

Social Presence Survey. An established survey on perception of social presence was used (Richardson & Swan, 2003), The survey was distributed to all students at the end of the course. Perception of social presence was specifically explored in three main teaching methods including discussion forums, PowerPoint presentations, and WarmUps – weekly graded papers on readings (Novak, Patterson, Gavrin, & Christian, 1999). The survey response options placed disagree options at the low end and the agree options at the high end of the 6-point scale. The survey enables researchers to understand students' perceptions of the social presence they experience in the course in general as well as in specific course activities.

Each student who returned the survey, complete or incomplete, by email to a research assistant received one point toward his or her final grade. Because students were given one point whether they returned a blank survey or a completed survey, the Institutional Review Board determined that there was not undo pressure compelling

students to respond. The research assistant removed names, assigned identification numbers, and entered survey data into SPSS for analysis. The researchers had no access to the names of students who completed the survey data at any point.

Content analysis of online discussions. Students' postings were analyzed using a method devised by Rourke, Anderson, Garrison, and Archer (1999). During the course, seminar participants were required to participate in online discussion forums, write weekly papers synthesizing readings, and contribute to dyadic PowerPoint presentations. In order to facilitate social presence in the course, the instructor provided prompt and detailed feedback on assignments and modeled social presence in communication with students. Social presence was demonstrated by the instructor using student names, offering personal context, and expressing feelings and humor as appropriate. Discussion forum comments were analyzed by a research team to look for concrete examples of social presence including affective, interactive, and cohesive components (Rourke, Anderson, Garrison, & Archer, 1999). Affective comments included expressions of emotions, use of humor, or self-disclosure; interactive comments quoted other students' messages, referred explicitly to others' messages, asked questions, complimented or expressed appreciation, or conveyed agreement; and cohesive comments used vocatives, addressed or referred to the group using inclusive pronouns, or incorporated phatics or salutations. Comments reflecting one of the three categories above were counted as demonstrating social presence.

Classroom Assessment Technique ratings. A Classroom Assessment Technique (CAT) was used to measure the relationship between social presence and students' learning outcomes. The CAT asked course participants to write a statement that they might say to a biological parent (or parents) explaining that parental rights would be terminated and the parent's child (or children) would be adopted out. The statements were analyzed using a rubric developed by the research team and based on the grading criteria of the principle investigator (see Figure 1). Each CAT was evaluated by two independent raters. The rubric dimensions were rated using the following scale: especially good = 3, typical = 2, off-base = 1, and none (no reference to a dimension) = 0. The maximum possible score was 18.

	Especially Good	Typical	Off-Base	None
States Problem				
Establishes Authority				
Demonstrates that Well-being of Child is Paramount Concern				
Shows Empathy				
Shows Concern				
Establishes Plan/Offers Services				
Grand Total				

Figure 1. Sample CAT Evaluation Rubric

IV. Results.

A. Descriptive Statistics.

Descriptive statistics were calculated to answer both components of the first research question. The first component asks if there is *evidence of social presence in students' communication in a discussion forum*. Out of 4,000 postings, 86.45 percent (SD = 0.08) of the individual posts demonstrated social presence by including affective, interactive, or cohesive comments. While it is difficult to say what a strong amount of social presence would be in an online discussion forum, a rating of 86.45 percent appears to be on the higher end of the scale.

Seeking to answer the second component of the first research question, asking whether or not there is *evidence of social presence in an attitudinal survey*, 121 questionnaires were analyzed. The overall range was 32 to 60, out of a possible 0 to 60. The overall mean score was 51.4 (SD = 6.22), which can be considered on the high end of the scale. This indicates that students perceived a high degree of social presence in the course. Reliability testing for the survey instrument found an alpha of .95, which compares favorably to the reliability score of .88 found by Gunawardina and Zittle (1997). Principal components factor analysis with varimax rotation showed two factors: 1) student perception of social presence and 2) student satisfaction with the learning community. Table 1 provides data on the means and standard deviations of these two variables.

Table 1. Mean and standard deviation for social presence variables.

Measures	Mean	St. Dev.
SP in Discussion Forum*	86.45	.08
Perceptions of SP Survey**	51.35	6.22

N of students = 121
*N of postings = 4,000
**Response options of 1-6, 10 questions

B. Pedagogical Method Analysis.

The second research question asks what pedagogical methods affect students' perception of social presence. The question we sought to answer through the regression analysis was, "What pedagogical methods affect students' perceptions of social presence?" In the Social Presence Survey, students answered questions about their perceptions of the social presence in specific course activities. We analyzed students' perceptions of three main teaching methods, a discussion forum, PowerPoint presentations, and Warm-Ups – weekly graded papers on readings. The mean score for the discussion forum was 49.56 (SD = 8.50), the mean score for the PowerPoint presentations was 47.95 (8.19), and the mean score for the Warm-Ups was 38.42 (11.10). Ordinary Least Squares (OLS) regression tests were run for each variable separately. The discussion forum (B=.47, $p<.01$, R^2=.42), PowerPoint presentations (B=.33, $p<.01$, R^2=.19), and Warm-ups (B=.25,

p<.01, R^2=.21) were all found to have a significant effect on perception of social presence. This indicates that students perceived all three of these teaching methods as positively contributing to their perceptions of social presence in the online class.

In order to test the strength of the three teaching methods further, we conducted a Multiple Regression analysis on the three methods as a collective model. This holds the effects of other variables constant. When all three methods are analyzed together, the only significant contributing variable is the discussion forum (*B*=.44, p<.01). The model accounts for 44 percent of the variance in students' perception of the effect of these teaching methods on their feelings of social presence (see Table 2). It appears that these students felt that the most effective teaching method for increasing their feelings of connection and community in this online course was the discussion forum. Considering that, as stated above, 86.5 percent of students' discussion forum posts were evaluated as demonstrating social presence, this positive perception of discussion forum makes sense.

Table 2. The effect of pedagogical methods on students' perceptions of social presence.

Methods	B	Std. Error
Warm-Ups	0.10	0.05
Discussion Forum	0.44*	0.07
PowerPoint	-0.06	0.08
R^2	.44	

N = 121, *p. < .01

C. Student Learning Outcome Analysis.

In order to understand more about social presence and learning, we combined social presence survey scores and demonstration of social presence in discussion forums into one variable. Multiple regression was then used to analyze the contribution of this variable on student learning outcomes. This is an attempt to answer the research question, "What is the relationship between social presence and students' learning outcomes?" Demonstration of social presence was determined by the content analysis described above and student learning outcomes were measured by scores on the Classroom Assessment Technique, also described above. Table 3 shows that demonstration of social presence (B=45.22, p<.01) was found to be the only significant contributor to student learning outcomes. In other words, students who provided the highest amount of social presence had the highest scores on the Classroom Assessment Technique.

D. Discussion.

What is the evidence of social presence? Students demonstrated a high amount of social presence in the discussion forum with an average of 86.45 percent of comments reflecting affective, interactive, and cohesive components. Students who displayed more social presence in the discussion forum also perceived more social presence in the survey. Overall, perception of social presence was high. With response options of 0 – 6, with 6

being the most positive, and with 10 questions, an overall mean of 51.35 indicates a high level of social presence. Additionally, this mean was highly correlated with the number of online courses previously taken by students. This correlation leads to questions of whether or not there is a type of student who selects online courses or if the ability to perceive social presence online is developed with the more online courses students take. Also, students on one campus had significantly higher scores on this scale than students on the second campus. Students on the second campus previously had the principle researcher as a teacher for two or three courses and several expressed wishing they could see the principle researcher in the classroom. These students were unable to interact with the principle researcher in a face-to-face setting as they had hoped. Further research might explore if perception of social presence is influenced by this type of expectation.

Table 3. The effect of social presence variables on student learning outcomes.

Perceived Social Presence	B	SE B
in WarmUp	0.05	0.12
in Discussion Forum	0.30	0.18
in PowerPoint	-0.16	0.18
Overall Perception	-0.41	0.21
Demonstrated SP in Discussion Forum	45.22*	12.18
R^2	.13	

N = 121,*p. < .01

What pedagogical methods affect students' perceptions of social presence? The response options on the attitudinal survey had the disagree options at the low end and the agree options at the high end of a 6-point scale. Based on the resulting scores related to specific methods, the discussion forum demonstrated the highest amount of perceived social presence, followed by the PowerPoint presentations, and finally the Warm-Ups. These findings make sense in that the discussion forums were the most interactive of the three teaching methods. The Warm-Ups were the least interactive, in that they were communication between each students and the professor only. Setting up a discussion forum with questions and grading that reward students for thorough and thoughtful answers can be seen to be profitable for increasing students' sense of belonging to the online community.

What is the relationship between social presence and students' learning outcomes? The regression model revealed that students with higher demonstrations of social presence in discussion forum posts had statistically significantly higher ratings on the CAT. This seems to indicate that social presence influences student outcomes on written assignments and supports findings in other studies (LaPointe and Gunawardena, 2004; Lee, Jeong, Park, Ryu, 2011; Picciano, 2002; and Swan, Richardson, Ice, Garrison, Cleveland-Innes, and Arbaugh, 2008). Students who demonstrated social presence in an online setting performed better on the assignment. While the evidence is clear in this instance, generalizing the results must be considered cautiously and in conjunction with

other studies due to the small sample size and case study methodology. More research on the relationship between social presence and learning is clearly indicated to aid faculty who design courses in a mediated environment.

E. Limitations.

Generalizability is challenged in the study, since the participants may be different from other students due to their previous relationships from other classes. Social work majors, however, provide valuable insights for an exploratory study. They are trained to be reflective and self-aware, have experience in engaging and active classrooms, and provide some ethnic diversity (7%). When working with any student-participants, however, social desirability might be a concern. Efforts were made to minimize the influence of social desirability by keeping the surveys anonymous and online (completed without the teacher's presence and submitted to a research assistant unknown to the students). Additionally, all students have had two research classes and have studied social desirability which may have increased participant awareness of the importance of answering surveys with honesty.

V. Conclusion.

The study builds on a growing body of research applying social presence theory to online communication. The social presence scale originated by Gunawardena and Zittle (1997) seems to be a useful tool. Social presence may be a critical element to successful online instruction. Findings from this sample indicate that social presence increased student performance. Instructors planning online course work can model strong social presence expectations through teacher immediacy skills. Future research should focus on collaboration among disciplines teaching entirely online in order to further explore the effects of context and disciplinary ways of knowing.

In a world increasingly focused on internet interaction, social presence theory speaks to the expectations students have for higher education. Faculty and institutions are taking heed of both the utility and the effectiveness of excellent online instruction. Helping students connect, both virtually and interpersonally, can motivate students for retention, as well as model important skills for their online life activities.

Acknowledgements

Valerie Decker, Amy Lay, Rob Richardson and Leila Wood contributed significantly to this research.

References

Allen, E.I., & Seaman, J. (2010). Learning on demand: Online education in the United States, 2009. Newburyport, MA: Sloan Consortium. Retrieved from: http://sloanconsortium.org/publications/survey/pdf/learningondemand.pdf

Angelo, T.A., & Cross, K.P. (1993). *Classroom Assessment Techniques: A Handbook for College Teachers.* San Francisco: Jossey-Bass.

Hostetter, C., & Busch, M. (2006). Measuring up online: The relationship between social presence and student learning satisfaction. *Journal of the Scholarship of Teaching and Learning, 6*(12), 1-12.

Biocca, F., Harms, C. & Burgoon, J.K.. (2003). Toward a more robust theory and Measure of social presence: Review and suggested criteria. *Presence, 12(*5), 456-480.

Bisman, C.D., & Hardcastle, D.A. (1999). A model for using research methodologies in practice. *Journal of Teaching in Social Work, 19*(1/2), 47-63.

Bonk, C.J., & Cunningham, D.J. (1998). Searching for learner-centered, constructivist, and sociocultural components of collaborative educational learning tools. In C. J. Bonk and K.S. King (Eds.), *Electronic Collaborators: Learner-Centered Technologies for Literacy, Apprenticeship, and Discourse* (pp. 25-50). Mahwah, NJ: Erlbaum.

Coomey, S.M., & Wilczenski, F.L. (2005). Implications of technology for social and emotional communication. *Journal of Applied School Psychology, 21,* 127-139.

Garrison, D.R. (2007). Online Community of inquiry review: Social, cognitive and teaching presence issues. *Journal of Asynchronous Learning Networks, 11*(1), 61-72.

Garrison, D.R., Cleveland-Innes, M., & Fung, T.S. (2010). Exploring causal relationships among teaching, cognitive and social presence: Student perceptions of the community of inquiry framework. *Internet and Higher Education, 13*, 31-36.

Greenhow, C., Robelia, B., & Hughes, J.H. (2009). Learning, teaching and scholarship in the digital age. *Educational Researcher, 38*, 246-259.

Grinnell, R.M., Jr. (1997). *Social Work Research and Evaluation: Quantitative and Qualitative Approaches.* Itasca, IL: F.E. Peacock.

Gunawardena, C.N. (1995). Social presence theory and implications for interaction and collaborative learning in computer conferences. *International Journal of Educational Telecommunications, 1*(2/3), 147-166.

Gunawardena, C.N., & Zittle, F.J. (1997) Social presence as a predictor of satisfaction with a computer-mediated conferencing environment. *American Journal of Distance Education, 11*(3), 8-26.

Kehrwald, B. (2010). Being online: Social presence as subjectivity in online learning. *London Review of Education,* 8(1), 39-50.

Lapointe, D.K., & Gunawardena, C.N. (2004). Developing, testing and refining of a model to understand the relationship between peer interaction and learning outcomes in computer-mediated conferencing. *Distance Education, 25*(1) 83-106.

Lee, K.M., Jeong, E.J., Park, N., & Ryu, S. (2011) Effects of interactivity in educational games: A mediating role of social presence on learning outcomes. *International Journal of Human-Computer Interaction, 27*(7), 620-633

Novak, G.M., Patterson, E., Gavrin, A., & Christian, W. (1999). *Just-in-Time Teaching: Blending Active Learning with Web Technology*. Upper Saddle River: Prentice Hall.

Padgett, D.K. (1998). *Qualitative Methods in Social Work Research: Challenges and Rewards.* Thousands Oaks, CA: Sage Publications.

Pew Internet & American Life Project (2010). *Technology user types.* Retrieved from http://pewinternet.org/topics/Technology-user-types.aspx

Picciano, A.G. (2002). Beyond student perceptions: Issues of interaction, presence and performance in an online course. *Journal of Asynchronous Learning Networks, 6* (1), 21-40.

Ponkanen, L.M., Alhoniemi, A., Leppanen, J.M., & Hietanen, J.K. (2011) Does it make a difference if I have an eye contact with you or with your picture? An ERP study. *Social Cognitive and Affective Neuroscience, 6*(4), 486-494.

Portnoy, D.B., Smoak, N.D., & Marsh, K.L. (2010). Perceiving interpersonally-mediated risk in virtual environments. *Virtual Reality, 14*(1), 67-76.

Richardson, J.C., & Swan, K. (2003). Examining social presence in online courses in relation to students' perceived learning and satisfaction. *Journal of Asynchronous Learning Networks*, *7*(1), 68-88.

Rourke, L, Anderson, T., Garrison, D.R., & Archer, W. (1999). Assessing social presence in asynchronous text-based computer conferencing. *Journal of Distance Education, 14*(2), 50-71.

Schultze, U. (2010). Embodiment and presence in virtual worlds: A review. *Journal of Information Technology, 25*(4), 434-449.

Sherman, E., & Reid, W.J. (Eds.) (1993). *Qualitative Research in Social Work*. New York: Columbia University Press.

Swan, K.P., Richardson, J.C., Ice, P., Garrison, D.R., Cleveland-Innes, M., & Arbaugh, J.B. (2008). Validating a measurement tool of presence in online communities of inquiry. e-Mentor, 24(2), 1-12.

Tu, C.H. (2002). The measurement of social presence in an online learning environment. International Journal of E-Learning, 34-45.

Wegerif, R. (1998). The social dimension of asynchronous learning networks. *Journal of Asynchronous Learning Networks, 2*(1), 34-49.

Journal of the Scholarship of Teaching and Learning, Vol. 13, No. 1, February 2013, pp. 86 – 99.

Using content reading assignments in a psychology course to teach critical reading skills

Debbie Van Camp[1] and Wesley Van Camp[2]

Abstract: Liberal arts students are expected to graduate college with fully developed critical reading and writing skills. However, for a variety of reasons these skills are not always as well developed as they might be - both during and upon completion of college. This paper describes a reading assignment that was designed to increase students' discipline-specific reading and writing skills. The assignment was piloted in a mid-level social psychology class. Pre-test/post-test comparisons indicate substantial improvement in students' ability to identify thesis statements, recognize and interpret evidence, and other effective and critical reading skills. Furthermore, students themselves rate the assignment as efficacious in helping them with both their reading comprehension and writing skills.

Keywords: critical reading, reading comprehension, written communication skills, undergraduate education.

I. Introduction.

This paper presents the outcome assessment of a semester-long series of assignments designed to develop undergraduates' reading comprehension and critical reading skills. However, the idea for the assignment was first inspired by the observation that many of our students struggle to write at an appropriate discipline-specific college level. In particular, they seem to struggle with forming thesis statements, providing synthesized evidence for their thesis statements, and summarizing an author's position when using it to support their own claims.

One of the hallmarks of a liberal arts education is the development of excellence in both writing and critical reading skills. Indeed, many employers acknowledge that while the specific skills of any given profession require on-the-job training, they expect graduates entering the workplace to possess these 'soft skills'. Of these skills, reading comprehension is often ranked highest, with 63% of employers rating it as 'very important'; unfortunately, employers also rank communication at the top of the list of skills in which college graduates are deficient (National Endowment of the Arts, 2007, p.14). Furthermore, students themselves seem to be aware that communication skills generally, and specifically how to read critically and effectively, are skills that they should learn in college (Walker, 2008). Given the importance of these skills, the observations that they are increasingly lacking, and students' desire to learn them, we present one classroom technique aimed at increasing students' reading skills but designed in such a way that these skills might translate into better writing as well. We expected students' assignment grades to improve over the course of the semester, and their scores on a critical reading

[1] Department of Psychology, Trinity Washington University, 125 Michigan Ave NE, Washington DC, 20017, vancampd@trinitydc.edu.
[2] Department of Philosophy, Virginia Polytechnic Institute and State University, 229 Major Williams Hall, Blacksburg, VA 24061, wvancamp@vt.edu.

assessment to be significantly higher at post-semester testing compared to their pre-semester scores.

A. Description of the Problem.

There can be little doubt that reading is an essential component of academia and accounts for a large proportion of the learning that takes place (Pugh, Pawan, & Antommarchi, 2000). Although the ability to read and understand complex material is a key predictor of college success, the level of national literacy strongly suggests that students enter college ill-prepared for college-level reading (Lewin, 2005; U.S. Department of Education, 2005). Consequently, many colleges and universities have implemented remedial education programs, otherwise known as developmental courses, designed to offer below-college level instruction in foundational skills such as mathematics, reading, and writing. These classes are designed to ensure that incoming students are given an opportunity to develop the skills in which high school may have left them deficient before moving on to more challenging college-level classes. According to some reports, as many as 40% of traditional undergraduates, and as many as 60% of community-college students, take one remedial course while in college (Attewell, Lavin, Domina, & Levey, 2006; Bailey, Jeong, & Choo, 2010). Reading instruction has historically been a key component of remedial education (Boylan, 2003) and in recent years as many as 13% of all college freshman are enrolled in a developmental reading class (U.S. Department of Education, 1996).

While some have begun to question the efficacy of remedial education (Bailey, 2009; Complete College America, 2012) this has not slowed the pace of development of such courses, or of state-wide developmental education initiatives (Smith, 2011). To some degree, these remedial courses have been successful in achieving what they set out to do, at least to the extent that they help students achieve a level of reading and writing competency that they should ideally have reached upon graduating high-school. However, beyond this fairly basic remediation for the struggling students, which allows them to move on to other classes, there is little evidence that students are improving. Roksa and Arum (2011) report that during the first two years of college, students show very little real gain in their critical thinking, analytical reasoning, or writing skills. Therefore, despite the best efforts of colleges to implement these remedial and foundational classes it is clear that a number of problems remain that may contribute to the inadequacies noted by academics and employers alike.

Not all colleges and universities offer the full range of these remedial or foundational courses. Reading in particular is a skill that college students are assumed to have and therefore many institutions do not teach reading to their students (Bosley, 2008). For those students attending a college which does have such interventions and programs, the typical college track begins with remedial classes that they may require. Then they may advance to foundational college writing and reading classes, and subsequently to the rest of the liberal arts curriculum and classes in their chosen major. One problem with this framework is that there may be a disconnect between the remedial or foundational classes and the rest of the student's college classes. From a student's perspective this disconnect might be as simple as perceiving the foundational reading and writing classes as a chore - something they must pass in order to move on. Similarly, these classes may seem irrelevant to students in their content; indeed critics of the remedial education approach argue that because of the potential for students to perceive remedial class content as irrelevant, it is more effective to place then into subject area classes as soon as possible and offer extra co-requisite support rather than pre-requisite classes (Complete College America, 2012).

Perhaps more critically though, the type of reading and writing students do in these courses is often fundamentally different from that in other coursework. For reading classes, this difference is reflected in the types of text assigned, what students are asked 'to do' when reading a text, how their compliance with the assignment and comprehension of the text are assessed, and so forth.

These differences reflect the reality that there are different kinds of reading for different purposes. For example, most of the reading that students do in high school is receptive reading - that is reading for information (Biancarosa & Snow, 2006). While this remains important in college, there is a further expectation that students be able to read in additional ways as well. For example, at the heart of critical reading is that the reader is able to identify what a text does, and how. This then allows for a more active reader who makes connections with and within the material, therefore constructing new knowledge as they read (El-Hindi, 1997). Reading-to-write involves integrating the information with one's own ideas in order to produce novel written material, and it is this type of reading that we most associate with college level work (Flower, Stein, Ackerman, Kantz, McCormick, & Peck, 1990).

Just as students may experience a disconnect between reading in their classes and the rest of the curriculum, faculty likewise often view these classes as more distinct than perhaps they should be. For example, reading classes are frequently taught by reading specialists or by the English department. Faculty members in other disciplines are rarely involved in this instruction. Furthermore, students are expected to take whatever remedial classes are deemed necessary and then be able to engage with the rest of the curriculum with no further need of instruction, reflecting the fact that explicit reading instruction is often sidelined as remedial (Harkin, 2005), even in literature classes (Bosley, 2008). This is problematic for a number of reasons. First, critical reading strategies require reinforcement through continued practice (Nist & Holschuh, 2000; Pugh, Pawan, & Antommarchi, 2000). Most college classes have the implicit and often explicit expectation that students read, however without continued feedback and guidance, they may not be practicing the appropriate skills in the ways they need to in order to be successful. Second, how one reads depends on both the reason for reading, the kind of text one is reading, and its specific content. For example, why and how one reads a short passage differs in important ways from why and how one reads a textbook and this in turn differs from an original source or an empirical research article. Faculty may unintentionally assume that the reading part of the instruction was taken care of before the students enrolled in their psychology/economics/biology/etc. class. Students are expected to move seamlessly from reading prose passages in remedial/foundational classes to reading textbooks for receptive reading in general education classes and then transition into upper-level classes and be able to read original texts from a reading-to-write perspective (Flowers et al., 1991), where it is expected that they understand the texts enough to meet the challenge of integrating them into a term paper (Johns, 1997). Similarly, explicit instruction regarding how to read the specific texts of their chosen major is too frequently lacking. Because reading classes are cross-disciplinary, students are taught general reading skills using more generic sources; however, there are often idiosyncrasies to our disciplines with which perhaps we are not adequately familiarizing our students.

Many universities and colleges have bravely implemented policies and curriculum changes to address the deficiencies that students have when they first arrive at their institutions. We believe that the disconnect which we have outlined is not one that should be addressed in these foundational reading classes but rather by the disciplines themselves. Similarly, it is

important to acknowledge that there is wide variation in the degree to which specific disciplines already do this. Philosophy for example is far more likely to assign students original texts and to carefully and methodically teach students how to read these texts. Likewise, English literature classes certainly require students to read extensively and perform literary analysis. However, many disciplines, including the popular social sciences, rely heavily on textbooks to disseminate vast amounts of information to students and we suspect instructors are less likely to assign original texts or to assess reading specifically beyond testing the learning of the content. The assignment that we piloted, and describe in this paper, was specifically designed to close this gap.

B. Theoretical Background.

The series of assignments we describe involves reading original psychology texts and identifying their key components. We expected this to result in improved comprehension and critical reading skills - which we assess - but also lasting improvement in writing skills - which we do not assess in this paper. These expectations are informed by the literature about how students learn and the scholarship that emphasizes the link between reading and writing.

The value of practice when learning and developing any skill is well documented, in particular the importance of extended and deliberate practice (Ericsson, 2006). This applies to academic skills such as reading and writing, which is a significant reason why remedial/foundational college courses are so reading and/or writing-intensive. However, here again is a disconnect: although everyone acknowledges the importance of practice in foundation classes, we often do not give our mid and upper-level students adequate opportunities to practice the kinds of reading and writing we expect from them. The presumption is that once the basic skills are formed this will generalize. However, much of what we know about how humans learn suggests in fact that successive approximations, feedback, and practice at each step is a more successful approach (Skinner, 1953; 1968). Similarly, the principles of learning by modeling (Bandura, 1962; 1973; 1977) suggest that if we want our students to write well, specifically in the style of their discipline, then one of the best ways they might learn to do this is to be exposed to models, i.e., to read the work of professionals in their field. For example, many upper-level psychology classes assign research papers or research proposals that require students to write a literature review. In addition to explaining to our students what this means, and perhaps even providing a few examples, much could be gained by increased exposure to published psychology papers. In an ideal world, our students are reading original texts in order to write their term papers; however, more realistically they are using textbooks and finding summaries and online sources for the same information. An assignment that forces them to read these texts in full provides the much needed opportunity for practice at reading and gaining the associated benefits to their writing through modeling. However, inherent within the principle of modeling and social learning theory is that the learner must pay attention to the model in order to learn the skills (Bandura, 1962; 1973; 1977). Providing students with an assignment that is specifically designed to make them read original sources and to pay attention to them for more than just content should encourage this attention.

Although we do not explicitly assess any improvements in the students' writing, the benefits to their reading are expected to translate into better writing. This reasoning is based on the vast literature which demonstrates that reading and writing are inextricably linked and are most effectively taught as integrated processes (Bartholomae & Petrosky, 1986; El-Hindi, 1997;

Flower et al., 1991). This might be especially true of the reading-to-write style of reading which is so crucial to college success. If reading and writing are crucial flip-sides of one another (Downs, 2000), then it might be reasonably hypothesized that activities which strengthen one will tend to strengthen the other. However, it is important not to allow another disconnect to creep in by focusing on reading/writing without specific and adequate consideration of how one connects to the other. Therefore, in designing our reading assignment, which was intended to expose our students to discipline-specific models of writing, the deficiencies that we had been observing in the students' writing guided the structure of the assignment – that is, we asked students to pay attention to the kinds of things we had noticed they struggled to do in their own writing when reading.

C. Details of the Assignment.

We designed an assignment with the specific purpose of helping students learn how to read original psychology texts. It was piloted in a mid-level social psychology course. Instead of using a traditional textbook for the class, the weekly readings assigned were original psychology texts that related to that week's topic, for example: *The Self and Social Behavior in Differing Cultural Contexts* (Triandis, 1989), *Self-Esteem as an Interpersonal Monitor: The Sociometer Hypothesis* (Leary, Tambor, Terdal, & Downs, 1995), and *Stereotype Threat and the Intellectual Test Performance of African Americans* (Steele & Aronson, 1995). Each week the students answered the following questions based on that week's readings: (1) In one sentence explain what the reading does by using verbs like argue, demonstrate, compare, describe, etc. (2) Identify the thesis of the text. (3) List three main pieces of evidence or arguments the authors use to support their thesis. (4) Give the definition of two unfamiliar words from the reading. (5) Write one sentence that paraphrases the author's idea and references it in APA style. These tasks were specifically designed to improve students' reading comprehension skills as well as those skills that serve as the foundation of their critical reading skills: the ability to recognize an author's purpose, to identify what the text does, and to understand persuasive elements of the text (Kurlund, 2000).

The students received a grade out of a maximum of 10 for each weekly assignment. However, grading was generous to encourage the students' continued engagement and motivation to complete the assignments. For example, demonstrating that the text had been read and completing all aspects of the assignment would result in grade of seven, even if there were some minor factual errors or errors in comprehension. A grade of eight reflected the student's competency with the material with only minor mistakes. Grades of nine and above indicated mastery of the material, no mistakes, as well as a sophisticated level of understanding (for a 10). Some students did sometimes earn a five or six for poor or incomplete work. Therefore, while technically the grading scale was from 1-10, in practice, students' grades ranged from 5-10. Specific feedback was provided to each student to encourage improvement throughout the semester. In addition, during most weeks, the class examined the text as a group and the instructor was able to help provide guidance for how to read the text, including offering strategies for reading challenging texts and techniques for identifying the thesis, evidence, and so forth. This takes a co-requisite approach by providing built in support for basic skills in the context of a traditional content based class (Complete College America, 2012).

II. Method.

A. Participants.

Participants were thirty female students enrolled in a *Self and Identity* course at a small comprehensive university in Washington, DC. Twenty-six students completed the pre-test, twenty-seven completed the post-test, and twenty-three students completed both. The majority of students were either juniors (n=13) or seniors (n=9). There were some sophomores (n=7) and there was only one freshman. On average, the students had taken 68 credit hours (approximately 22 classes) previous to the semester in which they enrolled in *Self and Identity*. All students had taken *Introductory Psychology* as it was a prerequisite for *Self and Identity*, but most had taken many more psychology and sociology classes. In addition, all students had taken critical reading and foundational writing classes in their freshman year.

B. Procedure.

The first author taught the class in the spring of 2012. It was a 200 level (mid-level) social psychology class that explored self and identity issues including the ways in which we come to know and understand ourselves, biases in processing self-related information, the content, structure, organization and function of the self, and the ways in which our membership to social groups (race, gender, religion, etc.) contribute to our sense of self. Twenty-percent of the students' overall grade came from completing the weekly reading assignment. To examine whether the students' critical reading ability improved due to these assignments, students completed a pre and post-test of critical reading skills based on readings that were unrelated to the course content.

C. Materials.

Pre and post-test. During the first and the last class period of the semester, students were assigned a short reading and answered multiple-choice comprehension questions based on the reading's content. The readings were both from the *Taking Sides* book series and were selected to match in approximate length and technicality. Neither reading related to the content of the course. The pre-test reading was from Barkley's (2007) *International Consensus Statement on ADHD* and the post-test reading was from Brizendine's (2009) *The Female Brain*. The comprehension questions were modeled after the GRE's critical reading questions. The questions asked students to identify the main point of the passage, indicate with which a number of statements the authors would agree, what might be inferred from the passage, why authors mention specific facts/make certain comparisons, the meaning of key terms, and what the aim of the passage was. The questions were designed to be moderately challenging for all students. The second author developed all of the pre and post-test questions and does not know the students, had no contact with their work, and was not familiar with the content of the class.

Weekly reading assignment. The syllabus explained to students that one of the objectives of the class was to become comfortable with reading original source psychology texts and that to facilitate this skill they would complete weekly readings and associated weekly reading assignments that were to be turned in to the professor as a hard copy in class. The format for these assignments was the same each week and the specific requirements are described above.

Student evaluations. Students completed a survey following completion of the course that asked them how valuable they found the assignment and the class generally for improving their reading comprehension, critical reading, and writing skills. Three questions asked how much the class helped students examine and interpret a written text, and present ideas effectively in writing (see Table 1); these were taken from the standard class evaluation used by the university with response scales of 1=*not at all* to 4=*very much*. Additional questions asked students to compare the *Self and Identity* class to other classes they have taken (see Table 1). Students responded to these questions on a scale of 1=*much less than other classes* to 9=*much more than other classes*. Finally, students were asked to comment in their own words on the weekly reading assignment.

III. Results.

The class average from the pre to post-test showed a statistically significant improvement in reading skills $t(22) = -4.32$, $p < .001$, d=.90. At the start of the semester the average number of multiple choice questions answered correctly was 8.04 out of a possible 12 (SD = 2.23) and at the end of the semester the average number of multiple choice questions answered correctly was 9.91 out of 12 (SD = 1.05). Of those students who completed the pre-test 58% received what could be considered a failing grade, i.e. less than 70% (corresponding to a score of 8.4 out of 12) with three students scoring as little as four or five out of 12. At post-test this 'failure rate' was reduced to just 15% and no student scored below an eight at post-test.

Almost all students improved, and those who did not improve (n = 2) or scored slightly worse at post-test (n = 4) were those who initially performed at the top; the four students who performed worse at post-test than pre-test had pre-test scores of at least 10 and remained at or above 10 (out of a possible 12) at post-test. Examining those students who scored at the lower end at pre-test allows us to focus on the students in whom we are particularly concerned about effecting change. Among the 14 students who received what could be considered a failing grade at pre-test we see an overwhelming improvement $t(13) = -9.18$, $p < .001$, d=2.45, from an average of 6.64 out of 12 (SD = 1.45) at pre-test to an average of 9.82 out of 12 (SD = 1.20) at post-test.

The students' improvement might also be reflected in an increase in their weekly reading assignment grades. Figure 1 illustrates the average weekly grade of those students who completed the assignment, which was most of the class. The average grade for the first week's assignment is somewhat inflated by the fact that it was liberally graded as the first assignment while students were familiarizing themselves with the professor's requirements and expectations. This was expressed to students, and they were aware, that they 'got off lightly' the first week. After this first week, every effort was made to remain consistent in grading the assignment so that any increase in grade reflects an improvement in the students' skills. Therefore, if we do not consider the first week, we see a gradual increase in grades over the course of the semester that then plateaus and settles at an average in the mid to upper eight range until the end of the semester when the class average drops again. This drop might be a reflection of the end of the semester pressure and so forth. In addition, week 10 involved in-class group presentations so it is likely that students were focusing less on the readings than usual. Overall, the pattern does seem to suggest a steady increase.

Additional evidence for the potential efficacy of the assignments is the degree of student compliance in completing the assignments. There were eleven assignments across the semester and the majority (57%) of the students completed all of them, a further 21% only missed one

assignment, and a further 11% only missed two, leaving a minority of just 10% who missed three or more. While this is not direct evidence of the assignment effectiveness in terms of what it teaches students, it does suggest a degree of engagement with the assignments, which might be taken as further support of their value.

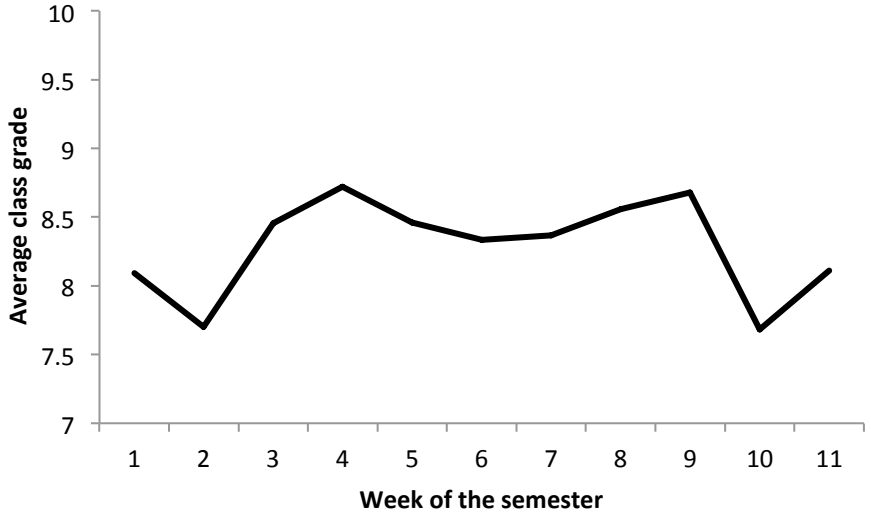


Figure 1. Average class grade for the weekly reading assignments over the course of the semester

Finally, although students' self-report responses to the course evaluation survey should not be taken as direct evidence for the efficacy of the assignment, they can be viewed as customer satisfaction data supporting the value of the assignment. The students' responses suggest that they found the assignment to be helpful for their reading skills as well as their writing skills. The questions along with the mean response to each are presented in Table 1. Students indicated that the class was very helpful for the reading skills of examining, interpreting, and analyzing written texts as well as for the writing skills of presenting ideas effectively. The remaining questions asked students to compare the class to others they have taken in college, and asked specifically about the skills that the assignment was designed to develop. Student responses were all above 7 on the 10-point scale suggesting that students felt that the class was more helpful than other college classes at developing these skills, in some cases much more. Particularly notable are those items on which students rated the class at eight or above – helping them to understand original psychology texts, identify thesis statements in texts, and identify evidence in texts. These were all explicit goals of the class, and in particular the assignment, and the students' responses suggest that they felt satisfied that these goals were met. Not surprisingly, ratings were higher for questions which asked about reading skills compared to those that asked about writing skills; the assignment was fundamentally a reading assignment, with the intended extra benefit of aiding students writing, which these students' responses suggest was successful.

Table 1. Student responses to a survey evaluating the class on key outcomes.

Thinking of your experience in Self and Identity, using a scale from 1=*not at all* to 4=*very much*, to what extent did the course help you to do the following:	**Mean**	**SD**
Examine a written text and make judgments about the value of information presented and assess the soundness of the author's conclusions.	3.93	0.26
Interpret and analyze written text and understand how literary devices such as imagery, metaphor, or point of view contribute to the overall meaning	3.87	0.35
Present ideas and information clearly and effectively in writing.	3.87	0.35
For the following questions please think about Self and Identity compared to other classes you have taken at this university and respond using a scale from 1=*much less* to 9=*much more.*	**Mean**	**SD**
Compared to other classes how much did Self and Identity help you understand original psychology work / texts?	8.13	1.19
Compared to other classes how much did Self and Identity help your critical reading skills?	7.87	2.13
Compared to other classes how much did Self and Identity help you identify thesis statements in texts?	8.00	2.34
Compared to other classes how much did Self and Identity help you identify evidence in texts?	8.20	2.08
Compared to other classes how much did Self and Identity help you learn how to summarize an idea for referencing in a paper?	7.60	2.23
Compared to other classes how much did Self and Identity help develop your vocabulary - particularly your psychology vocabulary?	7.36	2.34
Compared to other classes how much did Self and Identity help your ability to WRITE strong thesis statements?	7.27	2.28
Compared to other classes how much did Self and Identity help your ability to WRITE papers in the style of the discipline of psychology?	7.13	2.26
Compared to other classes how much did Self and Identity help your ability to WRITE papers that incorporate evidence to support a thesis?	7.20	2.24

In addition to the survey questions, students were also asked to comment in their own words on their experience with the weekly assignments, these responses indicated that the students found the assignments helpful in developing their reading and writing skills, for example:

> "I think . . identifying thesis and finding supportive evidence *weekly* encouraged the students to feel comfortable in doing such on their own and in other classes if and when needed."
>
> "I felt that the weekly reading assignments really helped me to understand the text and understand other text in different classes. I feel that in order to do my papers I will ask myself those questions to help me pull out key elements."
>
> "The weekly reading assignment really helped my vocabulary and finding evidence in texts to support the thesis!"
>
> "The weekly reading assignments were challenging but extremely effective. My skills in both reading and writing have improved since taking this course."
>
> "The weekly reading assignments will help me improve my reading and critical thinking skills when it comes to reading and analyzing lengthy articles. It also helped me sum articles up into paraphrases and be able to provide evidence."
>
> "The weekly readings were very helpful. Having to do the weekly readings I can say has greatly improved my ability identifying the thesis and evidence. Also helped with learning the correct way to cite without penalty but helping understand why and how it's suppose to be. I think these assignments sometimes are not met with enjoyment by students weekly but it is helpful and does what it sets out to do; improve students' ability to analyze and interpret effectively"

IV. Discussion and Conclusion.

The skill of reading is a critically important skill in itself, and as the flip-side of good writing it is an essential cornerstone of a successful college career. Beyond this, employers want graduates, in particular liberal arts graduates, to come to them with this skill set already developed. However, students, employers, and academics alike recognize that this skill is not as well developed as it should or could be. This paper presents the outcome assessment of an assignment piloted in a psychology course that was designed to allow students to learn and practice how to effectively read original psychology texts. The evidence suggests that the assignment was indeed successful in its goal. There was a significant improvement in the students' reading skills at the end of the semester, and particularly notable improvements were observed in those students who were seen to be struggling at the start of the semester. Furthermore, students themselves expressed that the assignment was very helpful in developing a number of reading and writing skills, providing further evidence of the value of this assignment.

It is critical that only one of the students in this pilot class was a freshman, and that many students were in their junior or senior year. These students have successfully completed the foundational reading/writing classes and so according to the stated goals of these classes in theory should have the college level skills needed for academic success. However, their pre-test scores suggest that the reading skills they developed and honed in these foundational courses have not translated into more discipline specific classes. If our students had been freshman, then the significant improvement we saw might have been attributable to other classes that they were taking concurrently (e.g., the foundational reading/writing classes); however, this was not the case. Likewise, most of the students had taken many classes before this one, including psychology classes, and yet the pre-test scores suggest that while they may be learning important

content in these classes they may not have received adequate guidance in reading within their discipline. Similarly, as upper-level, primarily social science, students, these students are enrolled in classes that require them to write term papers that include a thesis and provide evidence by integrating original sources; the pre-test scores suggest that the students would struggle to do this. Finally, it is important to note that both the pre and post-test were multiple-choice and therefore objective and not subject to experimenter bias suggesting a real improvement in skills. Unfortunately, we cannot say whether this improvement is enduring. However, we believe that if students continue to have the opportunity to practice these reading skills then they will strengthen and persist throughout their college careers and into the workplace.

There are a number of limitations and important suggestions for future work that should be acknowledged. First, this assignment was specifically designed for, tailored to, and piloted in a psychology course. We encourage scholars and practitioners in other disciplines to reflect on the need for similar interventions. The precise details of the assignment will, and should, vary across subject area but we suspect that the principle of modeling and guided practice would apply to all disciplines. However, it is important to adhere to the principle of discipline-specific modeling and with that in mind realize that this precise assignment in its current form might not be applicable to a non-psychology course. Indeed, these kinds of assignments cannot be cross-disciplinary if they are to be successful, but rather should be focused on discipline-specific training. Second, as with most empirical research, our results should be generalized with caution. The specifics of the university and its students may make this assignment particularly effective; however, the deficit in reading/writing skills in students is certainly widely noted so it is likely that some form of this assignment would be valuable in many universities. Similarly, the relatively small and heterogeneous sample that we used means that systematic or conceptual replication would improve the external validity of our findings. Third, while all efforts were made to ensure that the pre and post-test readings and questions were equivalent, they were different and it is therefore possible that students simply found the second reading and questions to be easier. Finally, as already noted, it is not possible to say whether the improvements that we witnessed are enduring ones, nor did we assess whether there was the associated improvement in students writing. Future studies should assess both of these possibilities.

This paper described the details of an assignment born of the observation that our students struggle to write. Specifically, they struggle to form thesis statements and provide supporting evidence. The logical and empirical link between writing and reading (Bartholomae & Petrosky, 1986; El-Hindi, 1997; Flower et al., 1991), as well as known principles of learning (Bandura, 1962; 1973; 1977; Ericsson, 2006), suggested an intervention that would help students with these skills. This intervention provided students with models of good discipline-specific writing along with a required assignment that was designed to help guide the students in how to read, prompting them to pay particular attention to those aspects observed to be lacking in their own writing. The specific instructions for how to read these texts allowed for learning through deliberate and ongoing practice (Nist & Holschuh, 2000; Pugh, Pawan, & Antommarchi, 2000).
A variety of evidence suggests the efficacy of this assignment for all students, in particular those most in need of it. This success supports the suggestion that foundational skills can be taught successfully as a co-requisite skills rather than as a pre-requisite class (Complete College America, 2012). Furthermore, the improvement in the students' skills is in keeping with research that suggests the utility of deliberate and ongoing practice (Nist & Holschuh, 2000; Pugh, Pawan, & Antommarchi, 2000) and the importance of ongoing feedback (Skinner, 1953; 1968).

In an increasingly competitive job market, it is crucial that we equip our graduates with all the soft skills a college education is expected to afford them. It is our responsibility as educators to acknowledge the shortcomings of our current education system and envision new ways that we might address them. Our assignment is just one such effort, and we hope that others consider adopting techniques with similar principles.

References

Attewell, P., Lavin, D., Domina, T., & Levey, T. (2006). New evidence on college remediation. *Journal of Higher Education, 77*, 886–924.

Bailey, T. (2009). *Rethinking developmental education in community college* (CCRC Brief No. 40). Retrieved from Community College Research Center, Teachers College, Columbia University website: http://ccrc.tc.columbia.edu/Publication.asp?UID=672.

Bailey, T., Jeong, D.W., & Cho, S.W. (2010). Referral, enrollment, and completion in developmental education sequences in community colleges. *Economics of Education Review*, *29*, 255-270.

Bandura, A. (1962). *Social Learning Through Imitation*. Lincoln, NE: University of Nebraska Press.

Bandura, A. (1973). *Aggression: A Social Learning Analysis.* Englewood Cliffs, NJ: Prentice Hall.

Bandura, A. (1977). *Social Learning Theory.* Englewood Cliffs, NJ: Prentice Hall.

Barkley, R.A. (2007). International consensus statement on ADHD. In B. Slife (Ed.), *Taking Sides: Clashing Views on Psychological Issues (15th Ed.)* (pp.232-236). New York, NY: McGraw Hill.

Bartholomae, D., & Petrosky, A. (1986). *Facts, Artifacts and Counteracts: Theory and Method for a Reading and Writing Course.* Portsmouth, NH: Boyton/Cook Publishers.

Biancarosa, G., & Snow, C.E. (2006). *Reading Next-A Vision for Action and Research in High School Literacy: A Report to the Carnegie Corporation of New York (2nd Ed.).* Washington, DC: Alliance for Excellent Education.

Brizendine, L. (2009). The female brain. In B. Slife (Ed.), *Taking Sides: Clashing Views on Psychological Issues (16th Ed.)* (pp.74-78). New York, NY: McGraw Hill.

Bosley, L. (2008). "I don't teach reading:" Critical reading instruction in composition courses. *Literacy Research and Instruction*, *47*, 285–308.

Boylan, H. (2003). Developmental education: What's it all about? In N.A. Stahl & H. Boylan (Eds.), *Teaching Developmental Reading: Historical, Theoretical, and Practical Background Readings.* Boston, MA: Bedford/St. Martin's.

Complete College America (2012). *Remediation: Higher education's bridge to nowhere.* Retrieved from http://www.completecollege.org/docs/CCA-Remediation-final.pdf.

Downs, D. (2000, November). *Rethinking dogma: Teaching critical reading in freshman composition*. Paper presented at the Annual Meeting of the National Council of Teachers of English, Milwaukee, WI. Retrieved from http://eric.ed.gov/ERICWebPortal/detail?accno=ED450377.

El-Hindi, A.E. (1997). Connecting reading and writing: College learner's metacognitive awareness. *Journal of Developmental Education*, *21*, 10-15.

Ericsson, K.A. (2006). The influence of experience and deliberate practice on the development of superior expert performance. In Ericsson, K.A., Charness, N., Feltovich, P., & Hoffman, R.R. (Eds.). *Cambridge Handbook of Expertise and Expert Performance* (pp. 685-706). Cambridge, UK: Cambridge University Press.

Flower, L., Stein, V., Ackerman, J., Kantz, M. J., McCormick, K., & Peck, W.C. (1990). *Reading to Write: Exploring a Cognitive & Social Process*. New York, NY: Oxford University Press.

Harkin, P. (2005). The reception of reader-response theory. *College Composition and Communication, 56,* 410-425.

Johns, A. (1997). *Text, Role, Context: Developing Academic Literacy*. Cambridge, UK: Cambridge University Press.

Kurland, D.J. (2000). How the language really works: The fundamentals of critical reading and effective writing. http://www.criticalreading.com/critical_reading.htm

Lewin, T. (2005, August 17). Many going to college aren't ready, report says. *New York Times*. Retrieved from http://www.nytimes.com/2005/08/17/education/17scores.html.

Leary, M.R., Tambor, E.S., Terdal, S.K., & Downs, D.L. (1995). Self-esteem as an interpersonal monitor: The sociometer hypothesis. *Journal of Personality & Social Psycholog*y, *68*, 518-530

National Endowment for the Arts (2007). *To read or not to read: A question of national consequence* (Research Report #47). Retrieved from http://www.nea.gov/research/ToRead.pdf.

U.S. Department of Education, Office of Educational Research and Improvement, National Center for Education Statistics. (1996). *Remedial education in higher education institutions in the fall 1995* (NCES 97-584). Retrieved from http://nces.ed.gov/pubs/97584.pdf.

U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics (2005). *National assessment of education progress. The nation's report card: Reading 2005* (NCES 2006–451). Retrieved from http://nces.ed.gov/nationsreportcard/pdf/main2005/2006451.pdf.

Nist, S., & Holschuh, J. L. (2000). Comprehension strategies at the college level. In R. F. Flippo & D. C. Caverly (Eds.), *Handbook of College Reading and Study Strategy Research* (pp. 75-104). Mahwah, NJ: Lawrence Erlbaum Associates.

Pugh, S.L., Pawan, F., & Antommarchi, C. (2000). Academic literacy and the new collegelearner. In R. F. Flippo & D. C. Caverly (Eds.), *Handbook of College Reading and Study Strategy Research* (pp. 25-42). Mahwah, NJ: Lawrence Erlbaum Associates.

Steele, C.M., & Aronson, J. (1995). Stereotype threat and the intellectual test performance of African Americans. *Journal of Personality and Social Psychology, 69*, 797–811.

Skinner, B.F. (1953). *Science and Human Behavior*. New York, NY: Macmillan.

Skinner, B.F. (1968). *The Technology of Teaching*. New York NY: Appleton-Century-Crofts.

Smith, M. (2011). *Accountability & continuous improvement in remedial education: Getting past go project*. Retrieved from Education Commission of the States website: http://www.gettingpastgo.org/docs/Acct-Brief.pdf.

Triandis, H.C. (1989). The self and social behavior in differing cultural contexts. *Psychological Review*, *96*, 506-520.

Walker, P. (2008). What do students think they (should) learn at college? Student perceptions of essential learning outcomes. *Journal of the Scholarship of Teaching and Learning, 8*, 45-60.

Journal of the Scholarship of Teaching and Learning, Vol. 13, No. 1, February 2013, pp. 100 – 111.

An exploration of metacognition and its effect on mathematical performance in differential equations

Mary Jarratt Smith[1]

Abstract: Research suggests that students in certain contexts who are "metacognitively aware learners" demonstrate better academic performance (Shraw & Dennison, 1994; Md. Yunus & Ali, 2008). In this research, the metacognitive levels for two classes of differential equations students were studied. Students completed a survey adapted from the Metacognitive Awareness Inventory (MAI) (Shraw & Dennison, 1994) at the start of the course. The questions chosen from the MAI were aimed at three components concerning the students' knowledge about their cognition: declarative knowledge, procedural knowledge, and conditional knowledge. Analysis shows student performance, as measured by the course grade, cannot be predicted by metacognitive awareness levels.

Key Words: Metacognition, MAI, differential equations

I. Introduction.

Metacognition is a person's ability to understand how s/he thinks, reflect upon one's thinking, and control one's learning based upon the understanding of and reflection on one's thinking (Shraw & Dennison, 1994). Flavell (1976) considered metacognition remembering to remember, and then monitoring and updating knowledge. Cross and Steadman (1996) believe that, though a person knows his or her strengths and weaknesses, s/he needs to take the next steps—the metacognitive steps—of planning how to approach a problem, checking for understanding, and testing for learning. These steps have been described by Nelson and Narens (1990, 1994) as a metacognitive system with two basic levels—the meta-level and the object-level. Information flows between the levels to monitor a person's learning process (object-level to meta-level) and control what a person does to enhance their learning (meta-level to object-level). The information flow process in the metacognitive system could also be thought of as knowledge about cognition (monitor) and regulation of cognition (control) (Shraw & Dennison, 1994).

In the concept of self-regulated study, as a student studies, s/he monitors his/her learning by using a variety of metacognitive judgments (for example, Ease-of-Learning (EOL), Judgments of Learning (JOL), Feeling of Knowing (FOK)) (Dunlosky, Serra, & Baker, 2007). Then the student decides (or uses controls) to continue to study based on the judgments that were made. In the hierarchical model proposed by Theide and Dunlocky (1999) students regulate their learning through planning and goal-setting. In this model, students set a high or low goal in terms of how much they feel they need to master and pre-plan their study time to accomplish their goal. In another model, Region of Proximal Learning, by Metcalfe and Kornell (2004) students regulate their learning through first choosing what items to study or not study, then stop studying an item when they feel that they are no longer learning anything about that item. Other researchers have determined that not all students use metacognitive knowledge to control their

[1] Department of Mathematics, Boise State University, 1910 University Drive, Boise, ID 83725, mjsmith@math.boisestate.edu

learning (Son & Metcalfe, 2000) or that the metacognitive knowledge may not be consciously used to enhance learning (Reder & Schunn, 1996; Siegler & Shipley, 1995).

Some research suggests that students who are "metacognitively aware learners" demonstrate better academic performance. Schraw and Dennison (1994) generated an inventory (Metacognitive Awareness Inventory--MAI) that examined metacognitive awareness and was deemed suitable for use with young people and adults. They tested their instrument on undergraduate students in several introductory educational psychology courses at a midwestern university. Schraw and Dennison concluded, among other things, that students with high scores on the inventory also scored high on reading comprehension exams. Other researchers, Md.Yunus and Ali (2008), used the MAI to test mathematics education students in their final year at a university in Malaysia. Their research studied the relationship between metacognition and gender and cumulative GPA of the students. Their findings indicated that procedural, declarative, and conditional knowledge (that is, components of the knowledge about cognition (Shraw & Dennison, 1994)) have "significant correlation to performance in mathematics and overall academic performance" (p. 129) and that "metacognitive scores can predict students' achievement to a certain extent" (p. 130).

Other research, however, has shown that higher metacognitive awareness did not lead to higher scores academically. Pressley and Ghatala (1990) studied students at the university level and at the elementary school level with respect to reading comprehension. Students at both of these levels were asked to read something and judge their performance on questions about the reading. In a variety of experiments at both elementary and university levels they found that "a lot of cognition is not very efficient" (p. 31) and though students may be monitoring their studying, poor monitoring contributed to poor performance. Their research suggests that students must be both metacognitively aware and proficient at applying this awareness in their studying.

Studies also indicate that few students engage in the processes of metacognition in a manner that would help them be successful at problem solving. Schoenfeld (1992) examined how students worked through problems that were not familiar to them and found that many spent very little or no time on planning during problem solving. Students would read the problem, consider some method of solution and use it without regard to whether it was leading them to a solution. Stillman and Galbraith (1998) identified the same lack of planning by students in their research. Schoenfeld (1985) also found that students, when they saw that a strategy was not working, threw it completely away and did not consider what they learned from that strategy as they moved on to another strategy.

Various other researchers have also noted the importance of planning in problem solving. Lester (1982) notes that to be a successful problem solver a person needs to know and understand his/her own cognitions and be able to monitor the thought processes throughout the solving of the problem. Silver (1982, 1987) suggests that the strategies used to solve a problem are metacognitive and guide how the process proceeds. In particular a person's beliefs about learning and mathematics can greatly impact how a person solves a mathematical problem. Veenmen (2006) believes that initially in the process of solving a mathematics problem, metacognitive skills are more important than intellectual ability and that a student needs an "adequate repertoire" of metacognitive skills to insure success in problem solving.

II. Inquiry.

For many years the author has observed some students who approach their learning very intentionally, systematically using their time and effort. A portion of these students performed very well, while other students did not. Conversely, some students who did well appeared to have a very haphazard approach to their learning. These anecdotal observations led the author to investigate how her students' knowledge about their cognition related to their performance, as measured by course grades, in a differential equations course. In particular, the author was interested in their declarative knowledge (knowing what is important to learn), their procedural knowledge (understanding how to use strategies from past experiences), and their conditional knowledge (knowing when what strategy is most effective). The author felt that perhaps successful students, however they approached their learning, were using metacognitive tools that less successful students were not.

The study is focused on students enrolled in differential equations, a course which requires students to have completed two prerequisite semesters of calculus. The author has taught courses in differential equations for 25 years, most of which have involved sections of approximately 35 students. In the spring of 2010 and the spring of 2011, trial versions of "large sections" (89 students and 120 students, respectively) of differential equations for engineering majors were offered. These courses became the focus of this study.

This study focused on the following research question:

- Do a student's metacognitive levels predict his/her course performance, as measured by course grade, in a differential equations course?

III. Methods.

The subjects for the study were students in two university junior level differential equations courses, from different semesters, with the majority of students majoring in engineering. As Nelson and Narens (1990) suggest, the main tool to generate data about a person's metacognition is from their own reports about their thinking. Hence, students' metacognitive levels were assessed using a survey. The survey was adapted from the Metacognitive Awareness Inventory or MAI, (Shraw & Dennison, 1994) which is considered a reliable measure of knowledge of cognition (Sanchez-Alonso & Vovides, 2007). The survey used a subset of 17 questions that were specific to the three areas of knowledge the author intended to study. Each question asked students to indicate their perception of the truth of the statement along a continuous scale from 0 to 100, with zero corresponding to completely false and 100 corresponding to completely true. Scores on the survey were translated to a scale of 0 to 10 for the analyses. The survey is attached (see Appendix) with notations added to show how the questions related to the areas of knowledge being tested (as indicated in the MAI). The survey was administered in the first two weeks of the semester and was counted as one homework assignment.

In the analyses below, only data from students who finished the courses are included (70 from spring 2010 (Class 1) and 105 from spring 2011 (Class 2)). Students consented to have their data included in the study and the methodology was approved by the university's Institutional Review Board.

To answer the research question, the author compared summative scores on the revised MAI instrument using equal interval division to indicate low, moderate, and high metacognition. Data were compared using descriptive statistics. Unpaired Student's t-tests were used to

determine any significant differences in means of the data. Cohen's d was calculated to determine effect size for means that were significantly different. Mann-Whitney tests were used to determine any statistical significance between the medians of the data. The two-sample F-test was used to determine any differences between variances of the data.

IV. Results.

To get a sense of students' levels of metacognition when they enter a differential equations course, the survey data from the classes were combined and the metacognitive scores were considered.

The summative metacognition scores were broken into three subintervals indicating low, moderate, and high metacognition for the three categories of metacognition being examined. Table 1 gives the percentage of students, in the classes combined, with scores in each of the subintervals.

Table 1. Subintervals of Low, Moderate, and High Summative Metacognition Scores with Percentage of Students in each Subinterval (175 students).

	Low	Moderate	High
Declarative	40-52	53-66	67-79
Percentage	13.1	56.5	30.3
Procedural	14-22	23-31	32-40
Percentage	5.7	49.7	44.6
Conditional	20-29	30-40	41-50
Percentage	11.4	49.7	38.9

Research Question: Do a student's metacognitive levels predict his/her course performance, as measured by course grade, in a differential equations course?

This question was studied within classes to account for any differences in the grading of the two classes. Students who received an F for the course and completed surveys were not considered because of the small number of them (4 in Class 1 and 2 in Class 2).

Figures 1 through 3 give the percentage of students, by grade received in the class, in the low, moderate, and high subintervals for each category of metacognition studied for both classes. (The ranges of scores for the subintervals are as noted in Table 1.)

For each class individually, the Student's t-test was used to compare the means of the metacognitive scores between students with differing grades. No significant differences were found in Class 1. In Class 2 significant differences were found between students receiving a B in the course and those receiving a C in the course in the categories of declarative and conditional metacognition. Class 2 also showed significant differences in means in all metacognitive categories when comparing C students to D students. Tables 2 and 3 give those results.

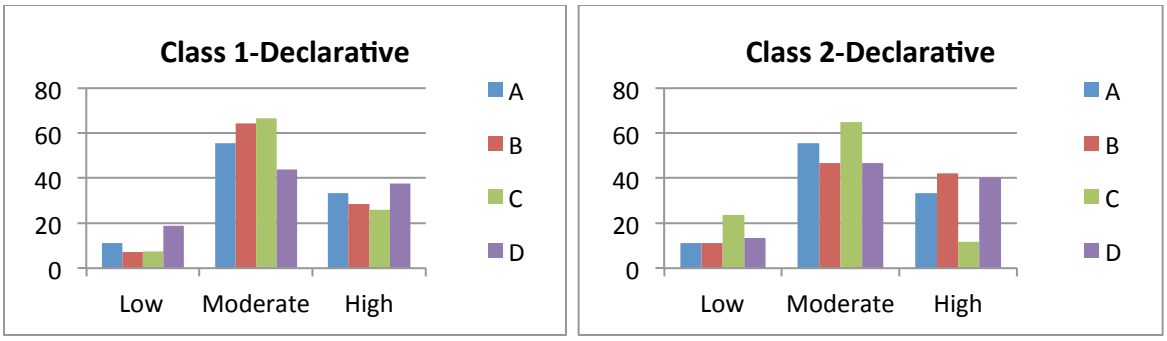


Figure 1. Percentage of students in the low, moderate, and high subintervals for declarative metacognition, by grade in class.

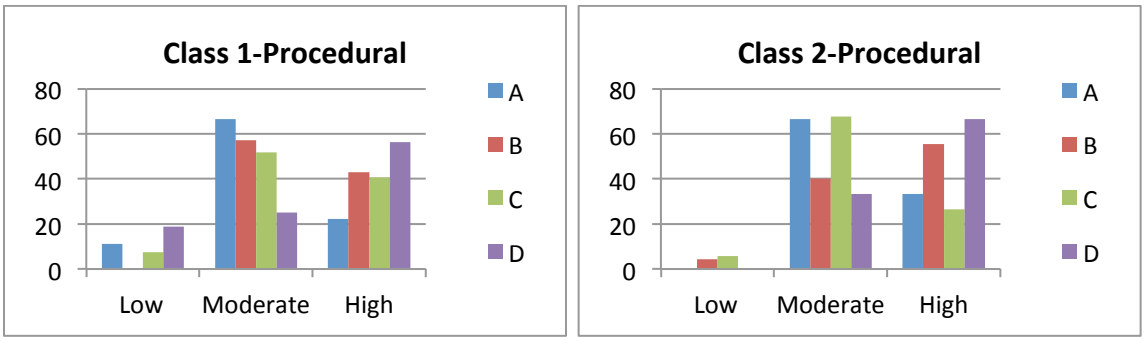


Figure 2. Percentage of students in the low, moderate, and high subintervals for procedural metacognition, by grade in class.

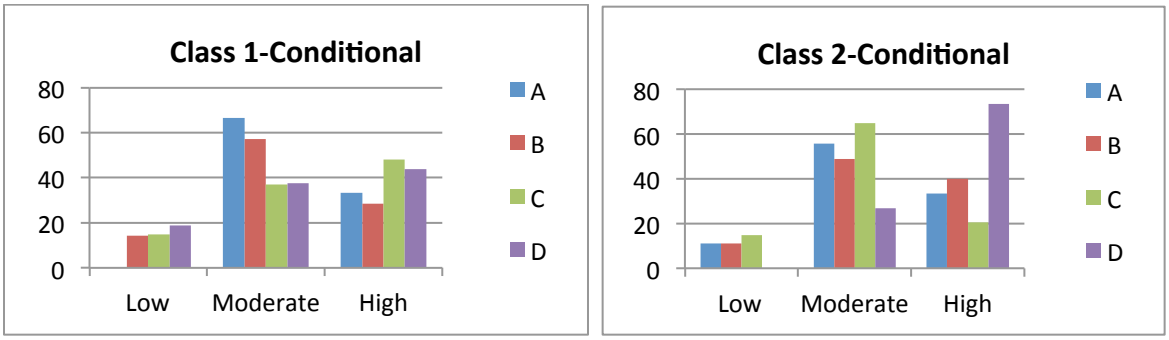


Figure 3. Percentage of students in the low, moderate, and high subintervals for conditional metacognition, by grade in class.

Table 2. T-test and Cohen's D Information for Mean Metacognitive Scores, for B and C students, Class 2.

	Declarative		Conditional	
Grade	B	C	B	C
Mean	63.8	58.0	38.6	35.7
p	0.00155		0.036481	
d	0.74061		0.47439	
Effect Size	0.34726		0.23079	

Table 3. T-test and Cohen's D Information for Mean Metacognitive Scores, for C and D students, Class 2 (34 C students and 15 D students).

	Declarative		Procedural		Conditional	
Grade	C	D	C	D	C	D
Mean	58.0	63.4	29.3	32.3	35.7	41.1
p	0.028988		0.047864		0.007015	
d	-0.72913		-0.66258		-0.90727	
Effect Size	-0.34251		-0.31448		-0.41311	

Mann-Whitney tests run to compare the medians of the metacognition scores for each class between students with differing grades in the course showed no significant differences in Class 1. Class 2 had significant differences in all metacognition categories between C and D students. Table 4 gives those results.

Table 4. Mann-Whitney U Test Information for Median Metacognitive Scores, for C and D students, Class 2 (34 C students and 15 D students).

	Declarative		Procedural		Conditional	
Grade	C	D	C	D	C	D
Median	56	63	30	33	36	43
p	0.006934		0.033408		0.033462	
U	352.5		353.0		389.5	

Because D students had higher metacognitive levels than C students in Class 2, the calculus I and calculus II grades for C and D students were compared to determine whether C students came into differential equations with higher content knowledge than D students, thus indicating that perhaps prior knowledge had a greater effect on their performance than their metacognitive levels. It was found that there were statistically significant differences in the mean scores which C and D students received in these courses. However, D students had a statistically higher mean in calculus I, while C students had a statistically higher mean in calculus II. Table 5 shows the results. In the calculation of the mean grade for C students in

calculus I, three students were not included as they received credit for this course using the results of an AP exam or something similar. The mean grade is based on a 4 point grade scale.

Table 5. T-test and Cohen's D Information for Mean Metacognitive Scores, for C and D students, Class 2, in Calculus I (31 C students and 15 D students) and Calculus II (34 C students and 15 D students).

	Calculus I		Calculus II	
Grade	C	D	C	D
Mean	2.49	2.95	2.52	2.24
p	0.0354		0.0309	
d	-0.59641		0.56497	
Effect Size	-0.28577		0.27184	

Because Class 1 had no significant differences in mean or median metacognitive scores between students with differing grades in the course and Class 2 did, the classes were compared to see if any insights concerning that would arise. When comparing the classes by grade received in the classes and the students' calculus preparation, no significant differences were found. When the classes were compared by grade in the class and their metacognitive scores, the only significant difference occurred between C students and their declarative metacognition ,with Class 2 having the higher metacognitive scores in that area ($p = 0.0147$, $d = 0.659$, Effect size = 0.2669).

V. Discussion.

The metacognitive levels for two classes of differential equations students were studied. The classes were combined to get a sense of the metacognitive levels of students as they enter differential equations. The classes were considered on their own to determine whether the metacognitive scores could predict course performance.

The metacognition scores for all students in the study were broken into three subintervals indicating low, moderate, and high metacognition for the three categories of metacognition being examined. Though the majority of students were in the moderate subinterval for all categories, over 40% of the students were in the high subinterval for procedural metacognition (understanding how to use past strategies) and nearly 40% of the students were in the high category for conditional metacognition (knowing which strategy is most effective).

It would appear that students came into the differential equations classes with very reasonable levels of metacognition, in general.

No significant differences were found in the mean and median metacognitive scores for students in Class 1 with differing grades. However, the statistical analyses show B and C students in Class 2 differed significantly in their mean metacognitive scores in knowing what was important to learn (declarative knowledge), and in knowing what strategy is most effective (conditional knowledge), with B students having higher means.

The C and D students from Class 2 also had significantly different mean and median metacognitive scores in all categories of metacognition, with D students having the higher means and medians. While trying to account for this seeming inconsistency, content knowledge from calculus I and calculus II, based on the grade received in each course, was considered and it was

found that students receiving a D in the differential equations course had significantly higher scores in calculus I and students receiving a C in the differential equations course had significantly higher scores in calculus II.

When considering Class 1 versus Class 2 the C students were significantly different in the declarative metacognition scores. All other comparisons, by grade received in the course with metacognition scores or by grade received in the course with calculus preparation, were not significantly different. With the analyses done, no evidence arises that would indicate why the classes had the differing metacognitive scores.

It is apparent from the findings above that it would be difficult to predict a student's course performance, as measured by the grade in the course, by considering their scores in declarative, procedural, and conditional metacognition. While it seems reasonable that B students would have higher metacognitive levels than C students (as seen in Class 2), the pattern does not hold with other students in Class 2. In fact, the D students (Class 2) had higher metacognitive levels than C students. This is not consistent with the results from other studies that used the MAI instrument with undergraduates in introductory education psychology (Shraw & Dennison, 1994) and mathematics (Md. Yunus & Ali, 2008) which indicated that students with higher metacognitive awareness have higher academic performances.

This analysis indicates that being "metacognitively aware" about one's cognitive knowledge does not necessarily translate into higher academic performance in this academic context.

VI. Future Work.

Pressley and Ghatala's (1990) conclusion that higher metacognitive levels did not necessarily lead to higher academic achievement was borne out in this research. Because students who received a D in the differential equations course did not necessarily enter the course more prepared than the C students, it is obvious that there is much more going on with the students' thinking than was analyzed in this study. The questions raised from this study have led the author to wonder how D students are using the control aspect of metacognition in their learning. Are these students setting low goals for themselves, yet are not studying appropriately to master material even at that level (Thiede & Dunlosky, 1999)? Are they studying the easier topics and not getting to the harder topics (Metcalfe & Kornell, 2004)? Do these students spend little or no time planning their problem solving strategies (Schoenfeld, 1992; Stillman & Galbraith, 1998)? When they have solved problems incorrectly do they examine where things went wrong and learn from that (Schoenfeld, 1985)?

It would be of interest to identify how students in differential equations control their study, and perhaps be able to answer questions like those above. If questions of these types can be answered, at least to some degree, it would then be helpful to build into the differential equations course ways to introduce productive metacognitive tools that would help the students to be more successful.

Acknowledgements

This research was supported by a "Designing for Learning Success" grant from the Office of the Provost, Boise State University, and by the Boise State Teaching Scholars Program. The author

would also like to thank Dr. Margaret Kinzel and Dr. Susan Shadle for their careful reading and comments of this paper and to the reviewers' for their helpful comments.

Appendix

Appendix 1. Metacognition Survey Used.

Instructions: Please put a mark on the number line that corresponds to how true or false you feel the statement is for you in a mathematics course. Zero implies completely false and 100 implies completely true.

1. I try to use strategies that have worked in the past. (PK)

0---------10---------20---------30---------40---------50---------60---------70---------80---------90---------100

2. I understand my intellectual strengths and weaknesses. (DK)

0---------10---------20---------30---------40---------50---------60---------70---------80---------90---------100

3. I know what kind of information is most important to learn. (DK)

0---------10---------20---------30---------40---------50---------60---------70---------80---------90---------100

4. I am good at organizing information. (DK)

0---------10---------20---------30---------40---------50---------60---------70---------80---------90---------100

5. I have a specific purpose for each strategy I use. (PK)

0---------10---------20---------30---------40---------50---------60---------70---------80---------90---------100

6. I learn best when I know something about the topic. (CK)

0---------10---------20---------30---------40---------50---------60---------70---------80---------90---------100

7. I know what the teacher expects me to learn. (DK)

0---------10---------20---------30---------40---------50---------60---------70---------80---------90---------100

8. I am good at remembering information. (DK)

0---------10---------20---------30---------40---------50---------60---------70---------80---------90---------100

9. I use different learning strategies depending on the situation. (CK)

0---------10---------20---------30---------40---------50---------60---------70---------80---------90---------100

10. I have control over how well I learn. (DK)

0---------10---------20---------30---------40---------50---------60---------70---------80---------90---------100

11. I can motivate myself to learn when I need to. (CK)

0---------10---------20---------30---------40---------50---------60---------70---------80---------90---------100

12. I am aware of what strategies I use when I study. (PK)

0---------10---------20---------30---------40---------50---------60---------70---------80---------90---------100

13. I use my intellectual strengths to compensate for my weaknesses. (CK)

0---------10---------20---------30---------40---------50---------60---------70---------80---------90---------100

14. I am a good judge of how well I understand something. (DK)

0---------10---------20---------30---------40---------50---------60---------70---------80---------90---------100

15. I find myself using helpful learning strategies automatically. (PK)

0---------10---------20---------30---------40---------50---------60---------70---------80---------90---------100

16. I know when each strategy I use will be most effective. (CK)

0---------10---------20---------30---------40---------50---------60---------70---------80---------90---------100

17. I learn more when I am interested in the topic. (DK)

0---------10---------20---------30---------40---------50---------60---------70---------80---------90---------100

References

Cross, K.P., & Steadman, M.H. (1996). *Classroom Research: Implementing the Scholarship of Teaching*. San Francisco, CA: Jossey-Bass Publishers.

Veenman, M.V.J. (2006). The role of intellectual and metacognitive skills in math problem solving. In A. Desoete & M. Veenman (Eds.), *Metacognition in Mathematics Education*. New York, NY: Nova Science.

Dunlosky, J., Serra, M., & Baker, J. (2007). Metamemory. In F.T. Durso (Ed.), *Handbook of Applied Cognition: Second Edition.* Chicester: John Wiley & Sons, Ltd.

Flavell, J.H. (1976). Metacognitive aspects of problem solving. In L.B. Resnick (Ed.), *The Nature of Intelligence*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Lester, F.K. (1982). Building bridges between psychological and mathematics education research on problem solving. In F. K. Lester & J. Garofalo (Eds.), *Mathematical Problem Solving: Issues in Research*. Philadelphia, PA: The Franklin Press Institute.

Md. Yunus, A.S., & Ali, W.Z.W. (2008). Metacognition and motivation in mathematical problem solving. *The International Journal of Learning*, *15*(3), 121-131.

Metcalfe, J., & Kornell, N. (2004). A region of proximal learning mode of study time allocation. *Journal of Memory and Language*, *52,* 463-477.

Nelson, T.O., & Narens, L. (1990). Metamemory: A theoretical framework and new findings. In G.H. Bower (Ed.), *The Psychology of Learning and Motivation*. New York: Academic Press.

Nelson, T.O., & Narens, L. (1994). Why investigate metacognition. In J. Metcalfe & A.P. Shimamura (Eds.), *Metacognition: Knowing about Knowing*. Cambridge, MA: MIT Press.

Pressley, M., & Ghatala, E.S. (1990). Self-regulating learning: Monitoring learning from text. *Educational Psychologist*, *25,* 19-33.

Reder, L.M., & Schunn, C.D. (1996). Metacognition does not imply awareness: Strategy choice is governed by implicit learning and memory. In L.M. Reder (Ed.), *Implicit Memory and Metacognition*. Mahwah, NJ: Erlbaum.

Sanchez-Alonso, S., & Vovides, Y. (2007). Integration of metacognitive skills in the design of learning objects. *Computer in Human Behavior, 23,* 2585-2595.

Schoenfeld, A.H. (1985). *Mathematical Problem Solving*. Orlando, FL: Academic Press.

Schoenfeld, A.H. (1992). Learning to think mathematically: Problem solving, metacognition, and sense making in mathematics. In D. A. Grouws (Ed.), *Handbook of Research on Mathematics Teaching and Learning*. New York, NY: Macmillan Publishing.

Schneider, W., & Artelt, C. (2010). Metacognition and mathematics education. *ZDM Mathematics Education*, *42,* 149-161.

Schraw, G., & Dennison, R.S. (1994). Assessing metacognitive awareness. *Contemporary Educational Psychology*, *19,* 460-475.

Siegler, R.S., & Shipley, C. (1995). Variation, selection, and cognitive change. In T. Simon, & G. Halford (Eds.), *Developing Cognitive Competence: New Approaches to Process Modeling*. Hillsdale, NJ: Erlbaum.

Silver, E.A. (1982). Knowledge organization and mathematical problem solving. In F. K. Lester & J. Garofalo (Eds.), *Mathematical Problem Solving: Issues in Research*. Philadelphia, PA: The Franklin Press Institute.

Silver, E.A. (1987). Foundations of cognitive theory and research for mathematics problem-solving instruction. In A. H. Schoenfeld (Ed.), *Cognitive Science and Mathematics Education*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Son, L.K., & Metcalfe, J. (2000). Metacognitive and control strategies in study-time allocation. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *26*(1), 204-221.

Stillman, G.A., & Galbraith, P.L. (1998). Applying mathematics with real world connections: Metacognitive characteristics of secondary students. *Educational Studies in Mathematics*, *36,* 157-195.

Thiede, K.W., & Dunlosky, J. (1999). Toward a general model of self-regulated study: An analysis of selection of items for study and self-paced study time. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *25*(4), 1024-1037.

Journal of the Scholarship of Teaching and Learning, Vol. 13, No. 1, February 2013, pp. 112 – 114.

Book Review

First Contact: Teaching and Learning in Introductory Sociology

Tomomi Naka[1]

Citation: Greenwood, N. A. & Howard, J. R. (2011). First contact: Teaching and learning in introductory sociology. Lanham, MD: Rowman & Littlefield Publishers.

Publisher's Description: The Introduction to Sociology course is usually the first contact that students have with the discipline of sociology. This course can determine whether students take other sociology courses or learn to use sociology in their lives as adults and citizens.

First Contact identifies important issues facing instructors in introducing students to the sociological imagination. Drawing on the literature of teaching and learning in sociology and higher education more broadly, First Contact provides an overview of the scholarship of teaching and learning, best practices, and other essential information to create a successful first course in sociology. It walks the instructor through the course design process-from learning about whom your students are, determining appropriate course goals and learning objectives, and using these ideas to design, execute, and assess your course. It examines the core content of a first course. It discusses how to design a syllabus, select textbooks and readings, as well as how to design and deliver effective lectures, facilitate good discussions, and other course delivery options.

An invaluable resource for anyone teaching the introductory sociology course — including grad students, new professors, and seasoned instructors who seek renewal in their approach to teaching this critical course in the sociology curriculum.

The first day of class creates anxiety for most instructors, but particularly so when the instructors are new to the institution and offering introductory courses. A lot of questions may arise, including: Does the course fit the level of the students? How can the course manage to adequately cover the discipline? What are some tips for how to create engaging and lively classroom? While many colleagues can provide personal, first-hand advice, a concise and clear collection of resources about how to prepare first classes can be valuable. *First Contact: Teaching and Learning in Introductory Sociology* by Nancy A. Greenwood and Jay R. Howard provides helpful tips and suggestions to help prepare for such first encounters with students.

This book consists of ten chapters, each of which is focused on a specific topic, such as how to find out about students, how to select textbooks, and how to help students participate in classes. Each chapter is relatively short, but includes many literatures and studies on the topics which provide concrete data and evidence beyond anecdotal accounts.

Greenwood and Howard provide the overall agenda of this book in Chapter 1. They discuss the state of introductory sociology courses, how teaching can help to deepen scholarship,

[1] Assistant Professor at Asian University for Women, 20/A M.M. Ali Road, Chittagong, Bangladesh 4000, tomomi.naka@auw.edu.bd

and areas in which sociology can contribute to general education. The following four chapters cover topics that instructors can consider before the first day of the course. Getting to know the students in the class is extensively discussed in Chapter 2. Instead of assuming who the students are, Greenwood and Howard emphasize the importance of trying to know who the students actually are in order to adjust expectations, course designs, and ultimately offer more meaningful learning experiences for students. For instance, students from different social backgrounds may have divergent sets of prior knowledge and skills relevant to sociology. These differences can affect how students engage class materials and activities. In Chapter 3, how to set course objectives is discussed in depth. The authors' discussions on the significance of the institutional context are particularly helpful for new instructors, as some implicit or explicit assumptions (such as whether the introductory classes are compulsory gateway courses for the major or largely for students who want to fulfill general education requirements), will affect the topics and skills that the instructors emphasize in the course, and how they design course activities and assessments.

Chapters 4 and 5 are both titled "Tools of the Trade" and provide practical advice for new and experienced instructors. Chapter 4 discusses textbook selection. Diverse textbooks are available, and the checklist on pages 71 and 72 concisely points out things to consider in making a selection. The functions of the syllabus (such as to communicate with students about expectations and to aid students' learning by giving an overview of the course and assignments) are discussed in Chapter 5. Even for experienced instructors, these discussions can be interesting. They help instructors review and reflect on how their ways of structuring courses are situated within broader pedagogical contexts.

Greenwood and Howard discuss tips and things to consider when classes are in session in the next three chapters. They discuss some practical suggestions for presenting engaging lectures (Chapter 6) and leading active class discussions (Chapter 7). Some techniques, such as "think a pair" are quite well-known, but nevertheless useful activities to encourage students to consider the course materials. Chapter 8 provides an interesting discussion about how to maintain friendly but professional relationships with students. The discussion on faculty rights is interesting to read, although it is difficult to imagine what readers could make out of these lists as particular institutional contexts affect how these rights are actually practiced.

The final two chapters (Chapter 9 and 10) discuss how the teaching of introductory classes relates to the instructors' long-term career development. Greenwood and Howard suggest that instructors can use student evaluations and peer teaching reviews to find strengths and areas for improvement in teaching. These discussions can be helpful, particularly for new instructors, in order to strategically consider how to become effective teachers. The final chapter emphasizes the importance of keeping up with pedagogical innovations and discussions. The appendix provides a list of additional general and discipline-specific pedagogical resources, including books and professional groups.

In general, this book provides a nice overview of how to prepare introductory courses. Certainly, it is not written as a quick and handy resource book where readers can find information just by looking at particular sections. However, its well-organized chapter layout and stories that can resonate with many instructors' experiences make this book useful to read or discuss in a group to start conversations about teaching and encourage each other to find ways to improve.

The challenge of this book, however, is how to offer both general and discipline-specific discussions and resources on pedagogy. While some chapters contain rich information on the

teaching of sociology courses, others primarily provide more general discussion of the teaching of introductory courses. Because the book's primary audience is instructors who teach sociology, more specific discussions and examples in the context of sociological courses would have been useful. For instance, more extensive discussions and examples of how to encourage students in preparing and actively participating in sociology introductory classes and class discussions would have been helpful in Chapter 7, especially, for newer instructors who are thinking about how to incorporate general ideas and suggestions into their own teaching of sociology courses.

Overall, this book is easy to read, covers many important topics, and provides additional resources on pedagogy. Graduate students or recent PhD's who are just starting their teaching careers would probably find this book valuable as it provides general but fundamental resources and concrete tips for teaching.

JOSOTL
JOURNAL OF THE SCHOLARSHIP OF TEACHING AND LEARNING

Mission

Founded in 2001, the Journal of the Scholarship of Teaching and Learning (JoSoTL) is a forum for the dissemination of the Scholarship of Teaching and Learning in higher education for the community of teacher-scholars. Our peer reviewed Journal promotes SoTL investigations that are theory-based and supported by evidence. JoSoTL's objective is to publish articles that promote effective practices in teaching and learning and add to the knowledge base.

The themes of the Journal reflect the breadth of interest in the pedagogy forum. The themes of articles include:

1. Data-driven studies: formal research projects with appropriate statistical analysis, formal hypotheses and their testing, etc. These studies are either with a quantitative or qualitative emphasis and authors should indicate the appropriate domain. Acceptable articles establish a research rigor that leads to significant new understanding in pedagogy.

2. Reflective essays: integrative evaluations of other work, essays that challenge current practice and encourage experimentation, novel conclusions or perspectives derived from prior work

3. Reviews: Literature reviews illuminating new relationships and understanding, meta-analysis, analytical and integrated reviews, etc.

4. Case studies: These studies illustrate SOTL and its applications, usually generalizable to a wide and multidisciplinary audience.

5. Comments and communications: Primarily, these are comments based on previously published JoSOTL articles, but can also include book reviews, critiques and evaluations of other published results in new contexts or dimensions

Submissions

Authors are encouraged to submit work in one of the following categories:

- **Traditional Research Reports: data driven studies with either a quantitative or qualitative emphasis**
- **Reflective Essays on SoTL**
- **Reviews of current themes in SoTL research including meta-analysis**
- **Case studies illustrating SoTL and its applications**
- **Comments and Communications on previous Journal articles, or book or software reviews**

All submissions for JoSoTL should be submitted using the online submission process on our website beginning on July 1, 2012.

Please follow this link to get more detailed information on the submission process for the Journal of the Scholarship of Teaching and Learning:
http://josotl.indiana.edu/about/submissions#onlineSubmissions

If you have additional questions or run into problems please contact the journal at josotl@iu.edu.

Editorial Board

All members of the **JoSoTL Editorial Board** are affiliated with FACET, the Faculty Colloquium on Excellence in Teaching, at Indiana University.

Journal of the Scholarship of Teaching and Learning, Vol. 13, No. 1, February 2013, pp. 118 – 120.

Style Sheet for the *Journal of the Scholarship of Teaching and Learning*

John Dewey[1] **and Marie Curie**[2]

Abstract: This paper provides the style sheet for the Journal of the Scholarship of Teaching and Learning. Manuscripts submitted for publication should adhere to these guidelines.

Keywords: radiation, metacognition, identity theory, constructivism, educational philosophy.

I. General Guidelines for the Manuscript.

The final manuscript should be prepared in 12-point, Times New Roman, and single-spaced. Submissions should be double-spaced. All margins should be 1 inch. The text should be fully left- and right-justified. The title (in 16 point bold) and author's name (in 12 pt. bold) should be at the top of the first page. The author's name should be followed by a footnote reference that provides the author's institutional affiliation and address. The abstract should be indented 0.5" left and right from the margins, and should be in italics.

Except the first paragraph in a section subsequent paragraphs should have a 0.5" first line indent. Use only one space after the period of a sentence (word processors automatically adjust for the additional character spacing between sentences). The keywords should be formatted identically to the abstract with one line space between the abstract and the keywords. Authors should use keywords that are helpful in the description of their articles. Common words found in the journal name or their title article are not helpful.

Pages should be unnumbered since they will be entered by the Journal editorial staff. We will also insert a header on the first page of the article, as above.

References should be incorporated in the text as authors name and date of publication (Coffin, 1993), with a reference section at the end of the manuscript (see below for the desired format for the references). Titles of articles should be included in the references in sentence case. Unless instructed otherwise in this Style Sheet, please use APA style formatting. Footnotes should incorporate material that is relevant, but not in the main text.

A. Plagiarism.

It is essential that authors refrain from plagiarism. Plagiarism is a violation of ethics and, in serious cases, will lead to a manuscript being rejected by this journal. No future manuscripts will be accepted from authors who have submitted a plagiarized manuscript.

[1]Department of Educational Philosophy, Indiana University Northwest, 3400 Broadway, Gary, IN 46408, jdewey@iun.edu.
[2]Institut Pasteur, University of Paris, 75015 Paris, France.

B. Unique work.

This journal does not accept previously published work. We also do not accept work that is being considered for publication by another journal. If your manuscript is accepted, you will be required to sign a form stating that your manuscript has not been previously published.

II. Section and Sub-Section Headings.

A. Major Sections.

Major section headings should be flush-left, bold-faced, and Roman numeral numbered. Major section headings should have one-line space before and after. The first paragraph(s) of the article do not require a major heading.

B. Sub-Sections.

Sub-section headings should also be flush-left, in italics, and alphabetically numbered. Sub-section headings should have a one-line space before and after. Sub-sub-sections should appear at the beginning of a paragraph (i.e., with an 0.5" indent, followed immediately by the text of the sub-sub-section), with the heading also in italics.

III. Tables and Figures.

Tables and figures should be inserted in the text where the author believes they best fit. They may be moved around a little to better correspond to the space requirements of the Journal. If necessary, tables and figures may occupy an entire page to ensure readability and may be in either portrait or landscape orientation. Insofar as possible, tables should fit onto a single page. All tables and figures should be germane to the paper. Tables should be labeled as follows with the title at the beginning (in bold), with data entries single-spaced, and numbered. Column labels should be half-line spacing above data.

Table 1. The title of the table.

Unit	Length, inches
Point	1/12
Pica	1/6

Figures should have their captions follow the image. Captions should be single-spaced, with title in bold. Additional text should not be in bold. The Editorial staff may adjust layout to allow optimal use of space.

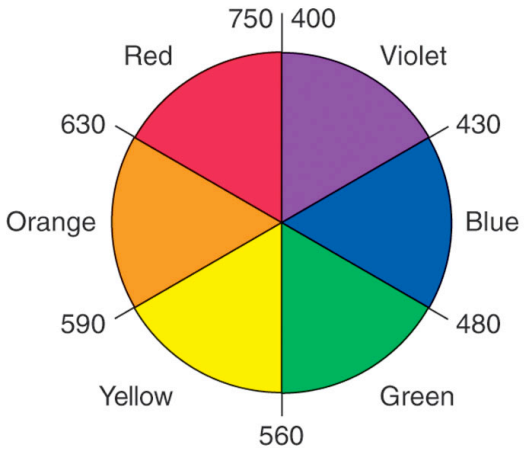


Figure 1. Color wheel with wavelengths indicated in millimicrons. Opposite colors are complementary.

Acknowledgements

Acknowledgements should identify grants or other financial support for this research by agency (source) and number (if appropriate). You may also acknowledge colleagues that have played a significant role in this research.

Appendix

Please insert any appendices after the acknowledgments. They should be labeled as follows:

Appendix 1. The Title of the Appendix.

References

Coffin, D.A. (1993). Using the competitive edge. *Journal of Economic Education*, *24* (1), 62-69.

Garcia, J. and Rodriguez, P. (2002). The determinants of football match attendance revisited: Empirical evidence from the Spanish football league. *Journal of Sports Economics*, *3* (1), 18-38.

Hamilton, S. J. (1995). My name's not Susie: A life transformed by literacy. Portsmouth, NH: Boynton/Cook Publishers.

Pappas, D. (2004). Fixing the fan cost index: A more realistic view. Retrieved April 21, 2004, from http://www.baseballprospectus.com/article.php?articleid=2790.

Contact Info for the Journal

JoSoTL Editorial Office

Indiana University Purdue University Indianapolis
755 W. Michigan St, UL 1180D
Indianapolis, IN 46202

josotl@iupui.edu

ISSN: 1527-9316