JoSoTL is a collaboration between The Mack Center for Inquiry on Teaching and Learning and the Faculty Colloquium on Excellence in Teaching, Indiana University.

Volume 11	Number 1	January 2011

Growing the scholarship of teaching and learning through institutional culture change

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Abstract: The scholarship of teaching and learning represents an important movement within higher education. Through this work, the profession of teaching is able to build upon itself through sustained inquiry and an evidence-based culture. However, for the scholarship of teaching and learning to take hold on a campus, a culture shift often needs to occur, during which time actions by campus leaders, change agents and facilitators lay the groundwork for, and effect, institutional change. This paper uses an organizational theory approach to sketch out a model by which this culture change can occur. It then uses our experiences at a regional comprehensive university in the Midwestern United States to elaborate on culture change models. Our experiences teach valuable lessons about how the scholarship of teaching and learning can become an important element within a campus culture.

Keywords: institutional culture, organizational change, institutional change.

I. Introduction.

On May 17, 2009 at Eastern Michigan University (EMU), representatives from 11 universities came together as members of the *SOTL Collaborative* to discuss how to support the scholarship of teaching and learning (SOTL) on each campus. The meeting took place the day before the first SOTL Academy Conference at EMU, which would attract 150 people. As those present at the first meeting of the Collaborative began discussing common goals for increasing engagement in SOTL on campuses, many began to make comments about the need to change the "culture" of their institutions in order to gain support for, and acceptance of, work in the scholarship of teaching and learning. What we believe that they meant was that in order for SOTL to gain a foothold within an institution, the core technology[3], or mission, of many institutions might need to be expanded from either teaching or "pure" research (what Boyer, 1990 called the "scholarship of discovery"), to include scholarly investigation of teaching and learning, perhaps culminating in publications based on these investigations. Those in the room believed that teaching needs to be valued, recognized, and rewarded more, in order for this to occur.

Changing the dominant core technology of a long-standing, large scale institution is not an easy task; universities typically have a history of being known for a specific type of work and are also large bureaucracies not prone to rapid change (Scott, 1998). In this context of culture shifts, we then began to consider how our efforts have contributed to changing the culture of our own institution to promote SOTL, to consider what else we need to do, and to reflect on the applicability of the lessons we have learned to other institutions.

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[3] In the organizational theory literature, the word 'technology' is used to refer to the work that an organization performs, transforming "inputs into outputs" such as transforming students into professionals (Scott, 1998, p. 21; see also Thompson, 1967).

The idea of culture, which accepts a key set of ideas and perhaps rejects another, conflicting set of ideas, is not something that can be imposed, but must develop over time and with the support of continued social interactions (Morgan, 1997). At many colleges and universities, minimal focus is placed on the competing technology of SOTL. This is largely because the primary mission of the institution focuses either on teaching or on research, rarely both, and seldom focuses on research about teaching and learning. The barriers to accepting and valuing this work are quite different in teaching-focused institutions (which may need to be convinced that giving faculty course releases and financial support for this research can be a good investment) and at research universities (which may need to be convinced that this work represents legitimate scholarship that ought to count, along with disciplinary research, in tenure and promotion decisions). These foci of teaching and disciplinary research may be quite important to colleges and universities, whose identities and place within the marketplace of higher education arise through their identity either as a teaching or research institution.

However, if institutions that emphasize teaching or discipline-based research have much to gain from involvement with the scholarship of teaching and learning movement, then a culture shift becomes vital. The technology of SOTL must gain support within the organization and among its membership in order to bring about a change in the culture of the institution. At both teaching and research institutions, changing the underlying institutional culture is important for legitimizing this work. "Legitimacy refers to the degree of cultural support for an organization" (Scott, 2001, p. 59); there can be no movement toward SOTL without increasing its legitimacy and value on campus.

II. Why the scholarship of teaching and learning?

Before we can reasonably advocate for change in institutional culture to promote the scholarship of teaching and learning, we should address the value of this work in general. The scholarship of teaching and learning starts from the idea that teaching is serious, *scholarly* work, rather than work that academics do separate from their scholarship (Boyer, 1990; Glassick Huber and Maeroff, 1997).[4] Shulman (1993, 1998) suggests that academics do not talk enough about teaching, or build upon our knowledge about good teaching to construct a scholarship around it. According to Shulman (1998, p. 6):

> A scholarship of teaching will entail a public account of some or all of the full act
> of teaching – vision, design, enactment, outcomes and analysis – in a manner
> susceptible to critical review by the teacher's professional peers and amenable to
> productive employment in future work by members of that same community.

In this vision, scholars of teaching and learning can build on our knowledge of good practice, in an evidence-based manner, and generate a body of scholarly work (through the peer review process) similar to what we do in our disciplinary research.

Clearly, not all faculty must engage in the scholarship of teaching and learning. Faculty do not have the time to pursue all areas of scholarly work – some might choose (quite reasonably) to focus on work in the scholarships of discovery, integration and application

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[4] As one telling example, our university's tenure and promotion process requires candidates to put forward evidence of their work in service, teaching, and scholarship. Teaching, as conceived here (and at many other universities), is placed in a completely different category than scholarship; this division of an academic's portfolio is certainly the norm in higher education.

(Boyer, 1990).[5] However, at the institutional level, and for the academy in general, a flourishing scholarship of teaching and learning becomes critical. As Hutchings and Shulman (1998) argue:

> [T]he scholarship of teaching *is* a condition – as yet a mostly absent condition – for excellent teaching. It is the mechanism through which the profession of teaching itself advances, through which teaching can be something other than a seat-of-the-pants operation, with each of us out there making it up as we go. As such, the scholarship of teaching has the potential to serve *all* teachers – and students. (italics in original)

To this, we would add that the scholarship of teaching and learning has a significant home in the disciplines – as Huber and Morreale (2002) remind us, while good teaching has elements in common across disparate fields, teaching and learning is also significantly different across the disciplines (see also Gurung, Chick and Haynie, 2008). Thus, SOTL work has the potential not only to advance teaching and learning generally, but also to focus these advancements within one's disciplinary home; engaging in SOTL does not mean turning one's back on disciplinary work. Ideally, work in SOTL enhances a scholar's contribution to his or her discipline, albeit in a non-traditional fashion.

III. Research-based principles of change: A theoretical framework.

Assuming the reader sees value in SOTL, the next step becomes making our institutions more hospitable homes for this work, both to support those engaging in this work and to enable the work to enhance the core mission of the institution. Kezar (2001) notes that organizational culture is one of the major perspectives or theories that can be used to examine change in institutions. Organizational culture is "what a group learns over a period of time as that group solves its problems of survival in an external environment and its problems of internal integration" (Schein, 1990). Shared perceptions, thoughts, and beliefs must first shift for individuals members in order to facilitate a transformation of the larger culture to incorporate new perspectives. People may be reticent to accept new views as an organizational culture experiences stability and its members experience reduced anxiety as patterns of responding and thinking become more automatic (Schein, 1990). This equates to a fear of change, in which individuals and institutions prefer to maintain consistency rather than attempt to deal with the uncertain effects of new ideas.

Change is slow. This is a result of the long standing histories in institutions of higher education and of the sense of comfort that is often associated with the accepted culture of the organization (Kezar, 2001). One of the key mechanisms of change in the organizational culture model is the leader (Morgan, 1997; Schein, 1990). The leader within an organization has the opportunity to model a set of beliefs and behaviors that the group members identify with and want to emulate. Leaders can encourage cultural change when they demonstrate that a new belief is valued within the organization by members of the institution, such as by dedicating resources

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[5] We would, however, argue that all faculty members have a professional obligation to practice good teaching (defined by McKinney (2004) as "promot[ing] student learning and other desired student outcomes" (p. 8) and also to engage in scholarly teaching, in which they "reflect on their teaching, use classroom assessment techniques, engage in systematic course design, update their courses, discuss teaching issues with colleagues, try new teaching techniques, and read and apply the literature on teaching and learning in their discipline." (p. 8) Whether they take the next step toward the scholarship of learning is, and ought to be, their own decision about how to structure their time and professional goals.

to SOTL. They can also encourage cultural change by making official statements of endorsement to the organization, such as by including SOTL in a strategic plan. The challenge for using leadership to successfully change the culture of a university is that if the members do not find the leader credible or close enough to their own thoughts, they may turn away from him or her as a leader, or separate into a subculture (Schein, 1990).

In addition to the leader, we would suggest two other categories of actors play a critical role. The first is the *change agent*, the individual (or individuals) on the ground who most strongly advocate for change. The change agent often has the strongest desire to see this change occur, as well as perhaps the most to gain from seeing it happen (and the most at risk in case this change does not happen, or in case it happens with deleterious consequences). The change agent may have the specific substantive expertise that the leader does not possess, but may lack the institutional clout or role to effect this change. Thus, in addition to the change agent, the process of bringing about institutional change may also require a *facilitator*, someone in the position to be the bridge between the change agents (with the passion and on-the-ground expertise) and the leader (with the institutional clout to make things happen). Ideally, the facilitator possesses enough of each to enable culture change to occur. As noted by Scott (2001), roles played by different actors within the context of the organization can be critical to bringing about action, or cultural change. The roles, and the positions of the individuals filling them, are shown below in Table 1 for easy reference; the actions of specific individuals will be discussed later in the paper.

Table 1. Roles involved in bringing about culture change.

Role	Importance	Person Playing Role
Leader	Possesses institutional power and influence to help change institutional culture	Associate Provost (AVP)
Change Agent	Possesses passion and on-the-ground substantive knowledge to help make change occur	Faculty Members (authors of this article)
Facilitator	Possesses combination of institutional clout and on-the-ground knowledge to help smooth the process of change	Director of Faculty Development Center

Cultural change is also slow because culture "perpetuates and reproduces itself" through socialization within the organization (Schein, 1990, p. 115). As new members join an organization, they seldom have a full understanding of the cultural assumptions that are held by long-standing members of the culture. Therefore, as we accept new members into our organizations, such as hiring new faculty, it is up to each of the senior members to indoctrinate the new person about what the members of the culture value. This can be done by the change agents, facilitators, and the leaders, each acting in their appropriate institutional roles. This process takes time. As new beliefs are incorporated into the culture, it may take a number of years before enough new members are brought in and identify with the newer aspects of the culture, such as the value of SOTL. In addition, longer-standing members of the community may continue to challenge changes to the accepted cultural norms. While there will always be subcultures (Schein, 1990), the numbers of those willing to adopt the new ideas into their culture will likely need to outweigh the numbers who are unwilling to accommodate the new ideas

before true cultural shifts can take place. Challenges and conflicts over beliefs are common in periods of cultural change (Scott, 2001).

Given the size and history of most post-secondary institutions, gaining cultural support for a new and competing technology such as SOTL represents a significant challenge. To bring about change, understandings of a goal or a technology must be altered at all levels, from broad groups (such as administrators) down to the individual faculty members (Kezar, 2001). Kezar outlined a "complex set of research-based principles" (p. 5) that is the basis of change in higher education. Using a number of these principles, we will examine, as a case study, our efforts to begin changing the culture of Eastern Michigan University such that SOTL may become an accepted technology within the institution. The following description of the steps we took to move our institution's culture toward one of accepting SOTL as a competing technology are matched with a number of the principles of change (Kezar, 2001). Our reflections on our actions, and the resulting impact that each had on EMU's culture, often address more than one of the principles of change at each individual step.

IV. A case study of organizational change: SOTL at EMU.

Having sketched out a vision for how institutional change can occur, our next task is to use this model to shed light upon our case. Below, we report on the process by which the scholarship of teaching and learning has become a more significant part of the institutional culture at Eastern Michigan University. Our discussion of the case study is largely chronological, and makes explicit reference to the elements of change identified by Kezar and other scholars of institutional change; the key elements of the case study, and the links they make to the theoretical model, are detailed below in Table 2, along with a timeline of when these steps first occurred.[6] We note in the final section of this case study that change has not occurred to the full extent to which we would hope, but that our progress to date has revealed more than modicum of success, and given us much to build on.

A. Promote organizational self-discovery.

The *formal* work of the scholarship of teaching and learning at Eastern Michigan University began with Bernstein's selection as a Carnegie Scholar in the Carnegie Academy for the Scholarship of Teaching and Learning (CASTL) Program for the 2005-06 academic year.[7] As a condition of his being accepted for the program, Eastern Michigan University needed to agree to provide institutional support for SOTL. As part of this support, the director of EMU's Faculty Development Center and agreed that Bernstein would lead a faculty development seminar on the scholarship of teaching and learning during the 2006-07 academic year (as of this writing, the seminar continued for four years with four classes of fellows under his direction; Ginsberg is

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[6] In the timeline, we concentrate on when these actions were initiated, in connection with the first meeting of the SOTL Collaborative and the first iteration of the SOTL Academy Conference. The activities we describe are, of course, ongoing activities. In describing the process by which we brought about this culture shift, however, we focus most on the early stages of these activities, as they were institutionalized.

[7] This is not to suggest that there was no work being done in this area before that point. Some faculty (like Ginsberg) had been doing and publishing work in the scholarship of teaching and learning before that – Ginsberg had been a regular participant in SOTL conferences by that point. And others (including Bernstein) had been doing work that fits within the framework of the scholarship of teaching and learning even if he had not been specifically framing his work around the SOTL movement.

currently running a modified version of the seminar). Ten faculty members joined the seminar the first year, representing all five of the university's different colleges.

Table 2. Principles of Change applied to growth of SOTL at Eastern Michigan University.

Principles of Change (drawn from Kezar, 2001)	Example of Actions Taken	Timeline
Promote Organizational Self-Discovery	-EMU agrees to provide institutional support for SOTL per Carnegie's CASTL program	2005-06 – Bernstein is Carnegie Scholar 2006-07 – First SOTL Seminar held (ongoing)
Articulate Core Characteristics Lay Groundwork for Change	-SOTL symposium establishes the breadth and depth of SOTL for wider campus audience	Winter 2008 – SOTL Symposium begins (ongoing) April 2006 – Randy Bass lecture December 2008 – Dan Bernstein lecture
Realize That Change in Higher Education Is Often Political	-Obtain support and endorsement of AVP of research	Winter 2008 – Gain Support from AVP (Leader)
Connect the Change Process to Individual and Institutional Identity	-Garner support from campus facilitators/boundary spanners (college Deans and FDC Director)	Winter 2008 – Gain Support from Faculty Development Director (Facilitator) Fall 2008 – Gain Support from College Deans
Balancing External Forces and the Internal Environment	-Formation of SOTL Collaborative	Fall 2008 – Contact institutions to offer membership in Collaborative May 2009 – First Collaborative meeting

As part of the seminar, faculty members spent the fall term designing an inquiry into teaching and learning in one of their winter term classes. They spend the winter term implementing the project, collecting data on student learning, and analyzing the data they had collected. Throughout the year, the group came together as a cohesive unit, relishing their time together to talk about issues of student learning that were often marginalized in other segments of the university. These faculty members (and the ones who participated in the seminar in subsequent years) were an interdisciplinary mix of individuals who together became strong supporters of the work, and advocates for it within their departments and colleges.

Each year of the seminar, participants wrote chapters in a book published by the Faculty Development Center. While the chapters were occasionally uneven and the book lacked the cachet that would be associated with publication by an external press, the essays were generally of high quality. The book itself became an artifact, an object people could hold in their hands and point to as representative of what could be done in the scholarship of teaching and learning at EMU. With the publication of each volume, this work was made visible to others (in part through a well-attended Book Launch in which the editor and authors each speak briefly about their chapters). As participants in the seminar came up for tenure and promotion (close to half were untenured when they participated in the seminar), their presentation of these chapters as evidence of scholarly work began to push the envelope and slowly establish the case that scholarly

inquiries into student learning represents true scholarship that should be counted as such by the university. An additional advantage of working with many untenured faculty is that once they became tenured, they would likely remain at the university for a long time and continue to be strong supporters of the scholarship of teaching and learning at EMU during their careers at the school.

The university initially agreed to support Bernstein in his efforts as a Carnegie scholar by providing institutional support for SOTL upon completion of his time as a Carnegie Scholar. However, it is unlikely that they had any idea as to what shape that support would take, nor how it would impact the campus. The SOTL Seminar, as implemented by Bernstein and supported by the Faculty Development Center's director, began the process of the organization self-discovery (Kezar, 2001). It was not necessarily their intention to do so, but it was an eventual outcome.

B.   Articulate core characteristics.

As the seminar was starting to take on a life of its own, we began to explore ways to enhance the visibility of this work (and to provide more opportunities for discussion of teaching and learning). One vehicle we have used for this has been the SOTL Symposium, a regular seminar series in the scholarship of teaching and learning. This began in the winter 2008 semester, in the middle of the second year of the Faculty Development Seminar. We have held approximately four talks a semester, with half coming from EMU faculty (usually alumni of the Faculty Development Seminar) and the remainder coming from faculty at nearby campuses. These talks showcase some of the best work coming out of our campus, and also provide an opportunity for EMU faculty to learn from experts in this work outside our campus. We generally average around a dozen people per talk, with participants representing a diverse range of faculty, lecturers, and often students.

A second component of our articulating the core characteristics of SOTL has been the outside speakers we have brought to campus (apart from the SOTL Symposium). In the last four years, we have hosted Randy Bass to provide a workshop on the scholarship of teaching and learning (as well as a keynote address at a Teaching and Learning Fair) in April 2006 and Dan Bernstein to do a workshop on course portfolios (as well as a SOTL Symposium talk on the Peer Review of Teaching Project) in December 2008. Both workshops drew large and appreciative audiences.

The process of expanding SOTL from the initial small group of faculty who participated in the SOTL Seminar began establishing for a wider campus audience just what the characteristics of SOTL included. These symposium presentations, which were open to the university community, allowed participants to see variety in the work of SOTL scholars and begin identifying key features that articulate the core characteristics of SOTL, such as the emphasis on student learning and value being placed on reflection in the teaching process (Kezar, 2001). Bringing in acknowledged leaders in the field provided opportunities for the campus community to learn about some impressive work and to expand their understanding of the shared, core characteristics associated with SOTL. Inclusion of these speakers in campus activities not only clarified the characteristics of SOTL, but they allowed people to see the possibilities for which we could reach here on campus. The exposure to a variety of SOTL work from those within the campus and across the country allowed participants to increase their understanding of SOTL characteristics and provided germination of the SOTL culture in new members.

C. Realize that change in higher education is often political.

In late 2007, the two of us began to discuss the idea hosting a regional SOTL conference on our campus. One of our primary goals was to increase the visibility and recognition of SOTL work happening on our campus. In addition to the work that we were doing, we knew there were many colleagues who were making strong contributions to the SOTL literature as well. A conference was an opportunity to highlight this work, possibly bringing notoriety to our campus, as well as bringing together colleagues from nearby campuses. Through a series of networks that each of us had in place at neighboring institutions, we were aware of what we believed to be a fair interest in SOTL in the region. We looked around at schools playing a leadership role in the scholarship of teaching and learning movement and saw no reason we could not do the same.

The next step, as we saw it, was to determine if the higher levels of the university would endorse our efforts to form and host this conference. We immediately identified one of the university's two Associate Provosts as the likely *leader* for our efforts. Bernstein had been involved in a small reading group on SOTL with this individual, when he had been the administrator on a team of four faculty and one administrator that composed and submitted EMU's application to be part of the Carnegie Foundation's Campus Leadership Program in the Scholarship of Teaching and Learning. Bernstein had been pleased to learn that the Associate Provost had previously done some research on student learning in his classes and that he continued to have an interest in this kind of work. As Associate Provost, he controlled some resources that could aid a conference, and also had institutional clout that would be essential in pushing this work along. His support for the conference would be necessary for us to move forward.

The Associate Provost was immediately supportive of the idea, albeit with an administrator's eye for the big picture of the institutional mission and the institutions' place among the greater higher education community. We had presented him with plan for generating interest in the conference, along with the best evidence we could muster that we could do so. We also shared with him a budget showing various scenarios for how the conference could break even, based upon likely attendance, fixed and discretionary expenses (we aimed to be frugal, but also not to make the conference appear cheap), and registration fees. Based on our preparation and previous reputation for getting things done, the Associate Provost offered the go-ahead to the conference. We began publicizing it and immediately ramped up our planning.

The support he offered at the beginning of the process continued throughout, up to and including the days of the conference (when he participated in a panel discussion at the conference and took time out of his busy schedule to attend many sessions and both keynote addresses). We believe we helped maintain this support through periodic updates as the conference planning was moving along. As he saw what we were doing, and how careful and conservative we were being in the planning, he began to commit more resources in support of our efforts. As noted below, he also began to use the power of his office more and more to increase our reach.

By providing support from a leadership role, this administrator modeled his belief that SOTL would be of value to the institution and that support of it could be valuable to the technology of "Education First," the university's marketing tag line. Additionally, he demonstrated an awareness of the image of the institution within the greater community, another principle of change (Kezar, 2001, p. 6). As leaders can effectively do, he provided the movement

with credibility by making an official endorsement of it and by providing us with key financial resources in the form of seed money (Morgan, 1997; Schein, 1990). The political nature of the leadership support was invaluable to the forward momentum of SOTL on campus (Kezar, 2001). A leader's support of this nature signaled to other university leaders above and below him that SOTL was of value to the institution. It also signaled to the faculty community that SOTL would be accepted, to some degree, in our scholarly agendas.

D. Connect the change process to individual and institutional identity.

In an attempt to both build attendance at the conference, and to build campus-wide support for the scholarship of teaching and learning, we next began to broaden our conversations on campus in support of the conference. A first conversation was with the director of our institution's Faculty Development Center. Long supportive of this work, the director was eager to help support the conference. This involved much expert guidance, many intangible contributions and small kindnesses, and a generous contribution of funds toward the registration fee for every EMU presenter at the conference. Besides making it easier for EMU people to attend the conference, her support was a powerful signal that the institution was supportive of the conference.

A second strategy that we pursued for reaching out was to approach the Deans of EMU's different colleges. We discussed with them possible panels that they might like to see at the conference (a few of which ended up appearing on the program). We also solicited their support for the conference through encouraging their faculty to attend and signaling to them that their college Dean considered this to be valuable work. One conversation, with the Dean of the College of Technology, was particularly valuable as we learned of his long-standing commitment to the work of the Faculty Development Center, that we were previously unaware of. He offered to pay the remainder of the registration fee for any faculty member from his college who attended, and agreed to be part of a panel on SOTL and Academic Careers at the conference

By reaching out to individuals who were able to facilitate change, such as the director of the Faculty Development Center and the college Deans, we extended the individual connections we were making beyond faculty and one administrative leader. . The financial support from a Dean was indicative to members of the culture under his leadership that the institution was embracing this technology as part of its identity. The Director of the Faculty Development Center's commitment of funds also signaled to a broader section of the university community, above and below her, that this work was worthy of integration into our institutional identity. These key individuals also had the capability of helping us connect the change to the institutional identity (Kezar, 2001) as their public support of the conference signaled to the faculty that the institution valued SOTL work.

E. Balancing external forces and the internal environment.

As we were working toward planning a conference, we began to consider a variety of ways to involve other institutions in the conference. One motivation for doing this was partially the desire to increase attendance at the conference, and hence increase the revenue we brought in. We were both familiar with conference models that offered group discounts to schools that brought a certain number of people to the conference. We liked this idea, but wanted to do more

with it. We aimed to build something larger that might contribute to building capacity for SOTL within the surrounding community.

The idea we settled on was to build, from the grassroots, a community of schools that would come together to support the scholarship of teaching and learning. We called this group the SOTL Collaborative. Functionally, we asked each participating school to pledge $500 in support of the Collaborative. In exchange, anybody from their institution attending the conference would receive a $25 discount on the conference registration. We also planned a meeting of each school's Collaborative representative for the night before the conference, in order to talk about these ideas some more.

The Collaborative attracted thirteen schools, from a wide range of institution types (ranging from research-intensive schools to regional comprehensives to liberal arts colleges). In forming the Collaborative, we sent a signal within our own institution that the work we were doing in advancing SOTL had receptive audiences outside our school. We also positioned Eastern Michigan University as a leader in this kind of work in our region; this leadership role was attractive to the administration of our school.

Bringing together all of these institutions provided useful ideas for advancing this work; it also enabled us to form valuable partners that we continue to call on. As we proceed, we have discovered that finding a place for the SOTL Collaborative outside its role as a vehicle for supporting the conference presents a challenge. After a few attempts, we are currently working with member schools to create a workshop for people new to SOTL that will be conducted before the 2011 conference, and can be transported to member schools at a reduced rate. We are also exploring other ways to pool resources and link the schools together. The Collaborative remains an excited, albeit uncertain, work in progress

Universities, like other large institutions, do not exist in a vacuum, but are situated in a context of peer institutions, community constituents, and internal members (Morgan, 1997). Understanding of the intersection between the demands of the environment, including the balance between those that are internal and those that are external is a key component to bringing about change. The external environment can energize the organization through its provision of resources, including funds and intangible support, such as encouragement and shows of support. By enticing those constituents in the external community to invest in our process, we brought about a balance between the leaders' desire to promote our institution's contribution to SOTL and our collaborating institutions desire for their own success. The greater value and investment placed on our efforts by colleagues from the external environment, the more likely our own leaders were to see that the culture shift move the image of our institution forward as a leader in SOTL (Morgan, 1997; Kezar, 2001).

V. Conclusion: Looking forward.

At this time, we cannot declare that the culture of our institution has completely changed to the point that SOTL is embraced by all members of the institution. However, progress is definitely visible in a number of key areas. The leadership of the university continues to support the SOTL Academy conference, now in its third year. The active support has moved further up amongst the leaders as the Provost has not only joined us to welcome conference attendees, he has suggested to other leaders on campus that information regarding SOTL is valuable to student academic success. As a result, our opportunities to share information about SOTL and our efforts on campus reach new audiences and legitimacy increases (Scott, 2001). Recently the Provost

requested that we make a presentation about the SOTL work on campus in an Academic Student Success Summit. This request signals to us that the higher levels of administration are recognizing the value of SOTL within the culture of our institution.

Yet, our challenges also continue. As change agents, we now are confronting the fact that both our leader (the Associate Provost) and facilitator (Faculty Development Director) have left the university in the past year. Once new people are inserted into those positions, we will need to build support among these people as we seek to continue the process of cultivating institutional change. As noted earlier, new members joining an organization may bring their own set of values and it will be our responsibility to share our vision of the role of SOTL within the culture of the institution in order to enable ongoing support from the individuals in these roles.

We continue to reflect on our process and the actions that we can take to further support SOTL on our campus and within our community. In an effort to continue leveraging the external forces to help change the culture (Kezar, 2001), we have begun to incorporate participation from key members of the SOTL Collaborative in growing both the conference and the Collaborative itself. In this way, our internal efforts are reinforced by those outside of our environment, and are at the same time strengthened by their participation and support. At the time of this writing, the results remain to be seen, however, we are optimistic that the increased functions of external constituents will serve to support the acceptance of SOTL on our campus and on theirs.

The process of changing the culture of a large institution, such as a long-standing university, is a slow one (Scott, 1998). For those would be agents of change, the process can be frustrating and seemingly without success, particularly in the early stages. However, Kezar's (2001, p 5-6) research-based principles of change suggest that there are indeed mechanisms that can be successful in bringing about the type of change that is required in order to move a teaching or research oriented institution forward to embracing a new and possibly competing core technology such as SOTL.

While our work here does not represent a fully-fleshed image of a model of change from a cultural theory perspective (Kezar, 2001; Morgan, 1997; Scott, 1998) it does hold the potential to enlighten and encourage others who would like to see their higher education institutions begin to embrace SOTL. For those who are, as we were, lamenting the need for the need for cultural shift within their institution, our case study connected can be a model of just one possibility. It is important to keep in mind that no one action is going to have a far-reaching effect. Rather it is the sum of parts, implemented over a long period of time that will hopefully add up to equal more than just the sum of individual steps taken. The opportunity to reflect back on the steps taken and their resulting movement forward in changing a culture is a valuable one.

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Attitudes toward academic service learning semesters:
A comparison of business students with non-business students

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Abstract: This study examines the attitudes of university students toward academic service semesters and their interest in participating in them. The findings suggest that students' attitudes toward an urban-based academic service learning program may be multidimensional. Four of the six factors identified in the study as being associated with students' attitudes toward the academic service learning program were found to be related to their level of interest in participating in the program. Interestingly, no evidence was observed which would suggest that business students possess lower attitudes toward academic service learning semesters than non-business majors or that they would be less interested in participating in them.

I. Introduction.

The missions of most colleges and universities include a significant societal component – a component which has been ignored by many institutions until recently (Boyer, 1996; Bringle, Games and Malloy, 1999; Reardon, 1998). In response to a call by Boyer (1994) for college and universities to return to their historic commitment to serve their communities and to serve humanity as a whole, increasing attention is being placed by many schools on their local and regional communities and on the global community. The increasing attention being placed on the societal component of institutional missions is prompting a number of societal-oriented initiatives, including a call to increase the societal involvement of students. A pedagogy consistent with the societal missions of colleges and universities is service learning (Easterling and Rudell, 1997). As a consequence, service learning as a pedagogy has been receiving increasing interest at many colleges and universities (Burke, 2007). In addition to increasing their societal involvement, the benefits of service learning to colleges and universities are several, including higher student retention (Bringle, Hatcher and Muthiah, 2010) and higher donations by students after graduation (Astin and Sax, 1998).

Although service learning is key to increasing a college or university's societal involvement, service learning is primarily an educational undertaking (Gelmon et al., 2001). As such, its role in furthering students' education is of primary importance. Research appears to indicate that service learning has the potential to significantly add to students' education (Deeley, 2010). Service learning, however, is not a single homogeneous activity. Instead, service learning is employed in a great variety of differing fashions depending on the academic objectives of the experience (Eyler and Gikes, 1999; Hefferman, 2001). Many of the service learning experiences consist of either entire courses centered around service learning or courses which include a service learning component along with a more conventional component (Hefferman, 2001). An

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additional type of service learning experience is one involving a semester-long immersion experience (Bargo, 2005). In these immersion experiences, students are involved in service learning full-time for an entire semester and receive 12-15 hours of course credit.

Academic service learning semesters involve students living in a disadvantaged environment for a semester, either internationally or in a domestic urban environment. One of the goals of such an experience is for students to build a holistic appreciation of an alternative environment – an appreciation which often is impossible when students only engage with individuals and/or organizations in a service area a few times a week (which is typical in other types of service learning experiences). Academic service learning semesters are presently being offered by a number of colleges and universities.

Given the obvious dominant service perspective of academic service learning semesters, it is logical to expect that they may be more appealing to students who are majoring in non-business areas than to students majoring in business. Business students are commonly viewed to be more oriented toward preparing for income-generating employment and as being less disposed to service-oriented activities (Wilson 2008). McNeel (1994) and Bécares and Turner (2004) support this relationship, observing that business students are less empathetic to the needs of others than students pursuing majors in other areas. Similarly, Myyry and Helkama (2001) note that business students are more work and achievement-oriented and less empathetic than are students pursuing other majors. The less empathic nature of business students can be expected to negatively affect their tendency to help others (often a major component of service learning activities). Eisenberg and Fabes (1990), for instance, suggest a theoretical link between empathy and helping behavior, a contention which has been supported by empirical research (e.g., Barr and Higgins-D'Alessandro, 2007; Bekkers, 2005). Indeed, May and Alligood (2000) suggest that empathy is necessary for the manifestation of helping behavior. Similarly, Davis et al. (1999) suggest that highly empathetic individuals are more likely to enter or pursue situations which may produce feelings of sympathy and compassion, such as what could be encountered in service learning. Consequently, business students can be expected to be less motivated to pursue experiences which may appear to them as involving helping others while not directly aiding them in achieving their short-term personal employment objectives. If this is true, business students can be expected to hold lower opinions of service learning semesters and be less likely to desire to participate in one.

Although the value of service learning in business education is well known (e.g., Godfrey, Illes and Berry, 2005; Metcalf, 2010), the adoption of service learning in business education has lagged that of other areas (Govekar and Rishi, 2007). Indeed, the incorporation of service learning into business education is a relatively recent phenomenon (Gujarathi and McQuade, 2002). Manring (2004) notes that service learning has gained attention in business education only during the previous seven years (at the time of their article) and Zlotkowski (1996) noted minimal use of service learning as a pedagogy in business courses in 1996. Service learning in business, therefore, does not have the long history which it does in other disciplines. Hence, the lack of a history of business students participating in service learning may lead business students to be less familiar with possible service learning opportunities.

The purpose of this paper is to begin to examine this issue involving an academic service learning semester set in a disadvantaged urban setting. This study will examine whether students pursuing business degrees hold less positive attitudes toward academic serving learning semesters and whether they possess less interest in pursuing an academic service learning semester experience than students who are pursing non-business majors. First, service learning

will be discussed. Second, service learning in business education is explored. Third, academic service learning semesters are defined. Finally, hypotheses are developed, tested, and results are reported and discussed.

II. Service learning.

The traditional objective of education has been the successful conveyance of information to students. Within this perspective, students are viewed to be open vessels to be filled with knowledge and information (Freire, 1998). Education is viewed as a transfer of information from wise, experienced individuals to students waiting to be filled with wisdom.

The success of this approach in educating students has been questioned (e.g., Bringle and Hatcher, 2003; Munter, 2002). Although the traditional approach to education seems logical, several view the traditional approach to education as leading to serious shortcomings (e.g., Guyton, 2000; Kohn, 1999). Specifically, the traditional approach has been accused of turning students into passive underachievers – a problem which Bransford and Nye (1989) call an "inert knowledge problem." Consequently, students are thought to gain a significant amount of knowledge via a traditional approach to education, but are thought to be unable to apply the knowledge to real-life problems and situations or to make the transition from memory to action. Faced with this reality, many in higher education have called for changes in classroom pedagogy (e.g., Jacoby, 1996).

One alternative pedagogy that has been suggested as a means to combat the problems perceived in traditional pedagogy is service learning. One of the keys to service learning as an alternate pedagogy is its ability to get students involved in their education (Munter, 2002). Instead of being viewed merely as vessels to fill with knowledge, service learning forces students to become involved in the application of this knowledge. Service learning is not a new form of pedagogy – service learning has a long history. As discussed earlier, growth in the use of service learning, however, is a relatively recent phenomenon. In recognition of the advantages of service learning as a pedagogy, its use has grown at an astounding rate during the past two decades (Bringle, Phillips and Hudson, 2004).

Although service learning has been widely discussed, confusion exists over its substance. Service learning is very different than just forced volunteerism or merely an effort of getting students involved in projects outside of the classroom. Instead, service learning is an "educational methodology which combines community service with explicit academic learning objectives, preparation for community service, and deliberate reflection. Students participating in service-learning provide direct and indirect community service as part of their academic coursework, learn about and reflect upon the community context in which service is provided, and develop an understanding of the connection between the service and their academic work" (Gelmon et al., 2001, p. v). More concisely, service learning is "a pedagogical process whereby students participate in course-relevant community service to enhance their learning experience" (Petkus, 2000, p. 64). Indeed, service learning is a part of a credit-bearing course (Bringle and Hatcher, 1996; Johnson, 2000). The focus of service learning, therefore, is on student education. Although service learning directly connects traditional curriculum with concern for one's community (Deeley, 2010; Kaye, 2004) and builds students' skills to engage their community, the primary goal of service learning is to improve students' learning processes.

Some trace the origins of service learning to the writings of John Dewey (1941) who advocated experiential and citizenship-based education (Burke, 2007; Fertman, 1994). Dewey

identified a six-step process of inquiry: (1) encountering a problem, (2) identifying a question to be resolved, (3) gathering information, (4) developing hypotheses, (5) testing hypotheses, and (6) drawing conclusions (1938). Building upon Dewey, Kolb (1984) reconceptualized the experiential learning process as a four-stage experiential learning cycle (Kolb's Experiential Learning model). Kolb expressed that true learners "must be able to involve themselves fully, openly and without bias in new experiences (concrete experience); they must be able to observe and reflect on these experiences from many perspectives (reflective observation); they must be able to create concepts that integrate their observations into logically sound theories (abstract conceptualization); and they must be able to use these theories to make decisions and solve problems (active experimentation)" (1981, p.236). Kolb's model has provided the theoretical basis for the use of service learning as an integral pedagogy (Cone and Harris, 2003).

As mentioned earlier, service learning experiences directly benefit both the community and students involved. In their research examining this issue, Eyler et al. (2001) observed favorable or neutral outcomes for students, community, or college or university for 132 of 135 studies on service learning reviewed. The primary focus of service learning, however, is to strengthen students' education (Ver Beck, 2002). Although underprivileged individuals, society, etc. also benefit from service learning activities, they are not the primary target of service learning experiences.

The benefits that students receive from engaging in service learning activities have been explored by several. Kupiec (1993), for instance, suggests that service learning produces three primary benefits: more effective learning, more effective service, and more effective integration of university and community. Zlotkowski (1996) believe that service learning can help students build technical skills, but it can also help students build soft skills such as effective teamwork, cross-functional flexibility, interpersonal and communication skills, and multicultural sensitivity. Bhaget and Ahmed (2000) suggest that service learning can produce such benefits since it allows students to transcend the limitations imposed by course structures. By involvement in the community, students are able to gain a deeper understanding of course material and to develop a capability to see and comprehend the linkages and commonalities between various areas. Rama, Ravenscroft, Wolcott and Zlotkowski (2000) suggest that service learning experiences motivate students to work harder and become more involved with their own education. Furthermore, they suggest that service learning provides students with context for their classroom learning and provides opportunities for students to encounter and actively work with individuals with diverse backgrounds. Finally, Bernacki and Jaeger (2008) observe that service learning experiences lead to more compassionate students who possess a greater ability to solve problems.

Thompson (2000) examined the effects of participating in a service learning experience on the opinions of students relative to a similar class without a service learning component. She observed that students taking a class with a service-learning component were more likely to express that respecting diversity, time management and responsibility, career skills, critical thinking skills, and democratic ideals and citizenship are important skills learned from the course than were students attending the class without a service-learning component. Moreover, many of the students taking the class with a service-learning component believed they were more motivated in the class if they were in a traditional class. On the other hand, however, Thompson (2000) also observed that students attending class without the service-learning component were more likely to express that reading and writing skills and factual and "academic" knowledge as important skills gained from the course than were students attending class with a service-learning component.

Eyler and Giles (1999) also examined the benefits provided by service learning and observed increased personal development, social responsibility, interpersonal skills, tolerance, learning, and application of learning. Similarly, McCarthy and Tucker (1999) observed that service learning appears to build students' problem-solving and leadership skills and fosters social responsibility. (Simons and Clearly (2006), however, did not observe a difference in problem-solving skills). Bhagat and Ahmed (2000) report a study comparing sections of a humanities course, one with a service learning component and one without. They report that superior content learning in the course with a service learning component along with enhancement of their values and community orientation. Andrews (2007) observed similar effects in business courses. Morton and Troppe (1996) also report that long-term retention of content information is improved with service learning. Cohen and Kinsey (1994) observed similar results. Astin and Sax (1998) report that service learning is linked to increased grade point average, retention, degree completion, civic responsibility, and life skills. Boss (1994) observed only a slight advantage in content learning for students engaged in service learning, but a substantial improvement in moral reasoning. Most of the empirical studies examining the value of service learning has shown that service learning appears to positively affect learning (Marcus, Howard and King, 1993) and complexity of thinking (Batchelder and Root, 1994). The results of student evaluations and alumni surveys indicate that students desire opportunities to bridge the gap between theory and practice such as are provided by service learning activities (Vander Veen, 2002).

In summary, Kaye believes that, as a result of being involved in service learning, students will "apply academic, social and personal skills to improve the community; make decisions that have real, not hypothetical results; grow as individuals, gain respect for peers, and increase civic participation; experience success no matter what their ability level; gain a deeper understanding of themselves, their community, and society; and develop as leaders who take initiative, solve problems, work as a team, and demonstrate their abilities while and through helping others" (Kaye, 2004, p. 7).

A. Service learning in Business education.

Although the acceptance of service learning in business education has lagged that of many other disciplines (Manring, 2004), the need for service learning arguably exists (Lester et al., 2005). Indeed, similar criticism has been levied against the nature of business education by business practitioners and by AACSB, the primary accrediting body of collegiate schools of business. Candy and Crebert (1991), for instance, state that although recent graduates are full of information and theories, they are generally not prepared to solve problems and make decisions. Similarly, Singh and Eischen (2007) state that there are limits to what can be achieved via traditional pedagogy. Academicians themselves have noted a growing "reality gap" – a growing differential between the needs of society and the internal priorities of institutions of higher education (Zlotkowski, 1996). Consequently, AACSB advocates increased use of experimental education, such as service learning (Ames, 2006).

Service learning appears to directly address several of these apparent shortcomings in business school education (Govekar and Rishi, 2007). Service learning also is able to address what is viewed to be growing public pressure to broaden the education of business students to include opportunities to apply business techniques and processes to social problems and nonprofit institutions (Easterling and Rudell, 1997; Mottner, 2010). Given the apparent benefits

of service learning in a business context, however, the integration of service learning into business courses has been slow (Zlotkowski, 1998). Where service learning has been implemented, however, successful results have been reported – in each instance, student learning increased as a result of the experience. Applications have been reported in accounting (e.g., Gujarathi and McQuade, 2002; McCoskey and Warren, 2003; Strupeck and Whitten, 2004), finance (e.g., Palmer, Goetz, and Chatterjee, 2009), statistics (e.g., Root and Thorme, 2001), management (Flannery and Pragman, 2010; Kenworthy and Fornaciari, 2010), strategic management (e.g., Angelidis, Tomic and Ibrahim, 2004), project management (e.g., Brown, 2000; Larson and Drexler, 2010), organizational communication (e.g., Stevens, 2001), public relations (e.g., Mitchell, 2009; Patterson, 2004), entrepreneurship (e.g., McCrea, 2010), and marketing (e.g., Ekrich and Voorhees, 2002; Knowles, 2000; Metcalf, 2010; Petkus, 2000).

Although service learning seems to have value in business education, business classes may not be the only place where business students can be exposed to service learning opportunities. In addition to opportunities in general education courses and electives, academic service learning semesters may provide students with additional opportunities to hone their skills and apply their knowledge.

B. Academic service learning semesters.

Academic service learning semesters involve a semester-long learning immersion in a disadvantaged area. During the semester, students live with a host family so they can live with the context of the economically poor and marginalized peoples and engage in local civic and social activities. Academic service learning semesters are not directly tied into a specific course or discipline area. Instead, they attempt to foster a holistic approach for engaging a community and working with the community to begin address some of the issues that they face.

III. The study.

The objective of this exploratory study is to examine students' attitudes toward participating in an urban-based academic service learning program offered by a university located in Midwestern U.S. Specifically, the attitudes of students majoring in business are compared to the attitudes of students not majoring in business. Based on the earlier discussion, students majoring in business are hypothesized to 1) express lower attitudes toward an urban-based academic service program, 2) possess a lower interest in participating in the experience, and 3) be less familiar with the program than students majoring in other areas.

H1: Students majoring in business possess lower attitudes toward an urban-based service learning program than students pursuing other majors.
H2: Students majoring in business are less likely to express interest in participating in the endeavor than students pursuing other majors.
H3: Students majoring in business are less familiar with the opportunity of an urban-based service learning program than students pursuing other majors.

A convenience sample was gathered from students attending a liberal arts university located in the Midwest section of the U.S. Consistent with its liberal arts tradition, the university places significant attention on community engagement and concern for others, particularly the

poor. Students majoring in business and those not majoring in business were solicited for involvement in this study. The resulting sample was comprised of 88 students with 54 students pursuing a business major and 34 pursuing majors in other areas. Thirty-eight of the respondents were male and 50 were female. Nineteen of the respondents were freshman, 21 were sophomores, 24 were juniors, and 24 were seniors.

The instruments used were designed for this study. To measure students' attitudes toward the service learning program, 27 items were developed based on preliminary qualitative research based on a focus group comprised of fifteen students at the university with the goal of identifying items which may affect students' attitudes toward an urban-based academic service learning program. The resulting items are displayed in Appendix 1.

Items were also developed to measure students' desire to participate in the academic service learning program. They were also developed based on preliminary qualitative research based on the focus group mentioned above. The items included the following: 1) I find the academic service learning program interesting, 2) I would be motivated to participate in the academic service learning program at (the university), and 3) The (the location of the academic service learning program) component of the academic service learning program is appealing.

Finally, familiarity with the urban service learning program was measured using a single item: I am familiar with the academic service learning program at (the university).

Students responded to each of the items using a five-point Likert scale. Since the intervals between the possible response categories cannot be considered equal (Jamieson 2004), responses from Likert scales represent ordinal data, and should theoretically not be treated as interval data or assessed with any statistical methods that are meant for interval data (Lubke and Muthen, 2004). Cascio and Aguinis (2005) note, however, that measures used for behavioral research often approximate interval measurement close enough to enable the researcher to run statistics that assume an equal interval scale.

IV. Results.

The items to measure students' attitudes toward an urban-based academic service learning program were factor analyzed using principal components analysis. Since a single factor was not expected, varimax rotation was used. Although eight factors with an eigenvalue greater than one were identified, examination of the scree plot and the factor scores suggest that a six-factor solution may be most appropriate (see Figure 1). The six factors appear to represent 1) level of comfort with the academic service program, 2) monetary concerns (difficulty of maintaining employment while participating in academic service learning), 3) distance from friends concerns, 4) social network disruption concerns, 5) graduation concerns (not being able to graduate in four years), and 6) cost savings (lower cost of living during the service learning experience) (see Table 1). The reliability of each of the factors is acceptable (although the reliability of the final factor is only marginally so). The Cronbach's alpha for each of the factors is as follows; level of comfort – 0.733, monetary concerns – 0.932, distance from friends concerns – 0.817, social network disruption concerns – 0.745, graduation concerns – 0.871, and cost savings – 0.671.
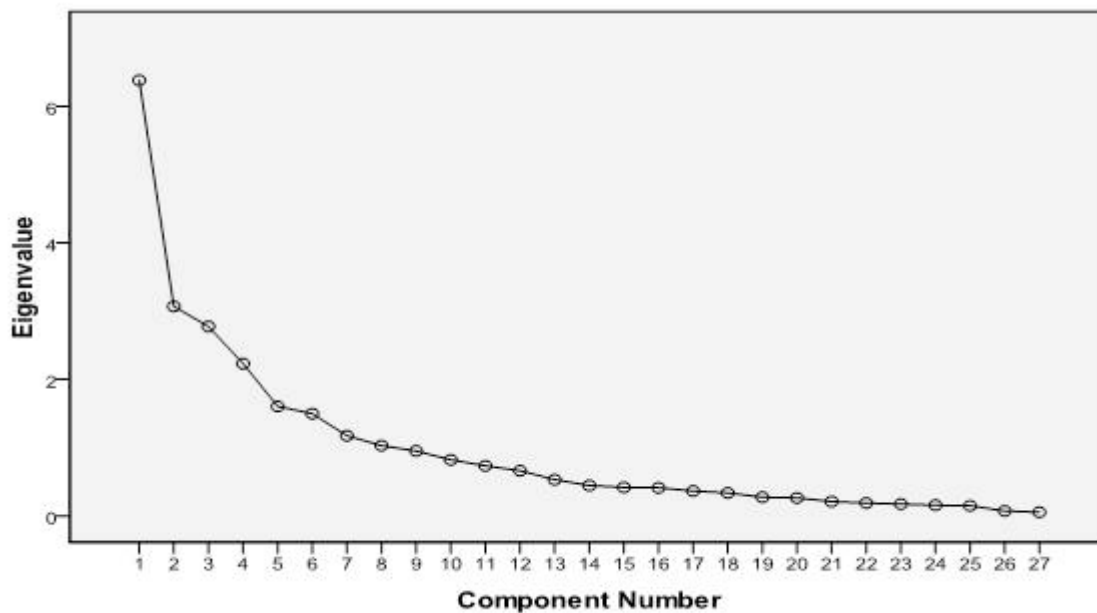
Figure 1. Scree test.

Table 1. Factor analysis results.

Factor	Extraction	Sums of Squares	Loadings	Rotation	Sums of Squares	Loadings
	Total	% of Variance	Cum. %	Total	% of Variance	Cum. %
1	6.383	23.641	23.641	4.552	16.859	16.859
2	3.072	11.377	35.018	2.727	10.100	26.959
3	2.776	10.282	45.300	2.605	9.648	36.607
4	2.232	8.267	53.567	2.522	9.339	45.946
5	1.605	5.944	59.511	2.456	9.097	55.043
6	1.498	5.549	65.060	1.983	7.346	65.060

The reliability of the items to measure students' level of interest in participating in the urban-based academic service learning program is 0.803, indicating satisfactory reliability.

Correlations between the factors obtained from factor analyzing the items measuring students' attitudes toward the urban-based service learning program and students' level of interest in participating and their familiarity with the program are displayed in Table 2. Significant (at the 0.05 level) relationships were observed for four of the six factors. Students who expressed that they are comfortable with the program, are less concerned with spending time away from friends, less concerned about losing contact with their social network, and are not expecting a cost savings from participating in the service learning program possess a higher level of interest in participating in the program. No relationship, however, was observed between either students' monetary concerns or their graduation concerns and level of interest in participating in the program. As would be expected, a significant relationship was observed between familiarity with the program and interest in participating.

Table 2. Correlations between students' attitudes toward an urban-based service learning program and students' level of interest in participating and their level of familiarity with the program.

Attitude Factor	Correlation	Significance
Level of Comfort	**0.743**	**0.000**
Monetary Concerns	0.004	0.972
Distance from Friends Concerns	**0.442**	**0.000**
Social Network Disruption Concerns	**-0.240**	**0.024**
Graduation Concerns	0.030	0.781
Cost Concerns	**-0.335**	**0.001**
Familiarity	**0.449**	**0.000**

T-tests were conducted to examine whether business students possess different attitudes than non-business majors of participating in the urban-based service learning program, levels of interest in the program, and level of familiarity of the program. The results are displayed in Table 3. No significant (at the 0.05 level) differences were observed between business majors and non-business majors for any of the attitude factors. Similarly, no significant difference was observed between business majors and non-business majors for their level of interest in participating in the program. No support, therefore, was observed for either Hypothesis 1 or Hypothesis 2. A significant difference, however, was noted for familiarity with the program, where non-business majors were observed to be more familiar with the program than business majors. Support for Hypothesis 3, therefore was observed.

V. Discussion.

Although exploratory in nature, the findings raise a number of interesting questions. First, the findings suggest that students' attitudes toward an urban-based academic service learning program may be multidimensional. In addition to the level of comfort students have with the academic service program, several other factors involving monetary and relationship issues appear to affect students' attitudes toward the academic service learning program. If a university wishes to affect students' attitudes toward such a program, therefore, the findings suggest that attention should be placed on several factors, but with the primary attention being placed on the students' level of comfort with the program. Communication with past students with successful experiences in the program may be beneficial, where the comfort level of prospective participants can be increased.

Four of the six factors associated with students' attitudes toward the academic service learning program were found to be related to students' level of interest in participating in the program. If a university wishes to affect students' interest in the program, it would appear that the university should place attention on these issues. The strongest relationship involves the level of comfort factor. Hence, attention should first be placed on increasing students comfort level with the program.

Table 3. A comparison of attitudes toward participating in a urban-based service learning program between business students and non-business students.

Attitude Factor	Mean Sum of Responses Business/Non-Business	t-value	Significance
Level of Comfort	26.96 27.5	-0.332	0.741
Monetary Concerns	9.96 10.62	-0.788	0.433
Distance from Friends Concerns	9.96 9.97	-0.011	0.991
Social Network Disruption Concerns	19.19 18.74	0.594	0.554
Graduation Concerns	12.54 11.88	0.934	0.353
Cost Concerns	11.65 11.79	-0.248	0.804
Level of Interest	9.28 10.00	-1.199	0.234
Familiarity	2.70 3.29	**-2.158**	**0.034**

It appears that any thoughts that students majoring in business may have lower attitudes toward the service learning program and may have less interest in participating in the program appear to be unfounded. No evidence was observed which would suggest the existence of such a difference. The only difference observed was that business students were observed to have a lower degree of familiarity with the program than students majoring in non-business areas. Given that familiarity with the program is related to the level of comfort students have with the program ($r = 0.375$, significance = 0.000) and with interest in participating in the program ($r = 0.449$, significance = 0.000), the possibility exists that increased attempts to make business students aware of the program may be able improve business students' attitudes toward of the program and their likelihood of participating.

A. Limitations.

Several limitations exist which may affect the generalizability of the findings. First, the study was conducted at a single university (a liberal arts university which places significant attention on community involvement and concerns for others, particularly the poor). Consequently, students pursuing business majors at this university may be more predisposed toward participating in an urban service program than students pursuing business majors at other types

of colleges and universities. Consequently, the generalizability of the findings to students attending other types of colleges and universities is unknown. Second, the study was based a relatively small sample. Third, the instruments used in the study have not yet been subjected to validity testing. Finally, no mechanism existed to gauge subsequent actual involvement in the service learning program by study participants.

B. Conclusions.

To address needs in the community, to improve students' educational experiences, and/or to respond to desires of stakeholders, many colleges are attempting to increase student involvement in urban-based semester-long service learning programs. If corroborated by further research, this study suggests that many of the issues which are important to students' attitudes toward such programs and to their interest in participating in the programs may be actionable by a university seeking to increase involvement. Furthermore, no differences were observed in the attitudes toward the program or interest in participating between students majoring in business and those not majoring in business. This suggests that students majoring in business should not be ignored when urban-based academic service learning programs are considered.

C. Directions for future research.

The research suggests several directions for future research. First, the present study was conducted at a university with a particular mission. Research examining attitudes in other settings is warranted. Furthermore, it may be advantageous to examine students attitudes by class to see if differences may exist at the freshman level reflecting differences in students' backgrounds and to see if changes occur as a result of exposure in the collegiate setting.

Although the study identifies students' attitudes, the bases and, consequently, the ease by which students' attitudes can be changed are unknown. Increased knowledge of the bases of the attitudes toward the service learning opportunity may provide increased understanding into how students' attitudes may be changed.

Although attitudes have been shown to affect behavior (Fishbein and Ajzen 1975), the relationship between students' attitudes toward service and their propensity to actually engage in the activity has not been previously examined. Most of the research conducted on service learning involves service learning as a required component of a course. Little research attention has been placed on the choice process of students faced with a optional service learning activity.

Finally, research activity should be focused on examining the validity of the instrument developed in this study.

Appendix 1. Scale items.

1. I would be comfortable living away from my friends at (the university) for a semester.
2. It is important that I graduate from (the university) in four years.
3. I must have a paying job on or off campus while in school.
4. Spending most of my time off campus away from my friends for a semester would be beneficial.
5. Getting my degree in four years is important.
6. If I lived off campus away from my (the university) friends for a semester, I would be unhappy.
7. Having a paying job while I attend school is important.
8. If it takes me longer than four years to get my degree, I will be disappointed.
9. Not having a paying job for a semester would be a financial problem.
10. I would feel safe living in (the location of the academic service learning program) in a university-sponsored apartment for a semester.
11. Being on campus everyday improves my academic performance.
12. I must have safe living conditions.
13. Living and studying in a university-sponsored apartment in (the location of the academic service learning program) would not be a problem.
14. My grades would suffer if I lived in a university-sponsored apartment in (the location of the academic service learning program) for a semester.
15. It would be unsafe to live in a university-sponsored apartment for a semester in (the location of the academic service learning program).
16. Social interaction on campus is important.
17. Living in a university-sponsored apartment for a semester in (the location of the academic service learning program) with my peers would be exciting.
18. I would expect to pay less living in (the location of the academic service learning program) compared with living on campus for a semester.
19. Culturally speaking, (the location of the academic service learning program) would be a good place to use my academic skills.
20. If I lived in a university sponsored apartment in (the location of the academic service learning program) for a semester I would not miss social interactions on campus.
21. I would feel comfortable living with a group of my peers in (the location of the academic service learning program) for a semester in a university-sponsored apartment.
22. I would not mind paying regular (the university) housing costs while living in (the location of the academic service learning program) for a semester.
23. If I knew that I could apply my academic skills in (the location of the academic service learning program) area, I would be interested in participating.
24. I would find it depressing living with my peers in a university-sponsored apartment in (the location of the academic service learning program) for a semester.
25. Utilizing my education while living in (the location of the academic service learning program) would be important.
26. If I lived in a university-sponsored apartment in (the location of the academic service learning program) for a semester, I would miss social interactions on campus.
27. I would not like paying the regular (the university) housing costs while living in (the location of the academic service learning program) for a semester.

Factors

Factor 1: Level of comfort with the academic service program
10. I would feel safe living in (the location of the academic service learning program) in a university-sponsored apartment for a semester.
13. Living and studying in a university-sponsored apartment in (the location of the academic service learning program) would not be a problem.
14. My grades would suffer if I lived in a university-sponsored apartment in (the location of the academic service learning program) for a semester.*
15. It would be unsafe to live in a university-sponsored apartment for a semester in (the location of the academic service learning program).*
17. Living in a university-sponsored apartment for a semester in (the location of the academic service learning program) with my peers would be exciting.
19. Culturally speaking, (the location of the academic service learning program) would be a good place to use my academic skills.
21. I would feel comfortable living with a group of my peers in (the location of the academic service learning program) for a semester in a university-sponsored apartment.
23. If I knew that I could apply my academic skills in (the location of the academic service learning program) area, I would be interested in participating.
24. I would find it depressing living with my peers in a university-sponsored apartment in (the location of the academic service learning program) for a semester.*
25. Utilizing my education while living in (the location of the academic service learning program) would be important.

Factor 2: Monetary concerns (difficulty of maintaining employment while participating in academic service learning)
3. I must have a paying job on or off campus while in school.
7. Having a paying job while I attend school is important.
9. Not having a paying job for a semester would be a financial problem.

Factor 3: Distance from friends concerns
1. I would be comfortable living away from my friends at (the university) for a semester.
4. Spending most of my time off campus away from my friends for a semester would be beneficial.
6. If I lived off campus away from my (the university) friends for a semester, I would be unhappy.*

Factor 4: Social network disruption concerns
11. Being on campus everyday improves my academic performance.
12. I must have safe living conditions.
16. Social interaction on campus is important.
20. If I lived in a university sponsored apartment in (the location of the academic service learning program) for a semester I would not miss social interactions on campus.*
26. If I lived in a university-sponsored apartment in (the location of the academic service learning program) for a semester, I would miss social interactions on campus.

Factor 5: Graduation concerns (not being able to graduate in four years)
  2.   It is important that I graduate from (the university) in four years.
  5.   Getting my degree in four years is important.
  8.   If it takes me longer than four years to get my degree, I will be disappointed.

Factor 6: Cost savings (lower cost of living during the service learning experience)
  18.   I would expect to pay less living in (the location of the academic service learning program) compared with living on campus for a semester.
  22.   I would not mind paying regular (the university) housing costs while living in (the location of the academic service learning program) for a semester.*
  27.   I would not like paying the regular (the university) housing costs while living in (the location of the academic service learning program) for a semester.

* Reverse-scored

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Assessing the value of a community-based approach to language and cultural learning: A longitudinal study

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Abstract: This article reviews the results of a survey of former students to determine the long-term significance of a community-based Spanish practicum that has been offered since 2000. The respondents affirm that, even nine years later, they still remember well the Mexican immigrant families that hosted them during the course. The students were able to develop a long-lasting appreciation for the power of second language and cultural learning through a combination of meaningful communication, strong interpersonal relationships, cognitive and affective learning methodologies, and involvement in constructing their own learning experiences. As predicted, the students' immersion in a different socioeconomic and cultural context had a major impact on their sense of social justice, but, unexpectedly, did little to foster a life of political activism. For practitioners, the survey results also raise questions about the importance of reflection in experiential learning methods, and the nature and appropriate role of service learning.

Keywords: language learning, service learning, reflective practice, second language learning, domestic language immersion, best practices, affect in language learning, transformative learning.

Pitzer College is in its tenth consecutive year of offering a Community-based Spanish Practicum (CBSP) as a major component of an integrative Spanish language program. Several assessments of the course have been conducted during its years of operation (Jorge 2003a, 2003b, 2006). This study and article, however, focus on determining what long-lasting impacts, if any, the CBSP has had on the students who enrolled between 2000 and 2009. Four hypotheses were examined in this study:

1. relationships developed in a cultural immersion course provide language learners with the motivation, self-confidence, and social connections to continue their language learning beyond college boundaries and throughout their lives,
2. combining cognitive and affective learning produces results that are remembered over time,
3. long-lasting learning occurs when students are engaged in constructing their own learning experiences, and
4. a memorable immersive intercultural learning experience across socio-economic boundaries would have long-lasting impacts on the students' sense of social justice and political activism.

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I. The course.

Pitzer, a member of the Claremont Colleges consortium located on the eastern edge of Los Angeles County in California, has developed an integrative Spanish major that complements the other colleges' programs by focusing more on language, culture, and society rather than literature. From its beginning in 2000, the Community-based Spanish Practicum has played a critical role in the teaching of Spanish at Pitzer. Because the Claremont Colleges consortial arrangement allows students to enroll in courses from any of the five undergraduate schools, the resulting wealth of teaching resources has allowed Pitzer to offer three alternative tracks in its Spanish major: literature; culture (from a socio-historical and anthropological perspective); or interdisciplinary studies. The Pitzer Spanish major is composed of campus-based interdisciplinary language and content courses, longitudinal research projects connected with community organizations at Pitzer's study abroad sites, and domestic community-based courses such as the CBSP.

The CBSP is an immersion course that connects college students learning Spanish with native Spanish speakers in the nearby community of Ontario, California. Developed in partnership with a group of women from Spanish-speaking households called *promotoras*, the course sponsors weekly visits to Ontario where the students can practice conversing in Spanish, build long-term relationships with the family and extended networks of friends and neighbors, and explore the surrounding Latino community. About 45 students enroll every semester, and more than 600 have participated in the practicum over the past ten years. This study focuses on the results of a survey of 560 students who participated during the first nine years that the CBSP was offered.

The *promotoras,* a group that has numbered between nine and thirteen over the years, live in a predominantly Spanish-speaking neighborhood where most everyday interactions can be conducted in Spanish. The initial group was selected based on the advice of teachers at a nearby primary school attended by their children. The *promotoras'* agreement to participate in the program was based on their intuition that the college students' regular visits would positively influence their children, assist their own personal growth, and augment their income through a small stipend provided for their expenses and time. The *promotoras* are all first generation Mexican immigrants who speak Spanish exclusively in their homes. Some live in a modest trailer park near a highway, and others live in small to middle-sized houses nearby. All have children and many primary and extended family responsibilities; most do not work outside their homes. The families are stable, with no serious social problems. Students visit in groups of three, which has proved to be an appropriate size for collaboratively developing relationships, conversing meaningfully, reflecting seriously on their experiences, and safely interacting with the neighbors. The *promotoras* are very protective of the students as they explore the neighborhood.

The students who choose to take the CBSP are not necessarily Spanish majors. They are predominantly European American, with smaller numbers of Asian Americans, African Americans, and some Latinos who are learning Spanish as a second language. Most students are from middle to upper middle class backgrounds. The CBSP engages students at their level of language proficiency, but requires at least one year of prior Spanish courses. Most students returning from Spanish-speaking countries after studying abroad who re-enroll in the CBSP have a higher level of proficiency than the minimum required. The course's community-based

experience is paired on campus with readings and reflections through a journal and regular *encuentros* (meetings) with faculty.

It is important to note that this cultural immersion experience is very different from immersions abroad because the *promotoras*, their families, and their neighbors are part of American society. Thus, the social issues that arise in the context of the visits are an integral part of the students' own personal experiences. Many students are able to connect local and global issues as they process their study abroad experiences while engaged in the CBSP. Some students repeat the course, and some stay in touch with the families outside the course itself. Many repeating students prefer to return to the same family because they feel proud of their progress and are happy to be able to engage at a more sophisticated level of communication.

Since the CBSP strives to foster a nurturing environment where people of different backgrounds, ethnicities, and socio-economic status can build meaningful relationships, there are benefits for all the participants. Students are able to develop confidence in their language skills and gain insight into one of the Spanish-speaking cultures of the area by sharing daily activities, cooking together, discussing contemporary issues, and meeting neighbors and extended family members. On the other hand, as the relationships develop, they begin to help the families with such things as school homework, bureaucratic paperwork, applications for services, or access to expertise in the mainstream society. For example, information about applying to college has been very important to the *promotoras'* children. Thus, unexpectedly, the *promotoras'* homes have turned into small hubs of information for their family, friends, and neighbors, opening up networks and resources previously unavailable to them (Jorge 2003a).

II. Background for the study and literature review.

The CBSP course design draws from the American tradition of experiential learning (Cummings 2000, Dewey 1942), Paulo Freire's pedagogy of dialogue (Freire 1998a, 1998b) and methodologies derived from community-based research and anthropological fieldwork (participant observation). Another important influence has been Mezirow's work on transformative learning, particularly how students can grow emotionally as a result of a "disorienting dilemma" which triggers critical analysis of experiences and produces changes in perspective (Mezirow 1991, 2000). Likewise, the American Council on the Teaching of Foreign Languages' *Standards for Foreign Language Education* (ACTFL Special Project 1999) embraces similar goals to the CBSP: speaking languages besides English, understanding different cultures, connecting with other academic disciplines, acquiring knowledge and insight into the nature of language and culture, and participating in multicultural communities at home and abroad. And also, Pitzer College's educational objective for understanding the ethical implications of knowledge and action has provided a supportive moral framework for the course. A strength of this process-oriented, community engaged language learning model is that the target language is acquired through meaningful experiences and deep, personal relationships in a rich socio-cultural context. Keiley's work on the integration of cognitive and emotional learning, especially in instances of contextual border crossing, has been instructive; the coping process he describes of dissonance, personalization, processing, and connecting is frequently evident among CBSP students (Keiley 2005).

The awareness of the importance of affective factors in language learning has permeated different approaches to teaching a second language since the 1970's. Krashen's affective filter, for example, is a construct that describes how low motivation, self-doubt, and anxiety can

hamper the process of language acquisition (1982). However, although this awareness has been identified, the cognitive side of learning seems to be more generally emphasized. Studies of the connections between emotion and cognition have attempted to explain how emotions might influence learning (Bower, 1992) and explored such things as the role that affective evaluation plays in the construction of knowledge (Brown 1987); emotion as a source of information and meaning for the individual (Kaufman 1993); language anxiety as a cause for individual differences in language achievement (Macintyre 1995); the importance of contexts that provide choices for matching teaching styles with different students' learning styles (Hokanson 2000); and learners' affective responses to the language learning process (Garret and Young 2009). *Affect in Language Learning* edited by Jane Arnold (1999) explored the broad influence of affect on language learning and set a useful frame by mapping affective factors related to language learning (Arnold and Brown 1999). Thus, the CBSP's design allows a more relaxed atmosphere, meaningful connections, decreased anxieties, and increased self-confidence and motivation. The interactions built into the students' visits with the families naturally incorporated the full scope of language functions usually included in a communicative language teaching approach, functions that are most often simulated instead in classroom settings.

During the past decade, community-based program practitioners and researchers identified various areas needing additional research (Eyler 2000). Among them was the need for national and longitudinal studies to track programs over extended periods of time in order to assess their long-term impacts (Perry and Imperial 2001; Levine, Brown and Flowers 2007). In recent years, some longitudinal studies of Service Learning (SL) focused on outcomes for students in terms of citizenship and civic engagement (Hauver and Iverson 2009; Bernacki and Bernt 2007; Wilson, Diaz, O'Leary and Terkla 2007; Hart, Donnelly, Youniss and Atkins, 2007); attitudinal, behavioral, and cognitive learning (Youniss and Metz 2005; Bradley, Aquila, Dodd and Jones 2004; Astin and Vogelgesang 2000; Sporte and Kahne 2007); employment and life skills (Abt Associates, Inc. 2004); academic progress (Dvila and Mora 2007); and diversity (Keen and Hall 2009).

Much of this longitudinal research has focused on medium or large-scale programs that have "processed" many students over time and usually have attempted to assess a program's efficacy for different groups of students during the course itself. A few recent important longitudinal studies addressed the impact on participants some time later, such as in the transition from high school to college. For example, a national freshman survey of nearly 293,000 students in the Fall 2004 gathered data on students' high school experiences, attitudes, beliefs, and values (Vogelgesang, 2005). To track the impact of college programs, another study followed a 1994 cohort of students through their college years and early adulthood (Denson, et al. 2005). A third study, focusing on the hypothesis that service-learning offers the potential to ease the transition to adulthood, surveyed online a nationally representative sample of 3123 US adults aged 18 to 28 who had a range of different experiences with service learning (Martin and Markow 2006).

Another research project drew from a large dataset of African American and European American youth who were followed throughout adolescence and into young adulthood in order to appraise the development of personal identities in relation to civic engagement during those stages of life (Eccles, et al. 2003). A project based on data from the National Education Longitudinal Study of 1988 examined the patterns and characteristics of individual involvement in community service activities from high school through early adulthood (Planty and Regnier 2003). A sample of 12th-grade students were asked about their high school volunteer service for the period 1990-92 and then re-interviewed in 1994 and again in 2000 in order to determine

whether high school volunteer service was related to volunteering two and eight years after students' scheduled high school graduation. But few studies have tried to evaluate the impact of specific courses and academic programs on a small group of identified students a few years after they were completed. Also, there is no longitudinal research on a continuing language practicum such as the CBSP.

III. The study.

As of Fall 2010 more than 600 students had participated in the CBSP over the past ten years; this study covers 560 students who enrolled in the first nine years. The intent of the study was to determine the extent to which these former students identify their CBSP experience as fundamental for their learning to value the ability to speak a second language, to engage meaningfully with people from other cultures, to understand contemporary issues related to social justice, and to participate actively in the political life of their communities. Verification of this connection, at least as expressed by the students' self-reporting, would reinforce the CBSP's operational hypotheses cited above.

This study did not address the issue of language acquisition itself for several reasons. There are too many variables at play to be able to measure definitively the influence of the CBSP alone on improvements in oral proficiency. For example, students entered the practicum with multiple levels of proficiency. Moreover, some students took other Spanish courses concurrently. Finally, it was not possible to create a viable control group of Spanish students who did not participate in the CBSP. Thus, this study focused on the perceptions that former CBSP participants had about their development of language skills.

Because former students were scattered across both the country and the globe, an online survey was developed to obtain their input. The survey was divided into four parts:

1. Part 1 asked for personal data and information about the student's academic experience: gender, ethnicity, number of Spanish classes taken, whether they studied abroad, graduation date, dates of CBSP enrollment;
2. Part 2 asked about the student's memories of the practicum experience through yes/no responses: if s/he remembered taking the class, recollected the *promotora*, and about continuing contact with the family;
3. Part 3 asked the student to use a Likert scale to assess the extent to which the CBSP had achieved several of its goals (with 1 being the lowest rating and 5 the highest); and
4. Part 4 was comprised of open-ended questions to assess the student's perceptions about lasting learning impacts resulting from his or her CBSP experience. These questions asked them:
   - what s/he remembered about the family, the neighborhood, and the course;
   - to recall a memorable story or event and to explain its importance;
   - whether they continue to speak Spanish, in what contexts, and with whom;
   - to what extent they interact with people of other cultures;
   - to explain if and how the course contributed to the social responsibility goals of the College; and
   - to provide additional comments as desired.

The request to participate in the online survey was sent via email and postcards to 560 former CBSP students during Spring 2009, but 63 were undeliverable. 160 of the remaining 497 students completed the survey, for a response rate of 32%. However, not all respondents

answered every question. The students who responded were generally very positive about the course and were eager to voice their opinions. It is difficult to know how the course affected non-respondents. Nevertheless, the survey results paint a reasonably consistent picture of the program's impact and point towards areas of possible improvement.

IV. Results.

A. Part 1: information about the respondents.

- •76% were female, comparable to and therefore representative of the percentage of students who completed the practicum (78% of 560).
- •Of those reporting their ethnicity, 69% were Caucasian. No ethnic data was available for the total number of 560 enrollees.
- •75% had studied abroad, were currently abroad, or slated to go in the next year. This figure is comparable to that for the general Pitzer student population. Data was not available for the total number of 560 enrollees.
- •61% were Pitzer students; the rest were students at the other Claremont colleges. This distribution is comparable to that of the total number of CBSP enrollees as shown in Table 1.
- •There is no reliable data to compare the number of students enrolled in each program year and the number of respondents for each of those years.

Table 1. CBSP enrollees.

	560 enrollees	160 respondents
Pitzer College	61%	59%
Pomona College	14%	17%
Scripps College	14%	13%
Claremont McKenna College	10%	8%
Harvey Mudd College	< 1%	-----
Unknown		3%

B. Part 2: memories of the course (yes/no responses).

A large percentage (91%) of the respondents remembered taking the course. A majority (54%) remembered the name(s) of their *promotora(s)* (some took the course several times and visited different families). And 19% had had contact with the families after completing the course.

C. Part 3: Assessment of the extent to which the CBSP had reached several of its goals (Likert scale questions).

A majority of the respondents (57%) continue to speak Spanish at least sometimes (3 and above on the Likert scale), and 26% speak Spanish often (4 on the scale) or extremely often (5 on the scale). Almost all (90%) interact at least sometimes with people of other cultures (3 and above on the scale), and 72% say they do so frequently (4 on the scale) or always (5 on the scale). And, even in light of the multiple influences in their lives, the following percentages of respondents

feel that the experience of visiting the *promotora* contributed more than average (4 on the scale) or a lot (5 on the scale) to their
- valuing the importance of a foreign language and speaking it (73%),
- being politically informed and/or civically engaged (50%),
- being concerned about issues of fairness in society (73%),
- becoming personally aware, developing strong personal relations, and exploring new social spaces (69%), and
- gaining knowledge of and/or empathy for some of the other cultures that comprise United States society (77%).

Also, 87% feel that the course contributed more than average or a lot (4 and 5 on the scale) to the goals of the College by helping them meet the educational objective related to social responsibility and the ethical implications of knowledge and action.

D. Part 4: Narrative questions.

1. What they remember about the family, the neighborhood, and the course.
Former students have vivid memories of their community experiences as the narratives in the next section below indicate. Even most of those who do not remember their *promotora's* name actually remember other pertinent facts, such as how many children she had and what their names were, and/or can describe the family's house and neighborhood with a fair amount of detail. Responses, of course, vary, but include discussions about the composition of the family, the children, the neighborhood and the importance of community, individual *promotoras'* traits, fond memories of specific interactions, the activities they shared, the emotional connections of their relationships, values issues, and the general worth of the experience. Hardly anyone mentions the campus component of the class (readings, journals, meetings, discussions, reflection papers, etc.); one person mentions it as very useful, and one person remarks that he is conscious of not remembering that part of the course. It is difficult to interpret this absence of reference as either positive or negative, since it was not referenced separately in the survey.

Although, in most circumstances, students were not able to maintain contact with the families, the students invariably express fondness for them, and say that they often think about them and how they are doing, even nine years later. They are particularly impressed by the dedication that the parents had for their children, their hard work to support the family, that other members of the extended family lived with them even though the houses were small, and that the children enjoyed interacting with them both in play and in serious discussions about going to college and other topics. Many express great fondness for the children, tracking their maturing process, and wondering how they are coping with family difficulties they had witnessed. The *promotoras'* traits had made lasting impressions too, with students using words such as jolly, welcoming, patient, warm, friendly, kind, loving, sweet, accepting, generous, and having a great sense of humanity to describe them. Additionally, their memories of different shared activities, such as cooking, eating together, playing games and music, dancing, going to an ethnic supermarket, and discussions about a broad range of personal and political subjects, frame the cognitive and emotional outcomes of the course. All of these memories are generally positive without being over-romanticized.

A surprising finding was that male students were almost twice as likely as female students (26% to 15%) to stay in contact with their *promotoras*; this seems to indicate that, despite the stereotype that "females are more emotional," males in this instance found the

relationship with their former "surrogate mothers" to be a longer lasting and deeper bond than their female peers.

Some of the illustrative comments include:
> She had a very large and supportive family. Several members of her extended family lived with her and her husband. [The *promotora*] was kind and loving and always encouraging us to speak and learn more. She and her family were extremely friendly, helpful, and patient with the students.
> Female/Course 2002/P 4.2

> I remember M, M and L [*promotora* and her kids] being very kind and open. The moments and intimacy they shared with the other students and me seemed very natural and, I'm certain, were very natural as the family seemed to integrate the class into their everyday life. Over time I found that many people in her community are very much the same… giving many times without expecting anything in return. I remember M's great cooking, I never went to her house expecting to eat, but, oh, I still have not had any Mexican food as good as hers (and I just came back from Mexico this past summer).
> Male/Course 2001-02/P 2.3

> Many students' responses pointed to the following aspects of the CBSP as important in positively influencing their later lives:
> •their immersion in a cultural and socioeconomic community different from their own;
> •being "forced" to go outside their comfort zone (the "Claremont bubble");
> •opening their eyes and heightening their awareness of contemporary social issues, such as immigration, race, and education;
> •being prodded to reflect on the causes and cultural contexts of injustice, prejudice, and privilege;
> •linking more theoretical discussions of social justice in the classroom setting to the direct experiences, personal observations, and social connectedness developed through meaningful interpersonal relationships in the community;
> •acknowledging and valuing people and cultures in our community whose capabilities and contributions are often overlooked and even denigrated;
> •being empowered to take greater responsibility for their own learning due to a different power dynamic in the course which decreased some of the instructor's usual control in order to adapt to changing community circumstances;
> •rediscovering the humanity of the immigrant other and creating empathy; and
> •developing mutually beneficial reciprocal relationships with the families who provided help to the students in language and general "life" education while the students contributed "mainstream" cultural knowledge and selected expertise.

2. To recall a memorable story or event and to explain its importance.
Because stories' images and metaphors can convey deep-seated learning and feelings that endure over time, the survey asked former students to tell a story, or describe an event, circumstance, or person that was memorable. The stories are broadly classified in four groups according to the issues they bring up. Descriptions of those topics and a few sample stories follow.

• participation and integration in family and life rituals, such as birthdays, *quinceañeras*, baptisms, confirmations, school open houses, Spanish masses in church, and wakes; they also include comments recognizing bonding, trust, and caring;

> I'll tell you two: One memory in which I felt the most honored to share with M. [*promotora*] and her family was MI's (daughter's) confirmation. M invited some of her students, including me, to the ceremony and I swear I have never seen someone take so much pride in preparation for an event as M. did for this one. The dress (which was gorgeous), the veil or scarf, the video recording, etc. and it was not only M's family, but many other families from the community who also had their children being confirmed that Sunday (mind you, some students did not go because this was for class or extra credit; we went because we were *familia*— as M. always treated us). Anyhow, I'll never forget it. Another memory I have is of eating what I believed, at the time, was the nastiest food anyone could ever get down their throats - *enchiladas de mole chocolate*. Now, when I had these the first time, I thought they tasted like vomit with cheese on top. I ate one, politely, and even pretended it was halfway decent, but afterwards I could not get the taste out of my mouth. Fast-forward to almost seven years later—I now go in search for these chocolate mole enchiladas and can't get enough of them. I have had them in many different styles, but none taste as good as M's tasted. It just goes to show that you have to try everything at least once; who knows, if you don't like it then you still might work your way up to it later.
> Male/Course 2001-02/P2.3

> I remember egging on the father in one of the families to recount all his fishing stories growing up in Mexico, diving for eels in the river. He was on worker's comp and injured at the time, but to hear and see him come alive talking about one of his loves and to share and understand with him in his language really opened up a door for me in how I relate to the world. It struck me that this was possible because of studying language and using it in the context that inspires memories.
> Male/Course 2005-06/P 8.3

> L. [*promotora*] is very open-minded. I remember one time, two other girls and I sitting around her kitchen table, and somehow we ended up talking about sex. She told us that the first time she heard of "oral sex," she thought that meant talking during sex. We all started laughing. It was memorable because I never expected to be able to talk about topics like that with her, and thought it was really cool of her to be comfortable and open with us.
> Female/Course 2006-07/P 9.4

• giving and being helpful, a major concern for students each year; they mention bringing different types of expertise and information, translating documents, and helping to fill out various forms for things like health insurance, employment, tax payer information, and grant and scholarship applications;

> I really enjoyed using my knowledge of the admissions process from working admissions at Pitzer to share anything that I could with the family in order to help them manage trying to send 3 children to college. I gave them all the resources I could and told them to contact me if they needed any other information.
> Male/Course 2006-07/P 11.1

• receiving comfort, support, interest, and concern about their own lives, and the personal attention of people who actually observed and interacted with them;

> Each evening was like a little trip to a different country. I liked it and remember thinking 'this is fun—I can't believe I'm getting college credit for it,' although in retrospect, of course, it was very educational, and just practicing speaking Spanish conversationally with someone Mexican (as many of the Spanish speakers in California are) was very useful, and I got more accustomed to that accent and the particular idioms and slang words and terms that are often used. I remember helping the kids with their homework sometimes because the mom (my *promotora*) had trouble helping them since their assignments were all in English. It has been 7 years since then so my memories are vaguer and less specific, but I still have a warm feeling about that family and how welcomed I felt there. We joked a lot at dinner and just generally enjoyed each other's company and it was nice having someone who wanted to hear all about our week at college, our classes, and our lives, sort of the way a parent might.
> Female/Course 2002-03/P 3.4

• understanding the broader social context of Latinos in the area, including immigration issues, economic determinants, and cross-cultural conflicts.

> The most memorable part about the class for me was connecting to a community outside of the Claremont bubble. Leaving Claremont and understanding the larger context of a Latino community was really important for my Pitzer career. It helped me understand much more about immigration, schools, race, and the economic status of the area outside of Claremont and eventually made me major in Spanish at Pitzer because of the community connection. This class was an essential beginning to my Pitzer experience.
> Female/Course 2003/P12.3

3. Whether they continue to speak Spanish, in what contexts, and with whom.
A CBSP goal was for students to gain confidence and improve their Spanish skills by practicing meaningful conversation in an authentic context of emotionally significant relationships so that later in life they would continue to speak it outside university boundaries in order to explore new social spaces. The extent to which CBSP graduates would be able to continue speaking Spanish is clearly subject to the individual's circumstances, and also relies on other influences, such as family networks, study abroad experiences, and additional language courses. At any rate, only 6% of the respondents indicate that they do not use Spanish at all (1 on the Likert scale), but over half are speaking fairly regularly. Of the 148 (93%) of the respondents who answered this question, 41% say they speak Spanish with family and friends, 26% in their jobs, 11% in classes (still in school or graduate school), and 10% in the neighborhood (shopping, restaurants,

neighbors). Other contexts mentioned are volunteer work, living abroad, communicating with household staff, recreation (e.g., reading, movies, singing), and church.

4. To what extent they interact with people of other cultures.
When former students reflect on the value of the CBSP, the momentary breeching of social and cultural barriers, the friendship, and the closeness of the neighborhood stand out, perhaps even more than the learning of Spanish. The language learning process actually seems to be the medium for that rich intercultural social experience that continues for most of them in their adult lives.

As a community-based course, the CBSP created a space where people of different socio-economic, ethnic, and cultural backgrounds could meet and learn from each other. For the students, the entree into this neighborhood was very memorable; for many it was the first time that they had crossed such a large cultural, linguistic, and socioeconomic divide. Since the students do not go into the community to provide a service to people who need help, but rather to practice Spanish in a stranger's home with a host who is much more capable and fluent in the language than they are, there is a relative balance of power among the participants, and mutually beneficial reciprocal relationships can develop. On the other hand, for ten years these students have been providing information and access to professional networks to the *promotoras,* their families, and their neighbors. Indeed, in 2003 (Jorge 2003) the author reported that because the *promotoras'* homes had become, in a sense, community information centers, the impact of the CBSP was felt much more broadly throughout the neighborhood.

5. To explain if and how the course contributed to the social responsibility goals of the College.
Students make the distinction between being socially responsible and politically active. Only 50% think the CBSP experience affected their political activism, but 73% say it influenced their being concerned about issues of fairness in society. It seems that the respondents moved toward a holistic awareness about social justice that integrates emotional connections with people and the community into a strong ethical foundation for informal non-governmental social action instead of overt formal political activism per se. A few students' comments illustrate how the course affected their sense of social justice.

> By giving students the opportunity to step out of one's comfort zone this course forces students to ponder the ways in which the forces of language, geography, gender, race, and class shape perceptions, relationships, ways of sensing and making sense of the world. It is a hands-on experience that through reflective writing fosters critical awareness and consciousness.
> Female/Course 2003-05/P 23.2

> Many other universities could have created this program in any number of ways. I feel like sending young students from academically rigorous universities like the Claremont Colleges could, so easily, have turned into a charity or a cause. Not only was this program an academic experience, but also we were taught, in no uncertain terms, that we were not to descend from on-high with our ideologies and our varied backgrounds to teach these families anything. WE were the ones who were there to learn. It was those families that had so much to offer us. If I came away with a desire to involve myself in social activism as it pertained to first or second-generation Mexican immigrants it was because I was inspired by

my experience with such strong families, especially the women, and not because I felt I needed to reach a hand down to help.
Female/Course 2003-04/P 26.1

Nothing brings this point home like direct experience, personal observation, and social connectedness. Practicum exemplifies each of these aspects.
Female/Course 2005-06/P 29.3

…Many people have a detached view of social justice where they are trying to change the world without interacting with it.
Male. Course 2008/P1.1

6. To provide additional comments as desired.
The respondents' general comments indicate that their perceptions and opinions are that the CBSP had a lasting impact on their lives. All but seven of the 104 responses to this question speak to the positive impact they think the class had on them. The other seven say the impact was lessened because they had already lived similar experiences. Seventeen say that it was one of, or the most, memorable class of their college years, and eight add that it impacted their careers—they are now involved in social work, active in the Latino community, employed as a school counselor, or working in a medical setting. Several mention that the pedagogical model, in and of itself, was very important because it was the basis for the powerful, unique experience. And a few wish to duplicate the program in the education settings where they are working. Finally, three say that they only realized the impact of the course in retrospect.

V. Discussion.

A. hypothesis 1: relationships developed in a cultural immersion course provide language learners with the motivation, self-confidence, and social connections to continue their language learning beyond college boundaries and throughout their lives.

The students not only recall the course, but also especially remember the families they visited, even if they do not always recollect their names, and even if they do not recall much from the other more standard classroom activities, such as journals, discussions, and readings. In many cases, even years later, both the students and community members continue to identify with the others' extended families to which they imagined they belonged. Although the program design was based on the notion that strong interpersonal relationships would abet the learning of Spanish, help overcome cultural and socioeconomic differences, and provide the basis for a subtle kind of service or reciprocity, it was not anticipated that students would "adopt" the *promotoras'* children and that the students and *promotoras'* families would develop such strong enduring bonds. While they may not have regular interactions, the two groups continue to be an important part of each other's conceptual and psychological landscapes.

Previous formative and summative course evaluations showed outcomes and impacts while students were in the program. What the author did not know is how persistent those outcomes and impacts could be. This study indicates that they did persist more strongly than imagined. What appears to be the basis of these potent memories is that the program made possible, encouraged, and indeed engendered long-term relationship building. It seems that one of the reasons for that persistence of impacts was our fostering a space in which language was

used as the medium to develop relationships and where the emotions and memories experienced provided the meaning and motivation for language use.

B. hypothesis 2: combining cognitive and affective learning produces results that are remembered over time.

The CBSP course design recognized the importance of affective factors in language learning, which extends to learning in general. Neuroscientists have questioned the dichotomization of affect and cognition, showing instead that they are distinguishable but inseparable, like the cognitive neural process itself (Schumann 1994); that emotions have important functions for learning and should inform teaching (Zang and Lu 2009); and that motivation and emotion have a role in controlling attention, learning, and retrieval of memories (Bower 1992).

The relationship between affect and cognition is extremely complex and not the direct subject of this article. But hypothetically, the persistence of impacts we found could be due to the interaction of cognitive and emotional factors related to a learning context that fostered positive emotions, strong motivation, self esteem, empathy, and personal significance, and allowed, as students noted, the creation of powerful memories. Responses to the survey's narrative queries suggest that the students' relationships with the *promotoras* constituted a type of surrogate family that helped them cope with the new, often disorienting context of college. One would have thought that the great socioeconomic and cultural divide between the two groups would have added to the students' sense of deracination, but apparently the opposite occurred—after the initial discomfort subsided, most students found a "home away from home" in the *promotoras'* households. The depth and meaningfulness of this relationship were rather unexpected.

C. hypothesis 3: long-lasting learning occurs when students are engaged in constructing their own learning experiences.

Students had many competing influences inside and outside the educational institution. So, it is very important that this group of former students who responded to the survey recognize that the CBSP had a meaningful long-term positive impact on them and that many of the educational outcomes endured. However, a counter-intuitive result of the survey was that 80% of the students who responded and participated in the CBSP in its beginning year, 2000, remember the names of their *promotoras*. No other program year's participants indicate this level of memory; in fact, the next highest rate is 75%, and that is for the 2008 group, just a few months before the survey. This proportion hovers between 35% and 50% for most of the intervening years, with increases only coming in more recent times, 57% and 67% in 2006 and 2007 respectively. Also, 100% of the 2000 class students indicate that the program strongly impacted their valuing of language learning, sense of social fairness, development of self awareness, and empathy for people of other cultures; that rate is much higher than any other class year. Again the impact of the program on these students' political and civic action is less (80%), but that is still higher by far than any later class group.

The explanation for this result seems to be that earlier students were more involved in the actual creation, development, and operation of the CBSP itself while later students simply participated in what was an already established program. If this analysis is indeed true, it appears that, even for community-based courses that involve students in a variety of "hands-on real-world" experiences that go beyond traditional classroom pedagogy, students benefit much more from active participation in structuring their own learning and in the creation of the course itself.

That level of participation involves them more deeply in the conceptual foundation of the course and more clearly aligns their interests with the program's values and purpose.

As a practitioner, one can wonder if this last point brings into question the possibility of ever fully institutionalizing a pedagogical design that is, in itself, a process. Since this course is centered on developing relationships and crossing socio-cultural boundaries, its structure is, by its nature, a living part of the content and constantly interrogating itself. As the CBSP became more "regularized" much of that initial energy was lost. As indicated above, the students still feel emotionally and intellectually engaged. They also feel that they can question the course and change it if they want to. But, the energy applied is different from the first two initial years when the course was being developed from scratch. Thus, as a practitioner, it could be hypothesized that the course design resists regularization, or institutionalization, an important topic for future research.

D. hypothesis 4: a memorable immersive intercultural learning experience that crosses socio-economic boundaries would have long-lasting impacts on the students' sense of social justice and political activism.

An interesting result of the survey is that only half the students indicate that the CBSP had a major impact on their actual political participation and engagement in formal civic activities after graduation, although male students rate this factor higher than females (60% to 48% at the 4 and 5 level). However, about 75% feel that it had a major impact on other aspects of their sense of social responsibility. The lower result on that item is most likely because the course itself did not involve students in any direct formal political or civic actions, although some were later employed in non-profit social service agencies.

This result seems to get to the heart of the issue about whether the CBSP is really "service-learning" or not. It is true that the course is not set up for the students to directly provide service or to work for specific community agencies that provide identifiable social services in a particular neighborhood. In that kind of approach, students' linking of classroom academic subjects to community realities is directed and "mediated" by the agencies. Accordingly, although students do learn about the intricacies of social issues from their interactions with community members, it is presumed that the community members benefit more from the relationship because of the services rendered to them. The CBSP has a community-building approach that relies on the development of long-term interpersonal and reciprocal relationships and connects different information networks. The service quality is not so directly observed as in other courses. But, for nine years the program has provided services in a very subtle, not patently evident, but far-reaching manner by bringing information and skills to the families and helping them connect to other networks. There is a more balanced relationship of power with the *promotoras* and their families, who can participate on their own terms and give and take whatever and however they choose. The issue of whether the course should encourage students to take on a more explicit service role became important in a later episode related to the *promotoras'* children's desire to go to college, discussed in the next section.

VI. Lessons learned.

As a practitioner, it is of course gratifying to learn that, even nine years later, former students indicate that the CBSP was a significant experience for them. This confirms the general trends taking place in the current disciplinary dialogue and self-examination about curricular changes

needed to meet students' need for language and culture competency in the 21st century, as reflected, for example, in the *Pedagogical Forum*'s focused topic in the March 2010 journal *Hispania* (Doyle; Fechter; Jorge; Oxford; Neussel; Sánchez-López; Wilbur and Monk 2010); in the Modern Language Association's *Report to the Teagle Foundation* (2007); and in the American Council on the Teaching of Foreign Languages' *Standards for Foreign Language Education* (ACTFL Special Project, 1999). The last underlined the connection between students and communities of native speakers at home and abroad as an integral part of their conceptual proposal. All of which encourages continued experimentation with and further development of the course.

In this light, two major issues from this survey stand out. One has to do with encouragement of formal political activism and whether more explicit service learning activities should be included in the CBSP, both of which could easily be done. The author, in fact, teaches another course which places students in a school in the nearby community of Azusa in order to help improve the literacy skills of English-learning kindergartners and their Spanish-speaking families. However, incorporating such a project in the CBSP would radically change the dynamics of the course. This issue came up again recently with respect to the *promotoras'* children (Jorge 2010, unpublished manuscript). Many of the children had grown up with the college students' visits to their homes over ten years and were greatly influenced by them in many ways, particularly in developing a desire to go on to college themselves. A few current students were upset when they learned that one of the children had applied to Pitzer, but was not accepted. They were concerned that over the years the students had collectively raised expectations for the children without helping to prepare them adequately for college work. They wanted to make this effort an explicit part of the CBSP curriculum. But, after lengthy discussions, they came to agree that such an overt service component would alter the equilibrium of power and change the nature of the relationships between them and the families. For all the reasons stated earlier this was considered a price too high to pay.

The other issue having to do with the students' not mentioning the campus components of the course as significant for them is disturbing but difficult to interpret. On the one hand, it may simply reflect a flaw in the survey, which did not ask explicitly about the classroom aspects of the course because the survey was more focused on the community-based field activities. On the other hand, it may simply mean that over time this important intellectual aspect of the course fades in importance compared to the emotional attachment to the families. Previous formative assessments while the course was in progress indicated that the students saw the classroom component as inherently connected to the field component. The readings, journals, and class meetings are meant to encourage students to reflect on their community activities. Reflection is an integral part of the teaching/learning process; it allows us to create knowledge, to develop meaning, to give depth to an experience, and to connect our thinking to broader bodies of knowledge. During the course, students have reflected on a whole range of issues, for example, socio-economic and political issues related to immigration, bilingualism, education, cultural diasporas, intercultural communication and values, elections, and social justice; as well as personal issues related to overcoming obstacles, parenting, the nature of happiness, love, and life. While the course is in progress, all the indications are that the students feel it is extremely useful to process and reflect on their experiences, and also make interdisciplinary connections with other areas of their studies. The assessments, in fact, revealed that the reflections were critical for achieving the learning outcomes of the course. Thus, it is a surprise to learn that, although the outcomes seem to persist over time, the reflective component is not considered so significant in

their achievement. This outcome, indeed, requires more investigation about the nature of reflection and how it works. It is perhaps possible that the process of reflection today is forgotten years later when the resulting ideas, attitudes, and behaviors are so integrated into personality that they are no longer noticeable except upon further reflection.

In sum, it does seem that the potent, lasting impressions that the surveyed students have about their CBSP experiences points to the importance and viability of this course design and its pedagogic basis. Students' engagement and questioning has kept the program alive, fluid and adaptive to the context, creating opportunities for constant reflection about what they are doing and why. For the students who are called upon to direct and structure their own education and determine their values, this provides a sense of ownership and empowerment, and a long-lasting appreciation for the power of a second language and attendant cultural learning.

Acknowledgements

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Is active learning like broccoli? Student perceptions of active learning in large lecture classes

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Abstract: Although research suggests that active learning is associated with positive outcomes (e.g., memory, test performance), use of such techniques can be difficult to implement in large lecture-based classes. In the current study, 1,091 students completed out-of-class group exercises to complement course material in an Introductory Psychology class. Students were assigned either active learning or content review activities. Students in the active learning condition reported greater retention of and engagement with the course material but not greater enjoyment when compared to students in the content review condition. The importance of choosing pedagogical methods that promote the construction of knowledge rather than just behavioral activity is discussed.

Keywords: active learning, student perceptions, instructional techniques, large lecture

I. Introduction.

The lecture is a traditional approach to learning and instruction found across academic levels and disciplines. It is an efficient means of transferring knowledge from instructor to student, especially given institutional pressures for large classroom environments. However, instructors have begun to question the effectiveness of this approach:

> ….we want to teach our students as much as possible in the limited amount of time we've been given. So we in effect load our pedagogical dump truck as full as we can, back it up to the classroom, and unload it onto our students, burying them in teaching…When we use the dump truck method, we overwhelm our students with more skills and strategies than they can possibly absorb in an hour. That's our first mistake. Then we fail to give students the opportunity to practice any of the strategies and skills, virtually guaranteeing that they won't be internalized. (Gremmels, 1995, p. 89)

Gremmels's metaphor cleverly captures the drawbacks of what is often seen in classrooms. Although constraints such as large class sizes and theatre-style classrooms can prohibit the use of newer pedagogical methods, ways of combining active learning with the traditional lecture should be explored.

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A. What is active learning?

Active learning is generally defined as any instructional method that engages students in the learning process (Prince, 2004). In contrast to "passive-learning" methods where the responsibility of instruction falls on the teacher, active learning is a student-centered inductive learning process. It engages students by requiring them to <u>do</u> meaningful activities and <u>think</u> about what they are doing (Bonwell and Eison, 1991). Thus, active learning does not involve just doing activities; there must be opportunity for students to reflect, evaluate, analyze, synthesize, and communicate on or about information (Fink, 2003). Research suggests that active learning leads to a variety of positive outcomes including better student attitudes (Bleske-Rechek, 2002), greater motivation (Waston, Kessler, Kalla, Kam, and Ueki, 1996), improvements in students' thinking and writing (Bonwell and Eison), memory for information taught (Cherney, 2008), and improved exam performance (Yoder and Hochevar, 2005).

B. The pitfalls of lectures and large class sizes.

Even though active learning is associated with positive outcomes, lectures should not be abandoned, given their potential to organize material and present information unavailable elsewhere (Nasmith and Steinert, 2001). However, lectures reinforce students' roles as passive learners and depersonalize students' experiences. Further, even though large lectures are the typical format for Introductory Psychology courses, many students do not have established memory structures on which to encode and build course material (Cherney, 2008). This, combined with exam formats that reinforce memorization, can thwart conceptual learning.

Incorporating active learning methods into lectures may address these limitations by engaging students with course content. Bleske-Rechek (2002) designed an in-class small-group activity to demonstrate obedience, conformity, and social roles in a real-life context in her 65-student introductory psychology class; students reported preferring the activity to a lecture. However, instructors at other universities may be faced with obstacles related to much larger class sizes and auditoriums of tiered seating (Michael, 2007). One alternative is assigning active learning activities that occur outside of class time and dividing students into groups, addressing complaints that large lectures are impersonal and intimidating (Barbour, 1989). This is consistent with the physical sciences that connect lecture with active learning in the laboratory. For example, students in an introductory physics class worked in groups outside of class on tutorials to help build qualitative reasoning on a fundamental concept (Redish, Saul, and Steinberg, 1997).

II. The current study.

To capitalize on the strengths of both teaching strategies while working within the pressures and constraints of higher education, the current study assigned group exercises to reinforce content taught in large Introductory Psychology lectures. Half of the students completed "active learning" exercises and half completed "content review" exercises similar to those found in a textbook study guide, selected because many students perceive study guides as helpful (Dickson, Miller and Devoley, 2005). We hypothesized that students in the active learning condition would 1) report greater retention of course material, 2) report more engagement with course material, and 3) have more positive attitudes about the course. Even though a limitation of the current study is the use of self-report, research has shown that students can report accurately on their

own learning (Chesebro and McCroskey, 2000), and that their perceptions can influence learning outcomes (Lizzo, Wilson, and Simons, 2002).

A. Sample.

Participants were 1,091students enrolled in one of four large Introductory Psychology classes at a large state university. The sample was comprised of 423 males and 640 females (28 students did not provide this information). The classes were predominantly freshman (71.3%). Two faculty members (the authors of this paper) each taught two classes. Both faculty members had previously taught Introductory Psychology.

C. Measures.

All participants completed an anonymous end-of-the-semester survey immediately following their final exam. All items were rated on a 5-point scale (1 = *strongly disagree*; 5 = *strongly agree*) except where noted below.

   Retention. Self-report of general retention was measured with three questions: "The group activities helped me better remember class material;" "I gained a better understanding of class material after completing group activities;" "The group activities were a good way to learn about the specific topics." A composite measure of general retention was created by averaging all three items ($\alpha = 0.88$). Self-report of retention for the topic of each group activity was measured with a single item using the stem, "The group activities increased and/or clarified my knowledge about [topic]."

   Engagement. Self-report of engagement with course material was measured with three questions: "The group activities helped me to think about what I was learning in a different way;" "The group activities stimulated my interest in psychology;" "The group activities challenged me intellectually." A composite measure of general engagement was created by averaging the three items ($\alpha = 0.80$).

   Course Attitudes. Enjoyment of the class was measured with a single question that asked students to rate their agreement with the statement, "I enjoyed this class." Overall evaluation of the course was rated on a 5-point scale (1 = *poor*; 5 = *excellent*) with one statement: "The course, on the whole, was…" To aid in interpretation, this item was reverse-scored such that higher scores indicate a more positive evaluation of the course.

C. Procedure.

Each instructor taught one active learning condition class and one content review condition class which were scheduled back-to-back, and the order of class condition was counterbalanced. There were 541 students in the content review condition (CRC) and 550 students in the active learning condition (ALC); there were no significant differences in sex or class year.

   Students within the same class were randomly assigned to groups of 6 and were required to purchase a manual containing instructions for each activity. Nine group activities were created by the authors for both conditions. CRC activities were designed to be engaging but passive (e.g., crossword puzzles and word scrambles of key terms, true-false games). ALC activities were designed to have students discover and apply the information themselves. For example, in the sensation and perception activity, students created different sugar-water solutions to test

absolute thresholds and just noticeable differences in taste. In the emotion activity, students were given specific instructions on how to pose their faces to demonstrate particular emotions and evaluated how good people are at identifying so-called "universal emotions." Students completed the activities in their assigned groups outside of class, and activities were due one week after the material was covered in class. Refer to Appendix 1 for details about these exercises.

III. Results.

A series of factorial ANOVAs were conducted to test the hypotheses that students in the active learning condition, compared to the content review condition would report greater retention of (Hypothesis 1) and engagement with (Hypothesis 2) course material. In addition to activity type, instructor and participant sex were entered as fixed factors in each analysis to control for differences (i.e., research has found sex differences in preferences for group work, Honigsfeld and Dunn, 2003). (Because the proposed hypotheses were not related to the variables of instructor or sex of the student, main effects for these variables and interactions between these two variables are not discussed below unless they interact with the type of group activity.) No significant interactions between type of group activity and either instructor or participant sex were found. In addition, the three-way interaction was not significant. Concerning Hypothesis 1, participants assigned to the ALC reported greater overall retention ($M = 2.96$, $SD = 0.97$) compared to the CRC ($M = 2.78$, $SD = 0.95$), $F (1, 1050) = 6.60$, $p = 0.01$, $d = 0.19$. Evaluation of students' retention of the specific topics revealed that for seven of the activities, participants in the ALC reported greater retention. Table 1 summarizes these results. For Hypothesis 2, a significant main effect was found for engagement with the material, $F (1, 969) = 33.05$, $p <0.001$, $d = 0.37$, with the ALC showing greater engagement ($M = 2.85$, $SD = 0.86$) compared to the CRC ($M = 2.53$, $SD = 0.85$).

Regarding Hypothesis 3, a second set of factorial ANOVAs were conducted to determine if participants who completed active learning group activities enjoyed the class more and held a more positive evaluation of the course. As with the earlier analyses, instructor and sex of participant were added to the model but there were no significant interactions with class type. A significant main effect was found for enjoyment of the class ($F (1, 1053) = 13.79$, $p < 0.001$, $d = 0.22$); however, it was the CRC ($M = 3.60$, $SD = 1.04$) that showed more enjoyment of the class compared to the ALC ($M = 3.37$, $SD = 1.05$). A significant main effect in the same direction was also found for overall evaluation of the course ($F (1, 1055) = 13.81$, $p < 0.001$, $d = 0.20$), with CRC participants ($M = 3.30$, $SD = 0.96$) showing a more positive overall evaluation toward the course compared to ALC ($M = 3.11$, $SD = 0.98$).

A final set of analyses was conducted to determine if participants' perceptions of greater retention and engagement with the material were predictive of more positive attitudes toward the class. Retention, engagement, and activity type (contrast coded with ALC coded as 1, and CRC coded as -1) were regressed on enjoyment and evaluation of the class. Only engagement ($\beta = 0.29$, $t = 6.09$, $p < 0.001$) and activity type ($\beta = -0.16$, $t = -5.19$, $p < 0.001$) predicted increased enjoyment of the class. Similar results were also found in the prediction of overall class evaluation (engagement:$\beta = 0.23$, $t = 4.65$, $p < 0.001$; activity type:$\beta = -.14$, $t = -4.54$, $p < 0.001$).

Table 1. Retention of material for each course topic.

Topic	Active Learning		Content Review			
	M	*SD*	*M*	*SD*	*F*	*d*
Research Methods	2.97	0.97	2.74	0.99	10.64***	0.23
Brain & Behavior	3.09	1.02	3.15	1.01	0.63	
Sensation & Perception	3.03	0.96	2.87	1.01	6.26**	0.06
Learning	3.14	1.00	3.07	1.02	1.35	
Memory	3.32	1.04	2.98	1.00	25.43***	0.33
Intelligence	3.06	0.98	2.92	1.00	4.53*	0.14
Emotion	3.07	1.04	2.89	0.97	6.38**	0.18
Social Psychology	3.02	1.02	2.85	0.97	6.04**	0.17
Abnormal Psychology	3.19	1.02	2.92	1.02	14.48***	0.27

*$p < 0.05$. **$p < 0.01$, ***$p < 0.001$

IV. Conclusion.

This study examined the difference between active learning group work and content review group work that complimented large Introductory Psychology lectures. As predicted, students in the active learning condition reported greater retention of course material for the majority of topics as well as the course material as a whole. Differences in self-reported retention were not found between both conditions for the "Brain and Behavior" and "Learning" modules. This may be due to the fact that these content review activities were more similar to active learning activities, requiring students to think about what they were doing. For example, in the content review activity for the "Brain and Behavior" chapter, students were asked to label brain structure and define its function and purpose *in their own words*.

Consistent with the second hypothesis, students in the active learning condition also reported greater engagement with the class material. These findings add to the literature demonstrating positive outcomes associated with active learning. In the current study, although the content review condition generally required students to "do" something, students did not have opportunity to select and apply their knowledge in novel ways. This is consistent with research on the generation effect (Slamecka and Graf, 1978), which suggests that people are more likely to remember information that they generate themselves (when compared with information that people simply try to remember). Explanation for the generation effect can be found in the levels-of-processing theory, which proposes that deeper and more elaborate processing is associated with enhanced recall (Slamecka and Graf, 1978).

The third hypothesis, that students in the active learning condition would report more positive attitudes about the class, was not supported. It is possible that students in the active learning condition resented the "intellectual effort" necessary for successful completion of the activities. A meta-analysis by Alliger and colleagues (1997) showed that utility reactions are more predictive of on-the-job performance. Thus, even though students in the active learning condition held less favorable affective reactions, their lack of satisfaction may not impact their learning. Further, our subsequent analyses indicated that both activity type and levels of engagement were independent predictors of overall course evaluation, suggesting that instructors should find ways of engaging students in course material regardless of how it is learned. It appears that active learning may indeed be like broccoli: Although it is good for students intellectually, their overall impression of it may not be completely positive.

One limitation of the current study is that the relationship between active learning and academic performance was not examined. Due to the anonymous nature of the questionnaire and the administration of different exams by the instructors, using grades as data was not possible. Although reactions have been found to be predictive of learning outcomes, the relationship is not strong enough to suggest that reactions be used as indicators of learning (Stizmann, Brown, Casper, Ely, and Zimmerman, 2008). Therefore, future research should examine whether the specific active learning exercises result in learning outcomes.

The current study examined the feasibility and benefit of assigning active learning exercises as a course requirement in large lecture-style classes to increase engagement with course material and the likelihood of conceptual learning. This concept may be applied to other types of classroom settings. For example, the online learning environment may be enhanced through the use of meaningful, hands-on activities that require students to synthesize and analyze information. This is consistent with calls to foster active learning in online courses (e.g., Brown, 1997).

Although active learning is a pedagogical method, it does not prescribe how to teach. Since hands-on activities are not necessarily methods that aid the process of learning, instructors should carefully choose pedagogical methods, focusing on those that promote selecting, organizing, and integrating knowledge, rather than just behavioral activity.

Acknowledgements

Appendix 1. Brief Descriptions of Active Learning Group Assignments.

Topic	Introductory Instructions
Research Methods	You will be conducting a study, using the guidelines of good psychological research. You will generate a hypothesis and collect data to see whether the data support it. You will also be asked to consider how well you did in designing a study based on what you have read and learned in class about what makes for good psychological research.
Brain and Behavior	During this exercise, you will be able to get some "hands-on" experience with the brain, its various structures, and how these structures function. You will also get some experience with how the brain works and how it can malfunction.
Sensation & Perception	You will examine both how you sense things as well as how you perceive things. The first half will involve viewing art and figuring out which visual cue is necessary to see the picture. During the second part, you will be able to test your perceptive skills using your sense of taste.
Learning	You will apply principles of learning to a real-life scenario. You will identify maladaptive behavior and recommend ways of changing that behavior in a classroom by applying the learning principles discussed in class and in your text.
Memory	You will examine how different memory strategies discussed in lecture and in your text can improve or hinder your memory for a grocery list.
Intelligence	You will examine the relationship between intelligence, scholastic aptitude/ability, and creativity by collecting data on these variables.
Emotion	You will participate in a demonstration on the subjective experience of emotion. You will also get an opportunity to try your hand at interpreting the facial expressions of other people.
Social Psychology	You will be using the principles of social psychology to solve a real-world problem. Keep in mind, there is no one correct answer to the problem. However, you will need to demonstrate that you understand concepts like social facilitation, groupthink, etc. and have considered them sufficiently.
Abnormal Psychology	You will read case studies of people who are suffering from a mental disorder. In addition to simply diagnosing them, you will be asked to perform a full assessment of their symptoms and possible treatment alternatives.

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Supporting conditionally-admitted students: A case study of assessing persistence in a learning community

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Abstract: Using Astin's I-E-O model as a framework, this article explores the effects of a variety of factors on first-year persistence for conditionally-admitted students participating in a learning community at a public land-grant university. Since the learning community began in 2002, program administrators have collected survey, interview, and academic success indicators for participating students. In 2007, the program received grant funds to more carefully investigate factors that promote and inhibit persistence among students. For students matriculating in 2007, this study collected survey and entry characteristic data to probe predictive factors for persistence after the first year. These data allow us to better identify and understand dominant influences on student persistence as well as plan more informed interventions for students most at risk for departure. Key factors at our university that affected persistence of at-risk students included social integration, academic conscientiousness (most notably the use of self-regulatory learning strategies), and select pre-college characteristics including motivation and college preparatory curriculum. This article serves as a case study; after describing our local context, we present the inputs and environmental factors most predictive of persistence. We close by discussing the implications of this research for universities and colleges seeking to improve support for at-risk students.

Keywords: learning community, at-risk students, first-year persistence, self-regulatory learning

The issue of student retention, as Braxton and Mundy (2001) have pointed out, is an ill-structured problem that defies a single solution. There is no magic bullet—especially for individuals who enter college with at-risk characteristics—to ensure that students will continue on the collegiate path. In fact, as the number of students enrolling in colleges and universities grows (25% over the past twenty years), the number of underprepared and/or economically disadvantaged students has also increased, a trend that heightens the need for our society to bridge gains in access with college completion (Engstrom, 2008). Improving persistence among at-risk students positively impacts diversity in higher education and increases career and economic opportunities for traditionally marginalized individuals, important features in improving what Rawls (1999) terms fair equality of opportunity in education.

Following a national trend towards learning communities as a way to promote collaborative, social constructivist learning environments (see Tinto, 1998; Bruffee, 1984; Ishitani, 2008), our university implemented a learning community in 2002 to bolster academic and social support for conditionally-admitted, first-year students who do not meet the

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university's GPA and ACT admissions requirements. Approximately 150 conditionally-admitted students are enrolled in the learning community each fall. Participating students are further divided into smaller cohorts of around 38 students. A meta-study of learning communities by Zhao and Kuh (2004), based on National Survey of Student Engagement (NSSE) data from 365 four-year institutions, has provided significant evidence that learning communities are associated with a variety of positive outcomes. Those outcomes include higher levels of academic effort, academic integration, and active and collaborative learning; more frequent interaction with faculty members; and more positive attitudes about the quality of academic advising and campus support. For at-risk students particularly, small but compelling evidence suggests that learning communities increase student engagement and persistence and represent the most meaningful avenue toward access for underprepared students (Engstrom, 2008).

Since 2002, our learning community has collected academic success data for its participants in part for internal assessment and program improvement purposes, but also to make an effective case to the university's administration for the program's continuation beyond its initial three-year pilot phase. In the years 2002 – 2006, we saw a substantial increase in academic success for students participating in the learning community. During this five year period, learning community participants earned an average first-semester GPA of 2.14, compared to an average of 1.79 for the comparison group of conditionally-admitted students who entered the university during the four years before the program was institutionalized. Learning community students earned an average first semester academic probation rate of 40%, a full 20% lower than the comparison group. In addition, fall-to-fall retention increased by about 5% among participants in the learning community. While our learning community does not include a residential component, our students' academic success and responses to program satisfaction surveys are consistent with a national study of living-learning programs that found at-risk students who enroll in living-learning communities generally experience a more successful academic and social transition to college (Inkelas et al., 2007).

The current study is based on research beginning in 2007 aimed at more intentionally exploring factors that influence persistence among students in the learning community. In general, our research has privileged "policy" and "institutional research" perspectives (Bean, 2005). For this study, we selected Astin's I-E-O model as the primary framework for our study, believing it would provide a useful way of understanding our data—especially the environmental factors which may affect students' likelihood of persisting. Many studies of learning communities and support programs for "at-risk" students investigate only the broad impact of the program on participants' first-year success indicators such as GPA and first-year persistence. In this study we wanted to improve our ability to identify and intervene earlier with students most at risk—some who may not show signs of increased risk until well into the first year. Our research questions include:

- Which entry characteristics as well as academic, social, and environmental elements (based on Astin's model) are most predictive of persistence among conditionally-admitted students participating in the learning community?

- To what extent do self-regulatory learning behaviors impact participating students' persistence at the university?

- What are the key areas for intervention in a learning community model, and how might instructors and administrators most effectively implement approaches?

I. Background and local context.

Each year, conditionally-admitted students are enrolled in the learning community based primarily on high school GPA scores (below 2.75 for non-residents and 2.5 for residents). In some cases ACT scores and high school prerequisite courses also play a role in conditional admission. Conditionally-admitted students are considered "at-risk" because of long-term institutional data showing higher academic failure and departure rates for students entering with low GPA and/or ACT scores. Students admitted conditionally at our university follow national trends in comprising higher numbers of male, minority, and first generation students than regularly-admitted students, as well as lower average family income ($10,000 less average annual income). In fall 2007, 64% percent of students entering the learning community were male and 18% percent minorities—a significant ratio in light of the fact that males comprise 47% of the general entering population and minorities 9%. Students admitted with conditions are also more likely to be basic writers and readers, evidenced in part by English ACT scores that average between 1 and 3 points below those of regularly admitted students.

Multiple studies indicate that provisionally-admitted students feel less confident in their ability to succeed in academic settings and need additional help in developing habits of mind and behavior conducive to college success (see Kinzie et al., 2008). While first-generation students are often identified as "at-risk" for college failure or departure, for example, those who enter under provisional status for low high-school GPA or ACT scores experience these risks to an even greater degree. The learning community model is particularly effective for a program serving academically at-risk students; Bruch et al. (2004) argue that "learning communities can provide historically marginalized students with a sense of belonging and space such that they can be truly engaged and active contributors in the learning community" (p. 18). Additionally, numerous studies (Berger & Milem, 1999; Braxton, Milem, & Sullivan, 2000; Milem & Berger, 1997) indicate the importance of peer groups and social integration in predicting persistence. By creating small cohort groups based around academic courses, our learning community seeks to promote social integration.

The Washington Center for Improving the Quality of Undergraduate Education defines learning communities broadly as "classes that are linked or clustered during an academic term, often around an interdisciplinary theme, and enroll a common cohort of students" (n.d., para. 1). Instituted as a public service consortium of The Evergreen State College, the Center's mission is to assess and support a variety of undergraduate initiatives including learning communities. Since the early 1990s, the center has collected comprehensive research and assessment from learning communities around the country. Our learning community fits the Washington Center's description of a cluster-model learning community, in which two or more classes are linked thematically or by content. In a cluster learning community, students attend classes together and faculty plan the program collaboratively.

Our program intentionally includes four general education courses that foreground skills commonly underdeveloped in at-risk students: reading, writing, speaking, and test and study skills integral to large lecture courses. Because the learning community connects multiple sections of first-year writing, U.S. government, public speaking, and critical reading and research courses, instructors meet in the summer and throughout the year to plan thematic, textual, and

assignment-based connections. Moreover, students are guaranteed enrollment in four general education courses that are in highest demand—a feature that in itself helps students gain a step-up during the first year. The learning community's writing and reading courses are smaller than regular sections of these courses (18 students vs. 23 for regular courses). The reduction in class size is not a feature common to all learning communities at our university but helps satisfy our desire to increase one-on-one time between students and instructor through out-of-class conferencing and workshop time during class. In addition, with smaller classes, instructors can more easily integrate discussion and student-led policymaking within classes.

Because the government course is a lecture course enrolling 250 students per section, participating students have an opportunity to take a large exam-based lecture course with additional study and test-taking help. This course also includes weekly supplemental instruction sessions led by undergraduate students and the instructor. Sessions focus on skills that can be transferred to any lecture course involving note-taking, multiple-choice and short-answer exams, and research-based writing.

Peer mentors, selected from past students in the learning community, play a crucial role in building community and developing a support network for participating students. Peer mentors help to lead the student seminar in August, a one-day meeting for students and instructors to build community and begin creating policies for the courses. Peer mentors also attend the composition course throughout the semester and assist students both inside and outside of class.

The program director and current faculty work to recruit instructors into the learning community who show commitment to student success and build close relationships with students. Astin (1993) found that student perception that faculty are oriented toward students (rather than primarily towards research) "produces more substantial positive direct effects on student outcomes than almost any other environmental variable" (p. 342). This factor positively influences, among other outcomes, attainment of a bachelor's degree, decision to re-enroll at the same college, and self-reported growth in writing skills, critical thinking abilities, analytical and problem-solving skills, and preparation for graduate school. While past feedback from students in the learning community has confirmed that students value the strong peer and faculty ties during their first year, program administrators sought in this study to investigate more explicitly how students' experiences, attitudes, and backgrounds impact their persistence.

II. Methods.

A. Conceptual model.

Berger and Lyon (2005) mark the 1970s as the beginning of theoretically-based retention studies. From that period emerged two key theories about retention: Tinto's interactionalist model and Astin's involvement-centered approach. Though Tinto's model, which focuses on students' integration into a school's academic and social systems, has "near-paradigmatic status in the study of the college student departure" (Berger & Braxton, 1998, p. 104), we believe Astin's model of college impact offers a more flexible model with which to investigate and categorize the variety of factors we considered in this study.

Astin's Input-Environment-Outcomes (I-E-O) model includes three major components: Inputs include students' pre-entry characteristics when they enter college; Environment includes all of the factors experienced during the student's time in college; and Outcomes pinpoint the

characteristics of the student after being exposed to the environment. To put it simply, the changes which happen after a student's time at college (outcomes) are affected both by personality and experiences prior to college (inputs) as well as the effect of peers, programs, faculty and other environmental factors (environment) during his or her time at college.

Obviously, as Astin points out, changes that happen during the time period being studied cannot necessarily be attributed directly to the impact of college—factors such as maturation and the environment outside of the college setting also create changes that may magnify, accelerate, or counteract the impacts of the college environment (also see Lounsbury et al., 2004). Thus, retention research ideally attempts to isolate the impact of college from other factors, including pre-entry characteristics as well as extra-collegiate factors, in order to clearly identify those factors which can be attributed to the college environment. However, due in part to our institutional policy perspective, we wanted to explore both the pre-entry characteristics and the college environment factors that seemed to predict student retention.

B. *Participants and procedures.*

This study focuses on the 2007 matriculating class of conditionally-admitted students at our institution over an 18-month period. In addition to collecting pre-entry characteristics from the registrar's office for all 139 participants, faculty administered a survey during class time at the close of fall semester. The survey was also sent electronically to those students who did not attend class on the day the survey was given. The faculty who administered the survey informed students that their responses were anonymous and their participation in the survey was voluntary. The 40-item survey took approximately 20 minutes to complete.

The survey is modeled after the College Persistence Questionnaire (CPQ) designed by Hall Beck and William Davidson. The CPQ is a tool for identifying and planning early intervention for students whose scores indicate they may be at greater risk for departure, and it collects data around six factors: Academic Integration, Social Integration, Supportive Services, Degree Commitment, Institutional Commitment, and Academic Conscientiousness. The survey also included questions assessing students' satisfaction with individual courses and the learning community. Within the academic integration portion, we added two open-ended questions concerning helpful and harmful influences on students' first semester academic success to help us assess students' use of self-regulatory learning strategies to achieve educational goals. In the past ten years, interest in self-regulatory learning (SRL) has heightened as educators investigate how students approach problems, apply strategies, and monitor their performance (Paris & Winograd, 2000). Self regulation is a helpful tool in assessing academic integration because it highlights the "self" and the extent to which students' goals and tactics influence the quality of their learning (Butler & Winne, 1995; Paris & Byrnes, 1989; Pressley, 1995). In addition, some evidence suggests that students who possess poor confidence in their scholastic abilities experience more challenges with self-regulated learning than their more confident peers, a scenario that can further dampen prospects of success for at-risk students (Bartels & Magun-Jackson, 2009).

To analyze the survey results, we used analysis of variance through SAS PROC GLM. This procedure, which uses the method of least squares for general linear models, allowed us to determine the relationship of a wide range of independent variables to the dependent variable of retention. When possible, retention was treated as a (continuous) numerical variable, though in some comparisons it was necessary to code retention as a categorical variable. In results, we

indicate correlations as statistically significant which are significant at the $p <= 0.05$ level. One key limitation of our study is the lack of statistical regression analysis, which would have afforded a clearer look at how factors interplay in students' persistence.

C. Measures.

Inputs: In Astin's model, inputs can include pretests, self-predictions about future outcomes, and personal characteristics. Our study gathered standardized test and entry characteristics data from the registrar's office, including age, gender, residency, citizenship, first generation status, ethnicity, high school GPA, athlete status, ACT score, and financial aid eligibility (including federal Pell grants). Because our university does not collect data on high school class standing, we were not able to include this (highly predictive) characteristic. From the fall 2007 survey, we gathered information about when students made the decision to pursue a college degree, their primary reason for attending college, and the college preparation courses they took in high school such as advanced placement, international baccalaureate, and/or honors courses.

Environment: Astin (1993) refers to environment as "the various programs, policies, faculty, peers, and educational experiences to which a student is exposed" (p. 7) and which play a role in the outcomes under study. Our study focused on three critical environmental influences described by Astin: student orientation of the faculty, academic integration, and social integration.

Student Orientation of the Faculty
Six 5-point Likert scale items in the fall 2007 survey captured students' perceptions of faculty responsiveness to students' needs. Measureable factors included students' perception of faculty concern for student success, willingness and availability in and out of class to provide assistance, and the degree to which faculty "care" for students in the learning community.

Academic Integration
The survey contained 14 items related to academic integration. Seven questions helped measure self-regulatory learning strategies based on Pintrich's (2000) categories and criteria for positive SRL strategies: text-based cognitive learning strategies; metacognitive and self-regulatory strategies including planning, monitoring, and regulating behavior based on goals; and resource management strategies (managing and controlling one's time, effort, environment, people, and outside resources). Measures also included 5-point Likert-scale evaluations of the learning community's impact on academic skills and success, identification of the types and frequency of academic support use (Math Lab, Writing Center, Libraries, etc.), perceived connections between courses and post-college endeavors, significance of select challenges to academic success (boredom, absences, time/coursework management), number of visits home, and typical places and times for completing out-of-class schoolwork. In addition to quantitative questions, this portion included an open-ended question asking students to describe the factors that most helped their schoolwork during their first semester. Students' responses were coded for trends in self-regulated learning strategies. While students' responses were not always lengthy or detailed enough to carefully analyze for categories of self-

regulation, most responses did contain language pointing to either self-regulating motivation (intrinsic) or extrinsic/outside forces (naming simply "good teachers" or "friends" as the most helpful influence on their academic success, for example).

Social Integration
Six items measured students' social integration. Students were asked to rate (on a 5-point Likert scale) their connection with campus, overall satisfaction with various aspects of their social life, and integration with the city. Students also identified the most significant places they spent time outside of class, their co-curricular activities and memberships, and the number of their friends who departed in the first year.

D. Outcomes.

In the I-E-O model, outcomes include the students' behaviors or outcomes after exposure to the environmental factors. Change or growth is typically determined by comparing outcome and input characteristics to assess the impact of environmental elements. Our study focused on the sole outcome of institutional persistence, meaning that we coded any student who returned to our institution as "persisting," and any student who did not return to our institution as "departing."

Although we focused on institutional persistence for our study, we acknowledge that controlling for transfer and stop out numbers can provide additional context for studies of first year persistence. Through accessing National College and University Clearinghouse data, for example, we found that only 15% of the students who departed in this at-risk population truly dropped out or stopped out in fall 2008.

However, our decision to focus on institutional persistence was guided by the fact that a large number of the students who departed institutionally showed indicators of struggling academically in the first year. Students in the learning community who departed earned an average first-year GPA of 1.57, vs. an average GPA of 2.62 for persisting students. Among the transfer students, 42% were on academic probation and an additional 5% had withdrawn from the university due to academic difficulties. Understanding that students who are struggling academically may mistakenly see transfer as a way to escape the challenges they encounter in their first year of college, these indicators led us to seek information about factors that impacted the students' first-year experiences, whether or not they transferred to another institution.

III. Results.

A. Input characteristics.

Despite a fairly wide spectrum of GPA scores among conditionally-admitted students in our study (ranging from 2.0-2.75), we found no results indicating that high school GPA or ACT predict retention for the sample. In other words, while conditionally-admitted students are as a group more likely to depart than the regular student body, students with the lowest entering scores in our study did not show signs of increased risk for departure compared to their at-risk peers. In fact, with a few exceptions, most of the entry characteristics data did not reach statistical significance when comparing persisting and departing students in the learning community. Characteristics including age, in-state residency, ethnicity, gender, first-generation status, high school GPA, composite ACT, and financial-aid eligibility did not predict persistence.

However, first generation, ACT score, and undeclared or declared disciplinary major came close to significance. Table 1 reports *p*-values for this set of variables.

Table 1. Impact of entry characteristics on retention.

	p-value
Gender	0.5064
Residency status (in state or out of state)	0.8620
Ethnicity	0.8424
First-Generation status	0.1570
High School GPA	0.9155
Composite ACT score	0.1687
Financial aid eligibility	0.4641
Declared/undeclared major	0.1579

In addition, students' math placement scores, varsity athletic status, and perception of the quality of their high school did not reach statistical significance in predicting departure. However, students' self-identified reasons for attending college did predict departure ($p=0.0106$) As shown in the table below, students who came to college because it seemed like "the next step," because they wanted the social experience, or because they had parental pressure were more likely to depart than those who indicated educational or career goals for their college education.

Table 2. Impact of the factor "reason for coming to college" on retention. ($p=0.0106$)

Reason for coming to college	Probability of persistence (± standard error)
Continue education (25 students)	60.1% (±10%)
Pursue a career goal (54)	55.6% (±6.5%)
For the social experience (3)	33.3% (±23%)
Seemed like the next step (24)	25.0% (±9.8%)
Followed parents' advice (2)	-0.00% (±34%)
Other (6)	87.5% (±17%)

Of the six students who wrote in "other" responses, four indicated "sports" as their main reason for coming to college, one identified "scholarship," and the final wrote simply, "I was ready for college."

Table 3. Relationship of college-education decision timeline to persistence. ($p=0.0015$)

Time at which students decided to pursue college	Probability of persistence
Before high school	54.1% (±6.4%)
During sophomore year	60.0% (±12.9%)
During junior year	28.5% (±13.4%)
During senior year	36.4% (±15.1%)

Additionally, taking an advanced placement or college preparatory course while in high school was a predictor of retention (p=0.0412). Students who reported taking *no* advanced placement courses had a 30% chance of persisting while those who reported having taken *any* college prep course were likely to return at a rate of 68%.

The data on *when* students chose to pursue a college education had too much variation to reach statistical significance. Interestingly, however, the results follow a logical trend: students who did not decide until their junior or senior year to pursue college education were less likely to persist than those students who had decided to pursue a college degree by their sophomore year. Table 3 shows the probability of persistence.

B. Academic and environmental characteristics.

Student Orientation of the Faculty: While students' responses to faculty assessment questions were generally very high, students who returned were statistically more likely (p=0.0483) to strongly agree with the claim that faculty were concerned for student success. (Means on a 5-point scale were 4.446 (±10.6%) and 4.145 (±10.7%), respectively).

Visits Home during Fall Semester: The number of visits home during students' first semester was a significant retention indicator (p=0.018). Students who returned for their second year reported visiting home an average of 2.7 (±0.39) times during their first semester, while departing students left campus to return home at least 4.04 (±0.4) times.

Course Absences: Somewhat surprisingly, the frequency of absences did not appear to be a significant predictor. The primary reason students gave to explain *why* they missed class was also not a predictive factor.

Connection between Coursework and Future Goals: The connection students perceived between their coursework and their future lives or careers proved a significant predictor for retention (p=0.009). On two sides of the continuum, students who saw a strong connection between their courses and future lives were all retained, while students who saw no connection had only a 25% chance of persistence (± 21.9%).

Boredom: Students' experience with boredom in class showed significant bearing on persistence (p=.0001). All students who reported "extreme" boredom in classes departed before their sophomore year, while students who reported that they were seldom bored in class had a 68.8% chance of persistence (± 9%).

Use of Resources: The use of support services in general showed a trend in student persistence. Students who reported using *no* support services had a 31.1% (±11.4%) likelihood of returning, while those who used any service were 55.4% (±5.2%) likely to return. Further, two specific services were more likely to impact persistence: the math lab (p=0.0074) and supplemental instruction in students' lecture- and exam-based government course (p=0.0954).

Adjustment to Coursework Habits: In terms of conscientiousness, there was a relationship between the time of day when students began their homework and their persistence: the later in the day that they reported beginning their homework, the less likely they were to persist

(*p*=0.0724). Students who reported beginning homework by afternoon were 68% (±9.9%) likely to persist, while those who reported waiting until late evening were only 39% (±7.7%) likely to continue on to their second year.

Students' responses to the open-ended survey question asking, "What has helped you the most this semester in your academic work?" revealed some differences in persisting and departing students' likelihood of naming self-regulated learning strategies. Persisting students were more likely to describe help factors related to Pintrich's (2000) positive SRL strategies: text-based cognitive learning strategies, metacognitive strategies including planning, monitoring, and regulating behavior in response to goals, and resource management strategies (e.g. managing time, effort, living environment, and outside resources on campus) . All of these behaviors are positively correlated with academic success in college.

Perhaps most notably, a broad pattern emerged between students who attributed their success to outside influences (teachers, peer mentors, etc.) and students who named *self-initiated* alterations to habits and mindsets about their coursework. For example, 53% of persisting students named self-regulating strategies as most helpful as compared to 43% of students who departed. Also notable is that persisting students' responses averaged 13 words per response, while departed students averaged 9 words. Persisting students tended to give more detail about influences that included greater awareness of their own best work times, developing more intentional work ethic, and strategies for note-taking and studying. The following table illustrates several common responses among both persisting and departed students.

Table 4. Student Responses about "Most Helpful Influences" in their First Semester.

Persisting students	**Departed students**
"finding quiet places to study and do homework"	"teachers"
"I work good in the middle of the night and having 24-hour labs and work areas are the best advantages"	"good teachers"
"making sure I went to classes, because once you miss one it's easy to keep skipping"	"friends"
"I have started getting a head start on my papers and having people read them to see what they think"	"computer labs"
"planning out time for relaxation"	"my friends and my teachers"
"Not procrastinating and getting things done early and going in for extra help"	"the teachers have helped me the most in my academic work"
"what helped me most this academic year was the motivation not to fail college"	"[Teacher name] is the only reason I'm still here"

C. Students' Social Integration

Students' self-reported overall satisfaction with the social experience during their first semester showed a trend in student persistence (p=0.0774). Students who returned for their sophomore year had slightly higher overall satisfaction than departing students (means of 3.362 ±8.6% and 3.143 ±8.8%, respectively).

Additionally, students who reported missing home "a lot" were very likely to leave (0% ± 24.7% chance of persistence), while students who reported missing home "none" or "some" were much more likely to persist (75% ±21.4% and 85.7% ±11.4% chance of persistence, respectively). Students who strongly felt that the learning community helped them meet new friends showed a trend towards persistence into their second year (p=0.0762)

Students' overall perception of their social experience showed a significant logical trend (p=0.0166): the more positive students were about their social experience during the first semester, the more likely they were to stay. However, no single measure of specific participation (in sports, Greek organizations, clubs, or other campus organizations) emerged as a significant predictive factor.

When trying to determine whether physical environment had an impact on success, we asked students to indicate locations where they spent a significant amount of time. Students who reported spending time in friends' rooms/apartments showed a trend toward persistence (p=0.0624), and students who reported spending time in the student union building were statistically more likely to persist into their second year (p=0.0318). Locations that showed no statistical predictive value included the library, churches, coffee shops, athletic facilities, and computer labs.

Finally, students who had higher impressions of the overall helpfulness of the learning community were statistically more likely to remain at our university into their second year (p=0.0129).

IV. Discussion.

Several of the most commonly cited entry characteristics did not emerge as significant in our study, including gender, ethnicity, high school GPA, ACT score, financial need (as indicated by Pell grant recipients), and first generation status. Because of the study's limitations in sample size and lack of longitudinal data, as well as the contextual variables of our institution and region, this data may not be generalizeable to other contexts. However, these results related to entry characteristics may help contradict the assumption of many college faculty and administrators that, among at-risk students, male, minority, and particularly low-scoring students will depart at a higher rate than students without these characteristics.

Because many institutions, including our own, periodically consider raising admission standards in an effort to heighten overall first-year GPA and retention, it is important to understand the degree to which entering scores really predict persistence among students admitted with conditions. Our university's admission standards, for example, currently allow students with entering GPAs between 2.0 and 2.75 to enroll and participate in the program (a fairly wide margin). Based on this case study, it appears that raising admissions criteria in GPA, perhaps to 2.5, may not have the intended result of radically changing overall success of the at-risk population. Rather than focusing on entry characteristics, our study revealed that students'

academic and social behavior patterns—as well as their ability to develop meaningful goals for college—proved to be notably more influential than high school scores.

A. Social integration.

Consistent with Tinto's (1975) and Braxton's (2004) research on social integration, persistence among the at-risk students was influenced by students' experiences and level of satisfaction with social integration. Students in our study who used what Braxton (2004) terms "proactive social adjustment" (p. 25) by taking advantage of the learning community environment to make friends persisted at a higher rate. However, it is not clear that students' efforts to join organizations, clubs, or intramural sports on campus resulted in higher persistence. Persisting students reported spending more time in social settings (e.g. friends' rooms or the student union). Students who departed did exhibit social avoidance behaviors by returning home at a significantly higher rate than persisting students (Braxton, 2004).

B. Academic integration and future goals.

In terms of academic integration, students exhibited what Bean (2005) refers to as both "attitudinal" and "behavioral" characteristics that were predictive of retention (p. 218). Perhaps most importantly, students' primary reason to attend college proved influential to their first-year retention. Those students who indicated a reason for college related to career or furthering education were 55 to 60% likely to return vs. 0 to 33% for students who named less focused motivation for college studies. College and career goals fall within Pintrich's (2000) description of mastery goal orientation, a focus on mastery of a task that might stem from either intrinsic or extrinsic rewards. On the flip side, students who indicated lack of personal goals ("college is simply the next step after high school" or "my parents wanted me to come"), or goals with little or no mastery involved ("I wanted the social experience") had a much higher rate of departure.

The connection students perceived between their coursework and future lives was a significant retention predictor. Pintrich (1990) discusses the importance of "task value beliefs" (p. 34) in students' motivation to succeed or set goals toward a particular outcome. That is, students who believe in the "importance of, interest in, and value of" a task (p. 34) will tend to feel higher motivation and exhibit proactive behaviors toward meeting the goal. Students' self-reported boredom in classes followed this pattern as well; the boredom level students experienced in courses strongly predicted their retention.

Because more students who departed made the decision to pursue college late in high school, we speculate that seeing college studies as a goal is a new mindset for some students and may require more time to develop intrinsic and future-focused attitudes consistent with college success. Related to this, students who took a college preparatory or advanced course in high school had a much greater likelihood of persistence (68% vs. 30% for students who had no preparatory curriculum). ACT data in our state indicate that 56% of students in 2008 who took advanced courses "beyond the core" were better prepared for college in skills such as math, reading, and science. It is important to note, however, that many of the students in this population took only one advanced or college preparatory course and were far from achieving what ACT designates as "core" or "beyond core" high school curriculum. Yet, these students still seemed to gain an advantage in retention, a result that may lend support to the notion that

developing college goals during high school is in itself a key predictor for success in college.

C. Self-Regulated Learning (SRL).

Following from students' attitudes toward college, learning behaviors such as the ability to plan activities, monitor and regulate behavior, and manage resources further affected student persistence. Students who planned study times earlier in the day had greater success, as well as those who visited a help center during the first year. Further analysis of student responses to the open-ended question "what has helped you most with your schoolwork this semester?" revealed a higher tendency among persisting students to identify self-regulatory learning strategies when discussing their first year experience. While the 10% gap in SRL indicators between persisting and departing students is not large, persisting students generally used more detail and pointed to some goal or criterion against which they evaluated their level of success. As the term "self regulation" implies, persisting students also had a higher instance of naming personal behaviors as opposed to indicating solely external forces on their success.

V. Implications.

Perhaps most importantly, this study emphasizes the value of gathering context-specific data about conditionally-admitted students to aid in planning both support and targeted interventions. Bean (2005) argues for the proliferation of "localized" research to alleviate attrition. For our context, this study has helped to re-align institutional assumptions about conditionally-admitted students that are driving approaches to "who" should be admitted (typically based on GPA and test scores) and "how" these students might be acculturated to the rigors of college coursework. Localized studies allow administrators and advisors to probe into factors that impact student success and persistence and plan developmentally appropriate strategies.

Besides informing policy decisions, this study reveals several key areas where at-risk students can benefit from targeted instructional approaches. Some research suggests that the first two to six weeks of a student's first semester in college are the most critical in influencing students' persistence (Woosley, 2003; Birnie-Lefcovitch, 2000). Recognizing this timeframe, instructors should integrate early curriculum that addresses self-regulated learning strategies with the purpose of helping students' reflect on their own attitudes and approaches to coursework. The learning community models offers a further benefit in that SRL instruction can occur in multiple courses and help students see how strategies function in different contexts and disciplines. Such strategies need not "replace" more traditional content, but can be integrated in short presentations and readings, guest speakers, and student reflections. In addition, helping students to recognize their behavioral patterns through discussion and reflection assignments— and then develop mastery-based goals for college—can inspire intrinsic motivation (see Paris & Winograd, 2000). Finally, the rise of learning communities, and research about the success of those communities, has attested to the importance of peer groups and social integration in predicting persistence. Our survey and interview data over the past five years suggests that students experience higher social integration as a result of their belonging to a learning community, but this effort may not be sufficient for students who struggle to a greater degree with social adaptation. Teaching students about the correlation between social behaviors and academic persistence may be an important step, as well as using targeted advising by instructors

and peer mentors for students who indicate in an early-semester survey that they are experiencing high levels of homesickness or plan to return home often.

In conclusion, while developing learning communities for at-risk students goes a long way toward bolstering both academic and social success for participants, this study reveals many gaps that program administrators and faculty can address. Helping students gain self-awareness of their "big picture goals," their attitudes toward help services (including relationships with faculty), and their use of time to meet goals are key approaches to lowering attrition in a program or course for conditionally-admitted students. Students may benefit from considering local research on attrition as well as being exposed to course-based activities in order to more successfully adapt to the critical "habit transition" in the first year of college.

Acknowledgements

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Effectiveness of refutational teaching for high- and low-achieving students

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Abstract: We assessed the effectiveness of refutational readings and lecture on decreasing psychological misconceptions for students of high versus low levels of achievement. During the course of a semester we addressed introductory psychology students' misconceptions with refutational readings, refutational lecture, or not at all. From pre- and post-test measures of student misconceptions, we calculated gain scores and from first semester GPA we identified students' achievement levels. High-achieving students had fewer misconceptions after completing refutational readings, or after hearing the refutational lecture. Low-achieving students, however, had fewer misconceptions only after hearing the refutational lecture. We conclude that students who are lower achievers in college may need more than just refutational readings to change misconceptions.

Keywords: refutational text, student achievement, student misconceptions

I. Introduction.

Misconceptions about psychology are pervasive among both the general public and among psychology students (Lilienfeld, Lynn, and Lohr, 2003; Taylor and Kowalski, 2004). Teachers of psychology are justifiably concerned that traditional teaching methods do little to decrease these misconceptions (Higbee and Clay, 1998; McKeachie, 1960; Vaughan, 1977). There are, however, teaching techniques that do appear to be somewhat successful in reducing conceptual misunderstandings for some students (Chew, 2004; Miller, Wozniak, Rust, Miller, and Slezak, 1996; Winer, Cottrell, Gregg, Fournier, and Bica, 2002). Among the successful techniques is the use of refutation to dispel misconceptions. Refutation, as used in texts and in lectures, has these critical attributes: It first activates the misconception. The misconception is then explicitly identified as being a false conception. The correct scientific information is then provided, so that students have a sensible, alternative conception that can replace their prior misconception (see Hynd, 2001 for more detail).

In a recent study designed to address student psychological misconceptions, we provided evidence for the efficacy of targeting misconceptions directly and refuting them with lecture and readings designed to present evidence supporting the correct scientific claim (Kowalski and Taylor, 2009). In that study, we identified claims representing information normally covered in introductory psychology. We then presented material that discussed each claim in one of the following ways. For some of the claims we explicitly identified the misconception as a misconception and then provided evidence to refute it. This refutation occurred by addressing the claim either in the classroom lecture, in the course readings, or in both lecture and in readings.

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For some of the other claims we provided evidence for the correct information without first activating the misconception and provided a standard or traditional exposition of the evidence in support of known information. As with the refutational presentation of material, we provided this standard presentation of material either in lecture, in readings, or both in lecture and in readings. Finally, we purposefully omitted covering some of the claims in either course readings or lectures. We found that refutational lecture, either alone or with refutational readings, produced significantly greater change in students' misconceptions compared with standard presentations. Refutational lecture, even without readings, produced greater gains than did providing standard lecture and readings together. However, refutational readings alone produced significantly less reduction in students' misconceptions, when compared to refutational lecture alone.

The success of refutational lecture in our study supported the claim that effectively reducing misconceptions requires instruction that first directs students' attention to their false beliefs and then discusses the scientific claims directly. Both the science education and the psychological misconceptions literatures recognize the importance of calling students' attention to or activating prior knowledge before attempting to alter a false belief (Driver and Bell, 1986; Chew, 2004; Posner, Strike, Hewsen, and Gertzog, 1982; Winer, et al., 2002). What remained unclear after our study was the independent contribution made by refutational readings compared with refutational lecture in dispelling psychological misconceptions when we provided students with both. Refutational readings alone were about as effective as standard readings and lecture together. However, refutational readings alone were significantly less effective than refutational lecture alone. Although reading research has repeatedly shown the value of refutational readings, there is also evidence that assigned readings often need to be supplemented with lecture to be effective in reducing misconceptions (Guzzetti, Snyder, Glass, and Gamas, 1993; Marshall, 1989). Chi (2008) reasons that although some misconceptions can be changed to correct conceptions with the use of refutational readings alone, other misconceptions cannot. For those misconceptions additional instruction may be necessary, particularly for students at lower levels of achievement, as these students may be less likely to comprehend the readings.

In the classic view of conceptual change, student comprehension is critical. Students must experience dissatisfaction with the misconception, and then have the new idea explained in a way that is understandable, plausible, and fruitful (Posner et al., 1982). Descriptions of the change process also emphasize the importance of the student becoming aware of the contradiction between the prior concept and the new concept (e.g., Chi, 2008). In addition, several researchers note critical learner characteristics that contribute to this change (Sinatra and Mason, 2008). Among these characteristics are differences in students' learning strategies that tend to differ with level of achievement. Studies comparing higher- with lower-achieving students have shown that lower-achieving students use less effective reading strategies, are less likely to see the relation between prior concepts and new concepts, are less likely to comprehend the argument in favor of the new concept, and are less likely to use new information at time of test (Guzzetti, 2000; Guzzetti, Williams, Skeel, and Wu, 1997). As a result, these lower-achieving students are more likely to need additional support in the form of lecture or teacher-led discussion to effectively process the refutational readings, relate it their prior concept, and change their misconception (Guzzetti, et al., 1997).

Research on psychological misconceptions also finds that student characteristics influence whether students alter their false beliefs after instruction. For example, compared with higher achieving students, lower achieving students hold more misconceptions (McCutcheon, Apperson, Hanson, and Wynn, 1992) and are less likely to change their misconceptions

following the introductory class (Gutman, 1979; Kowalski and Taylor, 2004). Gutman (1979) found that when he compared students who performed at higher levels in the course with lower performing students, the latter changed few of their original misbeliefs. He suggested that because of these achievement level differences, considering only overall course effects can underestimate change for high-achieving students and overestimate change for low-achieving students.

One of the questions left unanswered in our previous work, but for which we have data, concerns a closer examination of this effect of student achievement and the efficacy of refutational pedagogy. In our study, it is possible that refutational readings differentially influenced students who demonstrate high versus low levels of achievement in the college classroom. Low-achieving students may need the refutational lecture to become aware of the contradiction between their prior belief and the new information, and to make sense of the claim. High-achieving students may notice the discrepancy and understand the argument from reading alone. Thus, in our previous study, the overall effect we observed for refutational readings may have masked a differential effect of reading for high and low achieving students. Knowing the differential effectiveness of refutational techniques for students at varying levels of achievement would help instructors better understand the value as well as the limitations of the forms of refutational teaching.

Thus, the purpose of the current paper was to assess the differential effectiveness of refutational readings on decreasing misconceptions for students of high versus low achievement levels. In the previous study, all students, on average, benefitted less from refutational readings alone compared with refutational lecture alone. This effect, however, could have been accounted for mainly by the performance of the low-achieving students. In the present study, therefore, we reanalyzed a portion of our previously reported data, together with an additional variable measuring student achievement. We expected to find that the effect of pedagogy depended on student level of achievement. Both high and low-achieving students would benefit from the refutational lecture. High-achieving students would show reductions in misconceptions when provided only with refutational readings but not presented with a refutational lecture. We expected to observe little change in misconceptions for low-achieving students who did not hear a refutational lecture in addition to their having refutational readings over the material.

II. Method.

A. Participants.

Sixty-five introductory psychology students, primarily freshmen, participated for course credit. Students attended sections of the introductory psychology course taught by the authors at a private liberal arts college on the west coast. Nearly 80% of the participants were women. The average age of these traditional college students was 18 years.

B. Course Design.

We designed the course to allow us to assess the effect of method of addressing misconceptions in lecture and in readings. We covered items from our Psychological Information Questionnaire (described below) in either a refutational lecture, a standard lecture, or not at all. We also provided readings in a refutational manner, in a standard manner, or not at all. For this study we

reanalyzed only four conditions. The four conditions included in this reanalysis were (a) refutational lecture and refutational readings (R/R), (b) refutational lecture and no readings (R/N), (c) no lecture and refutational readings (N/R), and (d) no lecture and no readings (N/N).

C. Materials.

Psychological Information Questionnaire. The questionnaire contained 100 true–false items assessing students' knowledge of psychological information (Kowalski and Taylor, 2009). Fifty-five items assessed material normally covered in an introductory psychology course but not reflecting common misconceptions (e.g., The cognitive approach focuses on the mental processes involved in thinking). Forty-five items reflected frequently held student misconceptions (see Appendix 1). We drew items from previously published tests of misconceptions in psychology (e.g., "A schizophrenic is someone with a split personality"; Vaughan, 1977) and from the popular literature (e.g., "Mozart's music increases infant intelligence. We then randomly inserted the 45 misconception items among the 55 fact-based items. In constructing the measure this way, our purpose was to mask the misconceptions items, and to obtain a comparison to items of specific information taught in a standard introductory course in psychology.

    Reading. The course text was Melucci's (2004) *Psychology: The easy way*. This concise text allowed us to control the type and amount of information to which we exposed the students. We supplemented the text with 17 readings, directly related to specific misconceptions assessed on the Psychological Information Questionnaire. Reading length ranged from one to 15 pages. Sources for readings included chapters from books (e.g., Stanovich, 1998), periodicals (e.g., Wallis, 2004), and internet sources (e.g., Catharsis increases rather than decreases anger and aggression, 1999).

    Although course readings addressed claims in either a refutational or a standard manner, for this paper we focused only on 18 claims addressed by refutational reading (conditions R/R and N/R) and on 18 claims not addressed at all in the readings (conditions R/N and N/N) (see Kowalski and Taylor, 2009, for more detail).

    Lecture. Refutational lectures focused on 18 of the popular misconceptions. In each lecture we started by presenting the common misconception and then presented the scientific view, followed by evidence supporting the scientific claim. For the 18 claims in the N/R and N/N, we did not cover the topic in class at all.

    Achievement. To estimate student achievement, students provided us with permission to obtain their first semester GPA from the university registrar. The registrar calculates GPA on a 4-point scale (A = 4.00). This method of estimating achievement is time-frame specific to the semester during which we assessed change, and has been found to represent a meaningful student characteristic in previous studies of student misconceptions (Kowalski and Taylor, 2004; McCutcheon, et al., 1992).

D. Procedure.

Participants completed the Psychological Information Questionnaire as a pretest during the first class. During the semester, we assigned readings from the Melucci (2004) text as well as additional articles. Exams included multiple-choice or short-answer items over the readings. We

covered item content in class with refutational lecture, standard lecture, or not at all. On the last day of class, students again completed the Psychological Information Questionnaire in class.

III. Results.

To answer the question of whether the effectiveness of refutational lecture and refutational text depend on student achievement, we used a median split to divide students into high and low achievement levels based on first semester GPA. Student GPAs were normally distributed ($Md = 3.00$, $M = 2.91$, $SD = 0.64$). High achieving students (N = 32) started the semester with a mean of 26.0% correct on the misconception test and ended the semester at 70.0% correct. Low achieving students (N = 33) started the semester at 27.0% correct and ended at 58.6 % correct.

In addition to percent correct for the misconception items, we calculated average normalized gain scores according to the method described by Hake (2002, 2005). This statistical method accounts for differences in each student's prior knowledge, as well as each student's potential amount of improvement. According to Hake (2002), "the average *normalized* gain <g> is the *actual* gain [<%post> - <%pre>] divided by the *maximum possible gain* [100% - <%pre>]" (Hake, 2002, ¶9). Thus, we computed each student's individual normalized gain, and then averaged these gain scores across the group of students. In this way, the final evaluation of posttest scores takes into account the level of pretest performance.

We then conducted a 2 x 2 x 2 (Achievement [high, low] x Reading [refutational, none] x Lecture [refutational, none]) mixed model ANOVA, with <g> as the dependent measure. Means and standard deviations for high and low achieving students appear in Table 1. The overall ANOVA indicated a significant main effect for Achievement, $F(1, 63) = 39.75$, $p < 0.001$, $\eta^2 = 0.39$. High-achieving students showed higher normalized gain scores, <g> = .57 (.14) than did low-achieving students, <g> = 0.36 (0.14). There was also a significant main effect for Reading, $F(1, 63) = 13.54$, $p < 0.001$, $\eta^2 = 0.18$, and Lecture, $F(1, 63) = 395.40$, $p < 0.001$, $\eta^2 = 0.86$. Significant two- and three-way interactions qualified these findings. A Reading x Achievement interaction, $F(1, 63) = 7.44$, $p = 0.008$, $\eta^2 = 0.106$, suggested the effect of reading depended on level of achievement. However, the three way interaction Achievement x Reading x Lecture was also significant, $(F1, 63) = 4.55$, $p = 0.04$, $\eta^2 = 0.07$, qualifying the effect of the two-way interaction.

Table 1. Comparison of high- and low-achieving students across teaching pedagogies for average normalized gain.

Teaching Pedagogy	Student Achievement	
	High	Low
Refutational Lecture		
Refutational Reading	0.84(0.17)	0.60(0.25)
No Reading	0.80(0.20)	0.57(0.21)
No Lecture		
Refutational Reading	0.54 (0.28)	0.16 (0.30)
No Reading	0.24 (0.26)	0.14 (0.23)

Note. Standard deviations are noted in parentheses following means.

We then investigated the nature of the two-way interaction (Reading x Lecture) for students at high and low achievement levels. For students characterized by high levels of achievement, the main effects of Reading $F(1, 31) = 176.78$, $p < 0.00$, $\eta^2 = 0.85$ and Lecture, $F(1, 31) = 25.86$, $p < 0.00$, $\eta^2 = 0.45$, and the interaction $F(1, 31) = 11.48$, $p = 0.002$, $\eta^2 = 0.27$ were significant. In contrast, for students characterized by low levels of achievement, there was a main effect of Lecture, $F(1, 32) = 222.16$, $p < 0.00$, $\eta^2 = 0.87$. However, neither the main effect of Reading nor the Reading x Lecture interaction was significant.

When students heard a refutational lecture covering the misconceptions, the effect of refutational reading was similar for high- and low-achieving students. However, when they did not hear a lecture, high-achieving students demonstrated significant gains in understanding when given a refutational reading; low-achieving students showed little gain in understanding when given a refutational reading.

IV. Discussion.

Previously, we found that students demonstrated greater gains in overcoming psychological misconceptions when we addressed misconceptions in a refutational manner (Kowalski and Taylor, 2009). In assessing the value of refutational readings independently of refutational lecture, the conclusions of the previous study were unclear. In the overall analysis, coverage by refutational lecture together with refutational readings was similar to coverage by refutational lecture alone but superior to coverage by refutational readings alone in reducing student misconceptions. The current follow-up study assessed whether these previous findings masked differences in the effectiveness of refutational readings for dispelling misconceptions in high-versus low-achieving students.

We found differences in the effect of refutation for students of different achievement levels. High-achieving students reduced misconceptions when they heard a refutational lecture or when they read refutational readings. Thus, this study indicates that for high-achieving students, the typical misconceptions students hold in the introductory psychology class can decrease when students read refutational readings, even when there is no instruction in class to address these claims. Low-achieving students, however, gained no more from the refutational readings alone than they did when we did not cover the misconceptions at all. Our findings are consistent with previous reading research indicating low-achieving students require support beyond readings to change misconceptions (Guzzetti, et al., 1993; Guzzetti, et al., 1997).

This follow-up study answers the question about student achievement level differences in the effectiveness of targeting misconceptions. We cannot expect lower-achieving students to change misconceptions based on refutational readings alone. The study, however, does not help us answer the question of why low-achieving students benefit less from readings. Reading research shows that there are a number of characteristics that can influence change in students' misconceptions. Low-achieving students may not change misconceptions following refutational readings because they have ineffective reading strategies or have difficulty drawing inferences from readings (Guzzetti, et al., 1997). It may also be that low-achieving students lack the metacognitive skills, epistemological beliefs, and motivation to engage in effortful processing necessary to become aware of the contradictions between their prior conception and the new information and to understand the new information (Chi, 2008; Sinatra and Mason, 2008). These motivational factors may be particularly important contributors to enduring student learning. We

are currently studying how various student characteristics contribute to students' maintaining correct conceptions over time.

The in-class design of the present study did not allow us to eliminate an alternative explanation for our findings. We do not know the degree to which students actually completed the assigned readings for our classes. Low-achieving students might simply have achieved a lower GPA secondary to not reading their assignments. We are currently pursuing experimental studies to determine the reasons for the different effects of refutational readings on student performance. Knowing when and how misconceptions change is of critical value to teachers of psychology interested in having students of all levels of achievement leave their classes armed with an understanding of the scientific claims in psychology.

V. Implications.

Although the misconceptions in this study reflect students' knowledge of psychological science, the findings fit well within the accumulating body of knowledge on student misconceptions. Misconceptions exit in all disciplines (Bransford, Brown, and Cocking, 1998). Research across disciplines shows that refutational text can help reduce these misconceptions for at least some students (Guzzetti et al., 1997). It also shows, however, that text alone is often not enough. Teachers are needed to reduce student misconceptions, particularly for students with ineffective reading strategies. Teachers can help direct students' attention and aid comprehension (Guzzetti, 2000). As Marshal (1989) points out, although "…text functions admirably as a source of information, teachers are the optimal source of thought-provoking activity" (p. 329).

Appendix 1. Misconceptions Items on the Psychological Information Questionnaire.

1. If you're unsure of your answer while taking a test, it's best to stick with your initial hunch.

2. There are striking stylistic differences between the two hemispheres of the brain, with the left being "analytic" and the right "holistic."

3. Most people use only 10% of their brains.

4. Most "crack babies" end up with serious neurological deficits.

5. Subliminal messages can be used to persuade others to purchase products.

6. Taste areas for sweet, sour, salty and bitter are well defined on the tongue.

7. ESP (extrasensory perception) has been empirically documented.

8. During "out of body" experiences, individuals can observe themselves from above.

9. Drug education programs (i.e., DARE) are effective in deterring drug use among teenagers.

10. Individuals can learn information (e.g., new languages) while asleep.

11. During sleep, your brain rests.

12. Most people who use heroin become addicted to it.

13. Human memory works like a tape recorder or video camera, and accurately records the events we have experienced.

14. Eyewitness testimony is usually reliable.

15. Many adults were abused as children but do not remember the abuse.

16. Hypnosis is useful for retrieving memories of forgotten events.

17. In criminal eyewitnesses, confidence is closely related to accuracy.

18. Playing classical music (e.g., Mozart) to infants and children increases their intelligence.

19. Too much sugar causes hyperactivity in children.

20. Babies who learned sign language as infants have a higher overall IQ.

21. Immediate contact between a mother and infant after birth is critical for bonding.

22. You can "spoil" a baby if you respond to its demands too quickly.

23. A baby's attachment for its mother is based on mom's filling the physiological need for food.

24. If you live long enough, you will eventually develop dementia.

25. The defining feature of dyslexia is seeing words backwards (e.g., "pal" instead of "lap").

26. The polygraph ("lie detector") test is a highly accurate means of detecting dishonesty.

27.   It is generally better to express anger openly than to hold it in.

28.   Most women experience a marked worsening of their moods during the premenstrual period.

29.   Raising children similarly leads to similarities in their adult personalities.

30.   High self-esteem is necessary for high achievement.

31.   Astrologers can predict your personality from the arrangement of stars and planets at your birth.

32.   People's responses to inkblots tell us a great deal about their personalities and propensities toward mental disorders.

33.   People diagnosed with schizophrenia have a split personality.

34.   People who attempt to commit suicide do not talk about it.

35.   *We experience stress even when good things happen to us.

36.   "Psychological profiling" has been shown to be an effective means of identifying criminals.

37.   *The suicide rate is higher among the elderly than among adolescents.

38.   A large proportion of criminals are acquitted on the basis of the insanity defense.

39.   Clinical judgment and intuition are the best means of combining information to reach a diagnosis for a patient.

40.   A well-trained psychotherapist can establish a person's true thoughts and problems by analyzing dreams.

41.   All effective psychotherapies force individuals to confront the "root" causes of their problems in childhood.

42.   Electroconvulsive ("shock") therapy is a physically dangerous treatment.

43.   Opposites attract: People tend to have relationships with individuals who differ from them in their personality, interests, and attitudes.

44.   There's safety in numbers: The more people present at an emergency, the greater the chance that someone will intervene.

45.   Women talk more than men ("Men are from Mars, women are from Venus").

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* These claims are true. All other claims are False.

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If not the brain, then what? A paradigm for preservice intervention specialists that provides an understanding of neurodevelopmental disorders in children

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Abstract: This article contends that although Intervention Specialists are presented with a variety of children with diverse challenges that arise from neurological dysfunction, few teacher education programs adequately prepare teachers to understand, recognize and address these needs. The University of Findlay requires candidates in the post- baccalaureate   program   to   take   a course entitled Neurobiology of Learning that was developed to offer preservice teachers of special education insights into the underlying neurobiological causes of learning and behavioral challenges experienced in the classroom. A child neurologist teams with a professor in the college of education to provide the content for the four components of the course, a feature that distinguishes it from related course offerings in other Colleges of Education. This paper outlines the content of the course and discusses the importance of including neuroscience in the curriculum of preservice teachers, so that they may be better prepared to deliver services to children with special needs.

Keywords: neurobiology, learning, curriculum, preservice teachers, special education, neuroscience

I.   Introduction.

Over the last twenty-five years, neuroscience has concentrated on the most complex of its frontiers: the neurobiology of cognition and behavior. Yet, as Carew and Magsamen (2010) lament, researchers and neuroscientists are worlds apart in forming hypotheses about how people learn, and how to translate findings into classroom practice. While it may seem ludicrous to the modern educator to think of any other source of cognition but the brain, the very term "brain based learning" speaks to the disconnect between educational interventions and the state of our neuroscientific knowledge base. It is as if one has to persuade the reader, the majority of whom are teachers, that learning takes place in the brain. More perplexing may be the question: Who should be identifying neuroeducational problems in students? The great majority of medical personnel are not trained to identify, diagnose, or treat the common neurobehavioral and neuroeducational syndromes. There are only small numbers of trained neurodevelopmental specialists. Even amongst the latter, formal training in these areas lags woefully behind that of educators, who, ironically, are taught to defer to these same medical professionals who have limited neuroscientific knowledge. Ideally, all teachers should be equipped to help every child learn and reach his or her full potential. This paper explains the content of a course offered to students pursuing their Intervention Specialist license at the graduate level to help them achieve this goal. The course is comprised of four modules: module one offers an overview of the brain,

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its structure and function, discussing also scientific findings that have been the basis of practical application to the classroom; module two emphasizes the development of language in children, focusing specifically on language disorders that are diagnosed clinically, and which have implications for teachers in the development of interventions; module 3 discusses the controversial issue of Attention Deficit Hyperactivity Disorder (ADHD), giving students a deeper understanding of the complexity of the disorder that is so readily diagnosed and treated with medication that many underlying disorders are missed and go untreated; module 4 discusses right hemisphere dysfunction which includes an examination of autism, Asperger's syndrome and right hemisphere disorder. A fifth module, motor disorders, will be developed in the future and is not included in this paper. The course is designed to offer preservice intervention specialists a paradigm to help them to understand and appreciate neurodiversity and recognize the uniqueness of each individual. With this diversity come challenges: identifying specific needs associated with different learning styles, and the ability to design interventions that address these needs. Neurodiversity is a term described by Thomas Armstrong (2005), "Its basic premise is that atypical neurological wiring is part of the normal spectrum of human differences and is to be tolerated and respected like any other human difference such as race, gender, sexual preference, or cultural background." (Special Education and Concept of Neurodiversity, par. 8)

Fisher et al. (2007) emphasize that it is time for education, biology, and cognitive science to join together to create a new science and practice of learning and development. Education continues to ignore the wide range of state of the art technology, powerful brain imaging tools, the explosion of new discoveries in the study of genetics, and diverse methods, new and old, for assessing cognition and behavior. Consequently, many children are diagnosed incorrectly, labeled erroneously, medicated inappropriately, and rendered inadequate services because teachers are not trained to see beyond observable behaviors.

It is undeniably challenging for every teacher to meet the individual learning needs of each child in a classroom when faced with such diversity. The paradigm described and presented here emphasizes commonalities of brain function in children of all abilities, and looks at the underlying neurological conditions that promote the kinds of behaviors that teachers encounter in the classroom every day. The primary goal in the classroom is to meet children's individual needs, and, in order to better serve children, we must have a solid understanding of how they learn, as well as of how their learning is challenged. When one realizes that there are certain patterns and syndromes that can be identified based on knowledge of brain function, one acquires the ability to understand the complexity of human learning, and this daunting task of individualization is rendered somewhat more manageable. By assessing the language, perceptual, behavioral and motor characteristics of students with challenges, teachers can address and meet needs rather than perseverate on labels that frequently misinterpret perceived behaviors. Fischer et al. (2007) confirm that collaboration between medical and educational professionals is essential to optimum delivery of services:

"Answering key questions about mind, brain and education requires reciprocal interaction between scientific research and practical knowledge of educators and caregivers." (p.1)

The course described in this paper combines the knowledge and expertise of a pediatric neurologist and an educator so that preservice teachers may acquire the knowledge, skills and dispositions needed to adequately serve children with special needs.

It is not an easy task to adequately educate anyone on neuroanatomy, neurophysiology, and brain function in one semester and furthermore to apply this information to the classroom. However, Sylwester (2003) states that colleges need to commit to the implementation of a long-

term strategy that gradually enhances teacher and student understanding of biological functions and systems. It is imperative that the striking parallels existing between processes at the cellular and biological level be perceived by teachers as relating to processes that regulate social systems, specifically, the classroom. The course is divided into four modules. It is a blended class with face-to-face lectures on the topic of each module, as well as online discussion boards, readings and assignments. In addition to the modules, each candidate is required to visit the child neurology clinic, observe an initial evaluation of a child, and write a journal response of the experience. The final project requires candidates to design a one-week teaching unit aligned with Ohio's academic content standards, indicating areas of the brain that are activated during each instructional period.

II.   Module 1: Basic Functional Neuroanatomy.

Module One of *Neurobiology of Learning* introduces students to the basics of brain function and the essential components of neuroanatomy, namely the four lobes, the limbic system, neurons, dendrites and axons, in order to give an organized view of brain function in critical areas.
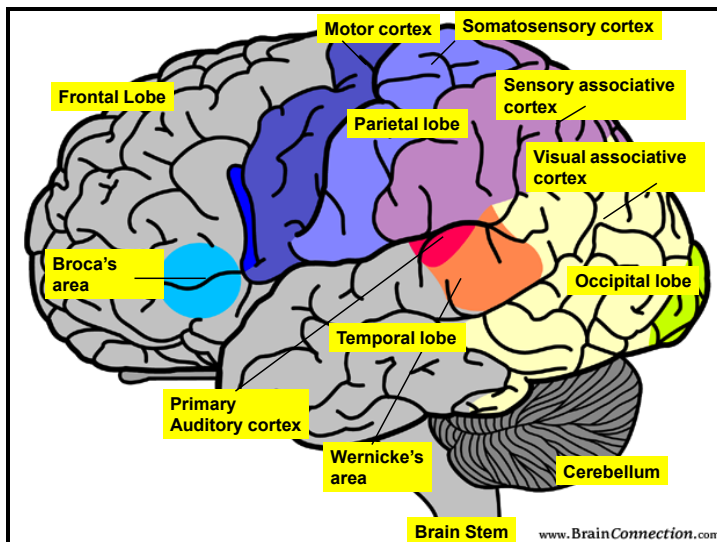
Figure 1. The major exterior regions of the brain (adapted from Posit Science).

  A. Syndromes.

This initial overview defines the syndrome as a reproducible constellation of symptoms. This particular definition emphasizes the predictability of behavioral patterns in a diagnosed subject, and highlights one of the major pitfalls of identification of children with special needs: misidentification caused by common or ambiguous manifestations. While the presence of a syndrome raises the possibility of a single medical entity, it does not necessarily mean that members of a syndrome share the same underlying condition. Tourette's syndrome is an example of a syndrome that would be familiar to most teachers, and is characterized by multiple tics, both vocal and physical.

  B. The Biological Spectrum.

Molecular definition of a variety of neurological conditions, including some neurodevelopmental disorders, has provided the biological basis for the concept of 'spectrum' of severity in these conditions. An example is Fragile X Syndrome, in which the severity of neurodevelopmental impairment is related to the number of CGG repeats in a segment of the DNA of the X chromosome. The nature of this genetic disorder confirms the fact that our students with special challenges can be perceived as having mild, moderate, severe and/or profound disorders. In Ohio, the Intervention Specialist teaching license is organized in this manner so that, although students are still labeled with specific disabilities, services are delivered in cross-categorical settings depending on levels of severity.

C. Brain Plasticity.

Ongoing research reveals amazing observations of the brain's ability to rewire, repair, and more importantly, to reorganize itself after injury: this is referred to as brain plasticity, and is probably the most exciting and motivating neurological research finding that has emerged in the last twenty years. Examples of brain plasticity have been noted when any repetitive action takes place involving the visual, motor, and sensory or coordination systems that are required for specialized learning activities (Willis, 2006). The implications for teachers are enormous, bordering on miraculous, when a teacher realizes that as a result of classroom interventions, he or she is literally influencing biological changes in the brain. The major question educators need to ask, according to Robert Sylwester (1995) is, "How much does one indeed effect change in students' brains as a result of challenging and stimulating interventions?" The answer to this question lies in individualized instruction based on the perceived needs of the child and his or her learning style.

D. The Elusive Concept of Attention.

A basic understanding of so-called topographical functions, i.e. the organization of brain functions and their location in the brain, is a useful foundation for understanding neurodevelopmental concepts. Still, the biology of the concept of attention has remained elusive. Most neurobiologists see this and other neurobehavioral disorders as originating in more complex interactions of specialized brain processes (Melillo & Leisman, 2009). For instance, if one has difficulty with auditory processing, then being able to follow the content of a teacher's speech becomes a challenge that would translate into a behavior misinterpreted as 'inattentiveness.' Stimulants, the mainstay of treatment for ADD, do not directly address this problem. Ritalin may help a child focus on a reading task or assignment, but it will not improve reading skills, it simply means he or she can stare at the page longer. The same principle applies to other challenges such as dyscalculia, emotional disturbance or spelling dysgraphia.

E. Left vs. Right Hemisphere.

Early neuroanatomical studies led to the conceptualization of the left hemisphere as being specialized in language functions and the right hemisphere as being specialized in visual or spatial functions. This led to the very popular idea of self-describing learning styles as "left-brained" or "right-brained" which became widely prevalent in schools and universities. While mostly correct, this knowledge has been enhanced by functional studies which indicate a greater

distribution of and interaction between cerebral functions. A disconnect between the two hemispheres, whether it be as a result of agenesis of the corpus callosum, the wide band of nerve cells connecting both hemispheres, or mild to severe disconnection syndrome, will certainly result in significant learning difficulties.

F. Memory.

Learning does not occur without memory. Indeed, without memory one would be deprived of the things that make up life: understanding, relationships, plans, goals, language, in a word, life. It is the essence of who we are and how we function. Yet, as Sousa (2006) asks

"What is a memory? Is it actually located in a piece of the brain at a specific spot? Are memories permanent? How does the brain manage to store a lifetime of memories in an organ the size of a melon? Is forgetting actually losing the memory or just access to it? "(p.78)

These are all questions that teachers need to answer for themselves because retention of information is the essence of education. Memories are formed based on the brain's ability to receive incoming sensory information. The brain then acknowledges, recognizes, and processes the incoming data that must be connected with prior information or memories, to be stored permanently to be retrieved later. (Willis, 2007).

The physical apparatus through which information is conveyed throughout the brain is a network of billions of neurons, or nerve cells. Communication between neurons occurs as a result of electrical and chemical signals that travel at speeds of up to 400 feet per second (Restak, 2001) along axons, or neural pathways and dendrites, or branched extensions of nerve cells, across a space called the synaptic gap to the target neuron(s). Memory is enhanced with repetition and practice, as long as connections are made and can be repeated efficiently. This occurs in all facets of learning: motor, language, social skills, emotions, and behavior, meaning that all areas of the brain are involved during the formation of memories.

G. Myelination, Neural Tube, Neuronal Migration.

In the developing brain, neurons migrate to areas of the brain where they will take up residence to carry out the function for which they were born. Neuronal migration, and the development of myelin, the fatty tissue that insulates the axons and dendrites, both occur as early as the second month of gestation (NINDS, 2007). If something disrupts the signals that guide these neurons to their assigned function, and they do not arrive at their designated area, structural abnormalities will occur in the brain. Symptoms vary depending on the abnormality, and present themselves on a spectrum of severity. Some common features that could be seen in the classroom include poor muscle tone and function, seizures, developmental delays, cognitive delay, failure to thrive, difficulties in feeding, swelling in the extremities, and abnormalities in head size. (NINDS, 2007)

H. Sketching a Neurological Picture.

Participants in the Neurobiology of learning class are required to observe an initial evaluation of a child by a pediatric neurologist in the clinic. This is an experience that could be baffling for the poorly informed observer. For this reason, the instructor simulates an initial evaluation of a child in the clinic, demonstrating the process of diagnosis and the steps taken to arrive at a

conclusion about the child's condition. Students are introduced to the elements that are considered during this evaluation, so that they may have a better understanding of the process and how the physician reaches a clinical decision based on observation of the child. The child's language, motor, sensory, and attention skills are evaluated in this initial examination. Language is addressed in more depth in the second module, because it is considered the most sensitive index of child development, and characteristics of language problems are central to the diagnosis of many syndromes.

Similarly, attention, a controversial topic in education is addressed more comprehensively in a later module. Anatomical and functional characteristics of attention are examined, emphasizing that there is no specific area of the brain that is responsible for attention. It is also interesting to note that Attention Deficit Disorder (ADD) and Attention Deficit Hyperactivity Disorder (ADHD) are not specified as categories of special education. Most teachers already know that attention issues are typically present, to some degree, in all children who struggle in school, no matter the reason.

The motor examination includes analysis of pyramidal, cerebellar, and basal ganglia functions. The neurologist is able to identify abnormal pyramidal function by examining the child's strength, motor control initiation, tone, and gait. Cerebellar functions are evaluated by observing the following: child's ability to rhythmically finger tap, gait, fluency, and tonality of speech, and presence or absence of tremors during motor activity. The basal ganglia is responsible for integrating contraction and simultaneous release of agonistic/antagonistic muscles. The neurologist observes the child at rest, looks for the existence of tremors, checks for rigidity of muscle tone, and considers the child's posture. Figure 2 demonstrates a link between some of the syndromes that a teacher may encounter in the classroom and the accompanying features that may be present, indicating problems in the areas of the brain responsible for motor function.

MOTOR DISORDERS

Syndromes

- Tourette's/Tics
- Sydenham's Chorea
- Athetoid CP
- Cerebral Palsy
- Hemiparesis
- PANDAS

Features
- Acathisia
- Tics
- Chorea
- Dystonias
- Weakness
- Rigidity
- Spasticity
- ADD/ADHD

Figure 2. Syndromes and features associated with motor disorders.

I. *Sensory Examination.*

The sensory examination involves an understanding of the anatomical location of the sensory system in the brain. See figure 3
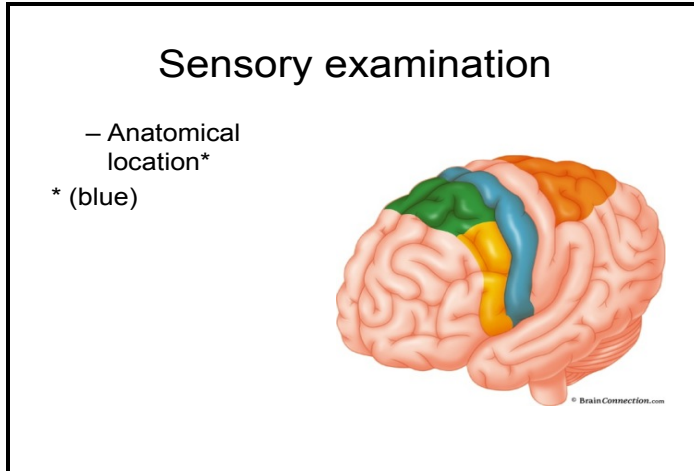
Figure 3. Anatomical location of the sensory system (Posit Science).

Basic sensory components include touch, temperature, pressure, vibration, and tactile discrimination. Sensory components are evaluated by examining stereognosis, graphesthesia and proprioception. Stereognosis is the ability to perceive the form of an object by using the sense of touch. Graphesthesia is the ability to recognize writing on the skin by the sensation of touch. Proprioception is the awareness of one's own body, and how one perceives pain and movement of one's body parts in relation to each other. A child experiencing deficits in any of these areas may not necessarily be diagnosed with a disability, but may present a puzzling array of difficulties in the classroom that might prevent him or her from performing to full academic potential.

III.   Module 2: Neurobiology and Clinical Features of Language in Children.

The neurocognitive examination attempts to analyze the integrity of each step of the process of language in a child. Many expressions of neurological functions as well as their related disorders/disabilities are displayed in a spectrum. A spectrum in many instances is biogenetically based, with the best documented examples being Fragile X syndrome, Huntington's disease and Myotonic dystrophy. Language is processed in one of two anatomical locations in the brain; receptive language is processed in Wernicke's area, in the posterior temporal lobe, while expressive language is processed in Broca's area, in the posterior frontal lobe.
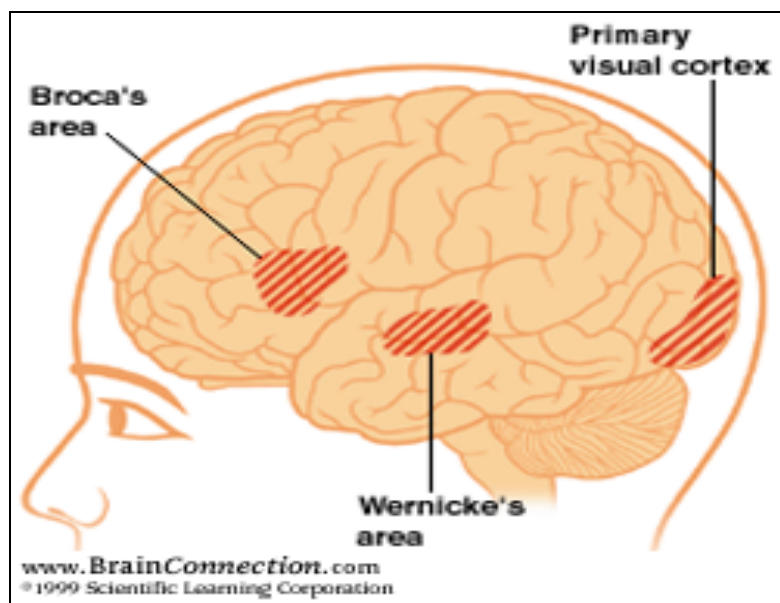
Figure 4. Anatomical locations of receptive and expressive language (Posit Science).

Processing of receptive language is complex and multivariate, including auditory processing, auditory figure ground, filtering, auditory memory, phonemic decoding, word to image conversion, and grapheme decoding. Executive function of language that a teacher sees in the classroom and which might be influenced by inadequate processing of receptive and/or expressive language will be manifested in difficulty with comprehension, reading, writing, following directions, speech and communication skills. The neurological exam of receptive language includes evaluation of word comprehension, sentence comprehension, letter identification, number identification, and reading. As might be expected, the neurological exam of expressive speech includes evaluation of spontaneous speech, letter substitution, word substitution, anomia, the inability to name an object, writing, and copying. In order to adequately diagnose language dysfunction, it is imperative to be cognizant of, and consider the developmental features of language in children, as well as the parallels in thought development and characteristics of attention. Language development is initiated from birth with phonologic discrimination, followed by responding to voices, vocalization, turn taking, and cooing vowel sounds by the age of 4 months. Between 6 to 8 months, the baby continues to develop babbling consonants and vowels, as well as syllables, including "dada", and "mama". Between 10 and 12 months, word utterances that signify meaning, begin to appear in the child's language, and at about the end of the first year, the child generally has a vocabulary of around 10 words. Subsequently, receptive language develops more rapidly than expressive language, which is manifested in mainly a clear discrepancy between how much the child understands and how well he may be able to express himself. By the age of two, two-word combinations develop and from this time onwards, there is a dramatic increase in vocabulary. By three years of age, words are intelligible to strangers and utterances are formed in grammatical sentences, although one may still observe continued phonological and morphological errors. Figure 5 below demonstrates the development of attentional processes, and clearly indicates that language develops according to the child's ability to focus on stimuli long enough to produce imitative utterances which exemplify speech.
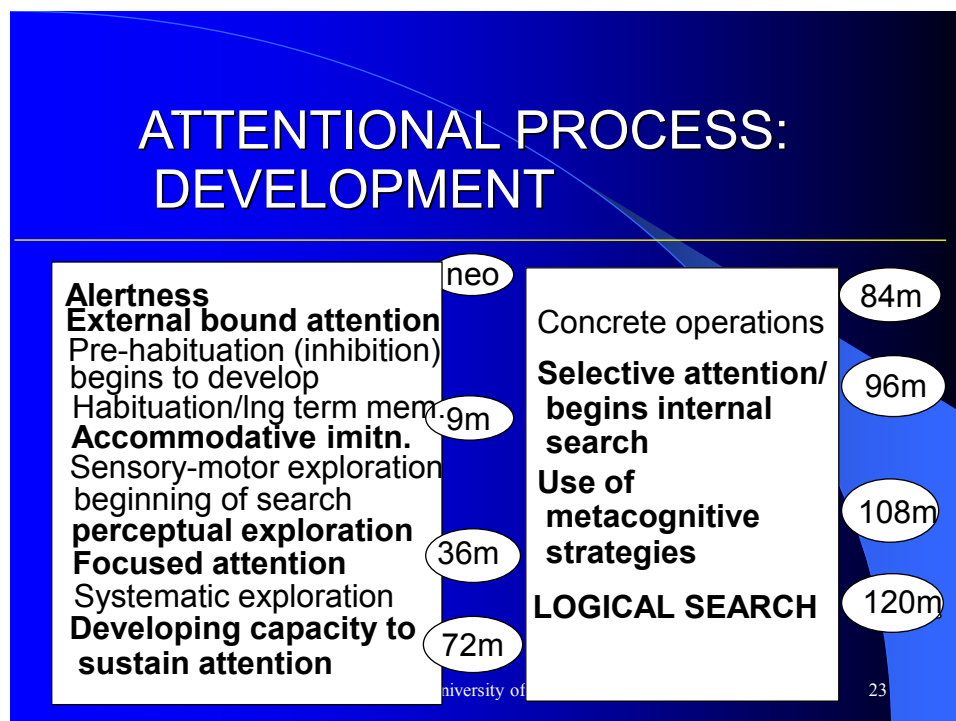
Figure 5. Developmental Scale in months of Attentional Processes (adapted from Blondis et al. 1991).

Aphasia, or disorder of language production, can involve all aspects of language: auditory and visual as well as receptive and expressive skills. This translates into an array of behaviors that are present in the classroom: reading, writing, listening, comprehension, speech, spelling, and copying. These skills are utilized not only in language arts, but throughout the curriculum in all subject areas. The typical syndrome of expressive aphasia includes dyslexia, behavior dysfunction manifested in anger and excitability, difficulty uttering speech, poor prosody (expression), poor grammar in speech, and poor writing. The typical syndrome of receptive aphasia includes dyslexia; poor phonological awareness; impaired language; dependent, aggressive or erratic behavior; anosognosia, or the inability to recognize one's own challenges; fluent yet shallow or meaningless speech; parahrasias, difficulty copying; and inability to master visual to auditory signals. A variety of clinical circumstances can lead to damage or destruction of the language areas in children: traumatic brain injury, hemorrhage or stroke, and respective surgery for epilepsy, to mention a few. Most commonly, in clinical practice, children are referred with observation of delay of language or behavioral abnormalities which usually are described as 'autistic'. As autism has become the fastest growing category of disability and is now approaching epidemic proportions, teachers should be aware of the possibility of mistaken categorization of children. Characteristics of developmental language delay in children are: failure to acknowledge voice interactions, delay in expressive vocabulary, and earlier development of receptive skills which are selective. For example, the child may have better comprehension of caregivers than strangers. Frequently delayed walking and autistic spectrum behaviors are associated with language aphasia; as the child grows, one sees an association with dyslexia, dysgraphia, and speech dyspraxia. It is interesting to note that the recovery rate of language seems to be standard regardless of whether the child has developmental aphasia or acquired lesional aphasia. Figure 6 below shows the rapid rate of growth in the number of

vocabulary words in a child with a brain lesion, which would be similar in a child with developmental aphasia. One should not infer, however, that a child who does not develop language according to typical developmental milestones should not receive speech and language therapy. All services that will help a child achieve his or her full potential should be considered.
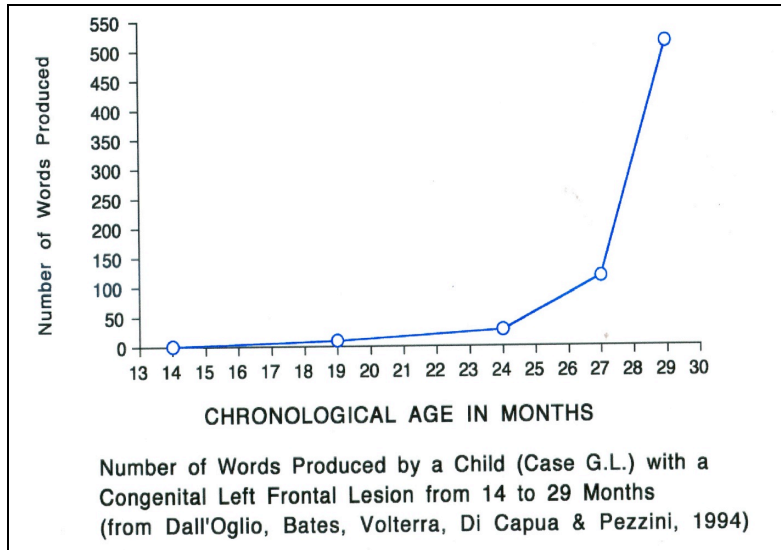

Number of Words Produced by a Child (Case G.L.) with a Congenital Left Frontal Lesion from 14 to 29 Months (from Dall'Oglio, Bates, Volterra, Di Capua & Pezzini, 1994)

Figure 6. Number of words produced by a child with a congenital left frontal lesion from 14-29 months (Dall'Oglio et al, 1994 in Bates et al).

When one considers the complex processes that are involved in the production of language, it is encouraging and motivating for teachers to know that the brain has the capacity to recover language lost and enhance developmental potential. With appropriate stimulation the language center of the brain can repair itself, significantly diminishing the devastating effects that language delay has on all areas of a child's curriculum.

IV.   Module 3: Disorders of Attention.

There has been an unprecedented increase in the diagnosis of attention deficit disorder with or without hyperactivity (ADD/ADHD) in children, which has resulted in the prescription of stimulant, and, more recently, non-stimulant medications by practitioners who may not always understand the complexity of this disorder. Disagreement persists as to whether attention deficit is a primary neurological disorder, or a symptom of an underlying biological, psychiatric, or neurological condition.

ADD and ADHD are best thought of as only two examples of multiple disorders on a spectrum, rather than as a single diagnostic entity. Multiple processing deficits can lead to a behavior of inattention, e.g. central auditory processing deficits, dyslexia and complex visual processing deficits. Unfortunately, inattention is more readily observed and diagnosed than any processing deficit, so there are many children whose real challenges are not being addressed, who are sometimes overmedicated, and who continue to fail and fall behind their peers. It is also important to recognize the important role of more complex neurobehavioral disorders that interfere with attention. Examples of these include obsessive compulsive disorder (OCD), depression, hypomania, impulse control disorders, and frontal lobe syndromes, particularly post

traumatic brain injury. Movement disorders such as Tourertte's syndrome, Sydenham's chorea, and pediatric autoimmune disorder associated with strep (PANDAS) are other important contributors to attention deficit syndromes.

Pharmacological studies have identified a variety of neurotransmitters that are associated with ADD/ADHD: dopamine, serotonin, and norepinephrine. Desch (1991) contends that the very existence of so many effective medications for the treatment of ADD/ADHD, with each medication having many different biochemical effects, adds further evidence that more than one neurotransmitter system is involved in the disorder. In terms of anatomical correlates, Melillo and Leisman (2009) explain that the prefrontal cortex, the cerebellum, and the basal ganglia are all involved in functions that affect attention. Lesions in these areas of the brain can result in a wide range of clinical manifestations. For example, patients with frontal lobe dysfunction may exhibit distinct symptoms, depending on the location of the lesion. Left prefrontal lobe dysfunction exhibits symptoms that might include apathy, depression with increased avoidance and perseverative (repetitive) behaviors, such as one might see in a child with autism. Right prefrontal lobe dysfunction results in distractibility and inappropriate or impulsive behaviors. There is no specific area of the brain that is primarily responsible for attentional processes.

There seems to be a growing consensus that ADD and ADHD are often comorbid with a wide variety of disabilities, primarily psychiatric disorders. Hudziak and Todd (1993) noted that the rates of comorbidity in children for ADHD and (OCD) was 35%, Cognitive Disability (CD) was 50%, mood disorders 15-75%, and learning disabilities (LD) 10-92%.
Clinical syndromes for ADD could be classified as follows: the restless child, the aggressive child, the inattentive child, the disorganized child, the disruptive child, and the failing child. The restless child may experience movement disorders that exhibit tics, akathisia (compelling need to be in constant motion), or seizures. As mentioned above, restlessness could be symptomatic of frontal lobe dysfunction resulting from trauma, stroke, or brain degeneration. The aggressive child might have a communication disorder, be hearing or language impaired, or may be diagnosed with a genetic disorder such as Cornelia de Lange or XYY both of which cause increased aggression in children. A child with petit mal seizures, one who is suffering from anxiety or depression, one who may be hearing/language impaired, or one with a thyroid disorder, anemia, or chronic pain, will present clinically as an inattentive child. Disorganized behavior in a child might be the result of visual spatial and visual perceptual dysfunction, as well as partial prosopagnosia, or difficulty with face recognition. ADD/ADHD behaviors can be the outward manifestations of neurobehavioral syndromes such as learning dysfunction, affective disorders, disorders of socialization, paroxysmal rage dysfunction, obsessive compulsive behaviors, autistic spectrum disorders, and/or movement disorders.

Accardo and Whitman (1991) emphasize that medication should never be the first treatment approach to ADD/ADHD, and should only be involved in a multimodal treatment program. The classroom teacher should be encouraged to work closely with the physician, clinical therapist, and parents in order to design appropriate, evidence-based interventions that will assist the student in achieving the best possible outcomes and eventual success in and out of the classroom.

V. Module 4: Spatial and Constructional Disorders.

This module addresses the anatomical distribution of spatial and constructional skills, the functions of the non-dominant hemisphere, and clinical syndromes that one may encounter in

children with right hemisphere or non-dominant hemisphere dysfunction. The right hemisphere controls movement on the right side of the body, including left-sided sensory control, spatial processing, visual spatial processing, and body perception. Other non-dominant hemispheric functions are social praxis, or understanding and perception of social behaviors, motor praxis otherwise understood as the ability to carry out learned movements, organization of oneself in space and time, and the decoding of facial features.

The learning and behavior characteristics that one might observe in Asperger's syndrome can be attributed to anatomical correlates in the right posterior parietal cortex. When these areas of the brain, as shown in the shaded sections of Figure 7, become dysfunctional, the individual demonstrates poor social skills, hyperdysprosody, hypodysprosody, hyper emotionality (R1), discomfort in social settings, and decreased emotionality (R2).
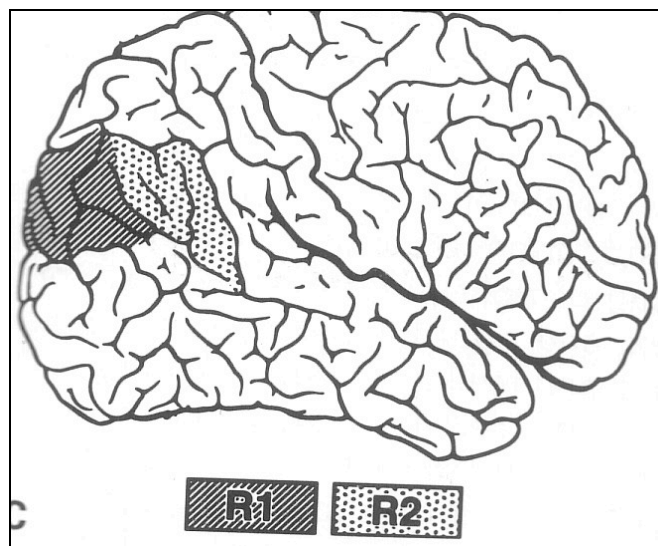
Figure 7. Anatomical correlates of Asperger's Syndrome (Weinberg et al. 1995).

Some of the learning and behavioral correlates for Gerstmann Syndrome, which manifests many of the same symptoms as autism and Asperger's Syndrome, are found in the areas of the brain that are responsible for finger dysgnosia, namely the right angular and supramarginal gyri. Damage or abnormality in these areas will result in poor skills in ordering, difficulty with transpositions, and dysgraphia. When malfunction of the visual association cortex occurs, the child will experience poor picture to word identification, and will also experience defective wit and logic. Problems in the right inferior parietal and supramarginal gyrus will produce poor sequencing of symbols, designs, objects, and events, and will lead to transposition of symbols in spelling and number tasks, and dysgraphia. In addition one will see right left confusion and poor organizational skills. Figure 8 below illustrates damage to the visual association and prestriate cortex of both hemispheres.
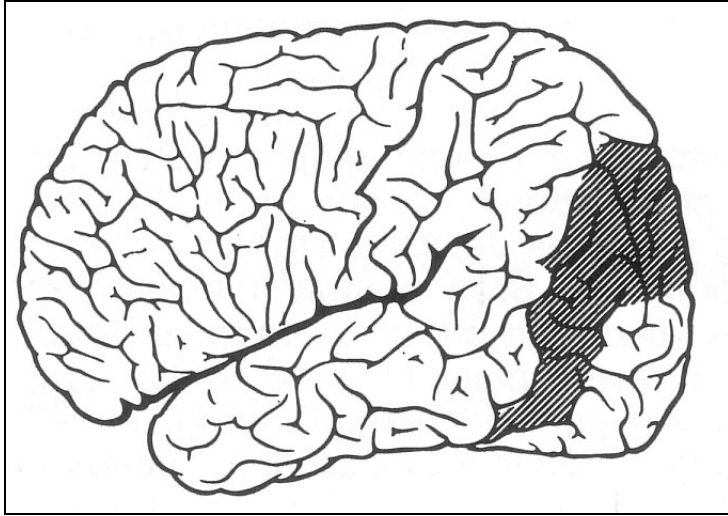
Figure 8. Visual Association and prestriate cortex of both hemispheres (Weinberg et al. 1995).

Damage to this area causes difficulty with verbal and non verbal communication, inability to accept inanimate interaction, defective logic and humor, stereotypic mannerisms, compulsive behavior, and poor adaptation to novel situations. These behaviors are all evidenced in the autism spectrum.

Anatomical correlates for depression are dysfunctional right posterior temporal cortex, prestriate, and inferior parietal lobe. Clinically, patients present with dysphoric moods, inability to anticipate or experience pleasure, loss of interest, hypovigilance, disturbed sleep, appetite, and mood disorders. Damage to the right inferior parietal lobule and parts of the right supramarginal gyrus and prestriate cortex can also produce many of the above mentioned behaviors with the addition of fidgety behavior inattentiveness and learning disabilities.

Weinberger et al (1999) continue to describe anatomical correlates between sociopathic type behaviors and damage to the right orbital frontal cortex. In addition to these behaviors subjects may exhibit difficulty with societal rules, compliance, obedience, and volition, all of which are indicative of sociopathy.

Clinical syndromes associated with right hemisphere dysfunction include amorphosynthesis, visual neglect, sensory neglect and anosognosia (also a frontal lobe function), motor apraxia, visual ataxia and sensory perceptual disorders must be included in this list of syndromes.

Upon close examination of the DSM-IV criteria for the diagnosis of autism, students taking this course readily see the connection between the descriptors outlined in the manual and the manifestations of right hemisphere dysfunction. These fall under three main headings: impairments in social interaction, impairments in communication, and restricted, repetitive, and stereotyped patterns of behavior, interests and activities. However, these behaviors are equally prevalent in children with Rett's disorder, a neurodevelopmental disorder affecting gray matter, children with childhood disintegrative disorder, a rare condition characterized by delays in language, social function, and motor skills, and at times in children with profound hearing loss and speech delay. Children with Asperger's syndrome also exhibit behaviors that are immediately recognizable as exhibiting right hemisphere dysfunction. Patients display normal or near normal intelligence, a spectrum of severity of social dyspraxia, i.e. little understanding of

social constructs and associated gestures, poor eye contact and facial fixation, and a high incidence of psychiatric disorders. Students with this disorder are often obsessive and perseverative, appear to lack social and affective modulation of expression and thus appear aloof and unemotional. Poor visual-spatial skills may contribute to learning difficulties in reading or math. Speech is observed to be dysprosodic and frequently too loud or high pitched. They struggle with semantic and pragmatic language, often displaying a lack of humor, both verbal and non-verbal. There are numerous behaviors that teachers observe and experience in the classroom that might be symptomatic of right hemisphere dysfunction. It is our belief that with greater knowledge and understanding of these syndromes, one will be more likely to address the needs and challenges of these individuals, regardless of the category of special education by which they are identified.

VI.   Conclusion.

This discussion does not imply that teachers should be neuroscientists, and certainly, one course cannot begin to give a complete picture of the research and information available on the brain. It is the intent of this course to improve the understanding of etiology so that teachers, particularly intervention specialists, will make the connection between these underlying etiologies and the behaviors that are so commonly misunderstood in children with special needs. It is not customary in teacher education programs to include courses in neurobiology, which is an issue that ought to be addressed. As the country, and particularly Ohio, is attempting to establish standards to guide the assessment of teacher effectiveness, it becomes the distinct responsibility of teacher training programs to take the necessary steps to increase rigor in an effort which will ultimately provide well trained, competent teachers who will make a difference in the classroom. If teachers are struggling, bemused, and incapable of designing appropriate interventions for students because of a basic lack of knowledge of neurodevelopmental disorders of children, students' needs will not be adequately met. Here, one needs to state the obvious: that teachers have a major impact on how well students learn and perform in the classroom. It is no secret that reform of the educational system is sorely needed, as our students leave school barely literate and unprepared for the challenges of the workplace, not to mention the complications of technology and social interactions.

It is the opinion of the author that teachers should have a more balanced education which would include knowledge of neuroscience and the application of scientific research to the classroom. Aggregated data from the University of Findlay course evaluations collected between 2000 and 2008 reveal positive feedback from participants of this course. The chart below illustrates the students' responses to the following criteria: adequate amount of work, instructor was well prepared, teaching style suited my learning style, tests were appropriate, instructor demonstrated concern for my learning.
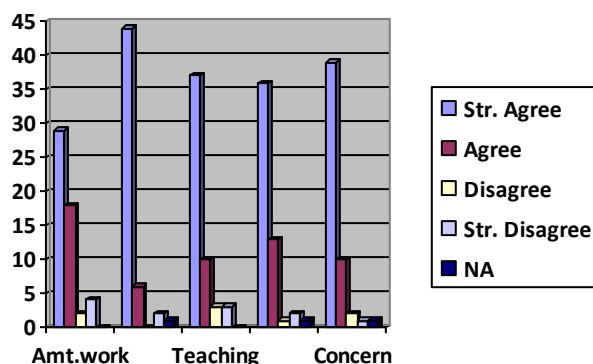
Figure 9. Results of course evaluation from 2000-2008 (N=53).

While these responses do not speak to the significance or usefulness of the content being taught, the following sampling of comments most certainly lend credibility to the worth of this unique opportunity that is afforded to our students: "Really enjoyed this class;" "Thankful for the opportunity to observe a clinical setting;" "taught me a lot about symptoms to look for in my students;" "super class-this is information ALL (sic) teachers should have;" "extremely beneficial."

If one increases the comfort level of intervention specialists in the identification and integration of neurocognitive syndromes, the quality of relevant interventions will enhance the quality of instruction, minimize labeling and mislabeling, and better serve children in the classroom. As Carew et al (2010) conclude:

"The bottom line is everyone wins…For each young mind served by Neuro-Education knowledge, all societies have the opportunity to regain lost ground-and build the potential for better academic achievements and opportunities for both young people and society at large." (p. 687)

It would be gratifying to see improved communication between the educational and medical models. Fisher et al (2007) assert that "Biology and cognitive science have as much to learn from education as education has to learn from them." While this sounds simple, it is not easy. The system that is in place is rooted in big government and political policy. Currently, there is no way of avoiding labels in special education because these labels drive funding, without which there would be no services. Unfortunately for those children with special needs, money driven labels become their identity. It is not uncommon for teachers to refer to students in the classroom as, "my LD kids" or 'my two autistic kids", my "IEP kids". Furthermore, the majority of school districts require teachers in special education to implement curricula that are standardized, scripted, and mandated; having the freedom and luxury to think and act creatively in the classroom is a difficult challenge for teachers both now and in the foreseeable future. But it must be said: it is imperative that teachers become more cognizant if the individual challenges that children experience in the classroom as a result of specific neurological conditions, whether they are mild, moderate, or severe. As Sylwester (1995) says:

Current brain theory and research now provide only the broad, tantalizing outlines of what the school of the future might be but we can anticipate that the rate of new discoveries will escalate. Educators who are willing to study the new

cognitive science developments, and then to imaginatively explore and experiment in their search for appropriate educational applications, will have to work out the specifics in the years ahead. If our profession does not do it, nothing will happen. Things will remain as they are. (p.141)

Preservice teacher programs should evaluate their curricula and examine the benefits that would result from the inclusion of courses in the biological sciences that offer teachers a better understanding of the children that they will serve. Insights into the neurobiology of learning have provided our students with the knowledge and understanding that if afforded to all preservice intervention specialists, could lead us to that enhanced level of services that we are seeking.

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Presence without being present: Reflection and action in a community of practice

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Abstract: Reflection and Communities of Practice are common constructs in teacher education. Co-teaching is often seen as beneficial, yet teacher education students rarely have experiences being co-taught. Thus, reflection, communities of practice, and co-teaching, deserve careful consideration in designing teacher education learning experiences. Based on experiences co-teaching, we argue that unexamined assumptions of university education and university structures can influence how future teachers learn through and about these constructs. We apply sociocultural perspectives to reflexively analyze our co-teaching in order to unpack meanings of: reflection in and on action and communities of practice. Through our analysis we raise questions about how structures of educational systems affect learning. Our goal is to consider issues related to the goals of teacher education and the structures that enable meeting those goals.

Keywords: reflection, communities of practice, co-teaching, teacher learning, discourse.

I. Introduction.

Teacher educators, who are often university professors, generally share a broad, common goal of developing future teachers who can participate productively in professional communities of practice in the field of education. In addition, teacher educators consistently attempt to develop future teachers' abilities to be reflective practitioners (Schon, 1987). Yet these goals can be challenging to meet. The goals are complex and represent sophisticated knowledge and ability – things hard for novices to develop in a short time. As two teacher educators, we cared about these goals and wanted to disrupt common practices to consider how this might impact achievement of these goals.

One challenge of learning to teach relates to programmatic structures and how these structures limit opportunities to model professional dialogue among peers. Traditionally, teacher education occurs in university classrooms with a single expert teaching new concepts or ideas to one group of novices. We wondered about how a hierarchical relationship between single more knowledgeable others and less knowledgeable learners, particularly in college classrooms, affects learning to participate in professional communities of practice. Such a structure can be problematic because the expert/novice construction fails to model or make visible the professional activity of participants in a community of practice. We also wondered about the ways the structure affects learning about reflective practice. Teacher educators ask future teachers to reflect on experiences. However, teacher educators rarely offer explicit modeling of effective reflection; often do not explain how reflection relates to professional activity; or fail to make their own reflections evident to future teachers. This essay describes the result of our

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choice to co-teach two university-based teacher education courses. Our co-teaching resulted in collaboration and unplanned experiences that disrupted traditional classroom structures but allowed us to alternatively pursue some shared goals for students in our program. In this essay, we intend to raise questions related to the goals of teacher education and the structures that enable meeting those goals. We hope to encourage consideration of instructional structures and how those structures promote professional learning within the context of a liberal arts university.

II. What process did we use to generate this essay?

We distinguish our work as a process rather than a methodology because our inquiry is neither fully rhetorical nor fully empirical. We follow processes of autoethnography, a methodology with roots in reflexive ethnography, but we do not produce an autoethnographic account. To understand this distinction and the methods associated with autoethnography it helps to begin with reflexive ethnography. Reflexive ethnography examines cultural phenomena, but in particular considers and examines the ways in which participants and researcher affect research, as well as the process of researching. Similarly, reflexive ethnography acknowledges the ways research affects the research context, especially in a cultural setting, and also how the context affects the researcher. Reflexive ethnography recognizes the reality that ethnographers participate in the construction of data they collect. (Davies, 1999) Autoethnography, arising from reflexive ethnography, attempts to "situate the self within the context of a culture, subculture or group (Duarte, 2007, p. 2) ." In order to situate the self, the researcher(s) becomes the subject. Situating the researcher in the research aims to, through reflective analysis, generate personal insights into the context and the process of generation of knowledge. (Davies, 1999; Ellis, 2004) Ellis (2004) specifies that autoethnography involves both process and product. The process reflects approaches to identifying and organizing information by reflexive analysis of oneself. Autoethnography is also a product because the outcome of the analysis is typically presented using a narrative perspective often as an autobiographic account. In this essay, we adhere to autoethnographic processes, but do not strictly produce narrative, autobiographical, ethnographic products. Thus, we apply the processes, but do not construct a full autoethnographic product.

Durate (2007) argues for the usefulness of autoethnography in the scholarship of teaching and learning. The personal insights of inquirers in the social and cultural context of teaching offer alternative and important understandings of interactions in a given context. We used autoethnography to inquire into our personal experiences co-teaching two disciplinary (Language Arts/Social Studies and Mathematics/Science) teacher education methodology courses. What follows is a brief description of our courses, an account of a single event, and subsequent discussion of other aspects of the course. These descriptions become objects for discussion to provide contrast with the common structures found in teacher education.

A. Setting the stage.

Before the start of a new semester, we agreed to collaborate on two teacher education courses. We started by discussing our interpretations of the goals for our courses, our experiences with student learning in prior courses, and our goals for our students. In addition, we discussed our experiences with approaches that had been more and less successful in helping students learn complex ideas. Through our discussions, we uncovered our common views on teacher education and its role within the structure of a liberal arts university. We identified similarities in our

philosophies of education and our common commitment to inquiry and critical reflection. Ultimately, we agreed that the course should challenge preservice teachers to learn about student-centered planning and teaching, culturally responsive pedagogy, and curriculum integration for elementary learning. While we had never co-taught a course, we developed a vision of the course that involved intensive co-teaching and placed both courses of teacher education students in one elementary school for practicum experiences. We approached our department chair for permission to pursue this departure from standard practice, received approval, and began planning the course.

The new vision represented a bold adventure of a deeply integrated teacher education methodology course. Mark was assigned to teach the mathematics and science methods section and Bird was assigned to teach the language arts and social studies methods section. We were both experienced teacher educators, Mark had over a decade of experience but was new to the University and Bird had taught for more than two decades and had taught in this teacher education program for several years.

In the weeks prior to the first day of class, we co-constructed a common syllabus that involved separate and combined class sessions, several common readings, and common assignments. There were 13 students in one section and 14 students in the other; all of whom were in the initial phase of an intensive course sequence that ends in student teaching two semesters later. Early in the term, an event occurred that we continued thinking about for several weeks.

B. An Episode.

It was very early in the term and our respective sections had met only a few times and infrequently as a combined group. Bird, having just returned from leading a strenuous study abroad trip, had become ill. This meant for one day Mark needed to lead both sections in a combined session. This created a problem because the conceptualization and implementation of the course represented a shared, co-constructed vision; neither one of us felt as though we owned the course. Thus, Mark was unsure about leading the combined group though a complex set of ideas without Bird present to co-teach the session. In the midst of that moment of uncertainty, we came to the idea that Bird could attend via Skype™. She would call in from home and be able to speak to the class and also listen to the discussion.

Prior to class, we both took extra care to make sure we agreed on the main ideas for this session. Mark made sure he had a clear sense of the readings, the authors' purposes and arguments. We discussed how Mark might stimulate a lively class discussion and what Bird might do to be part of the process. Bird spent extra time re-reading and thinking about the material and how ideas and assumptions might unfold in a discussion for which she was to be primarily a listener and invisible to the students. We prepared much differently than for a class independently taught by either of us. We realized how when we teach alone, the logic of thinking and the critical questions needed to help students come to understandings became embedded in the process. Years of teaching experience have made a certain repertoire of strategies and practices virtually automatic and seamless. But in a situation such as this, where the sequence and logic were based on multiple perspectives, we knew we had to be much more explicit. Mark thought carefully about what he planned to do in the classroom. Then he discussed it with Bird to make sure that she thought the plans were acceptable and to confirm that all the content she wanted addressed was included. As class started, (author one) checked the computer connections

and assured that everyone could be heard – not only Bird but also that she could hear the students. Bird typically relied on being able to see students' actions and expressions in order to guide her responses and formulate critical questions; not having a "sight line" was unnerving. When class started, Mark watched the faces of students and explained that Bird was home ill and that he would lead the class. As he explained that she was attending class via Skype™, there was an audible shuffle in the class, followed by the voice of Bird thundering from the classroom speakers.

The class continued in a seemingly conventional format. The focus for the session was on two articles about metaphors for learning. We also continued to discuss culturally responsive pedagogy. There were a number of planned activities to help students engage with and make sense of the readings. Since it was early in the term, the readings and activities focused on general ideas about teaching. However, as the class continued, it became clear this session was unique. While the students worked on an activity, Mark used the instant messaging feature of Skype™ to chat with Bird. She listened to class discussions and also sent chat messages about what she heard, describing how and where she thought the discussion was going. Thus, we were able to talk with the students and also with each other about the same event. In effect, we were able to teach and reflect and discuss on our teaching while it was taking place.

Our chats enabled Mark to reflect in the moment and get help thinking through what was actually going on, and thus respond more effectively. With Bird intellectually present in the content, virtually present via Skype™, and simultaneously at a distance, we were able to both teach and reflect with a colleague in action. For example, in the following excerpt, the class had been discussing culturally responsive pedagogy and metaphors for learning. The point was to interrogate students' individual, implicit definitions of learning. Additionally, we wanted to disrupt common ideas about banking models of education – without putting a name on it. Here is a verbatim transcript of the Skype™ chat from one moment from that session:

> Bird: I think this is hard for your little tribe as this is not what they think teaching is about so we (you) will need to tie that in for them.
> This requires considerable thought and analysis on their part.
> Mark: I'm not sure how, so feel free to jump in. We're breaking a few minutes, but after that feel free to jump in. I'm not quite getting them where I hoped.
> Bird: Okay … I think you are doing fine when they start talking about metaphors, what are they talking about?
> I would just plain ask them by going back to the first question or two on the calendar.
> This is about the relationship piece in schools and schools within communities etc.
> Mark: Do you mean, a) What does good practice look like? And b) How do we teach children that are different from ourselves?

After a short break, Mark displayed the questions from the course syllabus. The discussion continued, re-enlivened by Bird's suggestion to revisit some driving questions for the course. Bird continued to be part of the discussion both as reflective listener and a distant but invisible contributor. The class moved into a spirited discussion that could have continued for much longer.

Class ended that day, the students left and the class seemed not radically different than any other class; but something lingered for us both. Our private real-time chats about on-going class discussions left us thinking about what it means to teach, the nature of teaching at the

university, and how we can begin to help prospective teachers develop as critical and reflective practitioners in a community of practice. As we began to consider what occurred, we realized an important aspect was our real time chats based on one person being in the room with students and one person listening and speaking without being able to see the group dynamics. As a result, we thought about communities of practice and began to think about the role of critical reflection as a listening endeavor. The structure of co-teaching, especially with one instructor at a distance, allowed us to develop different interpretations of class dynamics. Ultimately, we recognized how these actions and structures could be at the core of communities of practice.

C. What followed?

After this class session, the course continued but the experience had many lasting impacts. Our approach shifted as we continued to reflect on our experience. We developed shared instructional approaches, we collaboratively observed students in practicum settings, and we began making our reflections on our teaching public to our students. In particular, our written reflections about class sessions, which ultimately became a core of this manuscript, were shared publicly and discussed with the students. These actions, both consistent with our philosophies and precipitated by the events described above, helped transform our teaching. It reformed our notion of co-teaching, which challenged each of us to think differently about reflection and communities of practice.

To elaborate on how co-teaching transformed our practice a specific example is illustrative. Bird previously developed and presented to students a graphic/narrative model of child-centered pedagogies. At her recommendation, we presented this to both sections in a co-taught session. While Bird presented the model to students, Mark listened and participated, but also thought about the model and how it reflected his approach to teaching preservice teachers about child-centered pedagogies and learning in general. During this particular co-taught class session, Mark joined the discussion and together, we reflected on our thinking publicly with the students, shared our critical analyses and questions, and modified the model to accommodate the commonalities shared in our perspectives. Reflecting on the session after class, we collaboratively transformed the model into a planning heuristic and classroom observation format relying on the essential features of model. In the next class, we shared the revised heuristic and classroom observation format with the students and engaged students in another co-led discussion about the limitations and affordances of the new heuristic. Thus, we used co-teaching both in the moment and reflectively within our community of practice to transform each of our practice to arrive at new, alternative approaches.

III. Theoretical Perspectives.

For this essay, we apply sociocultural theories to examine our interactions in communities of practice. In addition, we consider our co-teaching from theories of discourse and connections between discourse and reflective practice. These two broad frameworks interact and overlap to open up discussions informative for teacher education and also the scholarship of teaching and learning. Through this discussion, we hope to raise questions about co-teaching as it relates to teacher education in a liberal arts university education. We also hope to provoke thinking about issues of co-teaching, communities of practice, and reflective practice more broadly.

A. Sociocultural Theory and Communities of Practice.

Sociocultural theory describes and explains events in social contexts (Cobb, 1994; Cobb and Bowers, 1999). A social context is defined by participation in social practices, including the ways of acting and being which participants deem to be meaningful and useful (Cobb and Bowers, 1999; Perkins, 1998). Individual actions in social contexts must be viewed as activities that enable participation in a system of practices. Individual actions can also be described based on the cultural, historical, and institutional contexts in which those actions occur (Wertsch et al., 1995).

Wenger (1998) elaborates on these ideas by describing a Community of Practice as a group having a common domain of interests, engaging in joint activity, and developing a shared repertoire of resources. The construct arises from research that formulated theories of situated learning, which describe how apprentices learned from experts (Lave and Wenger, 1991; Rogoff, 1995). In an apprenticeship individuals learn by watching an expert, mimicking that expert, and then taking on increasingly challenging responsibilities of the practice of the expert. Situated learning also explains how experiences induct novices into communities of practice. Novices, through participation, learn about the shared domain of interest distinguishes participants in the community of practice. However, communities of practice are also based on joint activity and a shared repertoire of resources. In order to have joint activity and shared repertoires, interactions must be based on common understandings about how to make meaning in a shared context in which all participants have equivalent means, opportunity, and incentive to participate. The implication is that communities of practice become communities of practice when learning occurs through peer interactions.

B. Reflective Practice.

Schön (1987) theorizes, based on ethnographic research, that Reflective Practice represents a hallmark of professional activity. Schön describes two actions: being able to *reflect **on** action* and *reflect **in** action*. Reflection *on* action refers to thinking about actions and events after the fact. While reflection *on* action is important, it is not the sole activity of professionals. Reflection *in* action, Schön argues, is a distinguishing feature of professionals. This kind of reflection involves the ability to consider ongoing activity from the perspective of multiple criteria, while also being able to anticipate probable outcomes, and as a result take action in order to reshape the perceived, potential, and experienced outcomes of ongoing activity. In short, reflection *in* action involves being able to evaluate, assess, and act in order to shape ongoing activity in the moment. Both types of reflection are important in professional activity.

Related to reflection is the notion of private discourse in reflection *in* action. Vygotsky (1986) describes inner speech as thinking through ideas and experiences using unspoken words, while engaging in a personal internal dialogue. Private discourse, or inner speech, involves the internal dialogues we have with ourselves in the context of action. Thus, reflection *in* action often occurs through inner speech. But logically, we might wonder whether reflection *in* action may benefit from more than inner speech. As opposed to reacting in the moment based on stimuli, our internal dialogue results in deeper, sophisticated thinking about experiences. From the perspective of reflection *in* action, inner speech seems to be a prerequisite.

However, if we situate in the concept of reflection *in* action in a community of practice, this might create dialogic activity that, as Bahktin (1986) describes, participants continuously

define and redefine understandings of themselves, others, and ideas. This yields two important outcomes relevant to reflection *in* action. First, when individuals think through ideas and make those ideas part of joint activity, they must transform random thoughts into public discourse, which forces articulation of ideas into coherent claims and speculations. This leads to the second outcome; the individuals must articulate ideas in ways that also communicate meanings to the audience (Grice, 1999); thus it requires a kind of coherence. Then, as dialogism suggests, the audience can respond and engage in a dialogue that can affect our thinking. In the event described above, the dialogic activity was semi-public, because it occurred peripherally to the main dialogue. Thus reflection *in* action in a community of practice may be benefitted by semi-public speech. Semi-public speech could enable dialogic joint activity which results in deeper reflection *in* action and more elaborated understandings about the psychological time and space of on-going activity (Edelsky, 1993; O'Connor and Michaels, 1996; Shultz, Florio, and Erickson, 1982). We suggest that dialogic activity may facilitate reflection *in* action. However, to support reflection in action, dialogic activity relies on participants engaging in public or semi-public speech about reflections to make thinking transformed into shared action.

IV. Discussion.

Stepping back from theory, we would like to discuss the event described above using these theoretical perspectives. This discussion intends to generate dialogue among colleagues about communities of practice, the role of sociocultural perspectives in introspection, and the ways that each of these helps elaborate our understandings of reflective practice. Such a discussion offers the opportunity to consider limitations and also questions implied in this essay.

In terms of limitations, we would like to distinguish practical from philosophical limitations. It is tempting to focus on practical limitations including such things as scheduling, time, load, and faculty expectations. Clearly our context is particular; we are faculty in a liberal arts university that privileges teacher-scholars. While many of the approaches and actions we took may be perceived as being only relevant in similar institutions, we believe that such practical limitations can be overcome through commitment and creative endeavor. For example, developing a community of practice around a course can occur in many contexts in many disciplines. Similarly, we can say anecdotally – we have colleagues who have done similar things – that the use of Skype™ is possible in a variety of contexts. Clearly we were afforded a practical benefit of time that our courses were scheduled concurrently. Yet this remains a practical dilemma that does not seem insurmountable. For us, philosophical limitations are potentially much more profound than practical ones. Engaging in practices as we describe here require a willingness to take risks, to be fearless, and to make oneself vulnerable. Such actions are intuitively counter to stereotypical roles as professor. Thus we recognize that our willingness to engage in this project was serendipitous in that we were both willing to take risks, be vulnerable, and expose our faults to one another. In short, we were willing to take a stance that co-teaching would be effective for our students given the course and context.

A. Communities of practice of practice and university education.

Communities of practice offer one perspective from which we can examine our story. We devoted considerable time and energy coming to common understandings so that enabled us to develop common readings and assignments across the multiple content domains (language arts,

mathematics, science, and social studies pedagogy). We made efforts to identify central concepts we felt were important for students of teaching to learn. Our development of common understandings led us to determine that we must engage in joint activity in our course(s). Stepping in and out of our discussions we found ourselves developing shared common frameworks for thinking about teaching which crossed disciplinary (e.g. Language Arts, Mathematics, Social Studies and Science) boundaries. Ultimately, as a result of our common activity, we evolved a shared repertoire in our practice.

One might wonder about how this differs from instructors engaging in collaborative or co-teaching; what distinguishes our situation? This largely depends on how collaborative teaching is defined. Collaborative teaching can occur without development of common language or repertoires of practice. Instructors can contribute personal expertise without developing shared norms and practices or synergistic relationships that supersede individual or discipline. We developed unique synergistic structures that reflected our common understandings. This privileged neither of our perspectives and required that we share and discuss our values, beliefs and assumptions about learning to teach. We shared these ideas with each other and also with our students.

Ultimately, our experiences caused us to wonder about structures present in university education. Graduates of the university, future professionals, will be expected to participate in communities of practice. To learn to participate in communities of practice, students need to observe and experience communities of practice in order to learn to be effective and productive members of such communities of practice. We wonder, in what ways do course structures enable development of students' abilities to participate in communities of practice? We recognize that institutional contexts can be limited in their ability to offer flexible structures similar ours. Yet we remain curious about whether creative faculty within those institutions might be able to generate contextually feasible structures that might enable such experiences. Moreover we wonder, what might result from rethinking structures to facilitate high fidelity implementation of communities of practice in university courses?

Within the discipline of teacher education, one might argue that students gain experiences with communities of practice through student teaching. Practicum experiences of teacher education follow ideas of situated learning to design apprenticeship models for learning to teach. Prospective teachers learn about teaching by taking on increasing responsibility for running a classroom. Such an approach situates prospective teacher learning within a community of practice. Yet this argument has shortcomings and leads to pragmatic problems. Logically, apprenticeships focus on development of skills useful in a particular profession through modeling and practice. Some argue that apprenticeships can be a challenging context for teacher learning (Feiman-Nemser and Buchman, 1985; Feiman-Nemser and Buchman, 1987). Furthermore, apprenticeship models imply that teaching is a technical craft to be learned through practice (Britzman, 2003). However, it is clear that teaching is an intellectual activity involving more than skill (Jackson, 1990; Lampert, 1985; Lortie, 1975; Wilson, Floden, and Ferrini-Mundy, 2002). Furthermore, the apprenticeship is structured around a hierarchy, which is problematic in a community of practice. Apprenticeships can obscure the need for teachers to build communities of practice in classrooms; it implies a model of teacher as expert and students as learners who are recipients of knowledge, ideas, and meaning. Finally, the apprenticeship approach is confounded by the ways it places novice teachers in conflicting roles. The novice must navigate multiple expectations including: their personal expectations, expectations of their cooperating teachers, and the demands of the licensure program. The multiple expectations are

challenged by novice teachers' identities and assumptions about learning to teach. (Feiman-Nemser and Buchmann, 1985) Thus, we wonder whether the hierarchical arrangement of an apprenticeship ultimately limits teacher education. Regardless, the broader notion of entering a community of practice seems potentially useful as both a construct and a theoretical orientation; but *both* the construct and orientation need to be applied.

B. Reflection and dialogism in university education.

Schön (1987) argues that reflective practice, including reflection *on* and *in* action, results in professional learning. The official structure of our respective courses might have inhibited opportunities to learn the professional activity of reflection. Structures that arrange one instructor teaching a group of students can create challenges to making reflection visible to students and actually engaging in reflective practice while teaching. Thinking particularly about reflection *in* action, the challenge arises in that the structure neither enables discourses around reflection nor makes professional reflection visible to students. While we are concerned with teacher education students, we wonder whether the structure (e.g. one instructor assigned to one group of students) similarly affects the broader university community and whether other disciplines face impediments to learning reflective practice.

Reflection can occur in communities of practice, which offer contexts where peers can easily reflect *on* their actions through joint activity using professional resources. Schön 's (1987) distinction of professionals as reflective practitioners and the nature of reflection professionals engage in is more prominent in the specific event described here, but this represent a larger issue. In the specific event, the on-going dialogue embedded in the class session represents a reflection *in* action; but reflection relatively unique to have documented. This essay subsequently becomes reflection *on* action. But, we argue that the community of practice and disruptions in the context were vital to enabling reflection *in* action, and also our subsequent reflection *on* action. Having an intellectually present peer, who shared a repertoire of action, provoked a kind of reflection *in* action facilitated by public discourse as well as dialogism that forced explicit metacognition about the on-going activity. This was only possible due to the disruption in the context we created by co-teaching our courses. Thus, we infer that these interacting planes and reflections were important in creating a kind of learning we value and see as critical in developing reflective professionals.

V. A Final Episode.

Now, as we are rocking on the porch in mid-May while looking at the draft of this essay, we reflect on the semester. We confess to one another that we had no idea that our beginnings – and particularly the class session using Skype™ – would lead to this moment. We begin sharing our thoughts and successes from our combined efforts during the semester. We talk about the ways we see changes in our students who have begun to emerge as professionals over the past fifteen weeks. Our discussion begins to meander into hopes for our students, their strengths, and the challenges they will face. But, we soon realize that reflection on our semester is not the task of the moment. Reflecting in the moment on the scholarly dimension of our professional lives we realize that to tell this story our joint activity in this moment must focus on: clarifying our shared goals and intentions for this essay, identifying the common understandings of our personal and broader communities of practice, and developing our shared repertoire around this piece. The

draft is our shared public discourse that we can examine, consider, and discuss. Through our discussion, we identify central points, revisit the claims and argument, and we engage in the process of creation, reflecting the professional activity of an academic. Reflecting in action allows us to focus on the present task. In retrospect we realize that our present activity might have been improbable were we not in a context that enabled it. We developed a community of practice based on shared goals, norms, and repertoires. Finally, through our community of practice we were able to jointly explore alternative approaches and media to facilitate a disruption of the norm.

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Academic procrastination and the performance of graduate-level cooperative groups in research methods courses

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Abstract: This study examined the extent to which academic procrastination predicted the performance of cooperative groups in graduate-level research methods courses. A total of 28 groups was examined (n = 83 students), ranging in size from 2 to 5 (M = 2.96, SD = 1.10). Multiple regression analyses revealed that neither within-group mean nor within-group variability pertaining to levels of procrastination predicted the group product (i.e., quality of article critique). However, cooperative groups that attained the highest levels of procrastination due to task aversiveness, on average, tended to be those with the lowest levels of performance on the group product. Groups with the lowest levels of achievement tended to be those containing students who reported procrastinating most frequently on performing administrative tasks (26.4% of the variance explained), keeping up with weekly reading assignments (8.8% of the variance explained), and writing term papers (11.8% of the variance explained). These three procrastination variables together explained 46.9% of the variance in performance. This finding suggests that level of academic procrastination appears to play an important role among graduate students with respect to the performance of cooperative learning groups.

Keywords: Cooperative learning, academic procrastination, graduate student, research methodology course

I. Introduction.

The goal of the present inquiry was to contribute to a program of research assessing the role of group dynamics on academic performance of graduate students by examining the potential relationships between personality variables and students' achievement levels in graduate methods courses. Our selection of academic procrastination as the personality variable of interest was based upon the findings of a previous study in which a link was found to exist between academic procrastination and achievement in the context of cooperative groups at the graduate level, with some groups displaying higher levels of procrastination than other groups (Onwuegbuzie and DaRos-Voseles, 2001). However, Onwuegbuzie and DaRos-Voseles' qualitative inquiry did not investigate directly whether procrastination predicted group outcomes. Subsequently, the purpose of the present investigation was to increase our understanding of the role of group dynamics on academic performance by examining the extent to which academic procrastination

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predicted performance of cooperative learning groups in graduate-level research methods courses. It was hypothesized that levels of academic procrastination would predict cooperative group outcomes. Cooperative learning, which dates back to the early 1960s or even to John Dewey's time (Johnson, Johnson, and Holubec, 1998), might be an effective educational approach simultaneously to help to reduce academic procrastination and to enhance academic performance of the learning groups.

Academic procrastination is a special form of procrastination that occurs in the academic settings. It involves knowing that one needs to carry out an academic task or undertake an academic activity, such as writing a term paper, studying for examinations, finishing a school-related project, or undertaking the weekly reading assignments, but, for one reason or another, failing to motivate oneself to do so within the expected time frame (Ackerman and Gross, 2005). Although there is no universally accepted definition, academic procrastination can be defined as the postponement of academic goals to the point where optimal performance becomes highly unlikely, resulting in a state of psychological distress (Ellis and Knaus, 1977; Ferrari, Johnson, and McCown, 1995). Academic procrastination has been a prevalent phenomenon on college and university campuses for decades. Ellis and Knaus (1977) estimated that approximately 95% of college students procrastinate on their academic work. Solomon and Rothblum (1984) reported that 46% of the surveyed "nearly always or always procrastinate on writing a term paper" (p. 505). Gallagher, Golin, and Kelleher (1992) found that 52% of the college students who participated in their study indicated having a moderate to high need for help regarding procrastination. More recently, Day, Mensink, and O'Sullivan (2000) noted that nearly 50% of college students procrastinate consistently and problematically. Özer, Demir, and Ferrari (2009) reported that 52% of the surveyed undergraduates in their study were labeled as procrastinators. Most recently, Klassen et al. (2010) found that 57% of one group and 59% of another group of the undergraduate participants in their research "report[ed] spending three hours or more per day in procrastination" (p. 372). Muszynski and Akamatsu's (1991) research on doctoral-level clinical psychology students led to the conclusion that cognitive and affective factors related to procrastination might significantly result in delay or even failure in completing their dissertations. Most disturbingly, graduate students have been found to procrastinate to a greater extent than do undergraduates, as illustrated by Onwuegbuzie's (2004) finding that graduate students are approximately 3.5 times more likely than are undergraduate students to report that they nearly always or always procrastinate on reading their weekly assignments. Onwuegbuzie (2004) noted that between 65% and 75% of graduate students in his study wanted to decrease their procrastination on these tasks.

Both undergraduates and graduate students report some level of academic procrastination, such as underestimating the time necessary to complete reading tasks, missing deadlines for submitting assignments, preparing for examinations, low course grades, and course withdrawal (Beswick, Rothblum, and Mann, 1988; Fritzsche, Rapp, and Hickson, 2003; Kachgal, Hansen, and Nutter, 2001; McCown, Petzel, and Rupert, 1987; Onwuegbuzie, 1999/2000, 2004; Semb, Glick, and Spencer, 1979). Indeed, academic procrastination is used by some college students as an excuse for their poor performance in test situations (Beck, Koons, and Milgrim, 2000), thereby protecting these students' levels of self-esteem by removing the possibility that their performance levels are due to intelligence deficits (Ferrari, 1991, 1992, 1994). However, undergraduate students perceive that their procrastination tendencies are a barrier to their academic success in college (Fritzsche et al., 2003; Kachgal et al., 2001). At the graduate level, academic procrastination is associated with various types of academic-related anxiety, such as

library anxiety (Collins and Veal, 2004; Onwuegbuzie and Jiao, 2000), writing anxiety (Fritzsche et al., 2003; Onwuegbuzie and Collins, 2001), and statistics anxiety (Onwuegbuzie, 1997, 2004).

Academic procrastination is a complex phenomenon with cognitive, affective, and behavioral components (Rothblum, Solomon and Murakami, 1986). Academic procrastination has been studied extensively by a variety of researchers because it can have serious consequences for students who are frequently faced with various academic deadlines and social pressures. Many studies treat academic procrastination as a self-defeating personality flaw that corresponds to the behavior pattern of choosing the short-term gains, such as free time and effort, over the long-term costs of academic performance (Baumeister, 1997; Baumeister and Scher, 1988). Tice and Baumeister (1997) concluded that although the procrastinators might obtain genuine benefits in the short run, their short-term "benefits are eventually more than offset by the costs, however, because the stress and illness suffered by procrastinators late in the task exceed and outweigh the initial benefits" (p. 458) and academic procrastination "apparently leads to stress, illness, and inferior performance" (p. 457). It also leads students to experience various psychological and behavioral problems, such as anxiety (Carden, Bryant, and Moss, 2004; Haycock, McCarthy, and Skay, 1998; Onwuegbuzie and Jiao, 2000; Wang and Englander, 2010), depression (Saddler and Sacks, 1993), shame (Fee and Tangney, 2000), cheating and plagiarism (Roig and De Tommaso, 1995), fear of failure (Schouwenburg, 1992), and task aversiveness (Schraw, Olafson, and Wadkins, 2007; Solomon and Rothblum, 1984). Fear of failure also is associated with perfectionism, evaluation anxiety, and low self-confidence (Moneta, Spada, and Rost, 2007; Solomon and Rothblum, 1984; Thompson and Dinnel, 2001).

Procrastinators who perceive a task as difficult and requiring effort to achieve a successful outcome are more likely to avoid or to postpone beginning a task (Deniz, Traş, and Aydoğan, 2009; Ferrari, 1991; Solomon and Rothblum, 1984). Self-regulation, such as setting goals and pursuing a plan to achieve results, likewise is a problem area for procrastinators (Senecal, Koestner, and Vallerand, 1995). However, procrastination also can be the result of "the systematic underestimation of the difficulty of the task while simultaneously overestimating the positive benefits of procrastination" (Schraw et al., 2007, p. 20). Senecal et al. (1995) reported that intrinsically motivated undergraduate students who participated in academic activities because they derived satisfaction and pleasure from their participation were less likely to procrastinate. However, identified regulation, a condition of self-regulation in which a behavior is perceived by an individual as important and connected to his or her personal goals and values (Deci and Ryan, 1991), was associated with higher levels of procrastination (Senecal et al., 1995).

Past research has paid prime attention to the nature, antecedents, etiology, and consequences of academic procrastination. Only a few studies and publications focus on coping strategies to help students reduce procrastination (Alexander and Onwuegbuzie, 2007; Onwuegbuzie, 2004; Sommer, 1990; Tullier, 2000; Vacha and McBride, 1993; Wang and Englander, 2010). These strategies include cognitive-oriented strategies such as identifying and prioritizing goals, allocating appropriate time and resources to each goal and cognitive reframing "in which individuals constructed explanations for their actions that framed those actions in a positive light" (Schraw et al., 2007, p. 20). Affective strategies aimed at augmenting the cognitive strategies include building confidence, maintaining a positive attitude, linking the personal meaning of the overall goal to the academic task at hand as the result of higher-level hope, and even serving as a stress-reduction mechanism. Other strategies to help reduce the effects of academic procrastination involve the instructors using measured approaches to class

assignments. Onwuegbuzie (2004) suggested that instructors might rely on more frequently graded assignments, with each based on a smaller increment in cognitive material so that less time is available for students to procrastinate in between assignments, thereby reducing the opportunity for academic procrastination. Going beyond these individually implemented strategies, Derry, DuRussel, and O'Donnell (1998) explored a collaborative process where cognitive workload can be distributed among group members. Small groups were found to be especially effective for individuals to deal with complex subjects or tasks.

Cooperative learning is defined as "the instructional use of small groups so that students work together to maximize their own and each other's learning" (Johnson, Johnson, and Smith, 1991a, p. iii). Johnson and his colleagues (Johnson and Johnson, 2009; Johnson et al., 1991a; Johnson, Johnson, and Smith, 1991b) recommended incorporating in cooperative learning groups the following five-component model to maximize performance outcomes: (a) positive interdependence, (b) face-to-face promotive interaction, (c) individual accountability, (d) social skills, and (e) group processing. Evidence from elementary, high school, and college levels indicates that cooperative learning promotes higher student performance in contrast to other instructional techniques (Johnson et al., 1991b; Johnson, Maruyama, Johnson, Nelson, and Skon, 1981; Meyers, 1997; Slavin, 1991, 1994; Bowen, 2000; Gillies, 2008; Moreno, 2009; Munoz, and Huser, 2008; Nagel, 2008; Stockdale, and Williams, 2004; Strom, and Strom, 2002; Williams, Carroll, and Hautau, 2005). Moreover, in contrast to instructional formats that emphasize individual learning, cooperative learning affects positively students' attitudinal outcomes, such as increased task engagement and elevated levels of motivation, self-esteem, self-efficacy, and productivity (Crooks, 1988; Ghaith, 2003; Johnson, Johnson, and Maryuma, 1983; Klein and Schnackenberg, 2000; Lin, 2006; Mulryan, 1995; Nichols, 1996; Peterson and Miller, 2004; Serrano, and Pons, 2007; Wheelan and Lisk, 2000).

Cooperative learning is a subcategory of small group learning that has been widely researched. Indeed, Cuseo (1992) asserts that "cooperative learning is the most operationally well-defined and procedurally structured form of collaboration among students…" (p. 3). Upon completing a meta-analysis of cooperative learning studies conducted at the college level, Johnson and Johnson (1993) identified five reasons supporting the use of this instructional approach: (a) cooperative learning has a rich and long history of theory, research, and practice; (b) the research on cooperative learning has yielded findings that have validity and generalizability rarely found in the education literature; (c) cooperative learning concurrently affects many different instructional outcomes; (d) much is known about the essential elements that make it work; and, lastly, (e) cooperative learning creates opportunities that do not exist when students work individually or competitively.

According to the theory of adult learning, adult learners, generally, are self-directed learners who prefer a problem-centered approach towards learning, in contrast to a subject-content approach (Knowles, 1987). In addition, adult learners tend to validate the utility of new knowledge based on its applicability towards improving job effectiveness and overall performance. Moreover, adult learners' motivation levels are influenced by a combination of extrinsic rewards and intrinsic motivators, such as self-esteem and self-respect. Cooperative learning, because of its emphasis on positive interdependence, individual accountability, and group processing, might be especially effective for adult learners enrolled in courses that are distinctly different from their preexisting experiences (e.g., research methods courses). Indeed, empirical research evaluating the impact of these techniques on graduate students' instruction and learning outcomes indicates that graduate student participation in cooperative learning

activities elevates the frequency of meaningful learning opportunities in research methods courses (Collins and Onwuegbuzie, 2001; Onwuegbuzie, Collins, and Elbedour, 2003; Onwuegbuzie and DaRos-Voseles, 2001).

Utilizing qualitative analysis of graduate students' reflective journals, Onwuegbuzie and DaRos-Voseles (2001) found that the majority of graduate students enrolled in research methods courses reported positive overall attitudes towards working in cooperative-based groups on course assignments. However, quantitative analyses of students' performance levels at the course middle point indicated that the group of students who completed their assignments individually and were assessed individually received higher grades on the midterm exam ($d = 0.48$) in contrast to the students working in cooperative groups. Interestingly, the mean difference between the two groups (individual vs. cooperative) was not statistically significantly different at the conclusion of the course. In another study, Onwuegbuzie et al. (2003) examined the role that group composition plays in cooperative groups among graduate students. Utilizing group as the unit of analysis, results indicated that groups with the highest mean levels of research aptitude, as measured by mean group grades on the midterm and final examinations, produced cooperative learning projects (i.e., research article critique and research proposal) of the highest quality. Interestingly, the degree of heterogeneity of group composition (i.e., variability of individual scores on midterm and final course exams) influenced the quality of the group outcomes.

Researchers also have investigated the extent to which cooperative group members' characteristics predict the quality of group achievement outcomes at the graduate level (Collins, Onwuegbuzie, and DaRos-Voseles, 2004; DaRos-Voseles, Onwuegbuzie, and Collins 2003). For example, DaRos-Voseles et al. (2003) found that graduate students' levels of perfectionism predicted cooperative group outcomes. Also, Collins et al. (2004) reported that groups attaining the lowest scores on an article critique assignment tended to report the highest anxiety levels and were the most heterogeneous with respect to research anxiety.

Other research exploring the role of social interdependence—comprising cooperative orientation (i.e., each person has sufficient intrinsic motivation to attain goals coupled with the perception that the goals are attainable only if other group members also accomplish their goals, which results in promotive interaction because students within a cooperative learning group encourage and support each group member's achievement goals; Johnson and Johnson, 2000); competitive orientation (i.e., each person competes against peers towards attaining his/her goals, which results in negative interdependence and often leads to dysfunctional interaction because group members impede and inhibit each other's attempts to perform; Johnson and Johnson, 2000); and individualistic orientation (i.e., each person works independently towards his/her achievement goals without concern that the other peers also attain their goals; Johnson and Johnson, 2000)—in predicting the performance of cooperative learning groups indicated that graduate students' levels of individualism predicted achievement, as measured by the quality of article critiques produced by groups in the context of a graduate-level research methods course (Onwuegbuzie and Collins, 2002). Results revealed that groups containing students with the greatest individualistic orientation tended to produce the best article critiques, regardless of how heterogeneous the group was with respect to degrees of individualism.

Hancock (2004) assessed the degree to which graduate students' peer orientation (i.e., tendency of individuals to look to their peers for direction [e.g., values, identity, and codes of behavior]), which was classified as high versus low, predicted students' motivational levels and achievement as measured by a professor-constructed, criterion-referenced final examination. Results indicated that students with high peer orientation were considerably more motivated to

learn when exposed to cooperative-learning strategies than were students who had low peer orientation. However, the final examination scores did not statistically significantly distinguish the two groups.

The results of the reviewed studies in this article indicate that specific cooperative group members' characteristics (i.e., perfectionism, research anxiety, research aptitude, and peer vs. individual orientation) often predict the quality of group achievement outcomes in research methods courses at the graduate level. However, more empirically based studies that examine the impact of group characteristics on performance outcomes are needed (Onwuegbuzie and Collins, 2002).

II. Method.

A. Participants.

Participants were graduate students from a number of disciplines who were enrolled in five sections of an introductory-level research methods course at a midsouthern university in the United States. These students ($n = 83$) formed 28 groups ranging in size from 2 to 5 ($M = 2.96$, $SD = 1.10$). The same instructor taught all sections of the research methods course, thereby minimizing any implementation threat to internal validity (i.e., validity of findings being threatened by cooperative learning environment not being implemented to its fullest extent possible; Onwuegbuzie, 2003) resulting from differential selection of instructors (i.e., substantive differences between two or more of instructors prior to the implementation of the cooperative learning environment; Onwuegbuzie, 2003).

B. Setting.

All graduate students enrolled in educational degree programs were required to take the introductory-level research methods course. The semester-long (i.e., 16-week) course involved classes that took place once per week for three hours. The fact that all classes were held at the same time in the evening (i.e., 5 p.m. to 8 p.m.) minimized any implementation threat to internal validity resulting from differential time of day (i.e., substantive differences stemming from implementation of the cooperative learning environment at two or more different times; Onwuegbuzie, 2003).

C. Formation of Cooperative Learning Groups.

On the first day of class, students were asked to introduce themselves to the class, delineating their major, educational attainments and aspirations, current professional status, and interests. Students also were asked to form groups comprising 2-5 students based on similar majors or professional background. These criteria for group assignment were not directly related to aptitude or ability. Such assignment of groups by preferences is referred to as a modified stratified random assignment (Johnson and Johnson, 2000). Such as assignment was preferred over assignments such as simple random assignment because the latter likely would yield groups with different important characteristics such as proximity to each other's home (i.e., the further apart they live, the more difficult it would be for the group members to meet face-to-face outside class) and major (i.e., the more varied their majors, the more difficult it would be for the group

members to select an article to critique that the students would find equally relevant for their disciplines). In contrast, via a modified stratified random assignment, students selected group members based on relative similarity of these characteristics.

D. Base Groups.

The cooperative learning group that was utilized involved the use of base groups (Smith, Johnson, and Johnson, 1992). Base groups contain members who work cooperatively beyond the class assignment(s) and classroom context (Johnson and Johnson, 2000). The aim of these base groups was to promote stable group membership and group cohesiveness. Students were encouraged to stay together during the entire course so that the level of cooperativeness would be maximized.

E. Article Critique.

A major course requirement that was undertaken via cooperative learning groups involved a detailed written critical evaluation of a published research report (i.e., article critique). The primary goal of the article critique was to provide an opportunity for students to develop skills in evaluating published research articles using principles of the scientific method. Each group completed one article critique.

F. Instruments.

Academic procrastination was measured via the Procrastination Assessment Scale-Students (PASS; Soloman and Rothblum, 1984). This measure was selected because of its excellent psychometric properties that have been documented in numerous studies (cf. Yao, 2009). The first part lists six academic tasks: writing a term paper, studying for examinations, keeping up with weekly reading assignments, performing administrative tasks, attending meetings, and performing academic tasks in general. Respondents complete three rating scales for each of the six tasks indicating the frequency with which they procrastinate on that task (1 = Never procrastinate; 5 = Always procrastinate), whether their procrastination on the task is a problem (1 = Not at all a problem; 5 = Always a problem), and whether they want to decrease their procrastination on the task (1 = Do not want to decrease; 5 = Definitely want to decrease). The PASS items pertaining to (a) the frequency with which respondents procrastinate on a task and (b) whether their procrastination on that task is a problem were summed to provide an overall measure of academic procrastination, with total scores ranging from 12 to 60. Higher scores are indicative of greater self-reported academic procrastination. The second section of the PASS asks students to think of the last time they procrastinated on writing a term paper and to indicate how much each of 26 reasons reflects why they procrastinated (1 = Not at all reflects why I procrastinated; 5 = Definitely reflects why I procrastinated).

Using exploratory factor analysis to examine the dimensionality of the PASS, Solomon and Rothblum (1984) identified two factors, namely, fear of failure and task aversiveness. The fear of failure and task aversiveness subscales formed one set of dependent measures, and the following subscales formed a second set of dependent measures: writing a term paper, studying for examinations, keeping up with weekly reading assignments, performing administrative tasks, attending meetings, and performing academic tasks in general. For the present study, the

coefficient alpha reliability estimates were 0.85 (95% CI = 0.80, 0.89) for the overall PASS scale, 0.64 (95% CI = 0.49, 0.74) for the fear of failure factor, 0.76 (95% CI = 0.65, 0.84) for the task aversiveness factor, 0.76 (95% CI = 0.63, 0.84) for writing a term paper, 0.74 (95% CI = 0.60, 0.83) for studying for examinations, 0.82 (95% CI = 0.72, 0.88) for keeping up with weekly reading assignments, 0.92 (95% CI = 0.88, 0.95) for performing administrative tasks, 0.88 (95% CI = 0.81, 0.92) for attending meetings, and 0.81 (95% CI = 0.71, 0.88) for performing academic tasks in general.

For the article critique, three rubrics were used. The first rubric consists of a 5-point Likert-format scale (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree) that was designed to provide a score for the summary of the selected research article. This scale contains 35 items (e.g., "The conceptual/theoretical framework is summarized adequately"), such that scores range from 35 to 175. The second rubric, also consisting of a 5-point Likert-format scale (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree), assesses how accurately the 150-item reviewer checklist is completed. Each response on the reviewer checklist is rated on the 5-point Likert-format scale, such that the second rubric contains 150 items, whose scores range from 150 to 750. The third rubric, also a 5-point Likert-format scale (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree), was designed to assess the narrative for the critique section of the article. This rubric contains 50 items that evaluate all components of the critique section (i.e., title, abstract, introduction/literature review, methods, results, discussion), such that scores range from 50 to 300. This third rubric also assesses the extent to which the critique section is free from grammatical and typographical errors and follows APA guidelines. Scores from the three rubrics were converted into percentages. From these percentages, a final score was derived using the following weighting scheme: 35% for the summary rubric, 25% for the reviewer checklist, and 40% for the critique narrative. Thus, each article critique received a group score on a 100-point scale.

G. Analysis.

For each group, we computed the mean and standard deviations pertaining to students' scores on the PASS. We generated 28 sets of group scores. We used group as the unit of analysis. Using groups themselves as the unit of analysis, rather than the individual scores, decreases the possibility of the statistical independence assumption being violated and systematic error being created (McMillan, 1999).

The major analysis undertaken in the present study was an all possible subsets (APS) multiple regression (Onwuegbuzie and Daniel, 2003; Thompson 1995). Specifically, a series of APS multiple regression analyses was used to identify which of the procrastination dimensions, if any, predicted the group product (i.e., article critique). Using this technique, all possible models involving one or both of the independent variables were examined. This method of analysis has been recommended by many statisticians (e.g., Onwuegbuzie and Daniel, 2003; Thompson, 1995). In fact, in APS regression, separate regressions are computed for all independent variables singly, all possible pairs of independent variables, all possible trios of independent variables, and so forth, until the best subset of predictor variables is identified according to some specified criterion. For this study, the criterion used was the maximum proportion of variance explained (R^2), which provides an important measure of effect size (Cohen, 1988).

Squared semi-partial correlation coefficients indicate the amount by which R^2 is reduced if a particular predictor variable is removed from the regression model. In other words, squared semi-partial correlation coefficients identify the unique contribution of the predictor variable as a proportion of the total variance of the dependent variable (Cohen, 1988). Similarly, squared partial correlation coefficients represent the unique contribution of the predictor variable as a proportion of R^2. In the current study, the squared partial correlation coefficient (i.e., R^2) was utilized directly as an effect size estimate, as recommended by Cohen (1988). According to Cohen (1988), for multiple regression models in the social and behavioral sciences, squared partial correlation values between 2% and 12.99% suggest small effect sizes, values between 13% and 25.99% indicate medium effect sizes, and values of 26% and greater suggest large effect sizes. These same criteria were used to assess whether the proportion of variance explained by the predictor variables, R^2, was suggestive of a small, medium, or large effect.

III. Results.

The Shapiro-Wilk test (Shapiro and Wilk, 1965; Shapiro, Wilk, and Chen, 1968) did not indicate that the distribution of article critique scores was non-normal $W = 0.97$, $p > 0.05$, thereby justifying the use of multiple regression. In addition, evaluation of assumptions of linearity and homogeneity revealed no threat to multiple regression analysis.

The first APS multiple regression analysis involved overall level of academic procrastination, specifically, within-group mean procrastination score and within group standard deviation of procrastination score, yielding two predictor variables. This analysis revealed that neither variable predicted the dependent variable, namely, article critique scores $F(2, 25) = 1.04$, $p > 0.05$; $R^2 = 0.07$; Adjusted $R^2 = 0.003$.

The second APS multiple regression analysis involved the two factors that characterize why college students procrastinate: fear of failure and task aversiveness. Specifically, the predictor variables were the within-group mean and within-group standard deviation pertaining to fear of failure and task aversiveness, yielding four potential predictors. This analysis revealed that a model containing mean procrastination level associated with task aversiveness provided the best fit to these data $F(1, 26) = 3.42$, $p < 0.05$. This model explained 32.5% of the variation in article critique scores (Adjusted $R^2 = 7.5\%$). Using Cohen's (1988) criteria for assessing the predictive power of a set of predictor variables in a multiple regression model, the proportion of variance explained indicates a large effect size. An inspection of the studentized residuals generated from the model (Myers, 1986) suggested that the assumptions of normality, linearity, and homoscedasticity were met. Using the Bonferroni adjustment, none of the studentized residuals suggested that outliers were present.

The third APS multiple regression analysis involved the frequency with which students procrastinated on the six academic tasks: writing a term paper, studying for examinations, keeping up with weekly reading assignments, performing administrative tasks, attending meetings, and performing academic tasks in general. Specifically, the predictor variables were the within-group mean and within-group standard deviation pertaining to each of these six tasks, yielding 12 potential predictors. This analysis revealed that a model containing mean procrastination level associated with writing a term paper, keeping up with weekly reading assignments, and performing administrative tasks provided the best fit to these data $F(3, 24) = 7.07$, $p < 0.001$. This model explained 46.9% of the variance in article critique scores (Adjusted $R^2 = 40.3\%$). Using Cohen's (1988) criteria, the proportion of variance explained indicates a very

large effect size. An inspection of the studentized residuals generated from the model (Myers, 1986) suggested that the assumptions of normality, linearity, and homoscedasticity were met. Using the Bonferroni adjustment, none of the studentized residuals suggested that outliers were present.

The squared semi-partial coefficients revealed that procrastination associated with performing administrative tasks was the best predictor of the group performance on the article critique, explaining 26.4% of the variance. Procrastination associated with writing a term paper was the next best predictor of group performance explaining 11.8% of the variance, and procrastination associated with keeping up with weekly reading assignments accounted for 8.8% of the variance in group performance. Also, an examination of the structure coefficients, using a cutoff correlation of 0.3 recommended by Lambert and Durand (1975) as an acceptable minimum value, suggested that all three variables made important contributions to the model. The fact that both the standardized and structure coefficients pertaining to all variables were noteworthy indicates that none of these constructs acted as suppressor variables (Thompson, 1998; Thompson and Borrello, 1985).

IV. Discussion and Conclusion.

The purpose of this study was to investigate the extent to which academic procrastination predicted performance of cooperative learning groups in graduate-level research methods courses. The first result indicated that neither within-group mean nor within-group variability pertaining to overall level of procrastination predicted the group product (i.e., quality of article critique). However, the picture changed when examining the various dimensions of academic procrastination. Specifically, cooperative groups that attained the highest levels of procrastination due to task aversiveness, on average, tended to be those with the lowest levels of performance on the article critique. This finding is consistent with research indicating that procrastinators who perceive a task as difficult and requiring effort to achieve a successful outcome are more likely to report task aversiveness as a reason for procrastination (Ferrari, 1991; Solomon and Rothblum, 1984). Moreover, the fact that level of academic procrastination associated with task aversiveness predicts lower performance likely reflects students' perceptions that the article critique was a demanding task that required significant cognitive effort to achieve success.

In addition, groups with the lowest levels of achievement tended to be those containing students with the highest tendencies to procrastinate on performing administrative tasks, keeping up with weekly reading assignments, and writing term papers. This finding is consistent with the bulk of the research on academic procrastination, which indicates that procrastination on academic-related tasks leads to lower achievement levels (Beswick et al., 1988; Fritzsche et al., 2003; Kachgal et al., 2001; McCown et al., 1987; Onwuegbuzie, 1999/2000; 2004; Semb et al., 1979). Interestingly, academic procrastination associated with performing administrative tasks was by far the best predictor of group outcome, explaining 26.4% of the variance. This result might stem from the fact that for cooperative learning groups to be successful, they need to be organized.

These results suggest that graduate students who demonstrate procrastination tendencies also might have problems with self-regulation, such as defining goals and implementing a plan to achieve results. It is likely that graduate students, generally, are goal oriented because they are pursuing academic degrees and, therefore, are motivated to succeed. However, the tendency to

procrastinate is consistent with the finding of Senecal et al. (1995), who found that higher levels of procrastination are associated with identified regulation, a condition of self-regulation in which a behavior is perceived by an individual as being important and connected to his or her personal goals and values (Deci and Ryan, 1991). Although, this association appears counter-intuitive, it is possible that it might reflect students' perceptions regarding difficulty of a research course, in general, and the article critique, in particular. Senecal et al. (1995) speculated that despite the value placed by students on taking a course to reach their academic goals, they might not be interested in the course content. This limited interest might contribute to procrastination in completing course assignments.

The heterogeneity of the groups with respect to academic procrastination did not predict group performance at any stage of the analysis. This finding is somewhat in contrast with the results from previous studies of cooperative learning groups involving graduate students. In particular, DaRos-Voseles et al. (2003) found that groups that tended to be the most homogeneous with respect to self-oriented perfectionism and other-oriented perfectionism and the least homogenous (i.e., most heterogeneous) with respect to socially prescribed perfectionism tended to attain the highest levels of performance. Further, Collins et al. (2004) documented that heterogeneity of anxiety levels was the most important predictor of the quality of the group product, explaining 13.2% of the variance in achievement. Also, Onwuegbuzie et al. (2003) found a positive relationship between degree of group heterogeneity of midterm examination performance and scores on the article critique. However, the present finding regarding group heterogeneity is more in line with the results of Onwuegbuzie and Collins (2002), who found that groups that are more individualistic tend to produce better research article critiques, regardless of how heterogeneous the group is with respect to levels of individualism. These findings combined suggest that the role that group heterogeneity plays in the achievement process is complex, warranting further research.

The present findings have several practical implications for graduate-level cooperative learning groups. For example, instructors might consider dividing cooperative learning projects into parts and require that groups submit each part at regular intervals for formal or informal evaluation. Moreover, instructors might consider creating smaller in-class collaborative group projects. The products developed as a result of the groups' collaboration can be linked to the final group product due at the end of the semester. Formative assessment measures implemented throughout the semester might help to reduce academic procrastination within groups and hence improve group outcomes. This practice might assist students to self-manage time and course requirements more efficiently. In addition, providing opportunities for students to obtain peer feedback via grading rubrics might help keep students focused and cognizant of the instructor's expectation. Whatever interventions are implemented, it is essential that their effects on academic procrastination be monitored carefully.

These results contribute to a program of research assessing the role of group dynamics on academic performance of graduate students by identifying the relationships between dimensions of academic procrastination and graduate students' achievement levels in the context of a research methods course. Figure 1 illustrates the proportion of variance in group outcomes across 21 personality variables assessed in studies utilizing different samples of graduate students enrolled in educational research methods courses. Inspection of Figure 1 indicates that two of the dimensions of academic procrastination, namely, procrastination level associated with task aversiveness and procrastination level associated with performing administrative tasks were part of the top five personality variables in terms of the proportion of variance explained in group

performance. Viewed in this context, the results of this current study underscore the importance of academic procrastination in cooperative learning settings. Cumulatively, the personality variables identified in Figure 1 comprise a composite of personality variables impacting cooperative group performance in graduate-level research methods courses. However, the implications of this composite are restricted because the samples were predominantly female and White, which are typical demographic characteristics of graduate students enrolled in educational degree programs. Therefore, as noted by Collins, Onwuegbuzie, and Jiao (2009), additional research utilizing samples representing a wider range of demographics is needed to expand this important line of research.
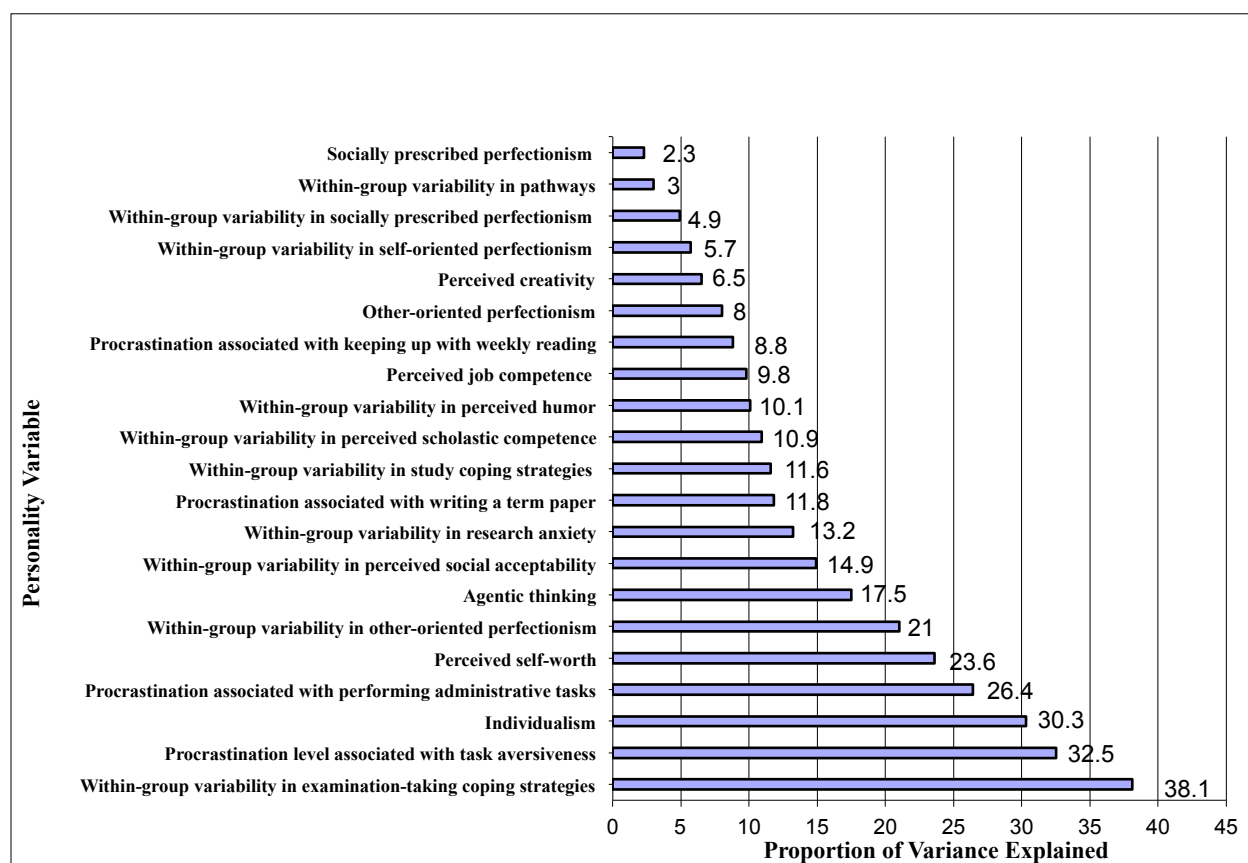
Figure 1. Proportion of variance explained in-group performance per personality variable utilizing different samples of graduate students.

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Case report writing in a Doctor of Physical Therapy Education program: A case study

Michael J. Fillyaw[1]

Abstract: Case reports are an established form of scholarship used for teaching and learning in medicine and health care, but there are few examples of the teaching and learning activities used to prepare students to write a case report. This report describes the implementation of two courses that prepare physical therapy students to write and disseminate a patient/client-centered case report. The first course is taught in a distance-learning format and is taken concurrently with a 12-week clinical experience where the student collects case data from a patient/client who consents to be the subject of the report. The second course is campus-based and supports the student's dissemination of the case report as a manuscript and oral and poster presentations. After three years, we have experienced widespread support from the students, patients/clients, and clinics. Factors that may have contributed to the students' positive experiences include course organization, student engagement, and support of the instructor, peers, and clinical community. This information can assist educators in all professional health care disciplines to establish or modify courses that prepare students to write case reports.

Keywords: college instruction, teaching methodology, experiential learning, course Design.

In health care disciplines, a case report is a detailed description of the clinical presentation, diagnosis, treatment, and outcomes of a patient (or case), often with an unusual or novel condition, to be shared for medical or educational purposes (*Dictionary*, 2010). In public health, case reports have been credited with showing how exposures and disease are related, such as the association of acquired immunodeficiency syndrome with sexual activity and severe acute respiratory syndrome with West Nile virus (Moore 2009). In clinical medicine Vandenbroucke (2001) suggests the potential roles of case reports include recognizing and describing new diseases or rare manifestations of disease, detecting side effects of drugs, and medical education and audit. In physical therapy, case reports provide detailed descriptions of how therapists meet clinical, managerial, and educational challenges (Fitzgerald, 2007) and have been called the "currency of practice" (Rothstein, 2002, p. 1063).

Case reports are considered ideal vehicles for teaching scientific writing (Neely, 2008), but there are only a few published reports describing how students are prepared to write a case report. Perry (1998) required undergraduate students in epidemiology and public health to write a case report summarizing the evidence supporting one intervention used in the management of a patient. Mostrom (1999) described a multitrack model in physical therapy that offered students three "inquiry" options: an individual thesis, a collaborative research project, or a case report.

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Good (2009) reported his methods for having chiropractic students write a case report about a fictitious patient. Klos (1976) described an optional case writing project for students in psychology. However, these reports do not provide detailed descriptions of the strategies used to teach case report writing to students, nor do they report the student view of the experience. The purpose of this report is to describe the implementation and outcomes after three years of two courses that prepare students to write and disseminate a patient/client-centered case report. Although the methods were developed and applied in a physical therapy education program, the model could be adapted to any discipline interacting with patients/clients.

I. Background.

Prior to revising our curriculum in preparation for awarding the Doctor of Physical Therapy (DPT) degree, like many physical therapist education programs we required all students to complete a group research project. However, a number of changes in the education community in physical therapy informed our decision to offer writing a case report as an alternative scholarly project for students. First, there was a growing disenchantment for requiring students preparing for clinical practice to complete a research project. Rothstein (1993, 1998) argued that, as a profession of practitioners, it made more sense that student physical therapists be able to write a case report than to have participated in a research project, which, he argued, were often poorly conceived and supervised by faculty with inadequate research credentials. A second change was the evolution in physical therapy to a doctoring profession. In discussing the clinical doctorate, Threlkeld (1999) forecasted that doctors of physical therapy would be writing case reports among other new responsibilities. In moving to the DPT degree, some physical therapist education programs revised the research curriculum to integrate clinical decision making and evidence-based practice (Ross, 2004), or permitted different forms of scholarly projects, including case reports (Mostrom, 1999). Furthermore, the call for more case reports by peer-reviewed physical therapy journals (Childs, 2004; McEwen, 2004; Partridge, 2003; Rothstein, 1989, 1993, 2002; White, 2004) helped to legitimize case reports as a form of scholarship.

The primary objective for including case report writing in the DPT curriculum is to provide a reflective and scholarly activity that enables students to demonstrate attainment of the behaviors, skills, and knowledge that describe the expected performance of physical therapists at entry into the practice of physical therapy. A secondary objective is to prepare graduates to contribute to the scholarship of physical therapy by (a) writing a case report in accordance with the requirements of a professional journal, (b) disseminating the report as both oral and poster presentations. To achieve these objectives, the program included Case Report 1 (CR1) and Case Report 2 (CR2) in its new curriculum for the Doctor of Physical Therapy degree. The physical therapy faculty planned it so both the case report and research project options would require students to complete two, 2-credit courses, so the choice of a scholarship project would be based on their interests and goals and not on a difference in the number of courses or credits associated with each project. The author accepted responsibility for developing the course descriptions, schedules, objectives, learning activities, dissemination plans, grading rubric, and patient consent form.

A. Case Report 1.

CR1 is a distance-education course offered concurrently with the students' second 12-week clinical practicum (CP2) in the sixth semester (beginning of the third academic year) of the DPT program. Course activities include reading and writing assignments that prepare students to collect data about a patient/client they select to be the subject of the case report. Any patient/client or management scheme that is infrequently encountered in practice or that has not been described in the literature may be the subject of the case report (Rothstein, 2002).

Communication with the clinic. Prior to Clinical Practicum 2, the academic program informs the clinical coordinator at each site that his or her student will be enrolled in CR1 along with the clinical practicum and will need to collect information about a patient/client in preparation for writing a case report. This information also is shared with the clinics through the program's *Clinical Education Handbook.* In addition, the student discusses the requirements for CR1 with his or her clinical instructor during orientation to the clinic.

Consent and confidentiality of protected health information. To protect the right to privacy (*Uniform Requirements*, 2010), the student obtains written consent from the patient/client, or his or her legally authorized representative using the consent form developed by the education program for this purpose, or the clinic's form, if one is available. The patient/client is informed that the student will assemble information from the medical history, physical therapy examination, and treatments to present as a case report at the university, and that it may be published or presented at a professional conference. The patient/client is assured that the case report is not research, no experimental therapies will be used, and the services recommended by the physical therapist or student physical therapist will be provided whether or not the person participates as a case report subject. To assure compliance with the Health Insurance Portability and Accountability Act (HIPAA) (*Understanding Health Information*, 2010), the student removes all protected health information from any patient/client records, forms, or notes before the information leaves the clinic. As an activity documenting the examination and treatment of a single patient, a clinical case report is a medical/educational activity that does not meet the definition of research – "a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge" (*Code of Federal Regulations*, 2010) – and therefore does not need to be reviewed by the university's Institutional Review Board for the Protection of Human Subjects.

Assignments. In the first three weeks of CR1, usually before identifying a patient/client, the students read selected articles about the value of case reports to physical therapy (Childs, 2004; Fitzgerald, 2007; McEwen, 2004; Summers, 2004; White, 2004), the framework of a case report (LaPier, 2004), and the requirements for preparing a case report for a professional journal (*Physical Therapy Information*, 2010). After selecting a patient/client, the student completes four assignments, based on the elements of the patient/client management model in physical therapy (*Guide to PT Practice, 2003*), which facilitate collecting and reporting information about the patient/client (Table 1).

Table 1. Writing Prompts to Facilitate Collecting and Reporting of Patient/Client Data.

Assignment 1: Examination and Purpose

1.   What is the patient's chief complaint or problem? What is the medical diagnosis?
2.   State the reasons for referral to physical therapy.
3.   Provide pertinent information about the patient's medical and social history, living environment, social and health habits, functional status and activity level, and medications.
4.   Provide pertinent information from the systems review.
5.   Construct a Table that reports the results of the tests and measurements.
6.   Provide citations on the reliability and validity of the individual tests and measures.
7.   Explain why you selected this patient/client for a case report. How will your case report add to the body of knowledge in physical therapy?
8.   State the purpose of your case report.

Assignment 2: Evaluation, Diagnosis, and Prognosis

1.   Discuss your interpretation of the information you obtained in the examination (history, systems review, tests and measurements).
2.   What are the patient's impairments, functional limitations, and disabilities?
3.   Explain how any comorbidities may affect prognosis, goals, expected outcomes, and plan of care.
4.   What is the patient's physical therapy diagnosis from the *Guide to Physical Therapist Practice*?
5.   What is the patient's prognosis for improvement with physical therapy? Provide a rationale for your prognosis that is based on theoretical argument, clinical experience, or previous research.
6.   What are the short-term and long-term or discharge goals for physical therapy?
7.   What goals and outcomes does the patient (or family) have for physical therapy?

Assignment 3: Plan of Care and Interventions
1.   Outline the physical therapy plan of care for: coordination, communication, and documentation, patient/client related instruction, and procedural interventions.
2.   Explain your decision-making process that led from evaluation, diagnosis, and prognosis to the plan of care and the selection of the interventions.
3.   What interventions were provided?
4.   Describe the chronology of interventions and explain the rationale for any changes over time.
5.   Provide a rationale for the interventions based on theoretical argument, clinical experience, or previous research.
6.   Explain the rationale for any changes that were made in the intervention.

Assignment 4: Outcomes
1.   Estimate the number of physical therapy treatment sessions the patient received.
2.   Include Table(s) of the results of the most relevant tests and measures or outcome measures made at admission and discharge from PT (or initial and final measures).
3.   Include any Figure(s) (e.g., photographs, etc) or Appendix you plan to include in the report.

B. Case Report 2.

CR2 is a campus-based course that meets for two hours a week in the fall semester after CP2. Class activities include lectures and discussions that support writing the case report manuscript, a

workshop on making a poster, peer review meetings, and meetings with the instructor. An instructor-developed grading rubric, which considers credibility, completeness, accuracy, organization, grammar, punctuation, spelling, and clarity of expression, is used to evaluate the manuscript. (Appendix)

Peer review. During two class periods, pairs of students use the grading rubric to review and provide feedback on two draft manuscripts. A draft is operationally defined as a manuscript that contains all the required elements, follows the organization of a case report, and expresses ideas in a consistent style that is grammatically appropriate for professional communication including correct spelling and punctuation, clear word choice and sentence structure, and correct scientific and medical terminology. The first draft includes the Title Page, Background and Purpose, Patient History and Review of Systems with Clinical Impression, Examination with Clinical Impression, and References. The second draft includes the Intervention, Outcome, Discussion, References, Tables, Figures, Appendices, and Abstract. The goal of the peer review is for students to evaluate their partner's paper from the perspective of the instructor (Rieber, 2006). Using the grading rubric as a checklist ensures that each draft is reviewed by the same criteria and the author receives feedback on all aspects of the manuscript.

Instructor review. After each peer review session, the student has one week to revise the draft manuscript before submitting it to the instructor for grading. After grading the draft, the instructor meets individually with each student to provide detailed written and oral feedback based on the grading criteria. The final course grade is the weighted average of all the graded activities: 75% from the final manuscript and 25% from the drafts of the manuscript and slides for the oral and poster presentations. The oral and poster presentations are graded pass-fail.

Dissemination. In addition to writing a "full" traditional case report manuscript (*Physical Therapy*, 2010), students make oral and poster presentations, modeled after presentations at meetings of the American Physical Therapy Association (APTA), at the college's Scholarship and Research Symposium. Also, students are encouraged to submit an abstract of the case report for presentation at one of the professional meetings of the APTA.

II. Methodology.

The twenty-four students who elected to write a case report during the first three years of the DPT degree program participated. To assess the students' perceptions of the course design and delivery, both quantitative and qualitative information were collected from the college's end-of-semester course and instructor evaluation forms and from student responses to open-ended questions about the peer review aspect. The students' responses to the college evaluations and peer review questions were anonymous. To assess the effect of instructor feedback on student writing, the differences in students' scores on the two draft manuscripts and the final manuscript were analyzed by a repeated measures analysis of variance followed by paired t-tests for multiple comparisons using Systat 11.0 for Windows statistical software. The project was exempt from oversight by the university's Institutional Review Board for the Protection of Human Subjects.

III. Findings.

The support for the case report has been universal among students, clinical instructors, and patients/clients. Although students have other assignments during their clinical, no one reported these hindered data collection for the case report, or vice versa. No clinic has expressed any

concerns about students' data collection during the clinical and every patient/client asked to be the subject of a case report has agreed. The subjects of the case reports reflect the diversity of patients/clients who receive physical therapy services in hospitals, inpatient rehabilitation centers, outpatient clinics, and skilled nursing facilities (Table 2).

Table 2. Selected Titles of Student Case Reports.

Inpatient setting
A Function-based Approach in the Physical Therapy Management of a 78 year-old Patient with Incomplete Spinal Cord Injury
Energy Conservation for a 78 year-old Male with End Stage Idiopathic Pulmonary Fibrosis
Functional and Resistance Training Following Shunt Revision in 7-year-old Male with Type I Chiari Malformation
Functional Training and Interdisciplinary Discharge Planning for a Patient with Parkinson's Disease
Inpatient Physical Therapy for a 20-year-old Patient Following Rotationplasty
Mobility Training for a Patient with Bilateral Oculomotor Nerve Paralysis and Hemiparesis Following a Stroke
Outpatient setting
A Comprehensive 12-week Physical Therapy Plan of Care after a Calcaneal Osteotomy to Correct Cavovarus Foot Deformity
A Comprehensive Physical Therapy Intervention Plan Following a Bimalleolar Fracture with Open Reduction Internal Fixation
Early Physical Therapy Intervention for a Work Related Upper Trapezius Strain with Neurologic Symptoms
Outpatient Rehabilitation Following Total Shoulder Arthroplasty in a Young Man with a History of Locked Posterior Shoulder Dislocation
Physical Therapy Management of a Runner with a Chronic Adductor Strain and a True Leg Length Discrepancy

A. Course and instructor evaluations.

Eighty-nine per cent and 75% of eligible students completed evaluations for the course and instructor for CR1 and CR2, respectively. All students responding to the course evaluations strongly agreed or agreed that the objectives of CR1 and CR2 were clear, the pace of the courses was appropriate, and that assignments were useful in developing or enhancing relevant practical skills. Of the students who provided an overall course rating for CR1, 75% rated it as excellent

or above average and three rated it as average. For CR2, 94% rated CR2 as excellent or above average and 6% rated it as average.

All students who provided an overall rating for the instructor strongly agreed or agreed he was well prepared, presented the material clearly and in an orderly and logical manner, inspired confidence in his knowledge of the subject, showed respect for the questions and opinions of the students, and displayed genuine concern with the student's progress. Eighty-three percent of the students, who rated the instructor for CR1, rated him excellent or above average; 17% rated him average. Of the students who rated the instructor for CR2, 94% rated him excellent or above average and 6% rated him average.

B. Peer review.

All but one student reported the peer review process helped them write the case report manuscript and prepare their presentations. Student anonymous responses to open-ended questions about the peer review process are included in Table 3.

C. Effect of instructor feedback on student writing.

The mean (SD) grades for the three drafts of the case report were 86.0 (7.3), 88.2 (8.0), and 97.8 (1.4), respectively. Overall, there was a curvilinear increase (F (1, 23) = 6.5, p = 0.02) in scores from the first draft to the final draft. The mean increase of 2.2 points [95% CI = - 1.2 to 5.7] from draft 1 to draft 2 was not statistically significant (p = 0.19). The increase of 11.8 points from draft 1 to the final draft [95% CI = 9.0 to 14.7] and the increase of 9.6 points from draft 2 to the final draft (95% CI = 6.5 to 12.8) were statistically significant (p < 0.001).

IV. Discussion.

This is the first report to describe the teaching and learning activities and outcomes of courses in a physical therapy education program that prepare students to write and disseminate a patient/ client centered case report. The course and instructor evaluation data indicate the overall design and delivery of CR1 and CR2 are successful and well received by students. As with any single case study, the findings cannot be generalized to students in other health care education programs, nor do they suggest a causal relationship between the teaching and learning activities employed and the student outcomes. Nonetheless, the findings suggest a number of themes that can stimulate further study and have implications for teaching case report writing in any discipline.

A. Systematic approach and course organization.

Many students identified the systematic, step-by-step process used to collect patient/client data to write the manuscript, and to prepare the oral and poster presentations as important to their overall learning experience. One student commented the "practical, organized way that paralleled organization of the plan of care in the clinical setting" was most valuable during CR1. Several students said the reading and writing assignments helped them understand the structure of a case

Table 3. Students' Comments about Peer Review.

Describe the aspects of the peer review that you found to be helpful

I think having someone else look at your paper and be able to determine what can be added or removed is helpful. I have a difficult time finding areas that need more detail/clarification.

It was helpful to have someone else to problem solve with and discuss other options. For example, we discussed our introductions quite a bit and this process validated my thoughts but also helped me find ways to cut it down and make changes.

I always think it's a good idea to let someone else read your paper for sentence structure, grammar, and spelling since it is hard to pick up those errors in your own writing.

I found different ways to approach problems that I had encountered while writing.

The peer review sessions and individual work sessions with the instructor provided a good amount of feedback to help finalize the paper, presentation, and poster.

It was also great to have someone else read your work. I find that I often overlook little things that could be changed because it is my own work.

I thought it was a productive use of time. It is good to have someone else look at your paper because it is sometimes hard to think outside your own box.

The outline and the grading sheet provide excellent guidance on what the case report should contain. Meeting with you is an excellent supplement to the peer review because it provides that added expertise on case reports.

Describe the aspects of the peer review process that were not helpful to you

Didn't find peer review helpful; would have preferred open time on project.

Provide any ideas you have to improve the peer review process

I feel I do not have enough expertise on case reports/journal articles/manuscripts. I felt comfortable suggesting changes with grammar, spelling, formatting, and some of the content but I wish I had a better understanding of what a strong case report really is. I feel that this is something that will come with time and that you would not be able to teach to us in advance.

The only aspect I can think about to improve the peer review process is to have more communication with the other students to ask questions or get feedback about our ideas. We did that a little with another group and I think it was helpful to us as well as to them.

Maybe have a "check in before you leave" as a group to hear answers to questions that each person has asked you and listen to problems other students encountered.

I don't think I would change anything. I would say to have more people read and be involved in the

> *review process, but I also know I would feel uncomfortable being forced to do that*

report and prepared them for collecting data from their patient/client. One student wrote, "The independent nature of the course helped me continue to develop my management and organizational skills, as well as to develop my ideas on the case." Two students commented that the second of the two draft manuscripts was more involved than the first and recommended that they be reorganized to equalize the amount of writing between the two.

B. Instructor support.

A number of attributes of the instructor appear to be important to students' learning and satisfaction with writing the case report. Preparedness, orderly, logical, and clear presentations, respect for students' questions and concern for student progress were reported as characteristics of the instructor that were most valuable to their overall learning experience. Many students commented that the instructor's responsiveness, well-thought, timely and supportive feedback, knowledge, and experience were important to their overall learning experience. For CR2, many students noted the scheduling of deadlines, due dates, and individual meetings with the instructor helped keep them on track and manage the workload. These comments reflect Sellheim's (2003) findings that faculty enthusiasm, respectful and positive attitudes toward students, concern with helping students to understand, valuing students' input, and accessibility all contribute to a "positive presence" that enhances student learning. Furthermore, evidence that writing improves when students have a better understanding of how they are being assessed (Beason, 1993) and are made aware of their strengths and weaknesses (Higgins, 2002) is found in the significant improvement in the average grade from drafts one and two to the final manuscript.

C. Student engagement.

Students are successful when their writing is personally meaningful, practical, or purposeful beyond the classroom (Haas, 2007). Writing and disseminating a case report requires the student to be actively involved in information gathering and problem solving, to make explicit clinical decision-making, to consult the literature for information related to their plan of care, and to demonstrate skills in professional writing and presentation. Because the students perceived the assignments to be directly related to their professional roles and responsibilities, their writing was authentic. One student said, "Writing a case report is an important aspect of the DPT degree." Another said, "The opportunity to write and present a case report was valuable to my overall learning experience in the program." Not every student was as enthusiastic about the poster presentation, however, and two students recommended it not be required.

D. Peer review.

Following Childs' (2004) recommendation that colleagues critically review case reports prior to submission for publication, peer review has been a valuable way for students to provide feedback and suggestions to each other before submitting the paper to the instructor. Only one student reported the peer support process used in CR2 was not helpful, preferring instead to use the time working privately.

Peer support is widely used to help students at every level improve their writing (Armstrong, 2008; Haas, 2007; Rieber, 2006; Topping, 2003). First, the author has an

opportunity to edit and improve the work before it is graded by the instructor. As one student stated, "Having this before we meet one on one with you makes us write our sections in advance and then have ample time to look at it again and make corrections before it is due (improves the quality of our draft before meeting with you)." The same student added, "I think it is a good idea to have it structured into class time." Second, the discussion between the author and reviewer cause both to rethink the assignment, which leads to improvement in both their papers (Haas, 2007). One student described the experience this way, "I found the peer review much more helpful than I thought it was going to be. Afterwards, my partner and I discussed how each of us was going to use some of each other's ideas in our own paper…the peer review process is definitely going to be a key part of writing a quality case report." Using the grading rubric during the peer review session seemed to be helpful. One student said, "It was good to have the grading sheet so the reviewer can say whether or not you missed some sections or should elaborate on others." Lastly, students may be less threatened in peer settings, more likely to ask questions of their peers, and more likely to react better to comments from their peers than to teacher's comments (Haas, 2007). One student echoed this opinion, "I did find the peer review process helpful. I found it to be an easy and comfortable process to have a fellow student read my case report and give suggestions before meeting one on one with you." One caveat about peer review is that authors must understand that peer review is only a part of the submission process and that they are responsible for their final submission. A side benefit of peer support to the instructor is the final manuscript is of higher quality and easier to grade.

The case report provides an alternative assessment activity for faculty to evaluate the student's ability to apply essential knowledge and skills by producing something significant and related to previous instructional activities and clinical applications (Kossman, 2005). In physical therapy, no other form of standardized written communication gives the detailed and credible descriptions of the decision-making process for an individual patient that a case report provides (Childs, 2004; McEwen, 2004). It provides evidence that the student is prepared for clinical practice. Writing the report requires the student to make explicit the choice of examination procedures, the logic behind the evaluation, diagnosis, and prognosis, the rationale for the choice of treatments, and to summarize the outcomes. In the process of working with the patient/client, the student must demonstrate the behaviors, skills, or knowledge that describe the expected performance of entry-level physical therapists, particularly in the areas of communication, clinical reasoning, evidence-based practice, education, screening, examination, evaluation, diagnosis, prognosis, plan of care, intervention, outcomes assessment, management of care delivery, and practice management (*Evaluative Criteria,* 2009). Disseminating the case report demonstrates the student is prepared to contribute to the evidence for practice; a minimum required skill of physical therapist graduates (*Minimum Required Skills*, 2004).

By writing a case report, students exemplify evidence-based practice (Sackett, 2000). First, they define their need for information about the patient/client's examination, diagnosis, prognosis, or treatment into an answerable clinical question. Second, they search the peer-reviewed medical literature for the best evidence to answer the clinical question. Third, they appraise the evidence for validity, impact, and applicability to their patient. Fourth, they integrate the research evidence with their clinical expertise and experience along with the patient's circumstances and preferences to develop a patient/client care plan. By illustrating the value of the clinician's expertise and the input of the patient/client, a case report demonstrates that randomized controlled trials provide only one kind of evidence used to make clinical decisions (Browman, 1999). Indeed, the *Journal of Medical Case Reports* encourages authors to invite the

patient to contribute to the case report by including an optional *Patient's Perspective* section, where the patient describes their experience of the disorder and treatment (*Instructions for JMCR Authors,* 2010).

Although disseminating the case report outside of the university is not an expected outcome of the courses, it is disappointing nonetheless that no student elected to submit a case report for publication or conference presentation. Offers by the instructor to assist students with the submission process after the course has ended have not been successful. Requiring students to submit an abstract for an APTA conference was considered, but CR2 ends several months before the call for abstracts is posted, so it does not seem practical to require submission as a course requirement. Moreover, it is unreasonable to expect that the accepted student would be able to attend the conference the following year. Anecdotal feedback from students provides some insight into the reasons why they do not submit an abstract for presentation. The deadlines for submission of abstracts to the APTA conferences are just a few months after graduation when the graduate's priorities are preparing for the licensing examination, searching for a job, and relocating. Also, because of the uncertainties of where they will be living and working, students don't know if they can afford to attend a conference, or will be given time off by their employer to attend.

Future research should include the development of valid and reliable rubrics for evaluating case report manuscripts and presentations, and the effects of peer review on students' writing and learning. Interrater reliability will be particularly important when different faculty teach multiple sections of the courses. Additional attention needs to be paid to identifying the barriers to submission for presentation or publication and to developing strategies that promote submission of quality case reports for publication and conference presentation. Finally, it is recommended that faculty and clinicians share the teaching and learning activities they use for case report writing and evaluate how writing a case report affects students' clinical behaviors and professional development. If case reports are to illustrate the scholarship of practice (McEwen, 2004), educators have a responsibility to prepare students to contribute to the scholarship of their profession by writing and presenting a patient case report.

Acknowledgements

Appendix. Grading Rubric for the Case Report Manuscript.

TITLE PAGE (5 pt)
  Title clearly describes topic and states that the manuscript is a case report
  Author's name, titles, location
  Acknowledgements
ABSTRACT (5 pt)
  Structure: Background and Purpose, Case Description, Outcomes, and Discussion; ≤ 275 words
BACKGROUND and PURPOSE (20 pt)

Scholarly presentation of background literature concerning the clinical problem
Provides a clear statement of purpose supported by the background information

CASE DESCRIPTION
Patient History and Review of Systems (20 pt)
  Documentation of HIPAA compliance and patient consent
  Demographic characteristics, medical history, patient/family goals for physical therapy
Clinical Impression 1 (10 pt)
  Reviews the primary problem, the potential differential diagnoses, and the plan for examination
Examination – Tests and Measures (20 pts)
  Examination procedures are consistent with Clinical Impression 1
  Cite available studies on reliability and validity of measurements OR
  Make presumptive arguments that the measurements would be reasonably reliable and valid
Clinical Impression 2 (10 pt)
  Provide a statement confirming or denying the initial impression based on the examination
  Physical therapy diagnosis
  Prognosis
  Plan of care including:
    • Plans for referral or consultation
    • Plans for additional testing (measures, time points) or follow-up evaluation of outcomes
    • Plan for intervention
    • Short- and/or long-term goals
Intervention (20 pts)
  Detailed description of the physical therapy services for 3 areas of patient/client management:
    • Coordination, communication, documentation
    • Patient/client-related instruction
    • Procedural interventions:
  Chronology of interventions and changes in treatment with rationale
  Indicators of patient compliance (e.g., attendance and performing home program)
  Cites credible primary literature to support intervention(s) used
OUTCOME (20 pts)
  Present the outcomes over the time points indicated in the follow-up plan
  Compare final outcomes to baseline
  Tables and Figures can be used to enhance the description
DISCUSSION (20 pts)
  Summarize how the case demonstrated the intended purpose.
  Relates findings to the literature and/or Background/Purpose of the case report
  Avoids definitive cause-and-effect statements or generalizations to other patients
  Discuss potential implications for clinical practice
  Offers suggestions for future research
REFERENCES (5 pts)
  Accurately follows American Medical Association style
  30 or fewer
TABLES and FIGURES (0 – 5 pts)
  Professional quality: accurate details clearly presented with legends and footnotes
  Maximum of 6
APPENDICES (0 – 5 pts)

Provide essential material not suitable for Figures, Tables, or text
Accurate/adequate details clearly presented

ORGANIZATION, COMMUNICATION, AND LANGUAGE (35 pts)

Formatting:
- Pages double-spaced, with page numbers AND line numbers

Organization:
- Content correctly placed in appropriate sections

Communication and Language:
- Non-biasing, people-first language
- Correct grammar, spelling, and punctuation
- Appropriate scientific and medical terminology/abbreviations
- International System of Units for all measurements (English units in parentheses)
- ≤ 3,500 words (excludes Title page, Abstract, References, Tables, Figures, Appendix)

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Book Review
Student Engagement Techniques: A Handbook for College Faculty

Sherry L. Early[1]

Publisher Description: Keeping students involved, motivated, and actively learning is challenging educators across the country, yet good advice on how to accomplish this has not been readily available. Student Engagement Techniques is a comprehensive resource that offers college teachers a dynamic model for engaging students and includes over one hundred tips, strategies, and techniques that have been proven to help teachers from a wide variety of disciplines and institutions motivate and connect with their students. The ready-to-use format shows how to apply each of the book's techniques in the classroom and includes purpose, preparation, procedures, examples, online implementation, variations and extensions, observations and advice, and key resources.

Overall, Barkley supplies faculty with a solid, provocative text providing clear examples, guides, and best practices, which could aid faculty in any discipline. The author provides a list of indicators of engagement in addition to a well thought out definition of engagement to illustrate the author's lens. Barkley makes reference to the National Survey of Student Engagement (NSSE) and Community College Survey of Student Engagement (CCSSE) as well as making a case for motivation versus active learning; this was particularly salient and reinforced student engagement as a product, not the sum. From my perspective, I would like to have also seen a depiction from the author on what being a learning-centered faculty member looks like.

The introductory chapters (one to two) seem to be missing some visual comparisons that I feel would have strengthened the overall impact of the material; particularly a visual depicting transformative learning. The author could have included a paragraph on academic self-esteem referencing Maslow or referring back to Maslow's research in the Covington section of the second chapter. I found the text lacked any means to address learning disabilities or low academic self-esteem. The introductory chapters were very well written and, while the teasing out of intrinsic and extrinsic motivation was predictable, it was necessary and well articulated.

Chapter three was lacking in the author's omission of information related to learning disabilities and brain function. This would have benefitted faculty who teach students with

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learning disabilities and maintained inclusivity in the chapter. I found critical thinking missing from this section. The critical-thinking addition could have enriched the chapter by providing more context and complexity related to how the brain operates when learning occurs.

Chapter four has some somewhat outdated terminology. The learning that takes place outside of the classroom complements the academic or curricular experience, it is not in addition to as the term extracurricular implies. Co-curricular student engagement and learning are a welcome addition to this chapter and I am very pleased to see the author include it. I did not find significant value in the affect/memory section of the chapter starting on page 34. I felt the substance of the chapter had enough breadth and depth without this content.

Chapter five complements content from the second chapter and the text would flow more effortlessly were chapter five directly after chapter two. I felt a section on the student's role in investing energy in the co-creation of the learning environment is necessary and would benefit this chapter. Incorporation of Astin's Input-Environment-Output (I-E-O) model (1993) citing students' putting forth intellectual energy toward shaping their learning experience is one avenue to consider. Additionally, this section would complement the motivational arena.

Chapter six was by far my favorite chapter of the book. The much needed inclusivity was delivered and it did not disappoint. The author finally spoke to critical thinking, diversity, best practices, and course delivery; the narratives were exceptional. Logistically, there were duplicate subheadings (e.g. Community) that could be combined. After reading page 71, I find the content or theme of the text to translate more to *Giving Students Voice*.

Chapter seven struggles with word choice on page 83; the term criticism has a negative connotation I find distracting and not learner-centered. I believe the same effect could be achieved through the lens of constructive feedback. Chapter seven's backward design approach is stellar. The author brilliantly executed this section and it was very clear and easy to follow. I found the Weimer/Blumberg content should have been introduced sooner, particularly in chapter two. In addition, I believe Fink would have been more useful in the introduction to the chapter as opposed to the current placement. Table 7.1 is very user-friendly. Lastly, the flow of the chapter would have been more fluid if there were a reversal of Tip/Strategy (T/S) 12, "Help students expect to succeed" and T/S 11, Expect students to succeed.

The outcomes section in chapter eight lacks a clear delineation between an assessment plan and evaluation of student learning or gauging the effectiveness of outcomes/goals. This section has real potential and may warrant some slight modifications. However, I find the rubric on page 81 to be quite helpful and I am impressed the author provided a link for rubrics included as a resource. Chapter nine would benefit from more emphasis on physical classroom desk/table setup. I suggest including diagrams and creative ways to utilize space and the impact on the dynamics. As mentioned earlier, I would recommend more discussion of diversity including incorporating multiculturalism and diversity as a whole (e.g. modifying lessons when a student is blind, deaf, in a wheelchair, etc.) and addressing/supporting students with learning disabilities

Chapter eleven is extremely practical, well written, and visually appealing. The graphic syllabus is fascinating. I would like to suggest incorporating a section on millennials' learning styles and needs.

In chapters twelve to nineteen (SETS), the author offers excellent examples inclusive of online modifications. These chapters can be a bit overwhelming in the first read, but an invaluable resource for later referral. I find the SETS to be highly functional and well organized.

While this book could benefit from future revisions and more inclusive language it provides faculty with a wonderfully useful tool to approach a myriad of learning and classroom issues.

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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

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- **Reviews of current themes in SoTL research including meta-analysis**
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- **Comments and Communications on previous Journal articles, or book or software reviews**

In your e-mail with your submission, please indicate which of the above categories most applies to your submission. Despite their differences, all of these types of submissions should include the author's expression of the implications their work has for the teaching-learning process. This reflective critique is central to our mission in furthering understanding of SoTL. Authors are encouraged to review the Guidelines for Reviewers in order to understand how their submissions will be evaluated. **Authors are strongly encouraged to study the Reviewer's Rubric that reviewers shall apply in evaluating their submitted work.**

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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.

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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.

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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.

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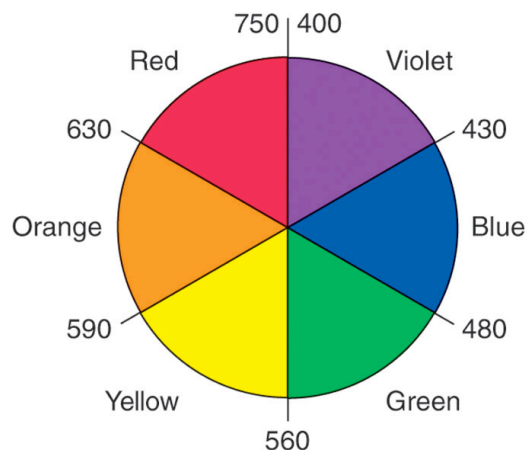

Figure 1. Color wheel with wavelengths indicated in millimicrons. Opposite colors are complementary.

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:

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