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## **The effect of contemporary learning approaches on student perceptions in an introductory business course**

**Lori A. Coakley<sup>1</sup> and Kenneth J. Sousa<sup>2</sup>**

*Abstract: University administrators and educators continue to explore and implement new approaches for delivering coursework. Ultimately, they are attempting to achieve the same goal; increasing the level of student engagement and retention of knowledge while maintaining educational quality. Various contemporary learning approaches can provide a “launching point” to assess, evaluate and implement creative course pedagogies in many introductory courses. To validate the influence of these approaches, this research offers an assessment of the changes applied to an Introduction to Business course using active, experiential, and cooperative learning approaches. The scope of the data was broadened to include both quantitative and qualitative data. Students registered for the course were surveyed using pretest and posttest instruments. The analysis of the data indicates that the application of the three learning approaches has a mixed impact on pedagogical results. Students perceive that their knowledge of business concepts increased after the course was completed despite a challenging environment requiring the application of theoretical concepts to practice. Students indicate that the knowledge gained from experiential-based deliverables through cooperative learning approaches, creates an opportunity for reinforcing and applying introductory concepts. The results of the research also found that while students perceive that their understanding of the concepts has increased, the variety of pedagogical approaches embedded in the course do not necessarily foster additional interest in the subject matter. However, the integration of student qualitative feedback clearly supports the benefits of each pedagogical approach while also providing insight into which approach students found most influential for learning. The contribution of this paper to the literature is to encourage the redesign of introductory courses by integrating all three pedagogical approaches to successfully foster student engagement and higher quality learning.*

*Keywords: Experiential learning, active learning, cooperative learning, student engagement, empirical studies*

### **I. Introduction.**

University administrators and educators continue to explore and implement new approaches for delivering coursework. Ultimately, they are all attempting to achieve the same goal; increasing the level of student engagement and retention of knowledge while maintaining educational quality. The faculty assigned to teach the *Introduction to Business* course continually re-examine course curriculum to determine whether the goals of the course are being met. A few years ago

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during this process, it was discovered that the course, one of the core classes taken by *all* freshmen students, was too segmented and disjointed in its approach when teaching business concepts. It had become stale, unimaginative, and quite frankly, dull.

The course methodology used a “*chalk and talk*” format, which works effectively for many subjects, but was not the best approach for this course as the only means of encouraging students to grasp business concepts (Becker & Watts, 1995, 2001; Govekar & Rishi, 2007; Hake, 1998; Siciliano, 2001). Furthermore, it became evident that the course structure no longer added value to the students’ first-year college experience. Specifically, as first-year students with little background in business, simply listening to lectures on the various business disciplines was not sufficient in promoting a clear understanding of what “business” was really all about. Finally, the course material too closely mirrored the content of the discipline-based, silo-oriented core classes students were required to complete during their sophomore year (marketing, finance, computer information systems, and management). It provided minimal opportunities or expectations for students to become more actively involved in understanding the interdependent nature of business disciplines.

Change was imminent if the course was to help students with “little or no organizational experience to develop a better understanding of the connections between themselves and business” (Lamb, Lee, & Vinton, 1997). The purpose of the course needed to be re-examined and learning goals re-defined to generate excitement about the world of business and foster an understanding of the complexities and challenges organizations confront daily. An equally desirable outcome was to reinforce students’ decision to pursue a business degree.

Various contemporary learning theories were considered to provide a “launching point” to assess, evaluate and implement creative course pedagogies. It was decided that some of the responsibility for learning needed to be shifted to the students through three related, but diverse pedagogical approaches: experiential learning, active learning, and cooperative learning. These three approaches involve students in the learning process by emphasizing interdependency and accountability rather than simply knowledge recall (Hernandez, 2002; Johnson, Johnson, & Smith, 1991; Johnson, Johnson, Roger, & Smith, 1991; Siciliano, 2001; Umble, Umble, & Artz, 2008). These research studies have shown that each approach yields significant benefits to students by enhancing concept retention and fostering critical thinking.

These approaches to learning also move students, according to Bloom’s taxonomy, beyond (1) simply remembering — recalling relevant knowledge from long-term memory, to (2) application and analysis — determining how parts relate to one another, and finally to (3) synthesis — integrating concepts to generate something new (Bloom, 1956; Krathwohl, 2012). Ultimately, students are able to use and apply knowledge gained rather than simply memorize a concept for later recall on an exam. According to Coates (2005), as well as Weldy and Turnipseed (2010), not only does student involvement in the learning process “more effectively embed concepts and principles into long-term memory” (Weldy & Turnipseed, 2010, p. 269), it further results in enhanced student engagement, leading to higher quality learning.

By applying these new pedagogies in the redesign of the *Introduction to Business* course, the desire was to heighten student engagement through the various stages of learning. The anticipated outcomes are to 1) yield a greater interest in a business degree, 2) improve retention of business concepts, and 3) increase understanding of business plan knowledge through the application of theory to practice using social interaction and real world experience. The purpose of this research is to measure the impact of these pedagogical changes on student perceptions.

## II. Approach to course redesign.

Several contemporary theories, developed and tested in the literature, identify strategies to increase student engagement as well as retention of concepts and knowledge. To create a holistic experience in the classroom and extend the engagement to activities that augment the course objectives, three pedagogical approaches were integrated into the course redesign: experiential learning, active learning, and cooperative learning.

### A. *Experiential Learning.*

One method to foster engagement and improve knowledge retention is through experiential learning (Harsell & O'Neill, 2010; Prussia & Weis, 2003). Experiential learning “occurs when changes in judgments, feelings, knowledge or skills result for a particular person from living through an event or events” (Chickering, 1976, p. 63). It is a means of “bringing to life organizational contexts that the typical student lacks in personal experience” (Joshi, Davis, Kathuria, & Weidner, 2005, p. 674). With experiential learning, the focus becomes less about the content itself, but more about the direct experience and processing that experience in a way to heighten meaning and understanding (Joshi et al., 2005; Kolb, 1984). Kolb’s Experiential Learning Theory Model (1984) has been one approach used to help managers, as well as students, understand the cycle of learning through experience. By moving through the four stages of the cycle (direct experience, reflection of experience, development of conclusions drawn from the experience and action), knowledge can be created “through the transformation of experience” (Kolb, 1984, p. 26). Therefore, it became important to consider each of the four stages when redesigning the *Introduction to Business* course pedagogies, rather than “fitting” course deliverables to the Kolb’s model as an afterthought.

To gain the benefits of experiential learning, the coordinators of the *Introduction to Business* course turned to the most logical choice among the current course deliverables; the business plan. According to Thomas (2002), this kind of hands-on project enables students to more effectively retain knowledge and apply theory to real-world problem solving. More importantly, the process of completing the business plan provided essential direct experience, the first stage in Kolb’s model. However, the business plan assignment was due at the end of the semester, with little else directly relating to the deliverable, and thus no opportunity for reflection – stage two of Kolb’s model (Kolb, 1984). New initiatives were needed to operationalize each stage of Kolb’s cycle to create direct experience *and* provide opportunity for reflection. Therefore, after substantial analysis and discussions, three new applied competitions were designed and added to the business plan project requirements; an elevator pitch (E-Pitch), trade show and marketing plan competition conducted during the semester. Furthermore, the presentation of the business plan would now include an extensive oral component that would enable students to more effectively reflect on their experiences gleaned by completing the project, fulfilling stage three of Kolb’s model.

Collectively, these new requirements would provide students with the opportunity to be involved in direct, practical, hands-on experiences that would be reflected upon in preparation for various oral competitions as well as the final exam. To complete Kolb’s cycle of learning, students would be required to apply what they had learned from the feedback received from judges and faculty, by integrating the appropriate changes to the final business plan document.

### *B. Active Learning.*

Another avenue for generating conceptual understanding and encouraging student engagement is through active learning. Active learning involves students “doing things and thinking about things they are doing” (Bonwell, 1991). Activities such as debates, class discussions, class oriented activities such as guest speakers, role playing, and hands-on exercises reinforce active learning (Auster, Grant, & Wylie, 2005; Braxton, Milem, & Sullivan, 2000; Meyers & Jones, 1993; Prussia & Weis, 2003). Braxton et al. (2000) claim that students engaged in active learning perceive themselves gaining more knowledge from their coursework. For the *Introduction to Business* course, it was determined that extending the concepts of marketing to real life through an in-class marketing plan competition would engage students more in the marketing component of their business plans. Furthermore, students’ interests would be heightened by learning how to create marketing storyboards in class, focusing on products that were familiar to students, such as skateboards. Other forms of active learning integrated into the redesigned course included debates on current ethical dilemmas being discussed in the news, using technology to engage students in unique ways and involving students in monthly *Introduction to Business Nights*. The “nights” initiative was a series of events where students interacted with invited company executives and entrepreneurs through panel discussions as well as an interactive question and answer session.

### *C. Cooperative Learning.*

Cooperative learning, a form of active learning, provides a sharper focus for encouraging team development and peer-to-peer interaction. The goal of cooperative learning is to enhance the understanding of conceptual material and promote social problem solving through the use of group work (Prussia & Weis, 2003). This concept involves the use of small groups of students to focus on maximizing their own learning as well as extending their newfound knowledge to other members of their group (Ausubel, 2000; Cooper, 2002; Johnson, Johnson, Roger, & Smith, 1991; Mallinger, 1998; Schomberg, 1986; Webb & Grib, 1967; Williams, Beard, & Rymer, 1991). More importantly, cooperative learning has been shown to positively relate to enhanced student performance (Tinto, 1997). Two popular approaches for integrating cooperative learning techniques into course structures include team-based learning and peer-to-peer learning.

*Team-Based Learning.* Team-based learning is not simply about working in a group on a semester long project but rather about the “creation of cooperative structures that are effective in promoting active and deep learning” (Hernandez, 2002). The outcomes of team-based learning are interdependence and individual accountability. According to Michaelsen and Black (1994), team learning is a method employed by faculty to facilitate accomplishment of the course learning objectives by harnessing the power of team work. This approach recognizes that traditional forms of course delivery, based on recall and memorization, are passive and not as effective as the multi-sourced foundation of team learning, where knowledge can stem from the individual student, their teammates and the instructor (Hernandez, 2002; Maskulka, Stout, & Massad, 2011).

To capitalize on the benefits of team learning, the coordinators designed the business plan project to include more than simply a paper, which is often shown to limit group cohesiveness when dividing assignments into sections and working independently (McCorkle et al., 1999). First, each student team was required to participate in an elevator pitch competition that “sells” their idea in 90 seconds to potential investors. Additionally, teams developed and presented a

basic marketing plan that included both a digital media commercial and a formal presentation delivered to business executives.

To achieve the foundation of team-based learning, it was important to a) reinforce the focus on interdependent skills and knowledge transfer, b) develop strong group cohesion and c) engage in application-oriented activities (Johnson & Johnson, 1987; Johnson & Johnson, 1987; Michaelsen, Fink, & Knight, 1997; Mullen & Copper, 1994). To accomplish this outcome, each team submitted a final business plan coupled with a team presentation. The oral presentation was restructured to ensure that each member of the team was fully knowledgeable about all sections (such as accounting, marketing, operations, etc.) of the business plan. Immediately before the presentation, team members were randomly assigned to present a specific section. This process became known as the *Wheel of Chance*.

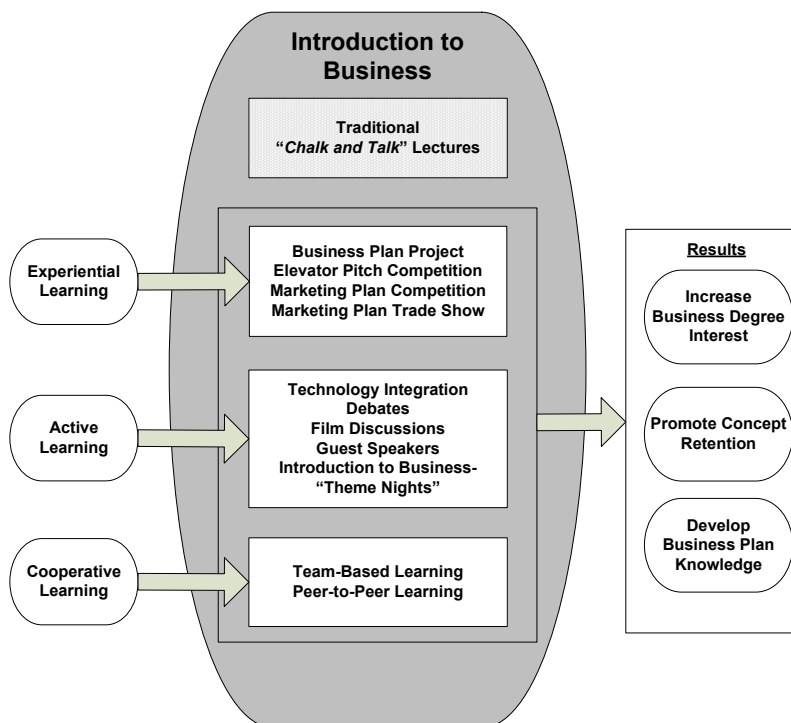
These team-based activities, such as the *Wheel of Chance*, are structured to integrate various business concepts to promote cooperative learning.

*Peer-to-Peer Learning.* A separate, but distinct, form of cooperative learning is peer-to-peer learning. Peer-to-peer learning focuses on one-to-one interaction where students “help, assist, encourage and support each other’s efforts to learn” (Siciliano, 2001). The coordinators for the *Introduction to Business* course investigated the various approaches for operationalizing peer learning within the course as an extension of the team environment. The first approach was initiated as a means of preparing first-year students for the fast pace and rigor of the E-Pitch competition. Student teams worked with upper-class students from the University’s entrepreneurship club to abet preparation and delivery of the E-Pitch. These upperclassmen were seasoned participants in past E-Pitch competitions within and outside of the University. These students voluntarily provided seminars that offered the first-year students various methods to develop and structure an E-Pitch, how to make efficient use of the short time afforded each team to present their E-Pitch, and “tricks of the trade” in delivering a high energy, enthusiastic pitch.

The success of this endeavor in peer-to-peer learning resulted in a second approach: the engagement of upper-class accounting students to “consult” for *Introduction to Business* teams on the accounting section of the required business plan. The instructors developed a “speed dating” approach for matching consulting teams with an *Introduction to Business* team; one or two team members went to each potential consultant and “pitched” their team idea and told them why it was best to work with their *Introduction to Business* team. After teams selected their consultant, they would meet twice a week to provide assistance on the accounting issues associated with their business plan.

#### *D. Summary and Research Objective.*

The literature suggests that pedagogical results such as student engagement and knowledge retention are limited when relying only on the use of traditional course design (Bonwell, 1991; Siciliano, 2001). As discussed above, expanding pedagogical approaches to include experiential, active and cooperative learning should positively result in generating greater interest in business, promoting retention of course concepts, developing business plan knowledge and applying theory to practice through hands-on, real world experiences. A complete summary of the course design, categorized by each pedagogical approach, is provided in Figure 1.



**Figure 1. Application of Pedagogical Approaches to Course Redesign.**

As illustrated in the figure, prior to the redesign of the course, the basic format was lecture – “*chalk and talk.*” With the inclusion of activities reflecting active, experiential, and cooperative learning, the course’s educational experiences were broadened. While the literature asserts that these approaches have a direct influence on student learning, as discussed in the previous section, we believe it is necessary to empirically validate our course redesign.

### III. Research methodology.

The objective of this research study is to measure the impact of the pedagogical changes on student perceptions. To complete this study, three hypotheses were compiled as shown in Table 1.

**Table 1. Research Hypotheses.**

<b>Hypothesis</b>	<b>Hypothesis Definition</b>
	<i>After completing the introductory business course, students have a(n)</i>
1	... increased desire in pursuing a business degree
2	... increased level of business knowledge
3	... increase level of business plan knowledge

Each of these hypotheses will be evaluated using an experimental research design.



### *A. Research Design.*

To achieve the objective of this research, a quasi-experimentation design was needed. This design would evaluate the effect of a treatment (introductory business course pedagogy) on student perceptions. Defined as a non-equivalent group design, the subjects are self-selected into the various treatment groups (Creswell, 2003; Reichardt & Mark, 1994). In this research study, the subjects were registered for the *Introduction to Business* course without any intervention from the researchers. The subjects' perceptions were assessed using a common non-equivalent design; a one group, pretest/posttest methodology. This methodology is used to determine the effect of a treatment on a population (Hair, Anderson, Tatham, & Black, 1998). Therefore, this research design was an appropriate choice to measure the influence of the course pedagogy on the students' perceptions. To gather the necessary quantitative data, a survey instrument was administered in a pretest/posttest environment.

### *B. Survey Population and Course Environment.*

In an effort to compile accurate results and gain an appropriate response rate, the population used for this research included all sections of the *Introduction to Business* course over five semesters. Since *Introduction to Business* is a required course for traditional, first-year students across all degrees and majors, this population would provide the foundation to collect responses from a broad and inclusive group of students across a variety of majors in business, liberal arts and sciences. In addition, the survey population also included multiple professors and semesters to provide variability in the delivered material over time.

The course was delivered through the use of a common syllabus prepared by the course coordinators. The syllabus required the use of several required attributes to maintain consistency with the course delivery. These attributes included the textbook, activities, exams and common chapters/topics. Specifically, the activities that integrated the contemporary learning approaches (business plan, E-Pitch, marketing competition), were required to be assigned by each instructor. Over two-thirds of the sections were taught by two instructors.

### *C. Survey Design & Administration.*

*Quantitative Analysis.* To determine the effect of the redesigned course pedagogy on the student perceptions of business, it would be imperative to design questions which would gain the information necessary to evaluate the hypotheses as outlined above.

Students were asked to bring their laptops to class in order to complete the survey at both the beginning (pretest) and at the conclusion of the course (posttest). Students did not receive any incentive (extra credit) and were not required to complete the survey as a component of the course grading.

In order to properly test the hypotheses, three paired questions were developed to assess students' perception of the new course delivery and design. The question and scale definition were the same for both the pretest and posttest survey instruments to reduce measurement error and increase the integrity of the individual responses. The constructs along with the associated question text and scale definition are shown in Table 2.

The survey instrument was designed to be implemented using an online, web-based environment. This approach would eliminate data entry as well as provide for a simplified "matching" process as discussed below.

Each student was provided with an index card which contained the section name, URL address and a survey identification number (SID). The survey identification number is a unique six-character field comprised of letters and numbers. The index cards were distributed to students prior to the survey administration. Students were required to enter their SID numbers into the survey. They were asked to retain the cards in their textbooks so that they would be used for the end of the semester survey (posttest) administration. This process would provide a) anonymity for the students' survey answers and b) a process to "match" the students' pretest and posttest survey responses for various paired-sample statistical analyses.

**Table 2. Survey Instrument Definition.**

<b>Construct</b>	<b>Question Text</b>	<b>Scale Definition (Number)</b>
Interest	I am interested in pursuing a degree in business.	Strongly Agree ... Strongly Disagree (5)
Knowledge	I believe that my knowledge of business concepts and topics is	Excellent ... Poor (5)
Plan Knowledge	My knowledge of developing and compiling a business plan is	Excellent ... Poor (5)

The pretest and posttest survey method was a deliberate decision to measure the impact of the course on the perceptions of the students. The thirteen-week period between the survey deployments provided some "distance" between the beginning and end of the semester. This methodology allowed the respondents to formulate their perceptions of their experience with the *Introduction to Business* course by providing an opportunity for reflection at the conclusion of the semester.

*Qualitative Analysis.* After examining the quantitative analysis from the first four semesters of data, the researchers acknowledged that qualitative data was needed to fully understand the context of student perceptions on the course redesign. Therefore, in addition to the quantitative survey, qualitative data was collected from two independent sources.

The first source was data obtained from the SIRII course perception surveys from one of the two course coordinators. In the qualitative section of the course evaluation survey, students were asked to provide feedback on course design and content, on which aspects of the course delivery methods they found most useful and on how they would improve the course. A content analysis was conducted on each of the responses, coding the responses based on which of the three pedagogical approaches was addressed: experiential (E), active (A), cooperative (C) or lecture-based (L). For example, one qualitative response stated:

*"I think it would be beneficial if team leaders had to turn in a paper listing each member's contributions. That way each person is accountable and it doesn't become a game to any slackers in the group to see how much they can get away with not doing."*

This quote was coded "C" for cooperative learning by two separate reviewers. Comments that included references to more than one pedagogical approach were coded for each approach. After completing an analysis of the qualitative comments and coding the comments independently, the codes were compared between the two reviewers. For those codes that did not match, each reviewer discussed their reasoning and a decision was made collectively as to which

category the comment fit best. Next, any comments that suggested improvement or changes were examined for common threads and themes.

The second source of qualitative data was collected from a follow-up online survey sent to students who had already completed the course. This survey instrument was developed specifically to gather information needed for the qualitative analysis associated with the three pedagogical approaches: experiential, active, and cooperative. Three groups of questions were provided on the survey instrument: 1) qualitative perceptions of course activities (three questions), 2) a rank order of three pedagogical learning methods (one question) and 3) gender (one question). To eliminate any response bias, the questions associated with the perceptions of the different activities and the rank order question were identified only as generic categories (A=Experiential, B=Active, and C=Cooperative). The survey questions asked students to evaluate specific course activities not directly identified to any specific category. The categories, questions and pedagogical approaches are identified in Table 3.

**Table 3. Qualitative Follow-up Survey Instrument.**

<b>Category</b>	<b>Question</b>	<b>Pedagogical Approach</b>
A	Business plan project, competitions (elevator pitch and marketing) and the Marketing Plan Trade Show	Experiential
B	Technology Integration (Skype, Respondus, Turnitin, SurveyMonkey), <i>Introduction to Business</i> "Theme Nights", Debates, Film discussions and guest speakers	Active
C	Team-based learning, Peer-to-Peer Learning (Global Entrepreneur Program for consultants/E-Pitch and accounting students as consultants)	Cooperative

The rank order preference for each of the three pedagogical styles was tabulated using frequency counts. The qualitative perceptions of course activities gained from the online survey were combined with the results from the SIRII course perception survey. These comments from both instruments were analyzed to identify common themes/threads and to also determine *why* students perceived particular pedagogical approaches as more effective than others. By using both quantitative and qualitative data to test the hypotheses, the results would provide a more robust analysis of the research and enable the results to be understood more holistically.

#### **IV. Results.**

##### *A. Quantitative Analysis.*

To fulfill the research objectives, the differences between the individuals' perceptions over the course of the semester based on the pretest and posttest survey responses were examined. For a complete analysis, the responses of the pretest and posttest surveys were "matched" by the individual students' SID value. The completion of this "matching" process provided a final dataset consisting of one response record, based on the SID value, for each matched pair from the two survey administrations.

The final dataset records, as shown in Table 4, include only those responses which consisted of a valid pretest and posttest survey response over five semesters. Students who responded to the pretest survey but not the posttest survey were not included in the final dataset for analysis. The matched responses column depicts the total number of responses (1,130) that provide a valid pretest and posttest submission (based on SID). The response rate was calculated based on the ratio of registered students to matched responses. The last column in the table calculated the percent of matched responses of the total responses for all semesters. While the percent of total responses is not evenly distributed across semester, the variation of percentages is reasonable (16 – 24%).

**Table 4. Responses by Semester.**

<b>Semester</b>	<b>Registered Students</b>	<b>Matched Responses</b>	<b>Response Rate</b>	<b>Total Matched Population</b>
Fall 2005	421	240	57%	21%
Spring 2006	405	178	44%	16%
Fall 2007	429	182	42%	16%
Fall 2008	405	254	63%	23%
Spring 2009	425	276	65%	24%
<b>Total</b>	<b>2,085</b>	<b>1,130</b>	<b>54%</b>	<b>100%</b>

Tables 5 and 6 provide the frequency analyses of the population by gender and college respectively.

**Table 5. Responses by Gender.**

<b>Gender</b>	<b>Responses</b>	<b>Percent</b>
Female	496	43.9%
Male	634	56.1%
<b>Total</b>	<b>1,130</b>	<b>100.0%</b>

**Table 6. Responses by College.**

<b>College</b>	<b>Frequency</b>	<b>Percent</b>
Arts & Sciences	167	14.8%
Business	656	58.1%
No Designation	307	27.2%
<b>Total</b>	<b>1,130</b>	<b>100.0%</b>

A t-test could be considered an appropriate statistical method to analyze the data. However, in cases in which the data level is ordinal or when the populations are not believed to be approximately normal, a t-test is not appropriate (Groebner, Shannon, Fry, & Smith, 2008). A Wilcoxon model is applicable when the data follows a “continuous, but not necessarily normal, distribution (Cannon et al., 2013).” Therefore, the Wilcoxon Signed-Rank Test was used to complete the statistical tests. The Wilcoxon Signed-Rank Test (WSRT) is a non-parametric methodology which calculates the ranks of the absolute values using two related variables to test the hypotheses as to whether the two variables have the same distribution. To evaluate related sample questions (matched pair questions), the WSRT was used to evaluate a sample of related and repeated measurements on a single sample. This statistical test provided information about the magnitude of differences within variable pairs and assigned more weight to the variables calculating large differences than to those having small differences. The test statistic is based on the ranks of the absolute values of the differences between the two variables. The significance value ( $p < .05$ ) of each test was used to evaluate the null hypotheses. Using the WSRT, the

hypotheses are tested based on the population median rather than a population mean, providing an accurate measure of the responses while considering outliers.

The WSRT was completed for the five semester, matched pair dataset for 1,130 responses. The descriptive statistics and Wilcoxon test results of the statistical analysis are shown in Tables 7 and 8 respectively.

**Table 7. Descriptive Statistics.**

Construct	Pre-Survey			Post-Survey		
	n	Mean	SD	n	Mean	SD
Business degree interest	1,130	1.52	0.91	1,130	1.63	1.01
Business knowledge	1,130	3.05	0.83	1,130	2.32	0.71
Business plan knowledge	1,130	3.59	1.01	1,130	1.90	0.78

**Table 8. Wilcoxon Signed-Rank-Test Results (\*\*\*) =  $p < .001$ .**

Hypothesis	Question	Pretest – Posttest Value			n	Asymp Sig.	
		Negative Ranks	Positive Ranks	Ties			
1	Business degree interest	117	201	812	1,130	.000	***
2	Business knowledge	695	72	363	1,130	.000	***
3	Business plan knowledge	951	20	159	1,130	.000	***

The asymptotic significance test (two-tailed) was calculated for each of the three related paired questions. Each of the remaining three paired questions calculated significant differences at the  $p < .001$  level. The final evaluation of the hypotheses based on the results of the statistical tests is as follows:

**Table 9. Research Hypotheses Evaluation.**

Hypothesis #	Hypothesis Definition	Evaluation
	<i>After completing the introductory business course, students have a(n)</i>	
1	... increased desire in pursuing a business degree	Accept
2	... increased level of business knowledge	Accept
3	... increase level of business plan knowledge	Accept

The knowledge questions associated with business concepts and the business plan calculated extremely high negative ranks (695 and 951 respectively). These negative rankings consisted of a significant percentage of the total responses (62% and 84%). Based on the Likert scale for these questions, the negative rankings illustrated a positive trend for the associated question.

The interest in pursuing a business degree question calculated different results. The positive ranking was higher than the negative ranking for this question (201 vs. 117). However, the number of responses that were neither positive nor negative (ties) was the largest percentage (72%) of the total responses of 1,130.

*B. Qualitative Analysis.*

For data collected from the SIRII course perceptions, a total of 74 responses were received, resulting in a response rate of 73%. The results of the content analysis are compiled in Table 10.

**Table 10. Frequency Distribution of Qualitative Responses (n=74).**

<b>Pedagogy</b>	<b>Coded Responses</b>	<b>Percent of Total</b>
Experiential	18	24%
Active	20	27%
Cooperative	3	4%
Lecture	40	54%
<b>Total</b>	<b>81</b>	

Seven responses were coded twice, with two pedagogical approaches documented within one response, resulting in 81 total coded responses. As shown in the table, 24% of the respondents preferred the experiential pedagogical approach. Twenty-seven percent of the respondents highlighted active learning methods of teaching as most useful. However, only 4% of the respondents referenced cooperative learning techniques. The majority of the student responses (54%) provided comments which referenced “lecture-based” learning as most useful. The response rate for the online surveys was not as robust. Of the 285 surveys online surveys sent to former *Introduction to Business* students, only 33 surveys were fully completed, resulting in a response rate of 12%. The survey was sent after the course was completed. We believe the response rate was low due to the inability to conduct the survey administration within a classroom environment. The frequency analysis is shown in Table 11.

**Table 11. Table of Ranking Frequencies Online Survey.**

----- Pedagogies -----					
<b>Rankings</b>	<b>Experiential</b>	<b>Active</b>	<b>Cooperative</b>	<b>Total</b>	<b>% of Total</b>
1	24	5	4	33	73%
2	5	9	19	33	58%
3	4	19	10	33	58%
Total	33	33	33		

Based on the tabulations of the rank ordered preference for pedagogical approaches, the number of first, second and third choices were counted. For example, there were 24 respondents that selected experiential activities as the most positive influential on the course outcomes; followed by only five that ranked it as the respondents’ second choice. The results of this analysis suggest that experiential learning is the most influential of the three pedagogies totaling 73% of the responses. Activities associated with cooperative pedagogies were ranked second, totaling 58% of the total responses, while active pedagogy activities ranked third.

The comments from question one on the online survey asked students to respond specifically to their perceptions of the activities listed in Categories A (Experiential), B (Active) and C (Cooperative). These comments were then combined with the qualitative comments

gleaned from the SIRII qualitative responses. A sample of the comments may be found in Table 12.

**Table 12. Representative Comments from Qualitative Responses.**

<b>EXPERIENTIAL</b>
I found ... the Business Plan the most useful aspects of this course.
The business plan project was very useful. It was extremely hard and stressful but I definitely learned a lot about business and myself because of it.
The business plan was very useful to me. It differed from many projects in that it was very practical and will likely have many applications to my future.
More time spent in class working on the business plan.
Help students more with the business plan project.
I liked working in class on the business plan.
Really good. Perfect introduction course as it covers all the important enough so as you understand them but not too in depth either. Business plan, despite the work, was definitely a cool and worthwhile experience.
It was a good course. I would have liked to have seen more step by step instructions on the business plan. It seemed like we were expected to complete certain sections before we actually learned about them in class.
So much work, some of it may be unnecessary but I learned a lot through the business plan project. I liked having the opportunity to have a quiz each week, helped me stay on top of the reading.
The design of the course was very well established in terms of the business plan and what progress we should be making in terms of where we are in the lectures in class.
I enjoyed the setup of this course. The weekly quizzes were helpful, although I think it would make more sense to have the quizzes to take place after the chapter lecture.
It all revolves around the business plan and most of what we do in class.
I love it, although the business plan is a pain it really does show all the different aspects of business and Professor *** makes it a lot of fun!
<b>ACTIVE</b>
Practice quizzes online
Online iPod content - studies with it for every quiz, didn't get below an 80.8 lectures
The videos that were shown were important but yet had comical qualities to it, which sustained my attention.
The lectures and the classes dedicated on working on the business plan really helped. All the video clips really related stuff to real life.
I really liked the way Professor *** taught the class. He would show us important videos during class to help us understand the material better and kept us updated with news going on currently.
<b>COOPERATIVE</b>
The team I worked with was so different from past team experiences and I learned a lot about the needed information.
Even when teams were assigned I think I would be good to have some check in points to know how the team is doing. My team never knew if we were ahead or behind compared to other teams and compared to what the professor wanted.
With the business plan project, I think it would be beneficial if team leaders had to turn in a paper listing which sections team members are doing. That way each person is accountable and it doesn't become a game to any slackers in the group to see how much they can get away with not doing. If they knew the professor knew they were responsible for a certain section, I think they would work harder at it and be more inclined to submit it to the team leader after extensive work was done with it.

The 21 responses listed in Table 12 were categorized into the three pedagogical approaches; resulting in 13 experiential learning activity references, five active learning activity references and three cooperative learning activity references.

## V. Findings & Conclusions.

### A. General.

The mixed results of the Wilcoxon Signed-Rank test illustrate some interesting findings. All tests show significant differences between the pretest and posttest survey responses. Specifically, the analysis suggests that the respondents' knowledge of business concepts and development of a business plan have increased significantly. These results demonstrate that the students' perceive an increase in business knowledge after completing the course which positively contributes to their business education. The results of the quantitative and qualitative analyses clearly assert that the combination of course components and learning pedagogies provide a solid foundation to initiate the students' business education.

These results confirm previous research asserting that students retain more knowledge in experiential projects such as the business plan rather than traditional "*chalk and talk*" delivery approaches (Ausubel, 2000; Bonwell, 1991; Siciliano, 2001). Specifically, the larger variances in the pretest and posttest survey results for business plan knowledge, as compared to business concepts in general, reflect the challenge, creativity and unbounded nature of experiential-based projects that students referenced in the qualitative feedback. Students, in general, found the course both demanding and challenging. Overall, most students believe they gained a better understanding of the world of business and how business people think. They also felt strongly that they had attained the knowledge they "signed up to acquire" after completing the course.

These comments resonate with the findings of both Hake (1998) and Braxton et al., (2000). Hake found that students of teachers who taught with interactive approaches made twice the average gains in learning – greater than two standard deviations. Braxton et al. found that students that engaged in experiential learning perceived that they gained more knowledge from their coursework. As shown in Table 12, many students commented that they liked the course being designed around the business plan. Some sample comments are as follows:

- The business plan was "extremely hard, stressful, and a lot of work," ... "very cool" ... "fun".
- "I definitely learned a lot about business and myself because of it."
- "The business plan project was a great overall introduction to the world of business. As someone who had no idea what I wanted to do, this was great. I finished the business plan project and was confident that I found a major that was right for me."

Comments such as these underscore the benefits of experiential learning. Referring to Kolb's Learning Cycle (1984), the business plan and its various components, such as the E-pitch, marketing plan and trade show competitions, enabled students to link business theory to practice and use direct experiences to heighten the understanding of key concepts relevant to the world of business (Vince, 1998). Many students, as evidenced above, gleaned emotional insights as well, adding to the overall experience. These results support the findings of Welding and Turnipseed (2010) who concluded that "real-world projects as a pedagogical tool should be integrated into business curricula to improve learning and better prepare students for a career in business (p. 271)." The amount of interaction needed to complete this project directly influenced students' perceptions that they had gained more knowledge from the course.

One of the major reasons for the course pedagogy redesign was to increase the level of interest in business. The results from the SPSS Wilcoxon test (Table 8) relating to the students' interest in a business degree question indicates a mixed outcome with more positive rankings



than negative rankings (201 vs. 117). These results point out that 18% of the respondents (201/1,130) lost interest in a business degree after completing the course. However, for most of the respondents (812, 72%), the perception of the students' interest in a business degree has not changed from the beginning of the semester.

While we were expecting that the transition from a "chalk and talk" approach to an experiential, team-based environment would increase interest, we believe that the glorification and sensationalism of business successes is a reasonable explanation of the loss in business interest. Students are a product of the media hype and glorification of the "mega start-up" businesses over the past several years. The social image of business stemming from such popular television shows such as *ABC's Shark Tank* and NBC's *Apprentice* capture the allure of business more than the hard work succeeding in business entails. Therefore, students may view highly successful businesses only from the visible results and the financial factors (e.g. stock price, sales, salaries, market share, etc.). They have limited experience or context to fully appreciate the level of integrated business planning (including financial projections, sales forecasting, product development, research and marketing activities) necessary to start a business. The work involved in creating a business plan may have resulted in a "*rubber meets the asphalt*" epiphany. Ultimately, as with successful sports personalities, people often see only the celebration of an athlete winning a championship *but do not understand the number of practices, training and minor league assignments that were the foundation of the observable achievement*. This epiphany may have impacted students' interest in business and attitude toward studying business, especially for those students who were undeclared business majors, or enrolled at the University to study liberal arts.

A second explanation for the decreased interest in business for some respondents may stem from their perceived lack of business aptitude after completing the course. According to several researchers (Downey, McGaughey, & Roach, 2011; Kumar & Kumar, 2013), attitude toward the business major is the main factor influencing students' intentions to choose this major. Students' attitude toward the business major is in turn influenced by factors such as job availability, social image and aptitude. Specifically, research shows that business students tend to pursue a major that fits with their perceived abilities (aptitude). According to Kumar and Kumar (2013), experiences in an introductory business course may lead students to believe they do not possess the aptitude for a specific major, diminishing their attitude toward business and thus, their interest in pursuing a business major.

We believe that these findings parallel the results of our research. Specifically, at the conclusion of the course, students' pre-course assumptions were transformed. Students who initially had been interested in business due to the social image and prestige of business may have found that, after taking the *Introduction of Business* course, their initial lack of awareness of the effort and conceptual knowledge required to operate a successful business, resulted in doubting their aptitude for business. In turn, this may have influenced their attitude toward business, diminishing their interest in business. This possibility would be an interesting question for a future research study.

### *B. Additional Insights.*

*Experiential.* While the overall business plan was positively evaluated and the E-Pitch competition was noted for providing confidence in handling very intense situations, the marketing plan trade show was not perceived positively. Students felt that those who spent a lot of money on their poster boards received an A+; others simply stated that it was "not a winner."

Furthermore, the course covers a lot of information and some students desired more detailed guidance in completing the business plan, requesting more in-class time devoted to answering questions concerning the business plan and more focused in-class discussions on how to write a business plan. Students also suggested more guidance should be provided when preparing for the various presentations. Other suggestions concerned the “timing” of assignments. Most students felt that the E-pitch and marketing plan competitions were due too close to one another and definitely too close to when the business plan itself was due.

*Active Learning.* With respect to the use of technology, students made very positive comments about SurveyMonkey and Skype. *“The technology was great. Being able to Skype professors was really helpful; it was like extended class time.”* As a way of learning course material, there was an overwhelming preference for taking the quizzes at the beginning of each chapter, followed by the lectures that reinforced what was read in the text. One student commented, *“I liked that we have to read the chapter first because then I know what the professor is talking about.”* These perceptions by students correspond with research on developing better learning activities (Bonwell, 1991; Sutherland & Bonwell, 1996; Whetten, 2007; Wilkerson & Gijsselaers, 1996). Whetten (2007) found that when he began to give unannounced quizzes at the beginning of class to reinforce expectations the material was read, students who had not prepared not only did poorly on the quizzes, but felt left out of ‘highly interactive, engaging learning processes (p. 351).’ However, despite the positive reactions to the quizzes in this study, students felt that the technology (Respondus) used to take the quizzes had too many technical glitches that were frustrating.

Other active learning approaches appreciated by the students included theme nights, debates, the interactive class discussions, guest speakers and films; all which received positive reviews and were perceived as a way to reduce the stress felt by the continued focus on completion of the business plan. *“The programs that went on outside of the classroom helped a lot with the actual development of the business plan. Pointers were given, editing was done and examples were used to make concepts clearer.”* Such comments underscore why active learning approaches were positively acknowledged among the SIR II course perception responses.

*Cooperative Learning.* Team-based learning received a majority of positive responses, as this approach was perceived as an opportunity to gain multiple perspectives, enhance a student’s ability to work in groups and facilitate completion of a large project. According to one student’s perception, *“Working with a team really helped improve my teamwork skills. It was great working on such a big assignment with kids I have never met before.”* The positive reactions, such as this statement, to the use of teams in the course reflect the work of Siciliano (2001), who found that face-to-face interaction, positive interdependence and individual accountability were the cornerstones of cooperative learning.

The students’ reaction to peer-to-peer learning was mixed. Students found that the peer consultants to be helpful to prepare the teams for the E-Pitch competition. However, there were overwhelmingly negative responses to the peer consulting providing accounting assistance. The students’ feedback indicated that the accounting peer consultants did not know enough to properly assist with the accounting section of the business plan and appeared to volunteer only to receive extra credit. Research has shown that peer learning has many positive outcomes including enhanced comfort level when asking questions of peers rather than professors (Webb & Grib, 1967), greater support and stimulation resulting in increased motivation (Mallinger, 1998; Schomberg, 1986) and greater understanding of the material beyond memorization (Ausubel, 2000). However, it is important to note that certain conditions must exist to ensure

success. According to Slavin (1988), there needs to be individual accountability and a set of group goals or interdependency. In the process currently applied in the *Introduction to Business* course, these conditions were not evident in the peer-to-peer consulting relationships. These omissions may explain the many negative comments received and should be addressed in future courses.

In addition, cooperative learning approaches were marginally acknowledged in the SIR II perception survey. In this survey, students were asked, “*Which aspects of the course (including tests, lectures, assignments, etc.) did you find most useful?*” The question may have inadvertently limited students’ to consider only those particular aspects versus more cooperative activities such as team-based learning and peer-to-peer learning. Therefore, this poorly constructed question, not developed by the researchers, could have led students to consider lectures, quizzes and assignments more useful than teamwork.

There were several suggestions made regarding the team-based work. Students strongly believed that each team’s progress should be monitored more closely by the faculty and that final team member peer evaluations should be submitted the last day of class rather than with the business plan itself. Since the oral final and presentation are conducted after the business plan is submitted students felt “*so much happens between the time you pass in the business plan until the very end of the semester.*” Therefore, peer evaluations would be more useful if submitted later than the current due date.

## **VI. Limitations and Future Research.**

Introductory courses are always in a state of continual evolution. As evidenced from the findings and conclusions, the redesigned course pedagogies used in the *Introduction to Business* course successfully integrated learning approaches that promoted student engagement and provided opportunities for students to directly apply course concepts. Future research, however, is needed to more fully explore the inter-relationship between the three constructs: course pedagogies, retention of course concepts and development of student interest in business. It would be prudent to design an experiment in which certain sections of the introductory course are taught using solely the “chalk and talk” lecture approach and other sections apply experiential, active and cooperative learning structures in addition to lectures. A common standardized final at the end of the semester could assess the knowledge gained from each team.

Furthermore, although the number of respondents to the online survey was too low to draw solid conclusions, it was interesting to note than when the data was segmented by gender, more men ranked *cooperative learning* approaches as the second most effective, while women ranked *active learning* second and cooperative third. This finding reflects the need to assess more fully the use of teams as a form of cooperative learning at the college level. Specifically, business education has traditionally been gender imbalanced toward males. It is important to determine how gender composition of teams and team dynamics influence learning outcomes, especially when working on large projects such as the business plan project in the *Introduction to Business* course.

In addition, when asking students to rank order pedagogical approaches, the categories focused exclusively on experiential, active and cooperative activities. However, 54% of the qualitative feedback received from the SIRII course perception responses identified lectures as an important aspect of the course students found most useful. Students claimed that the lectures broadened their understanding of the material and complimented the other approaches used (especially quizzes and assignments). In this study, lectures as a pedagogical approach was not

listed as one of the categories to be ranked by the online respondents. Rankings in the future should include “lecture” as one of the categories for comparison.

Originally, this research intended to determine if the *Introduction to Business* course changed students’ opinion of their original degree choice (as selected from their admission application). The pretest and posttest survey asks several questions to determine the change in their certainty of their current degree choice along with their degree selection upon entering their first semester. The use of these responses may provide the foundation for future research to determine the effect on a degree choice of first-year students.

The use of indirect measures of student learning, such as the use of surveys that rely on student perception alone, have come under question as an effective tool for gauging actual learning. While researchers have found evidence that the actual learning of students may be significantly related to what they felt they learned (Le Rouzie, Ouchi, & Zhou, 1999) or have even exceeded perceptions of learning (Weldy & Turnipseed, 2010), it would be beneficial to incorporate direct measures of learning into the assessment process. As stated above, this could include pretest/posttest assessment of introductory concepts or standardized exams.

Finally, it would be interesting to examine the underpinnings of business knowledge and retention through qualitative analysis to uncover the links and trends. For example, does the depth of students’ pre-college backgrounds have any effect on their perceptions (pretest/posttest) of increased knowledge or interest in business? Do students whose families own family business having a greater propensity to be interested in business?

Experiential, active and cooperative pedagogical approaches in the classroom have been shown to positively impact course outcomes, including enhanced understanding of business concepts and improved knowledge retention, as demonstrated throughout this paper. It is also important to consider that more interactive course delivery integrating these approaches also heightens the professor’s engagement in the course. Implementing methods for engaging students in the learning process will continue to be a challenge, but the efforts can be rewarding and gain positive results for both students and faculty.

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## **Let's discuss: Teaching students about discussions**

**Eve Brank<sup>1</sup> and Lindsey Wylie**

*Abstract: Research consistently demonstrates the benefits of employing classroom discussions; however, there has been less attention given to teaching students about discussions. The current research compared 2 advanced social psychology courses: 1 without (control) and 1 with (experimental) a week devoted to learning about and discussing discussions. Several different indicators showed marked improvements for the experimental group as compared to the control group. The differences between the two classes were particularly noticeable at the beginning of the semester. Even though the control group was able to eventually obtain similar scores, the differences at the beginning of the semester suggest that students in the experimental group benefitted early from the experimental condition. Additionally, measures provided directly by the students demonstrated higher ratings of self-assessment and course evaluations for students enrolled in the experimental class.*

*Keywords: classroom discussion; discussion; engaged classroom; classroom dynamics; social psychology; engagement*

### **I. Introduction.**

Creating a classroom where students are not only engaged in the learning process, but also careful consumers of information, is an important task for an upper-division college instructor. More engaged students tend to have greater academic achievement, with active student involvement in classes generally increasing learning (Voelkl, 1995). A common method for engaging students is through small-group class discussions. But, do students appreciate how to lead, or participate in, discussions? Do they appreciate the importance of discussions?

Most agree that discussions are an important pedagogical tool that foster student engagement and provide a forum for deeper understanding of complex concepts, yet discussions and teaching how to lead discussions are elusive and difficult tasks (Parker & Hess, 2001). Active student-centered learning—like what occurs in small group discussions—leads to better retention of course material as compared to passive learning that is more content-centered (Yoder & Hochevar, 2005). Yoder and Hochevar (2005) added a number of teaching techniques and classroom activities to compare student exam scores as a measure of learning across a series of three semesters. Students' performance was better when they learned the material with active (e.g., discussions, simulations, completion of scales) rather than passive (e.g. lectures, reading, videos with no follow-up discussions) techniques. Casteel and Bridges (2007) noted improved student course ratings and higher general performance with student-led discussion based courses as compared to non-discussion based courses.

Specifically, students have a preference for and better course performance with student-led discussions as compared to instructor-led discussions (Phillips & Powers, 1979). Student-led discussions are seen as particularly helpful because instructor-led discussions can often fall into

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more of a lecture-style mode, but student-led discussions foster greater student-to-student interactions (Phillips & Powers, 1979) especially for students who indicate at least a moderate amount of participation (White, 1978). In particular, student-led discussions seem to increase active learning even more than instructor-based discussions. Giordano and Hammer (1999) found that when instructors interacted in student group discussions, students overly relied on the instructor's input rather than fellow students' ideas.

Despite attention to the benefits of small discussions, undergraduate students are reluctant to actively engage and have limited experience with leading discussions (Brookfield & Preskill, 1999). To address this, Giordano and Hammer (1999) encourage the use of collaborative learning groups and provide a number of helpful tips from their experiences of using such student groups, but similar to Meyers (1997) these suggestions generally involve the formation of groups, the type of task completed within the group setting, and evaluating student performance in the groups. As Casteel and Bridges (2007) note, seminar-based undergraduate classes that employ student-led discussions are heralded, yet very little is known about how to make them work well.

We could find no research that taught students the importance of discussions and the way to lead and participate in discussions as a way to improve their discussion abilities and overall class performance. Therefore, we sought to determine whether student learning and class performance would improve by focusing on "discussing discussions." In addition to simply explaining how to lead discussions, we devoted class time to discussing the purposes and importance of small group discussions. We compared outcomes for those students who received this extra information to those who did not. Based on the positive learning effects that Yoder and Hochevar (2005) found when active rather than passive learning was employed. We expected that learning about and "discussing discussions" would contribute to increased student learning and other student assessments of the course because student learning increases when students are actively involved in the process of learning (Yoder & Hochevar, 2005).

## II. Method.

### *A. Participants.*

The participants were 76 undergraduates (63% female) from the University of Nebraska-Lincoln from two different advanced social psychology classes (Fall = 34 and Spring = 42 students). All of the students were either juniors (39%) or seniors (61%), with 64% planning to pursue some form of postgraduate education. There were no statistically significant difference between semesters on either year in school or future postgraduate plans. The authors obtained human participant approval from the authors' university institutional review board prior to conducting this research.

### *B. Materials and Measures.*

The materials for the course involved four main items that will be described in detail below. The first three were used for both the control and the experimental group and the last was used only with the experimental group.

**Course text book.** We used the *Taking Sides in Social Psychology* (Nier, 2010) reader, Third Edition. This book presents 18 chapters on major topics within social psychology. Each

chapter starts with a question (e.g., “Is Deception of Human Participants Ethical?”) and includes a “Yes” and a “No” side to the question that are reprinted articles from well-known scholars in the field.

**Personality type questionnaire.** At the beginning of both semesters, each student answered three questions related to their personality type associated to discussion participation (see Appendix A). Based on their responses to those questions, we assigned the students to heterogeneous discussion groups of approximately 10 students each (see White, 1978).

**Course assessments.** We used five different course assessments that measured knowledge acquisition and opinions of the course. Four of these were the typical class assessments: two exams, one term paper, discussion scores, and anonymous course evaluations. The fifth was a self-assessment to evaluate student learning of discussions and class material.

**Exams.** The exams were a combination of multiple choice and essay questions. The same grading rubrics were used in both semesters to grade the essay question answers. These rubrics focused on the students demonstrating a deep understanding of the two sides of an issue by providing original examples, positions, and observations. Both exams had a maximum score of 100 points.

**Term paper.** The term papers required the students to write about a relevant topic of their choosing. Similar to the format of the course textbook, we instructed the students to find two empirical articles from academic journals that address the same issue, but come to different conclusions. The paper instructions asked the students to describe the research and explain why the conclusions were different. The same teaching assistant graded the term papers for both the control and experimental semesters and used the same grading rubric both semesters. The rubric focused on students’ abilities to compare and contrast the research differences and develop a new research question that could potentially resolve the differences. The maximum possible score on the term paper was a 50.

**Discussion scores.** The discussion scores were derived from the instructor’s score (6 points maximum) plus an average of two peer reviewers within the discussion leaders’ group (5 points maximum). The rubrics for these two sets of scores focused on the discussion leader’s ability to lead a good discussion, discuss two sides of an issue, and integrate different knowledge together. All small group discussions took place at the same time with the instructor and teaching assistant rotating around the classroom listening to the discussions. The maximum possible score was an 11.

**Course evaluations.** Anonymous course evaluations were conducted at the end of both courses using the standard course evaluations used at the authors’ university. We selected and compared those questions most related to the objectives of the current research. See Appendix B for question wording. For example, we did not include questions those related to whether the instructor was available for office hours and responded to emails quickly. In addition, because the evaluations are anonymous, we cannot combine the answers to these questions with the other variables.

**Self-assessment.** The self-assessment asked students twelve-questions at the end of the both semesters to evaluate the students’ knowledge related to discussions and other class concepts. See Appendix C for a list of the questions. The instructor told the students this self-assessment was not meant to be duplicative of the students’ grades in the class, but rather an honest assessment of their understanding of the course material. An overall self-assessment average score was calculated for both the experimental and control classes.

**Discussion materials.** The experimental group also read three articles about discussions, which are listed in the current reference list (Cashin & McKnight, 1986; Frederick, 1981; Nunn, 1996). We chose these articles because they were relatively easy for undergraduate students to understand and they each provided information about the importance of discussions and suggestions for leading them. Similar to the other weeks in the semester, students also completed a homework assignment about the readings. For the discussion week, the questions asked were: Based on the readings, why are discussions a positive aspect of a college class? Based on the readings and your own experiences, what kind of barriers interfere with good discussions in classes and make classes more of a “spectator sport”? Based on the readings, how will you be able to overcome those barriers when you are leading discussions this semester?

### *C. Design.*

We employed a two group comparison design with one class offered in the fall semester (control class) and one class offered in the spring semester (experimental class) of the same academic year. The same instructor and graduate teaching assistant taught both classes. Although students self-selected which semester they enrolled and were not randomly assigned to either the fall or spring semester, there are no apparent differences between students who traditionally take this course in either the fall or spring semesters.

### *D. Procedure.*

Most students typically have had an introduction to social psychology course before enrolling in advanced social psychology. As an advanced course, one of the objectives is to convey information about social psychology and to assist students in becoming engaged consumers of the material. As such, the class is organized around the concept that all the answers are not known and that reasonable people can and do disagree on major topics within the field. The class met two days per week for 75 minutes each day. The first day of each week was devoted to a general lecture that provided background information for the chapter’s specific topic area. For example, when we covered the chapter addressing whether it is acceptable to use deception in research, the instructor presented a lecture about research methods generally and ended with the specific topic of deception. The lecture included definitional information about deception, but the instructor did not describe the readings from the *Taking Sides* book and did not provide a personal opinion about the appropriateness of deception. Before the second class that week, the students were responsible for reading the assigned chapter and answering a homework assignment that focused on critical thinking about the topic area in the readings. The class would start with a short video clip on the topic of the week or current event related to the topic. Students then gathered into their small groups for discussion.

Each week there were two discussion leaders for each group and every student was a group discussion leader twice during the semester. Within their group, the discussion leaders were responsible for presenting recent research on the weekly topic, directing the discussion, and generally leading the group in developing their views on the topic. Both semesters followed the procedures described above and covered the same topics. We implemented one difference for the spring (experimental) from the fall (control) semester. For the experimental semester, we included a week at the beginning of the semester that addressed discussions and the students then discussed the role of discussions. Because of scheduling differences during the fall semester, we

were able to include this extra week in the spring without changing or removing any of the other material presented.

The experimental manipulation of focusing on discussions, which was only included in the spring semester, was introduced and discussed similar to the other class topics. On the first class of the week, the instructor presented a lecture about the notion of discussions and why discussions are used in academic settings. Prior to class on the second class of the week, the students read three academic articles about discussions. For the discussion lesson, we did not designate any specific students as the discussion leaders, but rather, the students all practiced asking questions of their fellow group members and leading parts of the discussion. As a result, the students in the experimental semester spent a full week considering discussions and discussing discussions.

### III. Results.

On average, students enrolled in the two semesters did not rate themselves statistically different on any of the three personality type questions we used to assign group membership, which suggests that students in both semesters had similar initial inclinations toward (or against) discussion activities. See Table 1 for means and comparisons between the control and experimental groups.

Because we expected students in the experimental group to be more engaged in the class, we compared our experimental and control classes on variables meant to measure student learning and other related outcomes. The results for each are described below.

**Exam and Paper Grades.** Students in both semesters took two exams that each contained multiple choice and essay questions about the lecture and discussion day materials. Using a repeated measures general linear model (GLM), there was a significant within-subjects main effect of exam,  $F(1, 73) = 30.07, p < .01, \eta^2 = .29$  and interaction between semester and exam  $F(1, 73) = 15.10, p < .01, \eta^2 = .17$ . Students did significantly better on the first exam in the experimental class ( $M = 85.22, SD = 10.12$ ) as compared to the control class ( $M = 77.65, SD = 12.73$ ), but both classes performed similarly on the second exam (Experimental:  $M = 87.00, SD = 7.97$ ; Control:  $M = 88.18, SD = 6.65$ ). Although the experimental class did not have significantly different exam scores between the first and second exam, students in the control class did significantly better on their second exam as compared to their first. There was no main effect of semester,  $F(1, 73) = 2.77, p = .10, \eta^2 = .04$ .

After removing an extreme outlier score for the term paper (grade = 5/50; student had a personal issue that interfered with completing the paper), the students in the experimental class had significantly higher average term paper grades ( $M = 36.78, SD = 4.64$ ) than did those students in the control class ( $M = 34.19, SD = 5.24$ ),  $t(73) = -2.27, p = .03, \eta^2 = .06$ .

**Discussion Scores.** As mentioned above, two peer reviewers and the instructor completed discussion scores, which combined to form the discussion score. Each student received two such discussion scores—one for the first time they led a discussion and one for the second time they led a discussion in the semester. Using a repeated measures GLM, there was a significant within-subjects main effect of discussion,  $F(1, 74) = 63.75, p < .01, \eta^2 = .46$ , but no significant interaction between semester and discussion,  $F(1, 74) = 1.98, p = .16, \eta^2 = .03$ . Students in both semesters did significantly better on the second discussion (Experimental:  $M = 10.92, SD = 0.97$ ; Control:  $M = 10.87, SD = 0.97$ ) as compared to the first discussion

(Experimental:  $M = 10.08$ ,  $SD = 0.67$ ; Control:  $M = 9.67$ ,  $SD = 0.91$ ). There was no main effect of semester,  $F(1, 74) = 2.20$ ,  $p = .14$ ,  $\eta^2 = .03$ .

**Course Evaluations.** Students completed anonymous course evaluations, as part of the normal course process. Mean ratings were significantly higher for the experimental class compared to the control class for all of the selected questions. See Tables 1 and 2 for descriptive statistics and mean comparisons for these questions. As is common with course evaluations, not all students completed these resulting in fewer responses for these measures as compared to others.

**Self-Assessments.** Using the average scores for the 12 self-assessment questions, students in the experimental class had a higher average self-assessment score ( $M = 3.78$ ,  $SD = 0.49$ ) than did the control class ( $M = 3.33$ ,  $SD = 0.76$ ),  $t(66) = -2.91$ ,  $p < .01$ ,  $\eta^2 = .11$ . Most likely because the self-assessment was not part of the students' grade, we had more missing values for this measure than others.

**Table 1. Descriptive Information for Fall (Control Group) and Spring (Experimental Group) Semesters.**

	Fall		Spring		$t(df)$	95% CI		Cohen's $d$
	$M$	$SD$	$M$	$SD$		$LL$	$UL$	
Everyone knows what I think about issues.	1.84	.88	2.11	.85	-1.27 (66)	-.69	.15	.31
I have very strong views on most topics.	2.38	.94	2.57	.93	-0.85 (66)	-.65	.26	.20
I love active classes that are not just lecture.	2.56	1.05	2.86	.99	-1.21 (66)	-.79	.19	.29

Note. All  $p > .05$ , 0-4 scale.

#### IV. Discussion.

The current study suggests that teaching about and discussing discussions may be one way for students to become more engaged and have better course outcomes. Although student-led discussions are often described as being useful pedagogical tools, there is much less known about how to make them work well (Castel & Bridges, 2007). Students in the current research performed better on some course activities early in the semester, and liked the course more when they were given the opportunity to learn and discuss discussions as compared to those students who were not provided with this opportunity. As noted by Voelkl (1995), student learning is generally increased when a class incorporates active student involvement. In the current research we incorporated active student learning by not only having students discuss course topics, but by also explaining to the students why the discussions were important and allowing the students to "discuss discussions." We believe this extra active learning component contributed to the better

student outcomes and assessments in the experimental class. Although other researchers have also seen increased performance when discussions are used in their classes (e.g., Yoder & Hochevar, 2005), we sought to further increase performance and student assessments by using an active learning technique (i.e., discussions) to teach about discussions.

**Table 2. Selected Course Evaluations Questions for Fall (Control Class) and Spring (Experimental Class) Semesters.**

	Fall		Spring		<i>t(df)</i>	<i>p</i>	95% CI		Cohen's <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			<i>LL</i>	<i>UL</i>	
Course led to active thinking	5.87	1.18	6.68	1.19	-2.67 (59)	<.01	-1.42	-0.20	-0.68
In-class exercises encouraged thinking and application	5.67	1.42	6.58	1.28	-2.63 (59)	<.01	-1.60	-0.22	-0.67
Compared to other courses, how good was this course?	4.60	2.57	6.38	0.44	-3.68 (57)	<.01	-2.75	-0.81	-0.97

*Note.* 1 -7 scale; CI = confidence interval; *LL* = lower limit; *UL* =upper limit.

Interestingly, there seemed to be somewhat of a pattern of the experimental group performing better than the control group at the beginning of the semester, but then leveling off and performing similarly by the end of the semester (e.g., exam 2 grades and discussions). This pattern may suggest that students in the experimental group were able to more easily and earlier understand the benefits of discussions, which led to greater engagement in the course at the beginning. Ceiling effects for the experimental group may be another possible explanation as the experimental group started off quite strong.

Although the experimental group's self-assessments were statistically higher than the control group's self-assessment, the experimental group on average still rated themselves within the intermediate level of knowledge. Students may have been more critical in their self-assessments in the experimental semester because they were more aware of the importance of discussions than the students in the control semester. Employing difference scores from pre-versus post-assessments could have aided in determining whether this "extra-critical" explanation is viable. Unfortunately, we did not collect such pre-assessment data from the current samples.

Clearly, the instructor was not blind to the research question and therefore some experimenter bias may have been introduced. We feel that we addressed this with the use of multiple dependent measures, some of which were variables out of the instructor's control (e.g., self-assessments). In addition, the graduate student teaching assistant did much of the grading in the course. And, although she was aware that there was a research study being conducted, she was not aware of the specific research questions or which components of the class would be used to examine possible class differences.

Some additional questions do remain from this research. First, would a younger, less experienced sample have the same effect? The current sample was all junior and senior level college students. It is possible that these more advanced students were more amendable to learning about discussions, whereas younger college students may not be or may not be able to implement yet this kind of engaged learning process. Second, did the class sizes have an effect on our dependent measures? Specifically, the fall semester (control) had eight fewer students than the spring semester (experimental). Although we did our best to keep the small group sizes as close to the same size, there were fewer students in the control class. It is possible that the number of students enrolled in the class affected our dependent variables in ways we cannot assess.

Although it is tempting as a college professor to have students participate in certain activities in our classes because “we said so,” the current study suggests that it might be useful to engage students in the reasons why we do discussions. Of course, the first step may be knowing why we teach our classes the way we do and what purpose each activity is meant to serve (Bernstein, Burnett, Goodburn, & Savory, 2006) before we can explain our reasons to our students.

## Appendices

### Appendix A. Personality Type Questionnaire

Please rate the following statements using the scale below.

0	1	2	3	4
Not at all like me				Completely like me

1. Everyone knows what I think about issues.
2. I have very strong views on most topics.
3. I love active classes that are not just lecture.

### Appendix B. Questions from Anonymous Course Evaluations

Please use the following scale to rate the statements that appear below.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree

1. The course led you to engage in active thinking about the subject or its application.
2. The in-class exercises encouraged you to think about and apply the class material to real-world issues.
3. Compared to other courses you’ve taken at this level, how good was this course?

Note: These are a selection of the questions that are used each semester by the department in which they authors teach.



## Appendix C. Self-Assessment Questionnaire

Students answered these twelve questions using the following scale:

1	2	3	4	5
Little or no	Beginning	Intermediate	Advanced	Expert

1. Rate your ability for reading and understanding a social psychology journal article.
2. Rate your ability for writing a critique of a journal article.
3. Rate your ability for leading a class discussion.
4. Rate your ability for writing exam questions.
5. Rate your ability at critiquing or assessing a discussion led by another person.
6. Rate your ability for finding empirical social psychology articles.
7. Rate your ability for comparing two viewpoints on social psychological issues.
8. Rate your ability for recognizing social psychological issues in everyday life.
9. Rate your general knowledge of social psychology.
10. Rate your ability for recognizing two viewpoints on social psychological issues.
11. Rate your ability to critically think about social psychology topics.
12. Rate your overall understanding of research in social psychology.

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## **Influence of presentation handout completeness on student learning in a physical therapy curriculum**

**Erika Nelson-Wong<sup>1</sup>, Heidi Eigsti, Amy Hammerich, Nicole Ellison**

*Abstract: Students and faculty have disparate opinions on how complete lecture materials should be to optimize learning. The purpose of this study was to investigate the influence of lecture handout completeness and content area on Doctor of Physical Therapy student recall/retention in foundation level courses. These findings suggest there may not be a best practice for lecture slide completeness and may be course/content dependent. In this study students performed better with complete handouts in physiology and research courses and with less complete handouts in biomechanics.*

*Keywords: PowerPoint, Lecture Format, Health Science Education*

### **I. Introduction.**

There are consistent discrepancies between physical therapy student and faculty attitudes and beliefs regarding the completeness of lecture/presentation material provided to students. Anecdotal evidence gathered through informal surveys of students enrolled in the Doctor of Physical Therapy (DPT) program at Regis University suggest that students have a preference for access to complete presentation slides/handouts prior to and during the actual teaching sessions. Student comments on course and faculty evaluations also reflect this preference. Informal discussions that provided motivation for this study indicated that some students' rationale for this preference is note taking during a presentation interferes with their ability to listen, and they are afraid of missing critical information. An informal survey of faculty in the School of Physical Therapy indicates a conflicting belief that note taking, rather than interfering with understanding, helps support student learning through the process of encoding information. In addition, some faculty members believe that providing incomplete presentation slides/handouts facilitates student engagement and encourages class participation. These anecdotal findings are in accordance with what has been published in the literature, where survey studies have shown dissonance in faculty/student beliefs surrounding handout completeness (Marsh & Sink, 2010; McClennan & Isaacs, 2008). Many investigators have found the majority of students prefer to have access to course presentation materials prior to classroom sessions (Marsh & Sink, 2010; Murphy, Gray, Straja, & Bogert, 2004; Yilmazel-Sahin & Oxford, 2010); however, few studies have investigated the influence of access to incomplete or complete handouts on learning outcomes (Achterberg, Duquiane, Huebbe, & Williams, 2007; Larson, 2009). Furthermore, few studies in this area have focused on graduate education (Yilmazel-Sahin & Oxford, 2010), and even fewer have been conducted in the area of physical therapy education.

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### *A. Traditional Lecture Presentations in Physical Therapy Education.*

Traditional lecture presentations are not the primary instructional method employed in most physical therapy programs; however, some lecture presentations are frequently used (Willett, Sharp, & Smith, 2008), especially in foundation level courses, to introduce new concepts and provide background/basic knowledge that is necessary for students to advance to higher level application and synthesis activities. While traditional lecture may comprise a part of the content delivery in a course, it is important to understand that this may not be the most effective instructional strategy and should be used sparingly (Day, 1985; Hyland, 2010; Lake, 2001; Sellheim, 2006; Venglar & Theall, 2007; Wait et al., 2009; Wong & Driscoll, 2008). Many studies have been conducted investigating differences between teacher-centered (passive lecture) and student-centered (active learning) instructional approaches, and it is well accepted that an emphasis on student-centered learning is preferred (Day, 1985; Hyland, 2010; Lake, 2001; Sellheim, 2006; Venglar & Theall, 2007; Wait et al., 2009; Wong & Driscoll, 2008). However, traditional presentation style lectures are still often used, as one instructional component, particularly to present basic content in foundation science courses (Brahler, Quitadamo, & Johnson, 2002; Maring, Costello, & Plack, 2008; Sellheim, 2006). Ideally, traditional presentations comprise only a part of the content delivery, with case studies, facilitated group discussions, and hands on activities used in subsequent sessions to apply and reinforce concepts and promote critical thinking (Brahler et al., 2002; Chester, 2011; Zipp, 2010). Regardless of whether a classroom session is based around traditional lecture or more interactive activities, the use of visual materials such as PowerPoint slides has become ubiquitous. In the context of a traditional teaching presentation, the main purpose of PowerPoint slides is to guide and provide structure for the presentation, and ultimately clarify main concepts with the goal of improving student understanding (Achterberg et al., 2007; Brown & Manogue, 2001; Hill, Arford, Lubitow, & Smollin, 2012). In the Regis University School of Physical Therapy curriculum, PowerPoint slides are routinely used as described for the purpose of providing structure to a lecture presentation.

### *B. The Role of Note Taking.*

Students rely heavily on notes taken during a class session to study from later, and typically instructors expect that students are taking notes during class sessions, especially when a traditional presentation format is being used. It has been suggested that note taking enhances learning through the process of encoding information and providing a record for students to refer to later during studying (DiVesta & Gray, 1972). It has also been shown that college students do not always take quality notes, and that as little as half of the critical information from a presentation may be recorded (Anderson & Armbruster, 1991). Different formats and methods for content delivery have been proposed to address the potentially competing goals of facilitating student engagement and encoding and allowing for an accurate and complete record of the content. Providing an outline or incomplete notes to supplement a teaching presentation has been suggested to help guide the student in note taking while facilitating encoding (Katayama & Robinson, 2000; Kiewra, 1985a). While providing a complete set of notes to students solves the problem of students not having an accurate external record for study (Kiewra, 1985a, 1985b), some faculty believe that this method may reinforce passive modes of learning and student disengagement.

### *C. Differences in Undergraduate, Graduate and Health Sciences Students.*

Most of the empirical research surrounding this topic has been done with a focus on undergraduate students, and therefore these findings may not generalize to physical therapy students enrolled in graduate programs. Yilmazel-Sahin and Oxford (2010) compared perceptions of graduate and undergraduate students in a teacher education program regarding completeness of handouts (downloadable presentation slides) accompanying traditional lecture presentations. It was determined that undergraduates took fewer notes than graduate students when handouts were provided, and also experienced greater stress when handouts were not provided. Graduate students reported using handouts to prepare for class in advance and stated this enabled them to engage with the course material more deeply. Graduate and undergraduate students alike reported both learning and note taking were improved when incomplete, guided outline handouts were provided compared to when complete handouts or no handouts were provided. The Yilmazel-Sahin and Oxford study was limited to the investigation of students' perceptions and did not empirically test the impact on learning of different handout/slide formats.

While studies comparing instructional methods are prevalent in the physical therapy education literature, no studies were found that investigated the influence of varying completeness levels of instructional materials on physical therapy student performance. One study conducted with dental students showed a preference for visual and read/write learning modalities, indicating higher satisfaction with incomplete Power Point presentations that necessitate note taking (Murphy et al., 2004). Unfortunately, this study did not evaluate the relative effectiveness of different slide presentation formats on student learning.

### *D. Purpose and Hypotheses.*

The question of how to optimize teaching presentations to best facilitate student learning is certainly not new. However there remains a lack of empirical research, specific to the physical therapy student population, to guide educators in best practices for designing traditional teaching presentations and access to presentation handouts. The primary purpose of this study was to investigate whether presentation handout completeness influences learning in entry-level DPT students. Also of interest was whether handout completeness would impact immediate recall and longer-term retention of concepts. Finally, we aimed to investigate potential interactions between presentation handout completeness and course content. We hypothesized that less complete presentation handout formats would result in better learning, demonstrated on both immediate recall and longer-term retention quiz performance, than complete presentation handout formats. We also expected that the influence of presentation handout completeness on quiz performance would be similar between courses.

## **II. Methods.**

This was a repeated measures, counterbalanced experimental design. Three School of Physical Therapy faculty members, each with primary responsibility for a foundation science course, as well as an Instructional Designer for the Regis University Rueckert-Hartman College of Health Care Professions participated in this study. The courses included: Management Applications of Physiology 1 (MAP1), Critical Inquiry (CI), and Biomechanics (BIOM). These courses were selected for inclusion in the study as they are lower division courses taken during the first term

of the DPT program, contain foundation science level information, and the course structures all include traditional lecture presentations as a portion of the content delivery. The Regis University School of Physical Therapy curriculum follows the Normative Model of Physical Therapist Professional Education (*A Normative Model of Physical Therapist Professional Education: Version 2004*, 2004) and is therefore expected to be similar and comparable to other physical therapy programs.

#### *A. Subjects.*

A cohort of 66 entry-level DPT students beginning the first term in the School of Physical Therapy at Regis University were included in this study. Students in this program complete all of their coursework as a cohort, and take all classes together (no sectioning). The Regis University IRB determined the study to be exempt (assessment using standard educational practices) and therefore did not require consent to be obtained. Students were informed through standard statements in their course syllabi that Regis University faculty have an ongoing interest in investigating the effectiveness of instructional methods, and that quiz and test scores might be used for research purposes with all data de-identified. Signed learning contracts were obtained from each student, indicating agreement with course learning objectives and evaluative activities.

#### *B. Study Protocol.*

PowerPoint presentation slides were provided to the students prior to the class session as downloadable handouts, and were organized in the following manner. The three levels of handout completeness were: complete, fill in the blank, and incomplete. Complete handouts were defined as PowerPoint slides that contained all concepts for the presentation with no new information introduced verbally by the instructor, these handouts exactly mirrored the presentation slides. Theoretically, note taking would not be necessary and students would be free to listen to the instructor without the distraction of note taking. Fill-in-the-blank handouts were defined as PowerPoint slides that were 75% complete, with selected blanks, indicated by an underline, where students would need to fill in a missing word or concept. Incomplete handouts were defined as PowerPoint slides that contained 50% of the information for the presentation, necessitating note taking to fill in content gaps and expand upon concepts. These handouts were typically constructed as bullet-point headings, requiring the students to fill in additional information. Representative examples of the three-slide/handout formats are included in Appendix 1. All handouts of presentation slides were posted on a web-based learning management system (ANGEL) a minimum of 24 hours prior to the teaching session per standard SPT policy. Additional readings (journal papers and/or textbook) were recommended for each class session in the respective course syllabus. This study did not track student adherence with completing the additional readings.

Each of the three faculty members selected three sessions within their respective course for inclusion in the study, and provided a standard 50-minute presentation for each session, one each of the three PowerPoint formats (complete, fill in the blank and incomplete) for a total of three presentations in each of the three courses. The format for the first presentation was randomly assigned to each course, and subsequent order was counterbalanced to ensure that each course used a different order for the three formats to minimize order effects. Table 1 contains the topic area and presentation format that was used for each course.

**Table 1. Topic areas for each course and counterbalanced presentation order.**

<b>Management Application in Physiology I (MAP 1)</b>	<b>Critical Inquiry (CI)</b>	<b>Biomechanics (BIOM)</b>
Complete Physiologic Responses to Exercise	Fill in the Blank Evidence Based Practice	Incomplete, Bone Biomechanics
Incomplete Metabolism	Complete Levels of Measurement	Fill in the Blank, Hip Biomechanics
Fill in the Blank Neuromuscular Physiology	Incomplete Comparison Between Means ( <i>t</i> -test)	Complete, Thoracic Spine Biomechanics

Any information that was missing in the handout was provided during the class session providing the students the opportunity to take notes during the session. The Instructional Designer reviewed the handouts and slides prior to each session to ensure they met the criteria/definitions for each given format and to attempt to minimize disparity in handout/slide construction between faculty members.

The dependent variables for this study were performance on immediate recall and longer-term retention quizzes (percent correct). Quizzes consisted of five to seven multiple choice questions administered with fill in the bubble answer sheets. Quiz questions were written at the comprehension, application, analysis and synthesis levels, similar to expectations for examination questions within each of the three courses (Appendix 2). Immediate recall and longer-term retention quizzes were given for each slide format and consisted of the same questions presented in a different order. Immediate recall quizzes were given directly following the presentation, and longer-term retention quizzes were given at the start of the next course session (between two and seven days later). Quizzes were reviewed in advance by the Instructional Designer to help ensure the questions for each course and slide format were similar in design and level of difficulty. The timing of quizzes was not disclosed to the students in an attempt to prevent confounding effects of differences in advance preparation. The students were told that the quizzes were for the sole purpose of faculty feedback on student learning and were not counted towards the student's course grade.

Quiz scores (percent correct) were entered into a 3x3x2 within factor ANOVA, with factors of slide format (three levels: complete, fill in the blank, incomplete), course (three levels: MAP1, CI, BIOM) and quiz timing (two levels: recall, retention). Students who were absent from a class and missed a quiz had their data excluded from the analysis. Significance criterion was set at  $\alpha = .05$ . Pairwise comparisons using *t*-tests (with Bonferroni adjustment for multiple comparisons) were used for *post hoc* analyses when necessary. Statistical analyses were performed using SPSS version 18.0 (IBM, Amonk, NY).

### **III. Results.**

Of the 66 students in the cohort, 14 were excluded due to class absences, leaving a sample of 52 students. The number of students that were absent for a given session varied from zero to three, with an average absentee rate of 2.3%. The student cohort was 45% male. 70% were in the 20-25

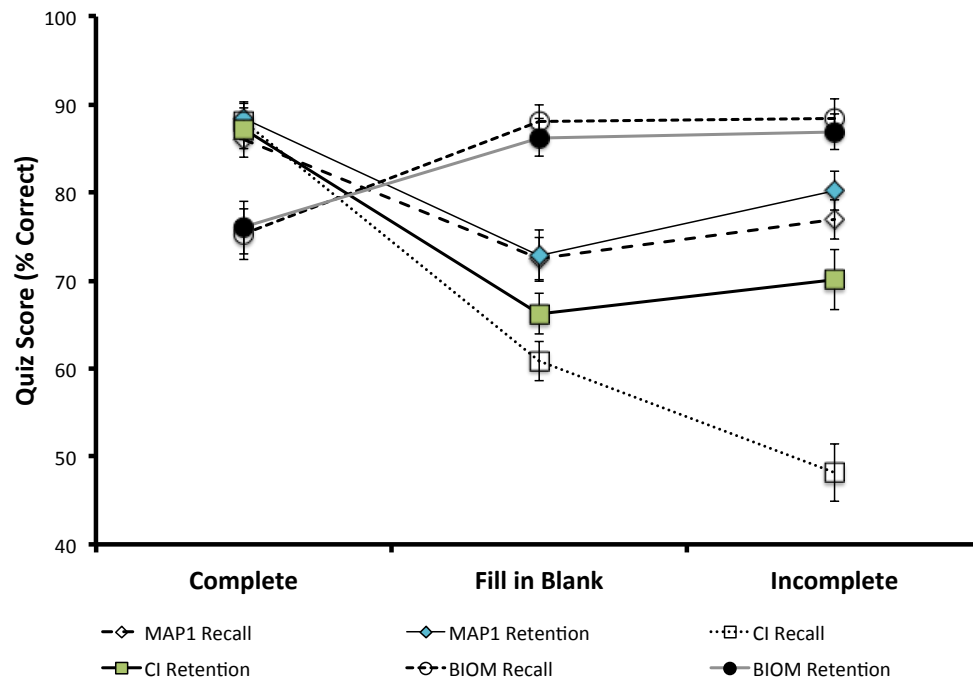
year age bracket, 23% in the 26-30 year age bracket, and the remaining 7% were older than 30 years. Summary descriptive statistics for recall/retention quiz performance (% correct) for each of the three slide formats in the three courses are provided in Table 2.

**Table 2. Recall and retention quiz results for each slide format for the 3 courses.**

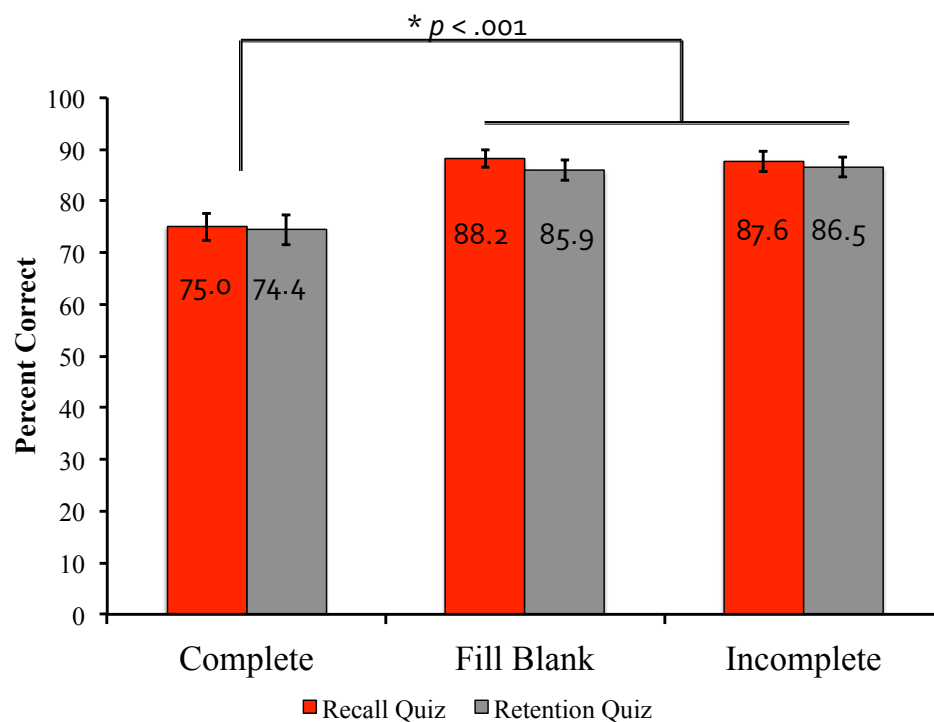
<b>Course</b>	<b>Handout Format</b>	<b>Recall % Correct Mean (SD)</b>	<b>Retention % Correct Mean (SD)</b>
<b>Management Applications in Physiology 1 (MAP1)</b>	<b>Complete</b>	86.0 (14.3)	88.5 (12.7)
	<b>Fill in the Blank</b>	72.5 (17.4)	72.8 (21.4)
	<b>Incomplete</b>	76.9 (15.8)	80.2 (15.8)
<b>Critical Inquiry (CI)</b>	<b>Complete</b>	88.1 (15.0)	87.3 (16.8)
	<b>Fill in the Blank</b>	60.8 (16.3)	66.2 (16.6)
	<b>Incomplete</b>	48.1 (23.5)	70.1 (24.6)
<b>Biomechanics (BIOM)</b>	<b>Complete</b>	75.3 (21.0)	76.0 (21.5)
	<b>Fill in the Blank</b>	88.1 (13.7)	86.2 (15.4)
	<b>Incomplete</b>	88.5 (15.7)	86.9 (14.5)

There was a significant 3-way interaction between handout format, course, and quiz timing ( $F_{4,204} = 9.652, p < .001$ ). There were also significant 2-way interactions between course and handout format ( $F_{4,204} = 42.3, p < .001$ ) and course and quiz timing ( $F_{2,102} = 12.6, p < .001$ ). To investigate the interactions of interest, nine pairwise comparisons were made using paired  $t$ -tests for each. Students performed best with the complete slide format, in both immediate recall and longer-term retention, in the MAP1 and CI courses, while they performed worst with this format for the BIOM course. Student performance on immediate recall was significantly different in all three courses for fill-in-the-blank; however, longer-term retention scores were similar between MAP1 and CI. Immediate recall quiz scores were also different between all three courses for the incomplete handout format, with the only difference persisting on longer-term retention being between CI and BIOM. Immediate recall and longer-term retention quiz scores were stable with all three handout formats for both MAP1 and BIOM, as well as for the complete handout format for CI. In the CI course, students improved in their longer-term retention quiz scores for both the fill-in-the-blank and incomplete handout conditions. The 3-way interaction is shown in Figure 1. For clarity, Figures 2 - 4 depict the findings by each course.

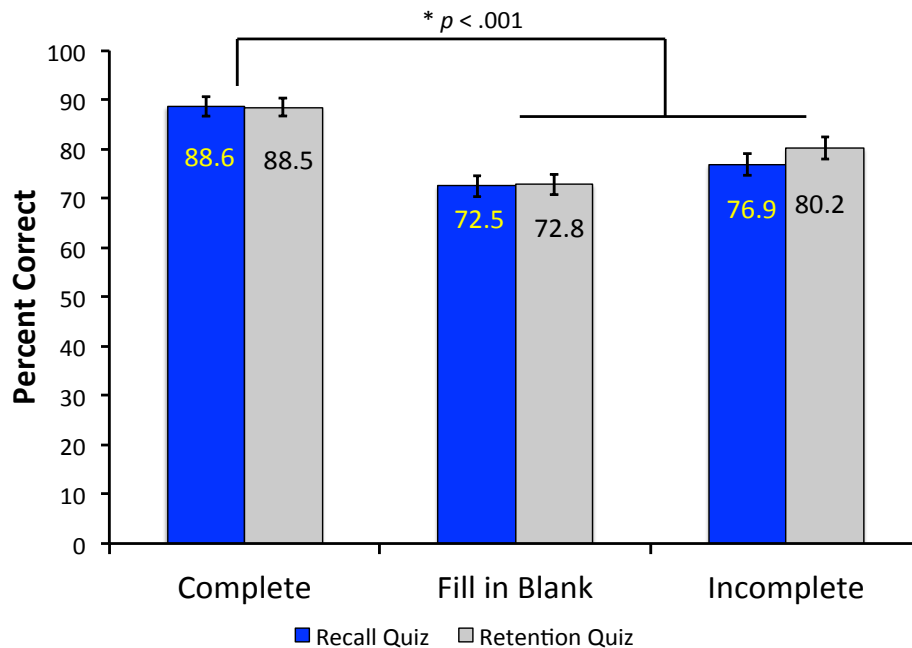




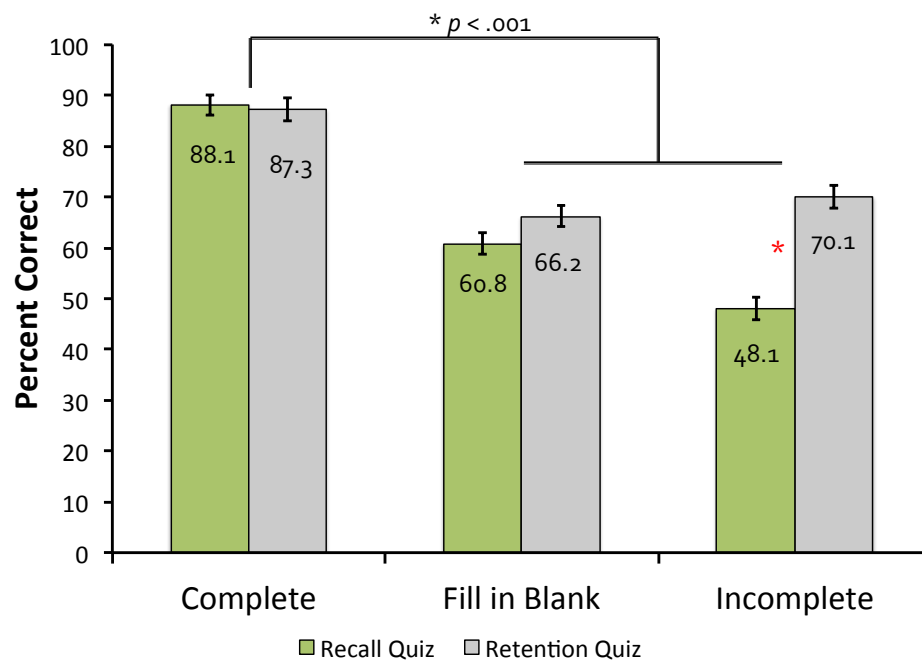
**Figure 1.** The 3-way interaction between course (Management Applications in Physiology 1 [MAP1], Critical Inquiry [CI], Biomechanics [BIOM]), handout/slide format (Complete, Fill in Blank, Incomplete) and quiz timing (Recall, Retention).



**Figure 2.** Recall and retention quiz results between handout/slide formats for the Biomechanics (BIOM) course.



**Figure 3. Recall and retention quiz results between handout/slide formats for the Management Applications in Physiology 1 (MAP1) course.**



**Figure 4. Recall and retention quiz results between handout/slide formats for the Critical Inquiry (CI) course.**

#### **IV. Discussion and Conclusion.**

The primary purpose of this study was to investigate whether presentation handout completeness influenced learning, assessed by performance on immediate recall and longer-term retention quizzes, in entry-level DPT students with an additional consideration for the influence of differing course subjects. Our hypothesis that students would perform in similar ways regardless of the course, with less complete handout formats being optimal, was rejected as students showed reverse patterns of performance between BIOM and MAP1/CI courses.

It was a surprise in the current study to find differences in student recall and retention between course content areas and handout completeness. In a similarly designed study, Larson (2009) found the highest student recall occurred when incomplete handouts were used, and the lowest recall with complete handouts. These findings were in a different student population, undergraduate business students, and the study was conducted within the context of a single course topic area, learning negotiation skills. The current findings suggest that there may not be a single best practice for handout completeness, and it may vary by type of course or by instructor. A major limitation of the current study design is that differences due to individual instructor presentation styles cannot be separated from differences due to course content. Although efforts were made to ensure that presentation slides and corresponding handout construction were similar between courses, it is certain that presentation delivery was not identical. Additionally, these findings are from one student cohort at a single institution, and while physical therapy students and curricula between institutions are expected to be similar, differences cannot be ruled out which may limit the generalizability of these findings. Another limitation of the study was the length of the quizzes, with only five to seven questions on each quiz. Other studies that have used quizzes to assess learning of concepts have used a similar number of items as this study (FitzPatrick, Finn, & Campisi, 2011; Larson, 2009). Because each quiz only covered concepts from a single 50-minute lecture, the authors felt that the number of items was appropriate for the amount of information covered. The influence of student learning style preferences is not included in the current findings. These data, as well as qualitative data obtained from student and faculty focus groups and surveys, are being analyzed separately as a second aim to this overall research project.

The topic areas that were selected by the instructors for inclusion in the study were mainly ‘concept based’, so although BIOM and CI (a course that includes statistics) were included in the study, those presentations did not emphasize equations or mathematical problems. However, concepts presented in MAP1 and CI (evidence based practice, physiological responses) may have been more conceptually abstract than the BIOM content (biomechanics of tissues and specific body regions), which tended to be very literal and concrete, and this could have had an influence on student response. It was encouraging to find that immediate recall and longer-term retention performance were stable for MAP1 and BIOM courses, regardless of the handout format used. Additionally, complete handouts which appeared to be optimal for students in the CI course, resulted in stability between immediate recall and longer-term retention quiz scores. It is possible that students in CI recognized they had performed very poorly on the immediate recall quiz with the incomplete handouts, and engaged in additional review/study of the concepts independently prior to the subsequent class session and retention quiz. These findings suggest that once instructors determine the most effective presentation and handout format for their particular course content, they can be fairly confident that student learning can be optimized in both immediate recall and retention.

Health science educators who teach foundation level curricular content that may be considered to be more abstract or conceptual might find that student learning is enhanced when presentation handout materials have a higher level of completeness. Educators who teach more concrete, problem-based content might improve student performance by providing less complete presentation materials. Given that it is impossible to parse out the influence of instructor style from this study, educators are encouraged to be aware that there may not be a single best practice regarding completeness of presentation materials provided to students a priori. Student learning in response to different presentation and handout formats can be easily assessed through pop-quizzes as a method of ascertaining what the best practice for an individual instructor and student group may be. This can be accomplished by developing handout materials that differ in level of completeness for different teaching sessions (or for sub-sections within the same session), followed by a short quiz over the content that was covered. Comparisons can then be made to provide insight into the most effective approach for the particular course, student cohort, and instructor combination. Because the immediate recall to longer-term retention performance was fairly stable within each course in this sample, it may not be necessary to assess both conditions to determine the best approach.

In conclusion, findings from this study provide evidence that physical therapy student learning varies with level of completeness of supplemental handouts as well as course content/instructor. Incomplete presentation handouts where students are required to fill in missing information through note-taking may be best utilized in concrete, problem-based courses such as biomechanics/kinesiology. Complete presentation handouts that allow students to write less and therefore be more engaged in listening may be best for courses that include a greater degree of abstract or conceptual topics such as physiology/health and wellness applications and evidence-based practice/research methods/statistics. Ultimately, educators should examine the effect of their own presentation slide and related handout format on student learning, particularly if they engage in teaching multiple content areas.

### **Acknowledgments**

The authors would like to thank the students of the Regis University School of Physical Therapy Class of 2014 for their participation in this study.

## Appendices

### Appendix 1. Representative Examples of the Three Handout Formats

Example Fill in the Blank Slide/Handout – Biomechanics (BIOM), Hip Biomechanics

#### Angle of Torsion

- ★ Transverse Plane

- ★ Long axis of femoral head to transverse axis of femoral condyles

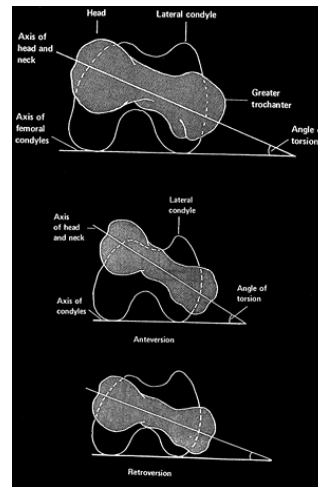
- ★ Adults – typically \_\_\_\_°
  - ★ Can range from \_\_\_\_°

- ★ *Anteversion* – angle > \_\_\_\_°

- ★ \_\_\_\_ rotation of femur

- ★ *Retroversion* – angle < \_\_\_\_°

- ★ \_\_\_\_ rotation of femur



Example Incomplete Slide/Handout - Management Applications in Physiology I (MAP1), Metabolism

#### From an Energy Transfer Standpoint: What Limits Physical Activity?

- Exercise **intensity** and **duration** depend on the ability of the cells to
- What are some other limiting factors?

## Example Complete Slide/Handout – Critical Inquiry (CI), Levels of Measurement

Measurement	
Nominal	Ordinal
<ul style="list-style-type: none"><li>• Least sensitive</li><li>• Naming, categorizing (grouping) data</li><li>• Have no relationship with each other</li><li>• Ex: Name of states</li></ul>	<ul style="list-style-type: none"><li>• Add magnitude to the categorization</li><li>• Ranking or order</li><li>• Doesn't indicate to what degree they are ranked</li><li>• Ex:<ul style="list-style-type: none"><li>◦ Professor: Assistant, Associate, Full</li><li>◦ Manual Muscle Testing</li></ul></li></ul>

### Appendix 2. Example Quiz Questions for Each of the Three Courses

#### Biomechanics (BIOM)

A retroverted hip will result in a \_\_\_\_\_ femur during gait, in order to keep the femoral head in the acetabular cavity.

- a. abducted
- b. adducted
- c. internally rotated
- d. externally rotated**

#### Management Applications in Physiology I (MAP1)

What are the 2 determining factors of fuel source in metabolism

- a. Intensity and skill
- b. Genetics and training
- c. Time of activity and skill
- d. Intensity and time of activity**

#### Critical Inquiry (CI)

Researchers investigated whether the type of stretching (dynamic vs. static) and the presence of warm up (warm-up vs no warm up) effects the strength of the hip musculature (Manual Muscle Test) in female collegiate soccer players. What is the level of measurement for the dependent variable?

- a. nominal
- b. ordinal**
- c. interval
- d. ratio

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## **A novel approach for practitioners in training: A blended-learning seminar combining experts, students and practitioners**

**Vicky J. Meretsky<sup>1</sup> and Teresa A. N. Woods<sup>2</sup>**

*Abstract: A joint student and professional practitioner seminar used distance technology to allow remote experts to present to, and remote practitioners to participate in, a university-based learning experience. Participants were professional practitioners from the US Fish and Wildlife Service who were mandated to receive training and on-campus graduate students in environmentally focused programs who were enrolled for credit. Seminars providing training in high-demand or cutting-edge topics may be especially valuable to practitioners outside the university in business, agency, or organization positions, if they can attend as distance learners. Such classes create opportunities to bring students and professionals together to interact with expert presenters, who may present from distant locations. Presenters model expert thinking for students and engage them in discussions in which they practice such thinking. Students gain additional insight into their field of practice by observing interactions between practitioners and presenters, as well as by working directly with practitioners, in discussions and, potentially, in assignments. As a result, at little cost to any participant, students are engaged in authentic learning that is not regularly available in a classroom setting and practitioners gain access to a series of experts as well as access to student views and, potentially, student work. Instructors must relinquish considerable control of some aspects of the learning environment, but as mediators can increase the value-added aspects of sharing the class with professionals. Professional programs seeking to prepare students for professional practice often combine both more traditional classroom learning and experiential learning during thesis preparation, service learning or internships. Seminars such as this provide a valuable addition to this mix.*

*Keywords: professional training, reflective practice, distance teaching and learning, cognitive apprenticeship, experiential learning, decoding*

### **I. Introduction.**

The training of practitioners, traditionally undertaken through apprenticeships, and the training of scholars, traditionally undertaken through university degrees, come together in the training of professional practitioners. Practitioners-in-training are scattered throughout the academy in schools of business, public administration, engineering, nursing, social work, education, law, design, as well as in professional programs in the applied sciences. Practice—the experience of *doing* of things—has long been recognized as distinct from and important to content-based education (Dewey, 1938).

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Professional practice requires integrating factual information with a nuanced appreciation of the context in which that information is to be brought to bear. The ability to apply the appropriate information in the appropriate way has been considered a form of art (e.g., Schön, 1987). Perhaps for this reason, professional practice is often considered part of the “hidden curriculum,” a phrase first used to connote a wide range of behaviors and mores that are not taught explicitly (e.g., Snyder, 1970) and that may be less easily seen and adopted by some student than by others, depending on their backgrounds. Although much of the hidden-curriculum debate focuses on concerns for students disadvantaged and discouraged by unspoken rules, among educators in medical and pharmacological fields in particular, the phrase describes aspects of professional practice and behavior that may not be made explicit in academic training, in parallel with Schön’s (1987) discussion (Bradley, Steven, & Ashcroft, 2011; Jaye, Egan, & Parker, 2005; Masella, 2006). Another conception of this need to learn by practicing is the notion of *cognitive apprenticeship* (Collins, Brown, & Newman, 1989). Collins et al. (1989) defined apprenticeship as “embed[ding] the learning of skills and knowledge in their social and functional context” (p. 454). Ideally, the training of practitioners results in students who have a good start in this art and sufficient understanding of the undertaking to direct their own learning and advancement, as Schön’s phrase, *reflective practitioner*, suggests.

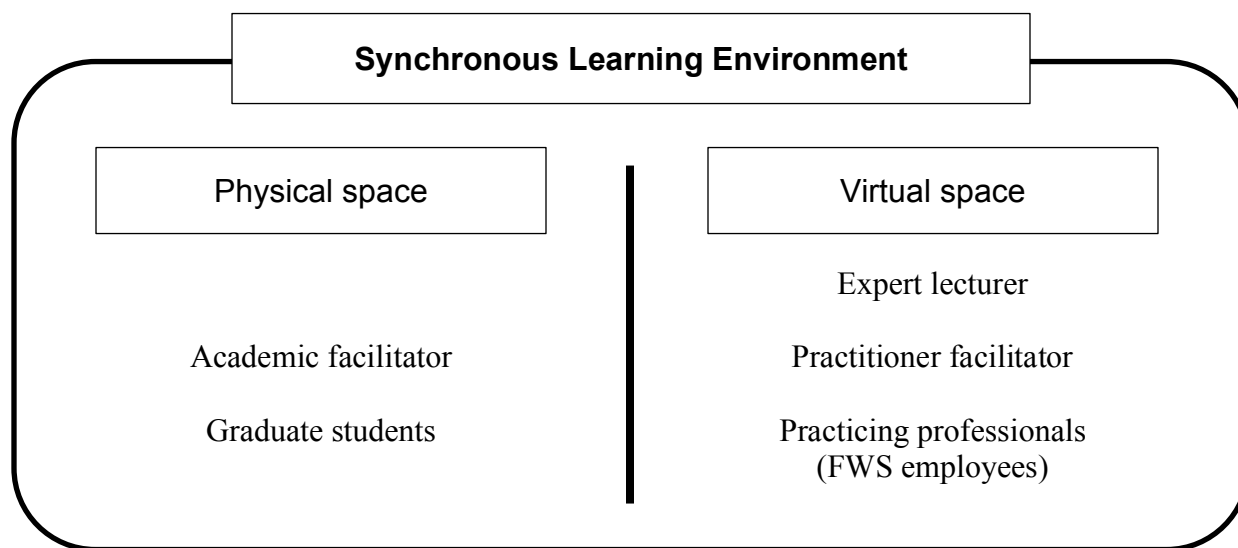
The teaching needs that Schön set out in *Educating the Reflective Practitioner* are echoed in Pace and Middendorf’s *Decoding the Disciplines* (2004). Although Pace and Middendorf discuss training students to become experts in academic disciplines, an analogous process that might be called *decoding the practices* is clearly called for in training practitioners and indeed is an apt paraphrase of the approach advocated in Schön (1987).

Traditional university courses teach requisite academic skills and subjects, but in isolation these lack the context and synergy needed in order for student to become practitioners. Internships, project-based classes, and service-learning classes provide opportunities to work with one or more communities of practitioners and these may or may not provide explanations of practice or opportunities for reflection concerning practice. As a faculty member (author1) and an agency practitioner (author2), we created a graduate seminar designed to provide training, in a cutting-edge topic, simultaneously to graduate students in a traditional classroom and practitioners from a federal agency who attended remotely. In bringing these two groups together in a seminar we created what Lave and Wenger (1991) have termed a *community of practice*: a group that comes together to focus on gathering and sharing knowledge on particular aspects of practice in a professional field. *Situated learning* (Lave & Wenger, 1991; Resnick, 1989), *cognitive apprenticeship* (Collins et al., 1989) and *experiential learning* (Kolb, 1984) are all aspects of cognitive learning that stress the importance of experience and authenticity for effective learning.

In this case study, we discuss the value-added aspects, beyond standard course content, that this combination afforded graduate students who were in training to become professional practitioners. We describe the aspects of experience and authenticity our course format provided and explore ways to increase opportunities for reflection in future iterations. We discuss the course practices and outcomes in the context of distance learning and blended learning and describe the role of instructor-facilitators in enhancing the learning opportunities of the course and in maintaining a sense of presence for all participants.

## II. Background and Methods.

In 2007, the US Fish and Wildlife Service (FWS) directed its various regions to provide training to many of their regional wildlife managers and biologists on the topic of climate change. The mandate specifically directed that training was to include more just a handful of staff, so that an in-depth understanding of climate change would rapidly become widespread in the agency. Region 3 (the Upper Midwest) sought to provide such training in a way that would avoid contributing to climate-change by transporting staff, possibly repeatedly, to some common learning site. To that end, author2, from Region 3, contacted author1 at the School of Public and Environmental Affairs at Indiana University to investigate the possibility of a combined seminar that would train both graduate students from the university and agency personnel from the Region. In addition, we sought to eliminate most expense and travel (and its accompanying impacts on climate change) by having experts present from their home locations. Similarly, although one practitioner who lived nearby usually attended the class in person, the remaining practitioners participated individually and in groups from across the Region via electronic and telephone connections. Figure 1 diagrams the resulting synchronous learning environment.



**Figure 1. Components of the blended-learning seminar.** The physical space was an on-campus classroom. The virtual space was an Adobe Connect session with a toll-free conference telephone line to permit synchronous question-and-answer and discussion. An expert lecturer led lecture-discussions remotely; the facilitators, together, guided discussions.

To accommodate the FWS practicing professionals, the class met once each week, for 2.75 hours. Typically, an expert speaker discussed some aspect of climate change for the first 1.25 hrs, including discussion with students and practitioners which we both facilitated. After a 15-min break, the last 1.25 hr was used for a discussion, again facilitated by both of us, of primary literature we had chosen to complement but not duplicate the expert's material. Distant expert speakers used Adobe Connect and a toll-free telephone line provided by the FWS to share PowerPoint presentations with the classroom and with remote practicing professionals who participated from a distance. Facilitators used the same system to present the reading under discussion in the second part of the class.

AdobeConnect is a desktop-sharing program that allows users to exchange control of the screen. Distant experts could control their PowerPoint and other materials themselves. There is also a Chat window that allows participants to type questions or comments during presentations without stopping the flow of the presentation. We encouraged presenters to use the setting that put their presentation on the full screen while instructor-facilitators used the setting that showed presentation and Chat. In this way, presenters were not distracted and facilitators could interject with questions from Chat or from the classroom at appropriate pauses. Reading discussions, being less formal, used Chat less, with distant participants commenting over the telephone.

Each speaker was given a short training session in the week before their presentation to assure that software issues were minimized and to discuss the logistics of speaking “blind” – without visual contact with the audience. Due to their other duties, the number of practitioners varied from week to week. The phone link was piped into the classroom through an audio link with the toll-free line, and remote attendees and expert presenters used speaker-phones.

Author1 attended all classes in the classroom, serving as a facilitator and coordinator during expert presentations and as facilitator during discussions of primary literature. Author2 attended all classes on the phone link and facilitated and amplified practitioner comments and discussion. Remote participants contributed to discussion either by telephone or by typing questions into the Chat window. Due to the large and varying number of practitioners attending, we did not use video of participants at all during the class.

The format required front-end time to learn the online technology and set up the slate of expert speakers, but most other aspects of the course occurred at a moderate pace throughout the semester. Overall, the time needed to prepare and present the course was not more than and was possibly less than would have been required for a traditional lecture/seminar combination.

Our primary aim in developing the seminar was to provide students and practitioners alike with information about impacts of climate change on fish and wildlife conservation, through presentations by experts from academia, agencies, and NGOs. We hoped that having both students and practitioners in the audience would enrich discussion and that each audience group would benefit from the knowledge of the other. Seminars, owing to the importance of discussion, already involve collaborative learning. Because this format was, so far as we know, entirely novel, we did not know how learning in this format might differ from more traditional academic seminars. In particular, we were aware that differences among the audience subgroups, both in their prior knowledge and experience and in their methods of experiencing the course, might affect the modes of learning and the nature of the knowledge learned.

We, the authors, spoke weekly during the course, discussing and reflecting on the nature of the interactions and learning observed as the course progressed. We realized that the learning environment we had created was providing a useful window for our students into the world and practice of our practicing professionals, as well as into climate-change science. We began to ask professionals who were commenting during question-and-answer and discussion periods to explain the contexts in which they applied climate-change science and the aspects of their work that raised questions about climate change, in order to enrich this practitioner-oriented aspect of the class without taking substantial time away from the primary topic. In addition, we sought to capture information about the nature of the practitioner-oriented learning that our students were experiencing. This scholarship-of-teaching-and-learning aspect of the seminar was not planned at the outset; rather, we acted on an unexpected opportunity in order to learn how our format added value to student and practitioner experiences.

With human-subjects approval, we surveyed students, expert speakers, and participants at the end of the course, asking for demographic information, previous experience with web-based or distance education through a variety of Likert-scale and open-ended questions addressing the experience of the course. Some questions were designed to assess logistical aspects of the course (e.g., for speakers, ease or difficulty of presenting without receiving visual cues from the audience); others asked participants to comment on the potential benefits or costs to learning associated with the course format. Relevant portions of the student and expert surveys are included in appendixes. We will provide details on the perspectives of the practicing professionals in a future publication.

### **III. Results.**

We focus here primarily on results associated with introducing graduate students to their community of practitioners.

#### *A. Participation.*

The class ( $n = 28$ ) included one undergraduate student in environmental management and 27 students pursuing Master's degrees in environmental science (MSES), MPA degrees with a focus on environmental policy and natural resource management or sustainability, or dual MSES/MPA degrees. One local agency practitioner often joined the class in the classroom. Another 10-80 practitioners (approximately, depending on the day) joined the class remotely, using the agency telephone line and Adobe Connect software. A handful of practitioners were regular participants but most only attended sessions of particular interest; all practitioners had occasional absences due to conflicts with work schedules.

#### *B. Recruiting expert speakers.*

Expert speakers universally responded positively to invitations to speak to the class and typically cited both the minimal time commitment and the opportunity to address practitioners in the primary federal agency tasked with wildlife conservation as attractive aspects of the invitation. All of our first-choice outside speakers who did not have time conflicts accepted invitations to speak ( $n = 12$ ). Most made their presentations from their offices, but one presented from home, and another presented while on sabbatical leave in Europe. Of nine speakers responding to the speaker survey, all indicated they were somewhat or extremely likely to consider a distance-learning/ distance-teaching format for future classes. Eight were somewhat or extremely likely to consider an agency-university mix.

#### *C. Student responses regarding interactions with agency practitioners.*

Of 27 students responding to "Do you believe that a collaborative agency/university approach to learning helped you learn about breaking issues more than a traditional classroom approach Y/N" all answered yes and 25 provided additional comments. One student wrote "*Provides insight into 'real' world issues agencies are facing and challenges they are trying to overcome.*" Another offered "*We get to hear what agency officials deal with every day. If we want to work for them, this is helpful.*" The following themes appeared repeatedly in comments:

- Better understanding of how climate change information is being used in the real world/outside perspective ( $n = 13$ ),
- Opportunities to interact with professionals ( $n = 8$ ),
- Better understanding of agency issues ( $n = 5$ ), and
- Usefulness for future interviews/employment ( $n = 2$ ).

#### *D. Agency responses regarding student interaction.*

Of 54 agency personnel responding to “Is attending such a seminar with university students a plus, a minus, or a neutral aspect of the experience?” 19 ranked it a plus, 17 were neutral, and three ranked it as a minus. Positive respondents overwhelmingly mentioned students’ fresh or different perspectives (11 of 14 who provided comments). Others mentioned the opportunity to bring science into the agency, and recruiting opportunities with students.

#### *E. Logistics.*

Invited to speak specifically about any aspects of expert presentations that were lost in distance teaching formats, 11 of 27 students providing survey responses had no comments on this question, eight noted a loss of visual cues such as body language, three indicated they found the experience less personal, and one mentioned awkward interruptions (possibly due to the rare technology glitch).

Five of nine experts had not previously used web-based training or seminar software and four of ten had never participated in a web-based seminar or training session. For eight remote speakers responding to the question, scores for difficulty of use of the software on a scale of 1 (easy) -7 (hard) ranged from 2 to 5.5, with an average of 3.9—almost exactly the middle of the scale.

### **IV. Discussion.**

#### *A. A community of learning and a community of practitioners.*

Opportunities for cross-training in this format ran in all directions among graduate students, practicing professionals and experts, as is appropriate for communities of learning and practice. Most of the graduate students were in programs in applied ecology and in environmental policy, rather than in wildlife ecology, and they brought that wider training to their discussions in class. The practicing professionals, primarily wildlife biologists and planners, often took time to clarify the role and responsibilities of the FWS, the relationship between the public and the FWS, and the constraints under which the Service operates, in order to provide experts and instructor-facilitators with context for their questions. If context was important but unclear or absent in a question or comment, facilitators often asked professionals to provide additional information. Experts ranged from purely academic to very applied and thus varied in their familiarity with environmental policies, with the FWS, and with attitudes of the public towards wildlife-related issues. Thus, while experts provided knowledge in their area of specialty, they were often recipients of knowledge concerning application of the information they provided.

Students enrolled in the seminar class clearly found that the student/practitioner mix provided opportunities for learning that were substantively different from those in traditional

university seminars. Their comments focused specifically on aspects of the class that provided a view into the community of practitioners that they were being trained to join and on the opportunity to begin to make contacts in that community. Agency participants were encouraged to consider whether they had projects or information needs that students could address in their term papers; two students wrote such papers. One student was hired by FWS. His first post was at a national wildlife refuge that had had personnel among the practitioner participants for the course.

The most common means of introducing students to communities of practice involve active experiential learning in situations such as internships, service-learning, and project-based classes. The MSES and MPA programs at Indiana University require two of these (an internship and a project-based capstone class) of all students. Both of these approaches put students directly in contact with practitioners but, in both cases, contact may involve only a single office or a single practitioner.

The format discussed here did not have as its primary purpose creating practitioners from graduate students. Nevertheless, it gave students an opportunity to hear and interact with practitioners who held many different positions, from several states and from two different branches of a major federal agency. In addition, the involvement of practitioners likely improved our ability to attract very high-quality speakers, thus fulfilling one of our primary goals. By creating, simultaneously, a *community of learning* and a *community of practitioners* that were jointly interactive, we provided students with an unusually rich opportunity at no extra cost to them and essentially no extra cost to the university (the use of a distance-learning classroom to support the telephone connections to speakers and practitioners).

Survey results clearly showed that students saw and appreciated the agency perspective. This behind-the-scenes look into agency operations provided aspects of *decoding practice* by allowing students to observe reflective practice as practitioners discussed how respond to climate change in their various positions. Thus, by bringing practitioners to the students, remotely, our format brought *situated learning* into the classroom (Lave & Wenger, 1991). More importantly, opportunities to watch experts interact with practitioners provided students with deeper understanding of the relationship between research and practice and the processes by which research informs practice.

Pace and Middendorf (2004), in *Decoding the Disciplines: Helping students learn disciplinary ways of thinking*, speak to the problem of creating experts from naive students and develop a model of identifying learning bottlenecks and making visible to students the thinking that experts do in any given discipline. In this, they address the problem posed by Collins et al.'s (1989) discussion of *cognitive apprenticeship* and Lave and Wenger's (1991) discussion of *situated learning*. *Decoding* a discipline or practice is accomplished by breaking the thinking or practice down to its component pieces and modeling each step for the students before asking them to practice that type of thinking and, later, to practice doing, on their own. The teaching approach we describe here is not a full decoding solution to bottlenecks in training professionals in that it lacks the overt step of explicitly describing practice and allowing students opportunities for guided practice. Rather, our format adds extensive interactions with practitioners, which give students the opportunity to observe practitioner approaches and narrative decoding of practitioner thoughts, to a teaching environment that is already rich with learning possibilities.



### *B. Adding reflection.*

The seminar-discussion format gave students opportunities for reflection, but not at the level suggested for reflective practice. Benefits of reflection could be increased substantially by constructing a course/community of practice with an explicit goal of reflection. Both experts and practitioners could be asked to explicitly decode aspects of practice in the discussion, when possible. In addition, students could undertake assignments that promote reflection (such as focused reflective journals) and that apply what they hear about practice from experts and practitioners in course-related projects and assignments. With sufficient advanced planning, agency-sponsored projects could become part of the class so that a truly experiential component could be added. Two of our students had such experiences, but our timeline did not permit developing such opportunities for all students. Our initial format allowed students to take important steps from *knowing* to *understanding* practice in their field (Wiggins & McTighe, 2005); the modifications we suggest here would allow students to deepen that understanding and would provide opportunity for assessing and validating this kind of learning.

### *C. Blended and distance learning.*

Our format uses distance methods in order to expand the variety and number of people involved in the experience. Both experts and practicing professionals attended almost exclusively in virtual space—as distance teachers and learners. During expert-led discussion, the three segments of the learning community—expert, practicing professionals, and graduate students—were all at a distance from one another. Readings were made available on-line but were primarily peer-reviewed literature that did not originate in an on-line format. Students submitted reading discussion questions through the course-management system, but then met with the instructor in class for reading discussion that included distant practicing professionals. Except for reading the discussion readings, all class components were synchronous. Thus, our format fits Milne's (2006) wider definition of blended learning: “a course or program that is accessible by distance and on-campus students simultaneously (supported by videoconference, for example).

Narrower definitions of blended learning (e.g., in Garrison & Vaughan, 2008) focus on the opportunities for reflection that arise from asynchronous uses of online material. The usual nature of a graduate seminar is of synchronous discussion, and our practicing professionals faced time constraints that also made the synchronous format attractive. However, in the asynchronous reading of peer-reviewed articles and creation of discussion questions, our format also partook of this narrow definition. Graduate students' questions reflected their variety of backgrounds and interests, and graduate students used the opportunity to ask their learning colleagues among the practicing professionals to reflect on the impacts of climate-change issues on resource management and policy in practice

### *D. Facilitating a multifaceted learning experience.*

The seminar posed unique challenges to us as instructors and facilitators. A new expert spoke every week, so we, as instructor-facilitator and practitioner-facilitator, provided continuity and an ongoing *sense of presence* for both graduate student and practicing professional participants. Sense of presence is important for engaging distance learners (Lehman & Conceição, 2010), and we were careful to communicate regularly with distance learners by email to provide them first

with information and support for setting up the software and then to provide information on upcoming speakers and readings. This regular communication allowed practitioners to stay in touch with the class even if they participated only rarely, and we had no problems associated with uneven participation.

Even with a consistent physical facilitator presence in the classroom, some students missed the visual contact with the experts. Some noted that it helped them to see a photo of the speaker projected before the start of class, and one speaker included a photo at the start of her presentation, to introduce herself visually to the audience.

Some challenges were merely logistical. Because presenters could not see students, they could not respond to a raised hand or a quizzical or confused expression. Similarly, the instructor-facilitator could not visually signal to expert presenters that students were or were not familiar with particular concepts. We encouraged presenters to focus on their presentations, and allow the facilitators to monitor the Chat area of the Adobe Connect screen where participants typed questions during presentations. As a result, the responsibility for managing the flow the presentation rested entirely on the facilitators, who became meta-communicators in this context, communicating about communication cues.

After the formal presentation, the question-and-answer discussion presented different challenges. Both students and practitioners had questions. In addition, there were opportunities for facilitators to ask experts to expand on answers for the benefit of students and practitioners. Similarly, facilitators often asked practitioners to expand on practitioners' questions or answers either to receive the best benefit of expert knowledge or to provide clearer insights to students regarding the nature of agency interests. During these interchanges, the facilitators had to be comfortable with letting control of the flow of discussion rest as much as possible with the participants while remaining alert for opportunities to nudge topics or speakers briefly to enhance learning of many kinds.

Collison, Elbaum, Haavind, and Tinker (2000) described the roles ('guide on the side,' instructor, and group-process facilitator) and range of voices (generative guide, conceptual facilitator, reflective guide, personal muse, mediator, and role player) available to moderators in online settings. Although our setting was more complex, these roles and voices are apt for it as well. During expert presentations, we acted primarily as facilitators of the group learning experience, occasionally stepping into the role of 'guide on the side' to highlight overarching themes and connections to other presentations or to readings. As guides, we used the voices of generative guide (to facilitate discussion), conceptual facilitator (to clarify questions to experts and answers to graduate students and professionals), and reflective guide (to encourage deeper investigation of a point during question-and-answer discussion).

The sessions that focused on discussions of readings were often dominated by student and facilitator interactions as agency personnel were less able to prepare and tended to listen (at most) during these sessions. In this context, we acted most often as 'guides on the side' of discussion and sometimes simply as traditional instructors when elaborating on the content of a reading. The voices of generative guide, conceptual facilitator and reflective guide were all useful to us as these discussions ranged from topics with which participants were familiar and engaged to topics that were less familiar or more complex. As guides, we not only invited consideration of the reading in isolation or in relation to expert presentations, but also often posed questions to prompt graduate students to consider the relevance of the reading to practitioners such as their professional co-participants.

The agency perspective was available to graduate students both in expert presentations and in readings discussions as both of us participated in both kinds of sessions and both of us have worked with and for multiple federal agencies. Further, some of the students had internship or employment experience with agencies and could contribute agency perspective from these experiences. Nevertheless, agency issues were typically a smaller part of discussions of readings than of discussions with expert speakers.

#### *E. Limitations of the format.*

The reality of agency work is that time rarely suffices for the work at hand, especially in an era of straitened financial circumstances. As a result, top-down prioritization of class activities is important to bring agency practitioners into the classroom. Deadlines, meetings, and other responsibilities create a constant tension for agency personnel, however much they may value the opportunity for learning. Our second iteration of an agency-university seminar had no accompanying directive from a regional director and attendance rarely exceeded a scant handful of agency practitioners, despite the importance of the topics to FWS work and the excellence of the speakers.

The opportunity to address a major federal agency was clearly attractive to expert speakers and suggests that facilitators of similar efforts should try to ensure some base level of agency buy-in and participation. In the case of the first iteration, top levels of the agency clearly indicated that training was to involve many people; such cases are likely to be rare, however. More often, it may be easier to ensure agency participation by spreading the impacts among staff members by matching personnel to the topic or topics most closely associated with their work. Such matching was likely going on during the course we have described here, accounting for some of the variability in numbers of participants. The format is sufficiently flexible that agency participation need not be a constant, but could be linked to particular topics.

Where long-standing relationships exist between agencies and universities, experiences of this sort could be negotiated well in advance and the ties between students and staff could be increased. Students were very enthusiastic about the opportunity to research issues of interest to the agency for their research-paper assignments. Such projects increase the experiential aspect of a course and provide students with closer contact and deeper understanding of the practitioner role. Where such relationships do not exist, the opportunity to leverage the university's ability to attract top speakers and to make use of student workers to fill information needs can be incentives to create or strengthen agency-universities ties. Changes in policy and regulations and advances in technology and practice create demand for learning in agencies that must respond to the changes. Such changes thus create opportunities for applying this format to the benefit of both practitioners and practitioners-in-training.

Even in the best circumstances, seminars such as this one cannot provide the duration or depth of practitioner interaction of an internship or major project-based experience. The process of transforming graduate students into practitioners is generally a long one, and cannot be entirely encompassed within the academy. However, classes in the format we describe here build on familiar class types (lecture-discussion and seminar) and make available to students a community of practitioners with little additional cost, while leveraging university resources on behalf of the participating agency.

Technological constraints on distance learning and teaching are continually diminishing. In addition to Adobe Connect, other proprietary software such as Skype now supports conference

calls and could be used for classes like this one. Class size is limited primarily by the facilitators' willingness to try to support discussion among the all participants and by any limitation on the number of callers into the conference or Skype line. If students are to use the distance option when they are home ill or travelling, then a short training session at the beginning of the course is advisable as instructors cannot easily offer technical assistance during regular class sessions.

#### *F. Conclusions.*

The format we describe relies on significant agency commitment to an educational or training opportunity. When such commitment is available, it affords students and instructors an opportunity for insight into authentic thought and practice that may exceed even experiences such as internships which may not involve reflection and synthesis. Expert presenters were very generous with their time in part due to the minimal time requirements of the distance format and in part for the opportunity to speak directly to agency practitioners. Having expert presenters gives students the benefit of the best sources of information, reduces time commitments for instructor-facilitators and allows agency partners to leverage the capacity of university partners to attract such speakers. The distance format allows agencies to train many of their personnel without travel costs, although the time commitment remains.

We found the experience of facilitating a multi-faceted learning experience to be immensely satisfying professionally. We, our students, and our agency colleagues received cutting-edge training in an area of great importance in our professional lives; we made new contacts with experts in our field and gained training in online technology and facilitation. The overall costs in terms of our time were entirely reasonable. We recommend this format to agency-university partnerships in all fields when need for training is urgent or high-demand topics create high agency commitment to the process.

### **Acknowledgments**

We gratefully acknowledge our graduate students and agency colleagues for their participation and for their help in understanding this learning experience from their perspectives, and Robyn Thorson, Regional Director, US Fish and Wildlife Service for her support of this experiment. Writing was supported by a Indiana University Scholarship of Teaching and Learning Writing Retreat Award. Craig E. Nelson and George Rehrey provided considerable advice and editing. Two anonymous reviewers were also provided helpful comments.

### **Appendices**

#### **Appendix 1. Student Survey.**

Only survey questions relating to the practitioner aspect of the class are shown. Formatting and numbering do not match the original survey.

#### **Likert-scale questions scored 1-5**

##### **Discussion**

Moderators managed discussion traffic well.

Agency personnel contributed important points and questions to discussion

Students contributed important points and questions to discussion

Points and questions raised during discussion were relevant and interesting

### **Learning**

I learned useful things about the class topic from guest presentations

I learned useful things about the class topic from discussions

Hearing from agency personnel in discussion was useful and informative

Readings were a useful part of learning in this course

Readings were relevant to the topic of the class for which they were assigned

I would take another course in this format if the topic interested me

The different backgrounds and experiences of class participants (students and agency personnel) was a positive aspect of the course

### **Open-ended questions**

1) Please comment on how effectively the guest presentations, readings, and discussion helped you learn about course topics.

2) For these three aspects of the course, were there specific techniques or practices that you felt made that aspect particularly effective?

Guest presentations

Readings

Discussion

3) For these three aspects of the course, were there specific things you felt reduced effectiveness and should be avoided in the future?

Guest presentations

Readings

Discussion

4) The circumstances that gave rise to the course suggested that we keep class size fairly large in order to provide maximum opportunity for training both students and agency personnel in this one-time situation. Please comment on any impacts of class size on your ability to benefit from the class. Please suggest discuss upper limits (of in-class participation, distance participations, or both or neither) that should be set on future uses of this format. You need not repeat points you have made in earlier answers.

5) Please comment on the effectiveness of a collaborative agency/university approach to learning about breaking issues.

6) Please comment on the effectiveness of distance teaching for learning about breaking issues.

7) If you attended some or all classes remotely, please comment on the effectiveness of distance learning/distance teaching for learning about breaking issues.

8) Are there aspects of presentations that are lost in the distance-teaching format that are important to you as a student? If so, please describe these, briefly.

9) Are there advantages or disadvantages to you as a student to using the distance-learning format to bring agency personnel together with students to provide training on breaking issues? If so, please describe these, briefly.

10) Please provide any additional comments here.

## **Appendix 2. Expert Survey.**

Only survey questions relating to the nature of the class are shown. Formatting and numbering do not match the original survey.

1) Prior to this course, please indicate the total number of web-based seminars in which you have been a participant.

2) Prior to this course, please indicate the total number of web-based seminars in which you have been a presenter.

3) How many times per academic year do you use conference calls to conduct business?

4) Prior to presenting in this course, had you previously attended multi-session, web-based training or seminars? If yes, please describe the general nature of the training or seminar(s) below.

5) Prior to presenting in this course, had you previously provided web-based training or led web-based seminars? If yes, please describe the general nature of the web-based work below.

6) Have you previously used other web-based training or seminar software? If yes, please provide the name of the software.

7) Please evaluate the moderators on the following attributes by circling a point on the scale that corresponds with your judgment for that attribute.

8) How likely are you to consider using a distance-teaching/distance-learning format for courses or training you direct? Please comment briefly and mention changes you would make for effectiveness.

9) How likely are you to consider using a university/agency mix for courses or training you direct? Please comment briefly and mention changes you would make for effectiveness.

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## **A case study of youth participatory evaluation in co-curricular service learning**

**Beth Lewis Samuelson<sup>1</sup>, Ross Smith, Eleanor Stevenson, and Caitlin Ryan**

*Abstract: This paper examines the practice of participatory evaluation through an exploratory single case study of the Evaluation Team of Books & Beyond, a co-curricular service-learning program of the Global Village Living-Learning Center at Indiana University. The paper, which is authored by three undergraduate members of the evaluation team and their faculty advisor, juxtaposes the process of conducting the evaluation and reporting the results with reflections from the Evaluation Team participants on conducting youth participatory action research, which offers a means of improving youth-serving programs and developing a greater understanding of why youth choose to participate in these programs. In their review of the implementation of their evaluation project, the team noted that the difficulties of getting past lessons learned to methodological rigor in service-learning evaluation are compounded by the realities of engaging in a student-faculty partnership in a co-curricular service-learning context.*

*Keywords: living-learning centers, student-faculty partnerships, reflection, action research*

In 2010–11, undergraduate students from the Indiana University Global Village Living-Learning Center implemented a youth participatory evaluation of Books & Beyond, a student-led, collaborative, co-curricular service-learning project founded in 2008. Their purpose was to identify the areas where Books & Beyond was working well and other areas where the experiences of the participants could be improved. Upon completion of the evaluation, all evaluation team participants reflected on the experience of being involved with the evaluation of the project, including working closely with each other, and participatory evaluation itself. The study presented here centers on the reflections of the participants following the completion of the evaluation project and focuses on a single exploratory research question: What lessons about the process may be learned from conducting a youth participatory evaluation in the context of a student-led co-curricular service-learning project?

We begin with descriptions of the IU Global Village Living-Learning Center and its Books & Beyond International Service Project. Theoretical foundations for the study, research design, and Evaluation Team reflections follow. While our purpose is not to report on the results of the evaluation itself, we will also provide a few highlights from the evaluation report and its impact.

### **I. The Global Village Living-Learning Center.**

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The Global Village Living-Learning Center, where Smith, Stevenson and Ryan lived for part of their undergraduate studies, is one of several residential learning communities on the IU Bloomington campus. Sponsored by the IU College of Arts and Sciences, the Global Village attracts students who are interested in international studies and foreign languages, regardless of their majors. The focus on international interests is a departure from the traditional language house, where students share a residence for the purpose of practicing common foreign languages together. The Global Village also offers formal and informal learning opportunities throughout the academic year, including the introductory “Q” course taught by peer instructors, which invites students to consider the political, social, cultural and economic dimensions of globalization and their roles in the process.

Living-learning centers such as the Global Village provide an academically enriched environment that makes residential halls more than simply places where students live and study. Through curricular and co-curricular activities on a shared theme or common interest, these learning communities integrate learning into the daily lives of the residents and mitigate the sense of disconnection between academics and ‘real life’ that undergraduates often experience. Academic living-learning communities have been shown to have positive effects on student satisfaction, retention and academic achievement (Forest & Kinser, 2002; Inkelas, 1999; Inkelas et al., 2006; Inkelas & Weisman, 2003) and have been recognized for their track record in promoting experiential learning and critical application of new skills (Brower & Inkelas, 2010).

## **II. Books & Beyond International Service Project.**

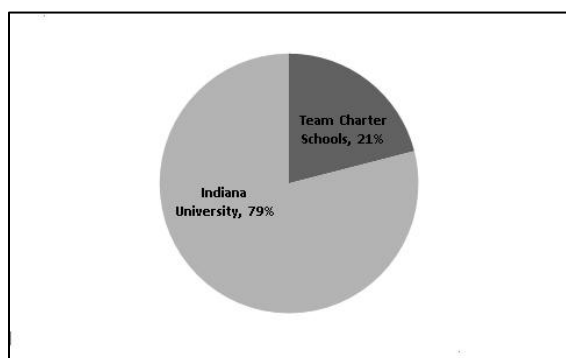
Because the Global Village strives to create a close-knit, diverse community of learners, the director of the center and his staff partnered with IU alumni and faculty to create Books & Beyond in 2008. The project was developed as a co-curricular service-learning activity that would provide a focal point for resident activities, while developing leadership skills and enriching educational experience. Over time, Books & Beyond has developed into a multi-year, multi-partner collaboration between the Global Village and two partners: TEAM Charter Schools: A KIPP Region, located in Newark, NJ, and the Kabwende Primary School, located in Kinigi, Rwanda. The project partners work together to engage young students at TEAM and Kabwende Primary School in authoring, illustrating, publishing and marketing collections of short stories. Since 2008, the project has printed five volumes of *The World is Our Home*, a collection of stories written and illustrated by young authors. Each participant receives a copy of the book, and in Rwanda these books have provided much needed reading material for primary school students. Books & Beyond has received considerable local media attention and has won several awards for youth service and experiential learning. In 2013, the books will be available in digital format.

Books & Beyond embodies the living-learning center philosophy by aiming to increase students’ civic engagement, promote student retention, and develop practical skills through tutoring and mentoring opportunities, leadership opportunities, cross-cultural communication, project management, public speaking and fund-raising. Because Books & Beyond is co-curricular, all of the students engaging in the process of developing the books receive no academic credit for their efforts.

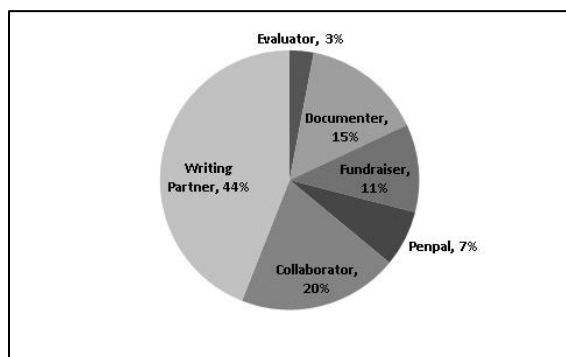
### *A. Project Organization.*

Although living-learning center staff and university faculty played more active roles in the founding and development of Books & Beyond, the nature of the project called for ever-increasing student involvement and control in planning, managing, and evaluating the project each year. As we will demonstrate with the Evaluation Team, this desire to ensure that the project is truly student-led is taken very seriously by the project participants and their mentors.

Numbers demonstrate how the project has thrived since beginning in 2008. Twenty-five Global Village students were involved with Books & Beyond in its inaugural year (2008–9). Twelve TEAM students participated in the project and contributed stories to the collection. In 2009–10, forty-six Global Village residents and twelve TEAM students joined in the project. In 2010–11, fifty-five Books & Beyond participants represented 33% of the total population, with 18% rejoining the project for a second or third year, and fourteen TEAM students participated (see Figure 1). These trends in growth have continued in 2011–12 and 2012–13. Each year, a majority of the Indiana University participants are first-year students; approximately one-third of all Global Village residents have chosen to be involved in Books & Beyond.



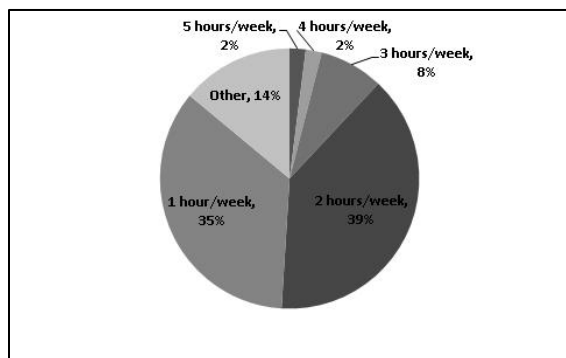
**Figure 1. U.S. Participants in Books & Beyond (2010–11).**



**Figure 2. U.S. Participant Roles in Books & Beyond (2010–11).**

Participants can volunteer with Books & Beyond in several ways. The TEAM students mainly work as writers and illustrators. Indiana University students who elect to be Writing Partners are paired up with TEAM students to work on crafting their stories. This role is the most common, as 44% of the Indiana University participants in the project are Writing Partners (see Fig. 2). The second most common team, the Collaborators (20%), helps to ensure that the stories are linguistically and culturally relevant. For instance, they teach the writers to avoid mentioning aspects of their lives that might be unfamiliar to Rwandan students, such as playing video games

or going to a fast-food restaurant. The Collaborators also develop skills in formatting and book design while editing over thirty stories each year. Other students maintain pen pal relationships with teachers at Kabwende Primary School (7%). The Fundraisers (11%) write grants and raise approximately \$20,000 each year. The Documenting Team (15%) creates short promotional videos that share Books & Beyond's challenges and successes. The Evaluation Team (3%) evaluates the impact of the project and looks for ways to improve it. And the Leadership Team takes an active role in organizing all of the teams, with a leadership team member designated as the head of each individual team. In 2010-11, most participants contributed one or two hours per week (see Figure 3).



**Figure 3. Hours Devoted Per Week to Books & Beyond by U.S. Participants (2010–11).**

### *B. Project Timeline.*

Several major events characterize Books & Beyond's annual activities (see Table 1). Work on the book begins in the early fall and is concluded in late April, when the book is sent to the printer. In October, the TEAM students visit IU, tour the campus, meet with their Global Village writing partner, and begin working on their stories together. Between October and January, the writing partners converse three times over Skype. They also use social networking such as Facebook, Twitter, e-mailing, and text messaging to keep up informally. In January, the Global Village students go to Newark over the Martin Luther King, Jr. Day weekend to hold work sessions so the writing partners can complete their stories together. In the summer, students from the Global Village and TEAM travel to Rwanda to distribute the books to the students at Kabwende Primary School and to help the Rwandan students work on their stories for the next year's collection. As of 2012, Books & Beyond has produced four volumes of stories and distributed over 8,000 copies to students in Rwanda. In the second, third, and fourth years, a total of sixty Rwandan students contributed their stories to the book.

### **III. Youth Participatory Evaluation in Co-curricular Service Learning.**

Adding a youth-led evaluation team in the second year fit well with the goal of increasing student leadership in Books & Beyond. We worked from a Vygotskian (1978) theoretical foundation that posits that learning through action research can be developmental and participatory. Because the approach recognizes the expertise and leadership qualities of all participants, regardless of age or status, and helps to balance power relationships, the benefits of youth participatory evaluation can include transformation of ways of knowing (Checkoway, Dobbie, & Richards-Schuster, 2003). YPE helps to build social and civic competencies, self-

confidence and social capital, while encouraging identity exploration and formation (Sabo, 2003, 2008) by allowing participants opportunities to enact roles that normally would not be within the realm of possibility in traditional classes or activities (Heath, 2000). As a form of participatory action research, YPE follows a reflective spiral in which participants collaboratively examine a question of community interest by following devising questions, collecting and interpreting data, and then reflecting on the process (McIntyre, 2008; Walter, 2009). Participants can be empowered when the results of their evaluation work are applied to their programs (Gong & Wright, 2008). Given this potential, youth organizers and researchers engaged in youth participatory research have opined that "not involving young people as researchers constitutes a missed opportunity for evaluation research" (Krenichyn et al, 2007, p. 603; London, Zimmerman, & Erbstein, 2003). Without engaging youth, a gap may exist between the adults performing the evaluation and the youth participants, who are acutely aware of the project and its impact on them and their communities. London, Zimmerman, and Erbstein (2003) have noted that "connecting youth, organizational, and community development can produce generative and self-sustaining processes that serve to address key social issues and revitalize communities and the organizations and individuals within them" (p. 35).

**Table 1. Timeline for Major Books & Beyond Activities**

<b>Fall Semester</b>	Leadership team issues a call for participation. TEAM Charter Schools students visit IU to meet their writing mentors and begin working on their stories. Students continue writing with their mentors via Skype and phone.
<b>Spring Semester</b>	Students meet again, this time in Newark, NJ, to finish the stories. Editing and revision of stories for <i>The World is Our Home</i> . Book sent to the publisher for printing.
<b>Summer</b>	Students from the U.S. travel to Rwanda to visit Kabwende School and deliver the books. Rwandan students write their stories to be included in next year's volume.

Because it can encourage growth that occurs beyond the margins of traditional learning arrangements, participatory action research methodology fits well with co-curricular service learning. The co-curricular variety, which is less frequently studied, aspires to the same ideals as curricular service learning, but does not occur in credit-bearing courses. Co-curricular service learning provides opportunities for participants to work outside of the expected roles of undergraduates as learners or consumers of knowledge. As with service learning for credit-bearing courses, one of the major requirements of co-curricular service learning is the emphasis on giving equal weight to service as well as learning (Keen & Hall, 2009) and benefiting both the service providers and the recipients equally (Furco, 2003). This emphasis on both service and learning distinguishes curricular and co-curricular service learning from other forms of experiential learning such as volunteerism, internships, or community service, which may emphasize service or learning, but not both.

Recent scholarship on teaching and learning (SoTL) values student-faculty partnerships in participatory research has emphasized the need for learning experiences that are both active and integrative. Recent research has shown that undergraduates valued learning opportunities that are characterized by experiential learning, significant interactions with faculty members, meaningful peer relationships, and scope for leadership and responsibility (Bowen et al., 2011).

Literature on training students for involvement in participatory evaluation is relatively sparse. We relied on an account of a similar student-faculty partnership by Tagor and Cuellar (2008), who described seven steps for designing and implementing a project: (1) Project planning and start-up; (2) Team-building (including critical thinking, skills development); (3) Research design and application; (4) Skills development (e.g. interview skills); (5) Data analysis and documentation of findings; (6) Final report (including presentations and publications); and (7) Action planning. We have adopted this organizing heuristic for reflecting on the first year of the Evaluation Team. In the next two sections, we will provide a description of the evaluation team and a short recount of the evaluation project as we implemented it. Following these sections, we will present the results of our reflections on the process of implementing the “2010–11 Books & Beyond Evaluation.”

#### **IV. Forming the Evaluation Team.**

Stevenson majored in Gender Studies and Human Biology and lived in the Global Village for several semesters. After working with the Documenting Team during her freshman year, she was recruited to serve as the leader of the Evaluation Team in her second year with Books & Beyond and received an AmeriCorps Service-Engagement position, allowing her to earn an AmeriCorps Education Award for her service. She joined the Evaluation Team based on the lead description provided by Books & Beyond, thinking she could use the service-learning and integrative approach of Human Biology in the role of Team Leader.

Smith joined the team in his second year in Books & Beyond, after serving on the Fundraising Team the year before, when he had been a freshman and a resident in the Global Village. As a Direct Admit Scholar in Secondary Education and Spanish, he planned to study abroad in Spain during his junior year and was interested in finding opportunities to engage in research activities with faculty members. Joining the evaluation team enabled him to try out some new skillsets, including interacting with participants on the project. He is serving as the Evaluation Team Lead for the fall semester of 2012.

Ryan officially joined the team in spring 2011, although she was significantly involved in the collection of video interviews in the fall due to her leadership role in the Documenting Team. She was a founding member of Books & Beyond, serving as a Documenting Team member during her first year with the project, then expanding her activities as the Documenting Team Lead for the academic year 2010–11, also serving as an AmeriCorps Service-Engagement Corps member alongside Stevenson. She became interested in the evaluation’s team work as a way for her to better understand the project’s scope and impact in the hopes that it would help to improve the project for future years.

Samuelson joined the Books & Beyond project at its inception as a faculty advisor, when she was a new faculty member. During the 2008–09 and 2009–10 academic years, she worked intensively on the planning and editing of the first and second volumes of *The World is Our Home*, planning the first trips to TEAM in Newark, NJ, and to Kabwende Primary School in Kinigi, Rwanda, and engaging in fundraising that helped the project get started. Over time, though, Samuelson has become less involved in the daily activities of the project, but serves on the Advisory Board and assists primarily in matters of evaluation and curriculum development. Samuelson joined the Evaluation Team late in the fall semester, after the first faculty advisor to the team was not able to continue with the position.

## **V. The 2010–11 Books & Beyond Evaluation.**

The methodology for the Books & Beyond Evaluation reflected the needs and concerns of the group at large. We applied a single case participatory action research design to investigate the process of forming the evaluation team and conducting the evaluation. We were initially interested in learning why the participants had chosen to join the project and what their experiences had been like. Our goal was primarily to provide information that would serve to make the project stronger in the upcoming academic year. We provide here a brief description of the project and its results here for the purpose of contextualizing our reflection, as our primary purpose for this paper is to discuss the experience of engaging in the research. Patton has noted that increasing rigor in qualitative research entails getting past “lessons learned” to methodological rigor in service-learning evaluation, but we found that addressing this concern is compounded by the realities of engaging in a student-faculty partnership in a co-curricular service-learning context (Patton, 2012).

### *A. Data Collection and Analysis.*

Early in the academic year, we reviewed methods of evaluation and developed a tentative model for Books & Beyond, one that would provide an effective, interactive learning experience for everyone involved. Consistent with the goals of the project regarding student involvement, development, and learning, the team decided to practice participatory evaluation, which may be defined as a process in which “researchers, facilitators, or professional evaluators collaborate in some way with individuals, groups, or communities who have a decided stake in the program, development project, or other entity being evaluated” (King, Cousins, & Whitmore, 2007, p. 87). We adopted several strategies for collecting data from project participants, including interviews, arts-based activities, and a written survey.

Our first round of data collection occurred during the fall visit to Bloomington in 2010. Thirteen middle and high school students from TEAM Charter Schools in Newark, NJ (Rise Academy, grades 5-8; TEAM Academy, grades 5-8; and Newark Collegiate Academy, grades 9-12) visited Indiana University for a weekend in October to meet their writing mentors and get a taste of college life. We worked with the Documenting Team, led by Ryan to conduct short, videotaped interviews with each of the writing partners. Each participant was asked to why he or she wanted to be involved with Books & Beyond and how he or she felt about being involved. The arts-based activities invited participants to express their feelings about the project through visual art mosaics, molding clay sculptures, and devised theatre. Participants were able to generate pieces of artwork and creative writing throughout the weekend. The devised theatre activity was part of a final workshop, during which we asked the Writing Partners to create short performances depicting how they felt about their experiences during the weekend visit.

We analyzed the data that we collected during the October weekend by reviewing the videotaped interviews and theatre activities and looking for prominent themes. We met regularly in Samuelson’s office to discuss the results of our content-based analysis. We noted that the participants valued the new mentoring relationships that they were forming and the fun times they were able to share during the intensive weekend. One devised theatre piece about social action particularly highlighted some of the participants’ favorite parts about the project; another skit discussed the value of the interpersonal connections generated by the project. Additionally, the performances served to illuminate some of the frustrations and negative feelings that the

students had regarding the weekend's activities. Several of the participants communicated their exhaustion from the long days and their desire to have more free time. They also displayed their frustration with the evaluation activities and the constant presence of the Documenting Team's cameras.

In January, the Evaluation Team accompanied the Writing Partners on their trip to Newark, NJ, to finish their stories and spend time with their writing mentees. During one of the group meetings, we presented the results of our analysis of the qualitative data we collected during the fall visit to the group. We also distributed the written survey, which was completed by fifty participants (TEAM Schools: 13; IU Global Village: 37). The first section asked participants to rate the severity of the problems or challenges that they experienced throughout the year (see Appendix). The second section, a modified version of the Civic-Minded Graduate Scale developed by the Center for Service-Learning at Indiana University Purdue University Indianapolis (Steinberg, Hatcher, & Bringle, 2011), asked participants to consider how their participation in the project helped them to develop a sense of connection to their schools and to their local and global communities. Other questions explored their interest in community involvement or service, their desire to pursue careers in community service, and their sense of confidence in their ability to make contributions to their communities.

### *B. Our Results.*

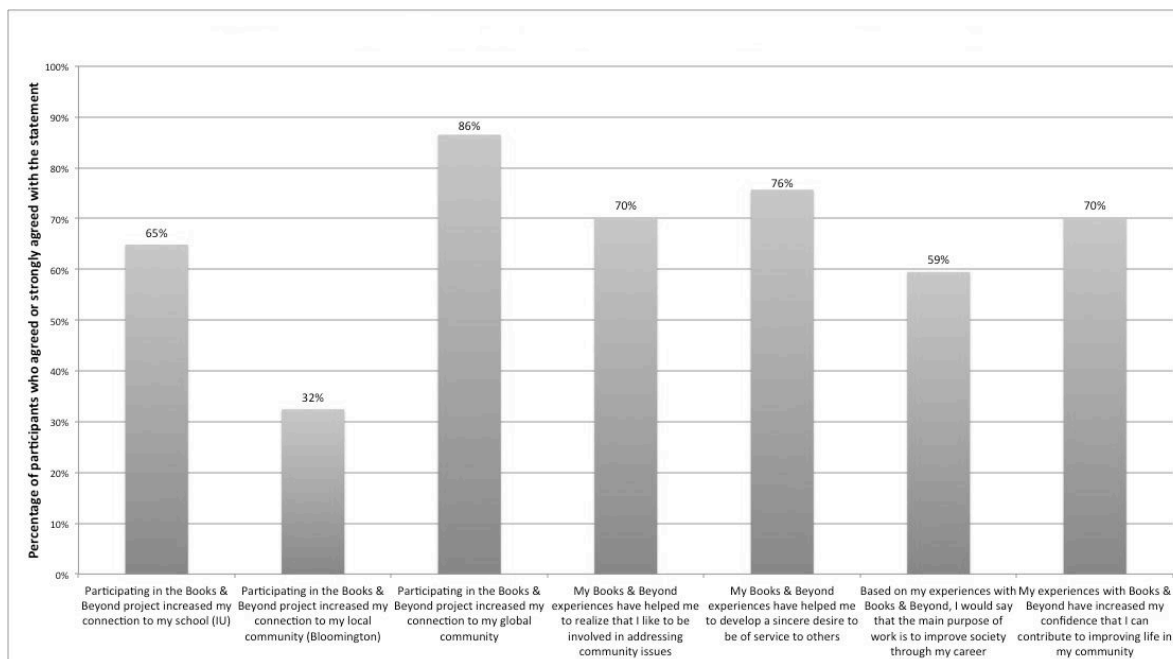
The resounding theme emerging from our analysis was that students at both Indiana University and TEAM believed that Books & Beyond would help them to have an impact on their world. Students from both groups joined the project in the hope of bringing about some type of social change, through providing books to Rwandan schoolchildren or through increasing cross-cultural communication and understanding.

Both groups of participants also offered a number of recommendations for how the project might be improved. In the written surveys, many participants cited time constraints as the main challenge or struggle that they encountered throughout their participation. However, additional concerns were raised throughout the process in reference to the Evaluation Team itself and its methods. Through the mosaics, devised theatre activity, and various points throughout the intensive fall weekend, participants displayed frustration with the redundancy of the Evaluation Team's activities and constantly being asked, "How does this make you feel?" Taking this into consideration, final reflections were made about the process as a whole and what might be learned from this case study of youth participatory evaluation.

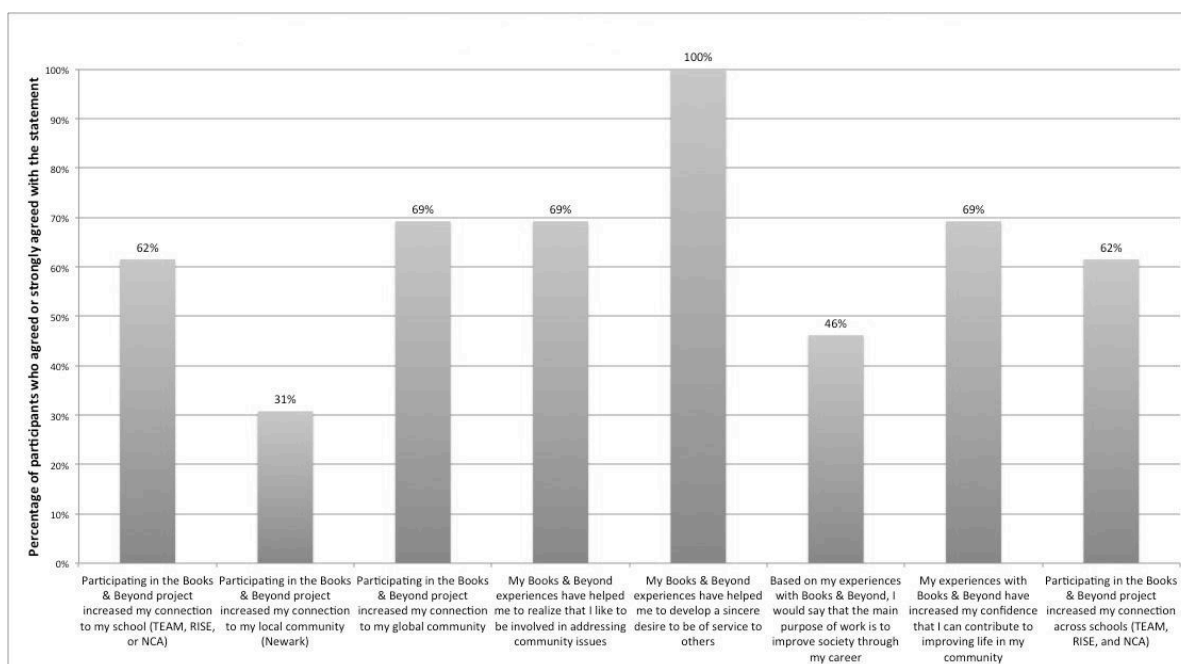
We noted that most of the Global Village and TEAM Writing Partners believed that Books & Beyond provided them with an opportunity to "make a difference," although the undergraduate Global Village participants were more likely to view the project as an opportunity to build their resumes. Most of the TEAM students saw the project purely as a form of social action. For these younger participants, the opportunity to engage in a social action project that they had control over was an especially salient factor in their decision to join the project. We also noted that all of the writing partners became bored and disengaged at some points during the writing workshops, and also during the evaluation activities.

Both groups agreed that the biggest benefits were connecting to their global community





**Figure 4. Perceived Benefits by IU Global Village Students of Participation in Books & Beyond (2010–11).**



**Figure 5. Perceived Benefits by TEAM Students of Participation in Books & Beyond (2010–11).**

and servicing others, and both groups had the highest percentage of students agreeing with two statements: “My Books & Beyond experiences have helped me to develop a sincere desire to be of service to others” and “Participating in Books & Beyond increased my connection to my global community” (see Figures 4 & 5). All of the TEAM Schools students agreed or strongly agreed that the project had helped to increase their desire to be of service to others, whereas 76% of Indiana University students agreed or strongly agreed. The Indiana University students

showed strong agreement that Books & Beyond had increased their connection with the global community; 86% agreed or strongly agreed (Figure 4). TEAM students were more likely to agree that their Books & Beyond experiences had increased their connection to their global community, increased their desire to address community issues and increased their confidence in their ability to be involved in addressing community issues (Figure 5). TEAM students show a stronger benefit of serving others in their communities and globally, while the Indiana University students felt they most benefited in the area of global connections.

The Indiana University students seemed primarily concerned with the amount of time devoted to writing and training; thirty percent indicated that time constraints were a “big problem” or a “really big problem” (see Figure 6). In the open-ended questions, some stated that they would prefer more time with their writing mentees devoted to socializing or working on their stories and less time spent in meetings. Some of their comments included:

1. “More quality time with my writing partner.”
2. “We could have more social and work time.”
3. “You probably should just cut back on the lectures.”
4. “Some changes that I think should be made are adding more times to simply be with your writing partner.”
5. “Many GV students express displeasure often times with being documented. More effort in explaining the crucial roles we all play, even the documenting team.”
6. “Hold more Rwandan culture nights.”

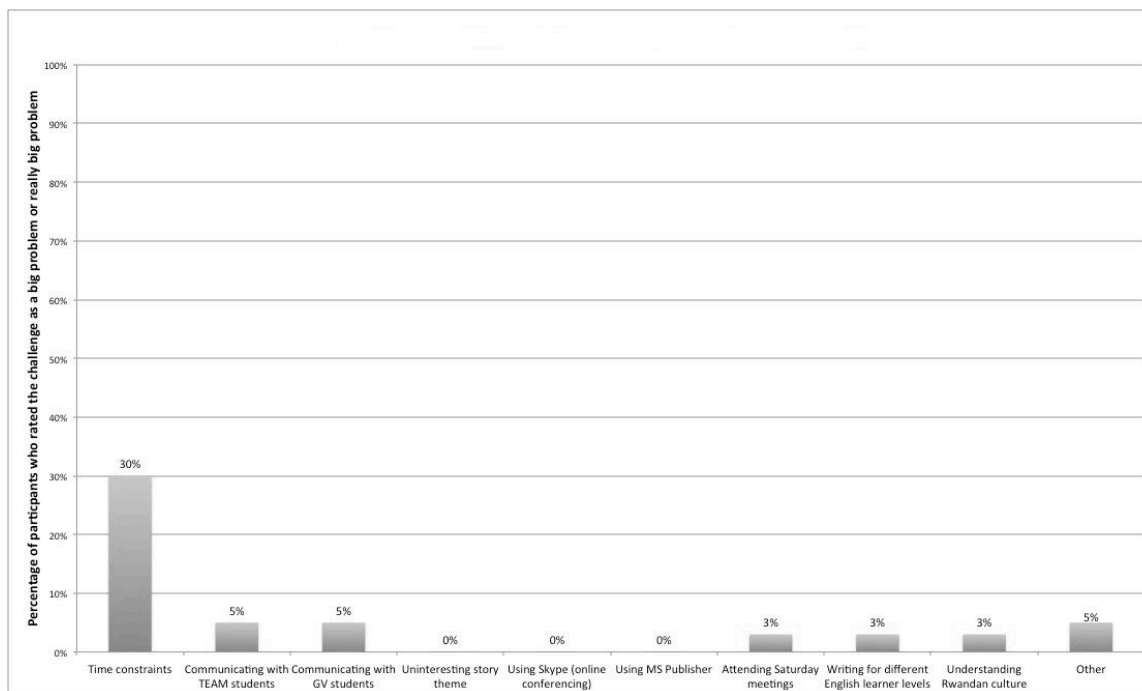
The TEAM students were also concerned about time constraints. Twenty-three percent indicated that time constraints were a “big problem” or a “really big problem.” The TEAM students were more likely to indicate that the Skype sessions, the Saturday meetings with their GV writing partners, and the time needed to maintain communication with their GV writing partners were also significant challenges (see Figure 7). These students desired additional time to Skype with their partners and suggested holding writing and mentoring sessions during the week instead of the weekend. Some of their comments in the open-ended questions on the survey included the following:

1. “I think that you should make what you want accomplished clearer.”
2. “Next we could have more Skype sessions and more time to communicate.”
3. “I’ve really enjoyed the program. Seems like we could do a little more with maybe having Skype sessions with students from Rwanda/Kenya.”
4. “Next year we should have more classes that help us learn about Rwandan culture.”

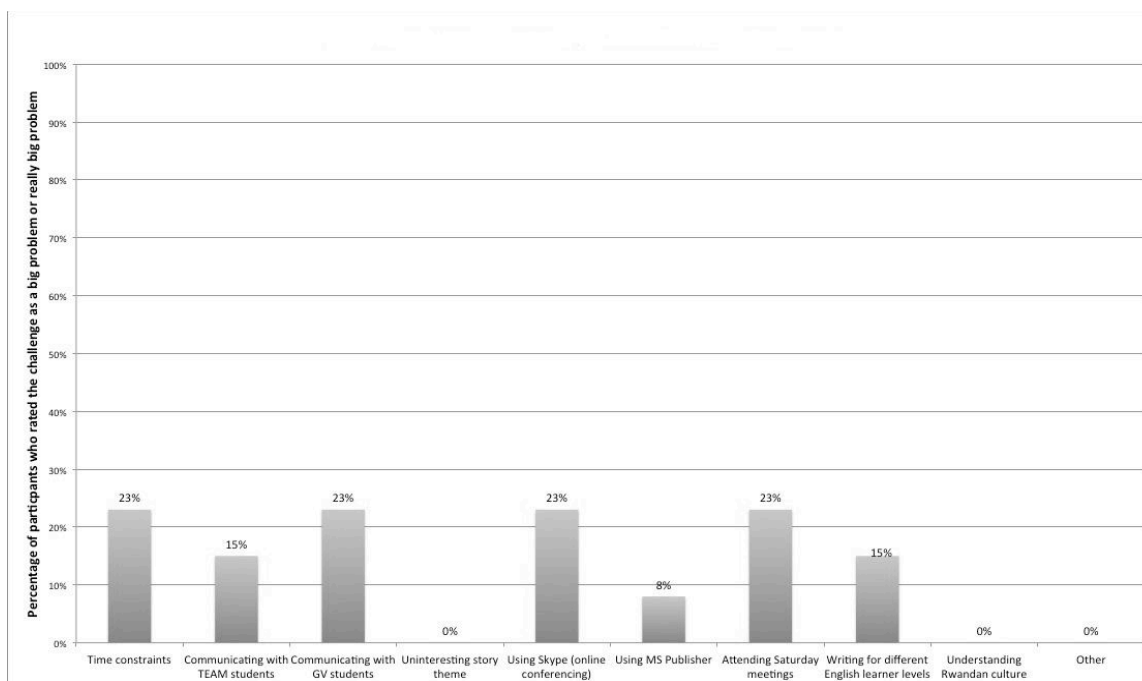
During the devised theater event, we observed both the Indiana University students and the TEAM students speaking optimistically about the power of the project to break down barriers. The students expressed a desire to have more free time with their writing partners so they could get to know one another without having structured activities. They were highly motivated to accomplish the task of completing their stories on deadline.

Reviewing the results of the 2010–11 Books & Beyond Evaluation helped to shed light on why students chose to be involved and whether they thought that project helped them to be community-minded. Most of the challenges that the students highlighted were addressed in action steps that the Books & Beyond Leadership Team incorporated into subsequent years. Many respondents expressed a desire for more one-on-one time to work with and get to know their writing partners. Respondents also cited an interest in learning more about the nation of Rwanda. In response to these requests, 2011–12 and 2012–13 saw increased opportunities during the October and January Weekends for writing partners to spend time with one another and work

on their stories. With the Evaluation Team as a framework, Books & Beyond hired a student intern in 2011–12 with the primary task of developing a strategic plan for the project that included both short-term and long-term goals. Most recently, the 2012–13 academic year saw the creation of a Rwanda Culture Team within Books & Beyond, which hosts a series of informative events each semester at the Global Village Living-Learning Center addressing the history and culture of Rwanda.



**Figure 6. Challenges Experienced by IU Global Village Students in Books & Beyond (2010–11).**



**Figure 7. Challenges Experienced by TEAM Students in Books & Beyond (2010–11).**

#### *D. Action Steps.*

The action steps phase covers the presentation of findings and their application to the project. We made a full presentation to the Books & Beyond Leadership Team at the end of the year. As a result of our findings, the project made some significant changes in the subsequent year. General awareness of and appreciation for evaluation of the project increased among leadership team members, and methods of evaluation were altered to better suit the project's needs and to avoid overwhelming student participants with redundant questioning. The Public Relations Team was added to the project and began publishing the *Amakuru*<sup>2</sup> newsletter. Rwandan culture nights became a regular activity for Indiana University students engaged in the project. And, finally, students were given more "down time" together during the fall and spring visits to encourage writing partners to get to know each another better.

We presented our results of our study at several forums, including the IU Women in Science Research Day Conference, the IU Hutton Honors College Undergraduate Research Symposium, and the Indiana Campus Compact Service Engagement Summit.

### **VI. Reflecting on the 2010–11 Books & Beyond Evaluation.**

Although the study resulted in the collection of a wealth of data regarding participants' thoughts, feelings, and preferences, the process of conducting the youth participatory evaluation was shown to be just as important as the evaluation itself (Voakes, 2003). It gave us an opportunity to practice and develop a new set of skills in research collection and analysis, evaluation implementation, and non-profit program support. This type of evaluation gave us the tools we needed to develop and validate knowledge while also addressing the development of Books & Beyond.

During the spring semester, we realized that the process of engaging in the Books & Beyond Evaluation was just as interesting as the results of the evaluation. We agreed that after we had completed the evaluation, we would reflect on the process and note what we had learned about the process of youth participatory evaluation as well as areas for improvement for future evaluations. During the summer and early fall of the following academic year (2011–12), each of the team members met individually with Samuelson to discuss their reflections on the seven distinct steps in designing and implementing a youth participatory evaluation program (Tagor & Cuellar, 2008): (1) Project planning and start-up; (2) Team-building (including critical thinking, skills development); (3) Research design and application; (4) Skills development (e.g. interview skills); (5) Data analysis and documentation of findings; (6) Final report (including presentations and publications); and (7) Action planning. In the remainder of this section, we will address our reflections on each of these steps in turn.

#### *A. Reflections on Project Planning and Start-Up.*

In the project planning and start-up phase, the Evaluation Team was assembled and started its planning meetings. Smith was hired in August by the Books & Beyond Leadership team, and helped to recruit Stevenson. Samuelson was involved in the process, but she did not step in as the faculty advisor until November, when the first advisor assigned to the team was no longer able to continue. She was aware of how the team was developing and how the planning was proceeding,

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<sup>2</sup>"Amakuru" is a Kinyarwanda greeting that means "Hello" or "How's it going?"

but was not directly involved. In some ways, the planning phase was the most difficult because of the decision-making that needed to go into decision what questions to ask, what types of data to collect, and how to analyze it. Each of the team members also had to complete the training required to getting approval from the university's Institutional Review Board, a process that proved very time-consuming. Looking back at this period, Smith felt that the early planning phase of the project involved too many planning meetings in which ideas got discussed, but decisions didn't get made:

I prefer working with a hierarchy in a team; no clear chain of command. It wasn't really clear who was making decision. [...] The way I work as a learner, just give me two or three different methods and a plan of attack (Interview, August 3, 2011).

He also felt that it would have been helpful to read related research early in the year. Last minute changes to the plans were frustrating for all of the team members.

### *B. Reflections on Team-Building.*

When Ryan joined the team in the spring, the team spent several weekends together researching and preparing for their poster presentations, and they felt that they worked well together during this process. At this point, the team began to see the value in spending time completing work together as a means of building camaraderie and improving the quality of their work. This seemed to be more motivating and engaging than the multiple, long, planning sessions held during the first semester. The students also bonded over the shared sense of challenge and urgency presented by their goals to present in on campus conferences during the spring semester. The need to complete a presentation and poster display brought the group together in working towards a common goal.

### *C. Reflections on Research Design and Application.*

During the design and application phase, we observed that every little action that the writing partners performed counted, because their activities together—enjoying free time, eating lunch, falling asleep during lessons, speaking in groups during activities, etc., helped to strengthen their mentoring relationships. Because of this, we emphasized the importance of noting even the “bad” or “embarrassing” things that happened. We also discovered the importance of allowing for enough time to analyze all of the data. This time-consuming process worked best when we planned to do it over the winter break.

A few details about the leadership of the team arose at this stage in the reflection. Smith expressed a preference for greater control by faculty members, and would have preferred more top-down instructions on what to do and how to do it. Stevenson wanted to learn more about different techniques for interviewing, and wondered how the outcomes might have differed based on different types of questions. Stevenson wanted to collect more statistical data at the beginning of the year, and not just at the end of the project.

Stevenson also felt that although it was important to have multiple types of data, she would have preferred skipping some of the arts-based activities:

Our first set of data collection would have been more helpful if we had had less “elementary art.” I wish that it had been less scattered, like having everyone just sit down and write a poem or something, instead of waiting until someone tried to sit down and do their homework. It was really difficult to get a response that was more than just, “I’m

exhausted.” [...] I do like the art form. I think it was really helpful, but a lot of the supplies were really hard to carry around. And it was hard to keep the pieces of art intact. It was really difficult (Interview, September 16, 2011).

#### *D. Reflections on Skills Development.*

Smith noted that being involved in the project helped him to rethink his plans for a future career: I feel that I developed at least some sort of foundation of research skills. I developed more of an appreciation for reading research that is out there than I had ever done for any class, maybe because this was research that was relevant to what I was doing. I started to really notice things in a research paper, like, ‘oh they’re citing this author. I should go back and look at the research this person has done.’ Or like, ‘what is this person saying versus what this individual is saying?’ That came more into play in the spring when we were starting to do the poster presentations around campus. I enjoyed that because I never really made any sort of contribution to IU in that way, to attend a conference. It was a really cool experience for me. And I vastly improved my presentational skills, which is always a work in progress for everyone. Getting involved in evaluation got me thinking more and more about working in academia, which is something I hadn’t really considered prior to this past spring (Interview, August 3, 2011).

Ryan noted that many of the skills that she had acquired during her involvement with Books & Beyond had little to do with her academic classes. She reported developing a greater appreciation for reading research, more than she had gained in any of her classes. The experiences were valuable, but she had difficulty translating this into a résumé or a cover letter:

A lot of times, I’ll write in cover letters, or something like, ‘I’ve learned more or just as much through doing this project as I have in the classroom here.’ Not only is it awesome because I’m working on this completely different side of myself than what is my major and my minor but it’s also just great because I’m learning through my own initiative, too, I learned all of that awesome stuff about Rwanda and about evaluation and really cool stuff last year, and I never would have gotten that in a classroom, because I never would have taken a class on it, and there isn’t one on it. And it was just great. I wish that more people could have that experience. Or I wish that it would count for something (Interview, September 15, 2011).

Stevenson wished for more training in interview techniques:

I wish we would have learned more about different ways of interviewing people. I would have liked to see different ways students responded depending on the way that we phrased the questions (Interview, September 16, 2011).

#### *E. Reflections on Final Reports and Presentations.*

The team agreed that presenting the data at academic conferences and to Books & Beyond members helped to promote the project. Their presentations brought further benefits by helping them to see the importance of what they were doing and by motivating them to keep working. At the end of the 2010–11 Books & Beyond final presentation to the Leadership Team, the Evaluation Team members agreed that writing an article on their results and their experiences would be a valuable next step, and they drafted a report on the results that formed the basis for

the first part of this paper. Stevenson found this step very enjoyable:

The poster was basically a condensed version of the paper. Because there were three of us working on it, we used the time really well and made sure that we didn't procrastinate on it. We spent an entire day together just looking for resources. The next weekend after that, we made the poster from the paper. So it was just a lot of finding and then putting together the stuff and revising. So it worked out really well (Interview, September 16, 2011).

The presentations helped us to demonstrate the importance of our work to other Books & Beyond participants. Smith shared that "[At the Books & Beyond leadership year-end meeting], someone came up to me and said, 'you guys have been kind of getting on my nerves all year, but now I finally understand why you have done all of this,' which is really a gratifying moment."

#### *F. Reflections on Action Steps.*

We compiled many of these observations in the *2011 Books & Beyond Evaluation Team Leadership Legacy Manual*, which we made available to the 2011–12 Evaluation Team. Several of our suggestions for future evaluation teams appear in the Appendix. Our team disbanded as Smith left for Spain for a study abroad year, Stevenson focused on completing her studies, and Ryan took on other duties with the Books & Beyond Leadership Team. Despite the team disbanding, all three authors maintained a sense of involvement, to varying degrees, in ensuring the project's future success and supporting future evaluation teams.

### **VII. Implications and Future Directions.**

Our rationale for this qualitative study was to examine the value of YPE for enhancing learning opportunities for participants and for producing more relevant results for the Books & Beyond project. Our purpose was to examine our experiences and learn from them. Conducting a youth participatory evaluation of Books & Beyond helped us to generate a great wealth of participant insights about the project, providing us with knowledge about what Books & Beyond participants get from their involvement as well as how the project might be improved for the future. We set out to collect data on the success of Books & Beyond, report our findings to the participants and to the broader community, and finally, to reflect on the process of our evaluation project and ways that it could be improved.

The Books & Beyond Evaluation Team has demonstrated how engaging project participants in evaluation has produced an atmosphere conducive to continual project improvement and adjustment for the sake of the greater goal of bringing about social change in the world. In future years, we hope that Books & Beyond will be able to engage the TEAM students more actively in the evaluation process. Furthermore, although we elected not to collect evaluation data from the Rwandan students at Kabwende Primary School, we would like to see this step occur, as the Rwandan students have participated in the project by writing and illustrating their stories and by receiving copies of the book for their personal use. The goal of ensuring that others benefit from our experiences extends not only to the future participants of Books & Beyond, but to other student-faculty teams who may desire to engage in a collaborative evaluation of their co-curricular service activities.

## Acknowledgements

We gratefully acknowledge the State Farm Youth Advisory Board for its generous support. We also thank Dr. Gus Weltsek III for his assistance as a consultant to the Evaluation Team in 2010 and doctoral intern, Bitia Zakeri, for her assistance.

## Appendices

### Appendix 1. Books & Beyond Satisfaction Survey

We want to hear from you about your experience with Books & Beyond so we can make improvements for next year.

#### I. Part One

**1a. I am from [please check your school]:** (Indiana University or TEAM)

**1b. My gender is** (Female or Male).

**2. What were your roles in Books & Beyond this year? [check all that apply]** (Writing Partner, Collaborator, Pen pal, Fundraiser, Documenter, Evaluator, or other)

**3. What was your MAJOR role in Books & Beyond this year?** (Writing Partner, Collaborator, Pen pal, Fundraiser, Documenter, Evaluator, or other)

**4. For the role that you checked in #3, what are some areas that you would like to do differently, if you were to join Books & Beyond again next year?**

**5. Approximately how much time did you devote to the project (in all your roles)?** (1-2 hour per week; 3-4 hours per week; 5-6 hours per week or Other)

**6. We know you faced many challenges in completing the project. Please rate the following:** (Very small problem, Small problem, Not a problem, Big problem, Really big problem, Not applicable to me)

- a. time constraints
- b. communicating with TEAM students
- c. communicating with GV students
- d. uninteresting story theme
- e. using Skype (online conferencing)
- f. using MS Publisher
- g. attending Saturday meetings
- h. writing for different English learner levels
- i. understanding Rwandan culture
- j. Other (please specify)

**7. Please suggest some changes we could make for next year that would address these challenges.**



## **8. Why did you decide to be a part of Books & Beyond?**

### **II. Part Two**

(Very small problem, Small problem, Not a problem, Big problem, Really big problem, Not applicable to me)

1. Participating in Books & Beyond increased my connection to my school (IU, TEAM Academy, RISE Academy or Newark Collegiate Academy).
2. Participating in Books & Beyond increased my connection to my local community (Newark, NJ, or Bloomington, IN).
3. Participating in Books & Beyond increased my connection to my global community.
4. My Books & Beyond experiences have helped me to realize that I like to be involved in addressing community issues.
5. My Books & Beyond experiences have helped me develop a sincere desire to be of service to others.
6. Based on my experiences with Books & Beyond, I would say that the main purpose of work is to improve society through my career.
7. My experiences with Books & Beyond have increased my confidence that I can contribute to improving life in my community.
8. FOR TEAM STUDENTS ONLY: Participating in Books & Beyond increased my connection across schools (TEAM Academy, RISE Academy and Newark Collegiate Academy).

### **Appendix 2. Suggestions from the 2011 Books & Beyond Evaluation Team Leadership Legacy Manual**

1. Have a casual meeting first where everyone just gets to know one another.
2. Make sure to present yourself as one of the team and not just as the leader. This is a small team, and the other members will be doing almost as much work as you do for Books & Beyond.
3. After the first meeting, establish a weekly meet-up with your teammates that would start the next week. Be sure to contact everyone about the meetings a few days in advance and the day of the meeting so that nobody forgets.
4. Create an agenda for what you want to talk about at the weekly meetings.
5. Be sure to take notes at the meetings so that you don't forget what was discussed, what is coming up, and what needs to be addressed in the future meetings.
6. Working with faculty will give you access to advice that will help you get through any challenges or obstacles. Be sure to include the faculty in all scheduled meetings and updates, even if faculty can't make every meeting or event.
7. Brainstorm ideas for collecting data before addressing your team. It's always good to get the ideas going with your own first, and then the rest of the team will possibly start brainstorming along with you.
8. Once ideas get flowing, take notes of everyone's ideas. Be sure to keep the ideas available until an absolute final decision is made on how you and your team will collect data.
9. Work with your team to choose a few methods on how to collect data. Don't collect data in only one format; this will not be helpful because the writing partners and other students in the project respond to different ways of asking "How do you feel?"
10. Make sure you give everyone enough time to analyze all of the data so that in a near meeting, your team can compare notes. Take notes on major themes you notice and give examples of

them. Make note of any exceptions as well.

11. After discussing what you and your team found in the data, begin making a compilation of your findings.

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## **Interdisciplinary psychology and law training in family and child mediation: An empirical study of the effects on law student mediators**

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*Abstract: There is growing interest in interdisciplinary training programs for law students. The goal of these programs is to prepare law students for the real world interdisciplinary settings they will face in their careers. However, there exists little research to provide evidence of the utility of such training. This study examined the effectiveness of an interdisciplinary psychology and law training program on law students using a multi-method approach (i.e., knowledge tests and focus group discussion). Findings suggest that interdisciplinary training of law students increased law students’ knowledge of law and psychology, was enjoyed by law students, and had a beneficial impact on law students’ educational experience.*

*Keywords: law student education, interdisciplinary law and psychology training*

### **I. Background.**

**Interdisciplinary training in family law and psychology.** In 1906, Freud lectured judges in Vienna on the practicality of psychology (Tapp, 1976). Since then, many ways to combine law and psychology have been developed, including the study of legal psychology, therapeutic jurisprudence, and joint degree programs. More specifically, a call for such integration in the area of *family law* was made in the Family Law Education Reform Project (FLER Project; Hafemeister, Ogloff, & Small, 1990; O’Connell & DiFonzo, 2006; Rachlinski, 1999; Tapp, 1976), which was co-sponsored by the Association of Family and Conciliation Courts (AFCC) and Hofstra Law School’s Center for Children, Families, and the Law.

The FLER Project was designed to teach law students the complexities of family law. Most importantly, students learn that contemporary family law cases often are not like the scenarios provided in their casebooks where seemingly all cases go to litigation. Modern family law is, instead, an interdisciplinary enterprise where psychologists, social workers, lawyer and non-lawyer mediators, and attorneys come together to serve a single purpose. This purpose, as outlined in the American Law Institute’s (ALI) Principles of the Law of Family Dissolution, is “to facilitate thoughtful planning by cooperative parents while minimizing harm to children,” often through alternative dispute resolution methods (ADRs), such as mediation (O’Connell & DiFonzo, 2006, p. 525). The implementation of FLER’s core principles has begun through a

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course at Hofstra School of Law (Schepard & DiFonzo, 2011), which stresses interdisciplinary models of contemporary family law practice and emphasizes ADR methodologies. Additional programs designed to integrate family law with other disciplines exist (Applegate, D'Onofrio, & Holtzworth-Munroe, 2009; Riley, Hartwell, Sargent, & Patterson, 1997; Seibel, Sutton, & Redfield, 1985). Indeed, it is believed that the interdisciplinary training of law students with other disciplines, such as psychology, can enable professionals to more effectively assist the families they serve (Applegate et al., 2009). Additionally, legal professionals, including family court judges, increasingly are being urged to implement evidence-based practices into their procedures (Holtzworth-Munroe, D'Onofrio, & Applegate, 2009). To do so, they need to understand enough about social science research methodologies to be able to interpret empirical evidence regarding which interventions are effective. Interdisciplinary training in psychology can aide in this process as well.

A major concern, however, is that there is little empirical evidence supporting the efficacy of such interdisciplinary training programs for law students.<sup>6</sup> To our knowledge, there is only one empirical study of the impact of interdisciplinary training of law students. Colarossi and Fogery (2001) utilized a pretest-posttest control group design to evaluate the effectiveness of an interdisciplinary course on domestic violence for social work and law students. The study control group consisted of law and social work students who were taking other courses in their respective fields, not the interdisciplinary course, during the two semesters the study was conducted. Relative to students in the control group, students in the new training program had a significantly larger increase in knowledge concerning domestic violence, more positive views of interdisciplinary work, and a significantly larger decrease in belief in unfounded stereotypes about domestic violence (Colarossi & Fogery, 2001).

While the findings of this one study are encouraging, the need for additional research on the effects of interdisciplinary education on family law students is clear (Applegate et al., 2009). The training of law students as family mediators is a prime opportunity for such interdisciplinary training, as family mediation requires attention to both legal and psychological issues (Emery, Sbarra, & Grover, 2005). The current study was designed to gather data on the impact of an interdisciplinary law and psychology training program on law students serving as mediators in a law-school-based family mediation clinic.

**Family Mediation.** Family mediation is promoted as a way to increase efficiency in the dispute resolution process and improve party satisfaction among separating parents (Emery & Wyer, 1987; Benjamin & Irving, 1995; Kelly, 1996). In addition to the belief that mediation is less likely to result in further conflict than litigation, researchers and practitioners argue that parents know their children better than a judge and thus know what is best for their children (Emery, Otto, & O'Donohue, 2005). Also, parents may be more willing to stick to an agreement they mediated rather than one handed down to them by the court (Bautz & Hill, 1989; Emery, Matthews, & Wyer, 1991). As a result, mediation is a widely used family law intervention (Emery, Sbarra, & Grover, 2005).

The best study to date supports the notion that mediation of family disputes can have positive outcomes on re-litigation rates and level of inter-parental conflict (Emery, Laumann-Billings, Waldron, Sbarra, & Dillon, 2001). However, findings from methodologically strong studies of mediation are quite limited, and there is room to improve the impact of mediation on

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<sup>6</sup> While few studies of the interdisciplinary training of family law students exist, there are more studies of the training of clinicians in other fields such as clinical psychology (Hill, Charles & Reed, 1981) and medicine (Leung, 2002).

families (Beck, Sales, & Emery, 2004). In particular, there is interest in conducting mediation in a manner that helps parents focus on the best interests of their children. Two such interventions were introduced, by McIntosh, in Australia: Child Focused Mediation (CF) and Child Inclusive Mediation (CI) (McIntosh, Wells, Smyth, & Long, 2008). These interventions are designed to promote protective factors for children of divorce (e.g., lower interparental conflict, stronger parent-child relationships) by motivating parents to consider the needs of their children during mediation (McIntosh, 2000).<sup>7</sup> In CF, this is done by talking to parents about relevant research and developmental issues (e.g., the impact of divorce and parental conflict on children) while helping parents consider how the general information applies to their family. In CI, a child consultant (usually a mental health specialist) interviews the child(ren) in the family and uses that information to customize feedback to the parents. These interventions have shown promise in an initial study. In that study, families participated in either CF or CI (McIntosh et al., 2008). A four-year follow-up demonstrated benefits to all families, with extra benefits accruing to families in the CI intervention (McIntosh, Long, & Wells, 2009). For example, parents in CF and CI reported lower levels of acrimony and conflict, as well as higher levels of satisfaction with parenting arrangements, over time.

CF and CI approaches to family mediation provide an opportunity for law students to receive interdisciplinary training in law and psychology, as these approaches require an understanding of legal and psychological issues and can directly involve both legal and mental health professionals (e.g., a lawyer mediator and a psychologist child consultant work together). The current study was designed to study the impact on law student mediators of interdisciplinary training in CF and CI mediation. We did so within the context of the Indiana University (IU) Child Informed Mediation Study (CIMS; for more details, see Ballard, Holtzworth-Munroe, Applegate, D'Onofrio & Bates, in press; Holtzworth-Munroe, Applegate, D'Onofrio, & Bates, 2010), a study designed to replicate and extend the McIntosh et al. (2008) study of CF and CI. The CIMS extends McIntosh's research by comparing CF and CI interventions to a mediation-as-usual (MAU) control group that did not involve a child consultant. In all three forms of mediation (MAU, CF, and CI) in CIMS, mediators conducted a mediation intake and decided if each case was appropriate for mediation. Two weeks later, the parties returned for mediation negotiations. In CF and CI cases, the session started with a parent feedback session, led by psychology graduate students who served as consultants. Following the parent feedback session in CF and CI, child consultants left and mediators proceeded to the negotiation phase of mediation, referring back to information provided by the child consultants if it was deemed helpful. While the McIntosh et al. study (2008) involved professionals, in CIMS, law students serve as mediators. Thus, in order to implement CIMS, the law and psychology faculty involved in the study developed an interdisciplinary training program for law students, consistent with recommendations made by AFCC regarding training of law students in family law (e.g., see the entire Oct. 2006 issue of *Family Court Review*; Applegate, D'Onofrio, & Holtzworth-Munroe, 2009). By conducting interdisciplinary training within the context of a research study on the effects of CI and CF versus MAU, law students also were able to directly observe how the studies that form the basis of evidence-based practice guidelines are conducted (Holtzworth-Munroe, D'Onofrio, & Applegate, 2009).

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<sup>7</sup> While CI and CF theoretically overlap, in practice cases are mediated using only one method or the other, not both.

## II. Current study.

The current study is, to our knowledge, the first to evaluate the impact of interdisciplinary law and psychology training on law students learning family mediation. We were interested in objectively measuring knowledge gained and in assessing students' subjective reports regarding the impact of the interdisciplinary training. Our two primary outcome measurement instruments consisted of a knowledge test and focus group discussions with students.

We implemented two study design features to help assure that any observed positive outcomes were due to the interdisciplinary training rather than other factors. First, before we began the CIMS training, we gathered data for one semester. This "baseline" (or pre-interdisciplinary training) semester serves as a comparison group to the later, interdisciplinary training semesters. Second, each semester (baseline and during interdisciplinary training), we administered outcome measures at both the start and end of the semester; this method allowed us to observe changes over the semester.

We hypothesized that, as a result of the interdisciplinary training, law students would develop greater knowledge not only of family law but also of relevant psychological research findings on divorce (e.g., the impact of divorce on children) and program evaluation research methods (e.g., how to conduct studies of program effectiveness for evidence-based practice). Additionally, we hypothesized that law students would report that they benefited from the interdisciplinary training and enjoyed working with psychology graduate students through CI and CF mediation.

## III. Methods.

### A. Participants.

Study participants were 33 law students in their second or third year who were in a divorce mediation course at the Indiana University Maurer School of Law Viola J. Taliaferro Family and Children Mediation Clinic ("the clinic"). The baseline comparison group ( $n = 8$ ) consisted of law students in the course one semester before the interdisciplinary training began, who did not participate in the new interdisciplinary training and did not learn CF or CI divorce mediation approaches, but were instead trained in MAU. The experimental group ( $n = 25$ ) included law students over three semesters who received training in MAU as well as in the new interdisciplinary training and who served as mediators in CF and CI mediation cases as part of the CIMS.

*Baseline versus Interdisciplinary Training for Law Students.* During the baseline semester before the interdisciplinary training officially began, law students were enrolled in a 40+ hour intensive course that fulfilled training requirements to become state registered mediators (for more information, see Applegate et al., 2009). Once the law students were registered mediators, they began seeing cases at the clinic and conducting mediation as usual. New law student mediators usually were paired with a law student mentor who already had served as a mediator for a semester. Students met with the professor supervisor for weekly meetings and additional supervision as needed. During the baseline semester, law students did receive some interdisciplinary training, consistent with state requirements for mediators; most of this training consisted of guest lectures by psychology faculty or other mental health experts. These lectures focused on topics such as psychological issues clients might face and

psychological competence to mediate, how to screen for domestic violence, and how to deal with difficult families. In preparation for the guest lectures, law students during the baseline semester also read a few psychology articles. During the baseline semester, due to the current study, other exposure to psychology occurred, in the form of knowledge test administration (the knowledge test had psychology questions on it) and participation in student focus groups that included law and psychology students. Thus, the main difference between baseline semester and the later interdisciplinary training semesters was that law students did not learn CF and CI mediation and did not work with psychology graduate student child consultants in the CF and CI divorce mediation interventions.

The rest of the study (i.e., 3 semesters) involved the new interdisciplinary training program for law student mediators. Law students participating in the CIMS research received the training and supervision described above for the baseline semester. In the new, interdisciplinary training, psychology professors involved in CIMS provided additional training in program evaluation research methods (to help law students understand the CIMS study) and psychological research (to help law students understand the issues that the child consultant might discuss with parents) and assigned more psychology articles to be read. The mediators had additional interdisciplinary training as they learned CI and CF mediation. Specifically, psychology faculty taught classes in which they lectured and held discussions introducing CI and CF mediation interventions, and law student mediators sometimes participated in role-plays of CF and CI mediation with psychology students. Then, as part of CIMS, law student mediators participated in CF and CI mediations. This included providing psychology child consultants with information about the case, reviewing the child consultant's plans for presenting the parents with feedback about their children, being present during the CF and CI parent feedback sessions led by psychology graduate students, and using the information the child consultant presented during the negotiation phase of mediation (when it was deemed appropriate to do so). Also, at least twice each semester, law student mediators and psychology graduate student child consultants met for joint case round discussions to discuss particular cases they had seen and ongoing training issues.

### *B. Measures.*

Possible interdisciplinary training effects were measured with two outcome measures: 1) knowledge tests; and 2) student focus group discussions. Both measures were given at both the beginning and end of each semester (i.e., before and after training). Students were informed that the knowledge tests and focus groups would not be factored into their course grade. They were encouraged to try their best on the knowledge test and to feel free to discuss what they wanted in the focus groups. These steps were taken, after consultation with the university's Institutional Review Board, to ensure that student mediators' study participation was voluntary and thus not part of course requirements or linked to course grades. We wanted to minimize student concerns regarding how their law professor would evaluate them.<sup>8</sup>

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<sup>8</sup> This procedure, particularly for the knowledge test, might have been a study weakness because any lack of significant study findings could be due to a lack of student motivation to study and do well on the test. On the other hand, this procedure might be a study strength, as the knowledge test at the end of the semester most likely reflects information students learned and retained, not just temporarily memorized to pass the test.



*Knowledge test.* The knowledge test consisted of 60 multiple-choice questions with two scales. There were 31 questions in the law scale (e.g., “In Indiana, the court may not grant the divorce of a couple until 60 days after one spouse first files for dissolution [divorce], True or False.”). The psychology scale was further divided into two subscales. Twelve questions addressed program evaluation research methods (e.g., “In order to keep subjects in your experimental and control groups comparable on the variables you think might affect the study findings, you must use: a. Generalization, b. Control of the independent variables, c. Random assignment, d. Double blind placebo conditions, e. Random selection from the population of interest”), and 17 questions addressed psychology research on divorce (e.g., “A recent review of child custody evaluations concluded all of the following except: a. Tests designed to address relevant custody questions are not based on scientific evidence, b. There are well established studies documenting whether infants/toddlers are harmed by overnight visits, c. Constructs frequently used to justify conclusions in evaluations, such as ‘parent alienation syndrome,’ have never been scientifically tested, d. Evaluators frequently use well-validated measures that aren’t relevant to the court decisions.”).<sup>9</sup> To maintain student confidentiality, law students did not put their name or any identifying information on their knowledge tests and the test was administered by an assistant, not the faculty involved in this study.

*Focus group discussion.* Focus group discussions were held to gather information on students’ knowledge, attitudes, and feelings concerning divorce, mediation, research, and interdisciplinary training. Psychology professors acted as facilitators for the law student discussions to decrease the possible effects of social desirability (i.e., law students might filter their comments for fear of being negatively evaluated by their law professor, particularly if they were to criticize that professor). The facilitators prompted students’ discussion with a list of questions, but also followed the natural flow of the discussion, so that not every question was asked in every focus group.<sup>10</sup>

*Focus group discussion coding.* We developed a system for coding the content of focus group discussions. The same coding system was applied to pre-training and post-training discussions, allowing direct comparison of discussions at the beginning and the end of the semesters. Observation of the group discussions demonstrated that the discussions often contained particular themes; codes were written to capture those themes.

Within certain topics of conversation (i.e., divorce, mediation, and research), codes captured students’ knowledge/understanding of the topic (e.g., “Students appeared to have confidence in their understanding of mediation”), sources of information about the topic (e.g., “Students discussed personal experiences outside of their class and the IU clinic as a source of knowledge about divorce”), and attitudes/feelings concerning the category’s topic (e.g., “Students discussed research in a positive light”). Other codes assessed the students’ discussion of their training goals included professional goals (e.g., “Students discussed wanting to learn, or having learned about, practical skills for future careers”) and personal goals (e.g., “Students wanted to learn, or discussed having learned about, relevant issues for personal reasons such as influencing their own relationships”). Some codes captured the extent to which the students discussed interdisciplinary training; one code measured the acquisition of new information from their experience with interdisciplinary training (e.g., “Students expressed gaining, or having a better grasp of, the concept of divorce, mediation, research, and psychology”) and four codes

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<sup>9</sup> The knowledge test is available from the authors, upon request.

<sup>10</sup> The focus group questions are available upon request to the authors.

measured behaviors related to the enjoyment of interdisciplinary training (e.g., “Students spoke of having positive feelings about the interdisciplinary training experience”), a desire for more or continued interdisciplinary training (e.g., “Students mentioned a desire for the integration of disciplines”), frustrations due to the interdisciplinary process (e.g., “Students felt interdisciplinary training was more complicated than it was helpful”), and suggestions for additional interdisciplinary training (e.g., “Students expressed a desire for more preparation for mediation and examples of ideal interdisciplinary mediation”). Each code captures a specific behavior of interest and is followed by several descriptors/examples that clarify the behavior being measured.

Codes are rated on a zero to three scale, as follows: 0 = “Students do not engage in the coded behavior,” 1 = “Students engage in the coded behavior only slightly/briefly,” 2 = “Students engage in the coded behavior to a noticeable or moderate degree, but not extensively,” and 3 = “Students engage in the coded behavior a lot or extensively.” Each code was assessed once for the entire group; in other words, codes were not assigned to individual students participating in the discussion.<sup>11</sup> Due to idiosyncrasies across focus group discussions, a check box was also used to indicate that facilitators did not ask about a topic and thus the group had not engaged in the behavior.<sup>12</sup>

### *C. Procedure.*

*Data collection.* For the baseline semester, eight law students completed knowledge tests and participated in focus group discussions at the beginning and end of the Spring 2009 semester. In each of the following three semesters, a new group of law students (8 in Fall 2009, 8 in Spring 2010, and 9 in Fall 2010) received training in the CI and CF mediation interventions and specialized interdisciplinary training through the implementation of the CIMS. In each of these semesters, the law students completed the knowledge test and participated in a focus group discussion at the beginning and end of the semester.

*Coding of focus group discussions.* Five undergraduate coders were trained to code the focus group discussions. Focus group discussions were coded in a random order. All of the focus group discussions were coded by all coders and checked for inter-coder reliability. Coders were aware of reliability checks and given feedback on a weekly basis. To determine inter-rater reliability, we utilized interclass correlation coefficients (Shrout & Fleiss, 1979). The interclass correlation coefficients for the codes used in study analyses ranged from .44 to .84 ( $M=.70$ ).<sup>13</sup> For each code, the average rating across the coders was calculated.

For data reduction purposes, we formed several *a priori* defined subscales, each averaging data across a group of related codes, and checked their internal consistency using Cronbach's alpha. These subscales were utilized for data analysis and were defined as follows: Training Goals ( $\alpha = .74$ ; two items) measured the extent to which law students' expressed professional and personal goals for the course. Confidence/Enjoy ( $\alpha = .86$ ; four items) measured the level of confidence the law student's expressed regarding their understanding of divorce, mediation, and research and the level of their enjoyment of the interdisciplinary training.

<sup>11</sup> Given concerns about student comfort, individual students were not forced to be involved in the discussion, and the level of participation varied across students, making it impossible to assign all codes to all students.

<sup>12</sup> The full coding manual, which includes codes not used in the present study, is available from the authors, upon request.

<sup>13</sup> Detailed inter-rater reliability data are available from authors upon request.

Information from the Current Course ( $\alpha = .91$ ; four items) assessed the extent to which law students mentioned the current course as a source of their knowledge about divorce, mediation, and research. Interdisciplinary Training Information/Enjoyment ( $\alpha = .71$ ; two items) measured the extent to which law students expressed their belief that they had acquired new information from, and enjoyed, the interdisciplinary training.

*Themes from focus group discussions.* To obtain additional qualitative data regarding law students' experiences with interdisciplinary training, we re-watched recordings of the focus group discussions, identifying themes that emerged and selecting quotes that exemplify these themes.

### III. Results.

The present study examine the hypotheses that interdisciplinary training would result in: 1) increases in law students' knowledge test scores; and 2) positive changes in the law students' attitudes and knowledge about interdisciplinary work, as observed in focus group discussions.

**Table 1. Knowledge Test Scores by question type for baseline and interdisciplinary Semesters.**

Subscale	Baseline Semester				Interdisciplinary Semester			
	Pre (SD)	Post (SD)	<i>t</i> (df)	<i>p</i> ( <i>d</i> )	Pre (SD)	Post (SD)	<i>t</i> (df)	<i>p</i> ( <i>d</i> )
Law	18.13 (2.39)	22.69 (2.22)	-3.95 (7)	.00 (1.98)	16.12 (3.19)	21.90 (2.48)	-7.15 (24)	.00 (2.02)
PERM	4.75 (1.16)	4.75 (1.67)	.00 (7)	.50 (0)	4.76 (1.42)	5.52 (1.56)	-1.80 (24)	.04 (0.51)
PRD	11.06 (1.97)	10.75 (2.37)	.29 (7)	.39 (0.14)	9.80 (1.88)	11.02 (1.85)	-2.31 (24)	.02 (0.65)

*Note:* The total possible points for Law was 31 points. The total possible points for PERM (Program Evaluation Research Methods) was 12 points. The total possible points for PRD (Psychology Research on Divorce) was 17. Pre (Pre-training); Post (Post-training).

*Knowledge Tests.* One-tailed independent samples *t*-tests were run on knowledge test data<sup>14</sup>. We also examined effect sizes. The effect sizes in this study measure the magnitude of the effect that the interdisciplinary training had on law student knowledge (See Table 1).<sup>15</sup>

<sup>14</sup> Ideally, dependent *t*-tests and/or paired, repeated measures ANOVAs would have been run to directly link individual students' pre- and post-semester scores, but because no identifying information was gathered from the students, we were unable to match the pre-training knowledge test scores to post-knowledge test scores for individual students. Thus, we were forced to treat the two test scores (i.e., pre- and post-semester) as independent of one another although in reality they are not. However, we used the actual number of students in the study, rather than the inflated number created by treating the pre-training and post-training tests as independent samples, when computing degrees of freedom in our analyses.

<sup>15</sup> Comparisons of law students' scores, at the beginning of the baseline and interdisciplinary semesters revealed that there were no statistically significant differences between the groups' pre-training scores on law ( $t(31) = 1.63, p = 0.11, d = .71$ ), program evaluation research methods ( $t(31) = -0.02, p = 0.99, d = -.01$ ), or psychology research on divorce questions ( $t(31) = 1.63, p = 0.11, d = .65$ ). However, examining the means at the start of the semester, baseline semester law students' scores were noticeably higher than the scores of the students in the interdisciplinary semester for law question and research on divorce questions, suggesting that the students during the baseline semester entered the course with more knowledge of family law and psychology research findings regarding divorce. Law students' end of semester scores were also compared across the baseline and

*Baseline semester.* Law students had statistically significant increases in their law knowledge from the beginning to the end of the semester ( $d = 1.98$ ) but not in their knowledge of program evaluation research methods ( $d = 0$ ) or psychology research on divorce ( $d = .14$ )

*Interdisciplinary semesters.* From the beginning to the end of the interdisciplinary training semesters, law students had significant increases in their law knowledge ( $d = 2.02$ ), with the magnitude of the effects comparable to the baseline group. In addition, they had statistically significant increases in their understanding of findings from psychology research on divorce ( $d = .51$ ) and knowledge of program evaluation methods ( $d = .65$ ).

## Focus Group Discussions

*Baseline semester.* As there was only one group of baseline semester students, and discussion was coded at the level of the group, statistical analyses could not be run on the baseline semester scores. However, examination of Table 2 indicates that law students were less likely to discuss their goals for training at the end of the semesters than at the beginning. Their level of discussion on the other subscales increased from the beginning to the end of the semester, reflecting increased confidence in their knowledge of topics (divorce, mediation, research), expressing that they had acquired information from the current course, and having enjoyed interdisciplinary training (i.e., law students did receive some interdisciplinary training during the baseline semester).

**Table 2. Focus group discussions for baseline and interdisciplinary semesters.**

Coding Subscale	Baseline Semester		Interdisciplinary Semester			
	Pre	Post	Pre (SD)	Post (SD)	$t$ (df)	$p$ ( $d$ )
Training	2.10	.60	2.10 (.28)	1.25 (.35)	17.00 (1)	.02 (-2.65)
Confidence	1.73	2.80	1.35 (.22)	2.57 (.14)	-10.12 (2)	.00 (6.60)
Course	.55	2.65	0.67 (.36)	2.30 (.22)	-9.69 (2)	.01 (5.49)
Enjoyment	.60	2.40	1.25 (.21)	2.65 (.07)	-7.00 (1)	.05 (8.85)

*Note:* \* =  $p \leq .05$ . \*\* =  $p \leq .01$ . \*\*\* =  $p \leq .001$ . Training (Training Goals); Confidence (Confidence and Enjoyment); Course (Information from the Current Course); Enjoyment (Interdisciplinary Training Information/Enjoyment); Pre (Pre-training); Post (Post-training).

*Interdisciplinary semester.* One-tailed dependent samples t-tests and effect sizes were conducted on focus group discussion across the three interdisciplinary semesters. See Table 2.

interdisciplinary semesters and no statistically significant differences were found between groups' post-training scores on law ( $t(31) = 0.80, p = 0.43, d = .34$ ), program evaluation research methods ( $t(31) = -1.20, p = 0.24, d = -.48$ ), or psychology research on divorce questions ( $t(31) = -0.34, p = 0.74, d = -.48$ ), although examination of the means suggests that students during the interdisciplinary semester ended with higher knowledge scores on the questions regarding program evaluation research methods and psychology research on divorce.

Law students discussed professional and personal training goals less at post-training than at pre-training ( $d = -2.65$ ). Overall confidence in their knowledge of divorce, mediation, and research ( $d = 6.60$ ) increased for law students from pre-training to post-training. The current course was discussed as a source of students' knowledge about divorce, mediation, and research more extensively post-training than it was pre-training ( $d = 5.49$ ). Students expressed that they enjoyed the interdisciplinary training more at post-training than they did pre-training ( $d = 8.85$ ).<sup>16</sup>

### Themes from Focus Group Discussions

*Similarities across baseline and interdisciplinary semesters.* In general, law students in both baseline and interdisciplinary training semesters reported that they had gained practical skills applicable to future careers and felt positively about the mediation process as an alternative to litigation.

Prior to training in mediation, law students in both the baseline and interdisciplinary training semesters expressed excitement about the experiential learning component of their mediation clinic training. For example, at the start of the semester (pre-training), a baseline semester student said, "The thought of being able to be *so hands on* while a law student was really appealing. . .", and a student receiving interdisciplinary training stated, "*Practically*, this experience will be helpful for dealing with clients in the future. . .".

At the end of both the baseline and interdisciplinary training semesters, the law students were, indeed, pleased with their experiential training and believed that it would influence their future careers. A baseline student, at post-training, stated, "When you learn how to listen to people the way you do in mediation . . . the skill applies to other settings [like] when you are talking to your clients or when you are preparing for trial." Similarly, an interdisciplinary training law student, at post-training, noted, "I learned how to transition from advocate to neutral. It's a different approach where you shift your mindset to stay neutral. It was very helpful."

Prior to receiving training, both baseline and interdisciplinary law students expressed concerns about how courts handle custody decisions and the ability of judges to do so in a way that would benefit the child. For example, according to a baseline student at the start of the semester (pre-training), "Knowing the legal standards and the best interests' analysis and the enormous discretion the court has, I like the idea of taking lots of things into account. It's scary because judges are human beings too. They have a big docket and have to do the whole process and I don't think anyone could do a good job or make a good determination, but this is how we do it: judges decide. I don't know if that's the best decision." Similarly, an interdisciplinary training student, at pre-training, stated, "It seems like *mediation would be better than having some judge say what to do*. You're working together and you feel like you have more control over the outcome. It seems to me that they would be happier. They're divorced but it's better than walking into *a combative court proceeding*."

After receiving training in mediation (at the end of the semester), both baseline and interdisciplinary training law students were even more aware of the inherent difficulties, such as

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<sup>16</sup> Given the small sample size and nature of the data gathered, it may be controversial to analyze the focus group data with dependent samples t-test. Thus, we also examined the rank order changes for each subscale and each of the three interdisciplinary training semesters. We found the same pattern of results as we did for the dependent samples t-tests. For example, in each interdisciplinary training semester, the mean rank of training goals from pre-training to post-training changed in the negative direction and the mean rank for confidence and enjoyment changed in the positive direction from pre-training to post-training. These analyses are available from the authors upon request.

time constraints, of the court system for families going through divorce or separation. They continued to have concerns about the court's role in custody decisions. For example, one baseline semester student, at the end of the semester noted, "I'm more skeptical of decisions made by judges after the twenty minute hearing and reading the case file now. There have been mediations where I was thinking one thing for the first two or even four hours, but after several hours of conversation you discover these game changing facts. I don't think the judges are that much quicker about figuring these things out in their twenty minutes to have the whole picture and make a meaningfully informed decision." Indeed, at the end of the semester, both baseline and interdisciplinary training law students felt that mediation was a better option for their clients than court. For example, students stated, "...*When mediation works for a couple, it really works* and the outcomes are really good and you can tell that's really going to work for them," and "Every couple I had seemed to *really like the process a lot*. It seemed *really empowering* to them to have some control over decision making."

*Differences across baseline and interdisciplinary semesters.* Students' quotes revealed that students in interdisciplinary, but not baseline training, believed they had benefited from interdisciplinary training as they had become more aware of issues they had not previously considered. Also, students in the interdisciplinary training appreciated learning about a different discipline and receiving the real world experience of working with other professionals. These students endorsed ideas suggesting that they were more likely to work across disciplines in the future and carry what they learned in interdisciplinary training into their professional careers.

Before the start of training, both baseline and interdisciplinary students expressed a desire to learn more about research and relevant data. One baseline student, at the start of the semester, said, "*I'd like to know* how it plays out over time if a couple who divorces has high or low conflict ... How does conflict change over time?" Another baseline student, at pre-training, noted, "I don't know anything about research." Similarly, at the start of the semester, a student about to receive the interdisciplinary training stated, "I only know stereotypes probably because I've heard it on the news or *Maury*," and another interdisciplinary training student said, "*Learning how to evaluate* interventions based on psychological research *would be helpful...*".

At the end of training, baseline law students continued to have a desire for information about research. At the end of the semester, one baseline student stated, "*I want to know more* about the child inclusive mediation process ..." while another baseline semester student added, "*I'd like to see a study* that compares the long term durability of agreements reached through a very directive mediation style versus a more facilitative mediation style ...".

In contrast, post interdisciplinary training law students clearly had gained experience with research. On the one hand, they were grappling with some of the frustrations experienced in research. One interdisciplinary training student, at post-training, reported, "I think the most frustrating thing for me was the *random assignment*. I just kept on getting divorce mediation as usual ...", while another said, "I never realized *how reluctant people are to participate in research*. I was surprised by parents' resistance." But the law students who received interdisciplinary training also were quite positive about their exposure to research knowledge and training. For example, an interdisciplinary training student, at post-training, said, "*I learned a lot about research* on divorce and mediation... *I find myself referring to information given by the psychology faculty* when I'm talking to my parents. I tell people about mediation and random assignment ...", and another student who received interdisciplinary training said, "*I learned all my research knowledge* from the child feedback session." As a final example, an interdisciplinary training law student, post-training stated, "I liked that *the psychology department came in and*

*told us ... the way the study works and how it is designed ... and this is what we're hoping to accomplish and yes there are flaws... I like that transparency and that honesty in what we were doing."*

At the beginning of training, baseline law students made no mention of interdisciplinary training; however, by the end of the semester, they wanted such training in the future. Such statements, made by baseline semester students at the end of the semester, included: "I'd like to hear from *psychology faculty* a little bit more ..."; "The day we just sat down with psychology students (i.e., focus group discussion) it was good to see the difference in views between people."; and "I'd like to see *psychology students mediating with law students ...*". In contrast, at the start of the interdisciplinary training semesters, law students were excited about the interdisciplinary training that they were going to receive. One such student said, "*I'm psyched to be working with the psychology department. It's very different from what we do on a day-to-day basis. We do custody battles ...*", and another said, "*I'm excited to work together ...*".

And at the end of the training, law students in the interdisciplinary training semesters expressed how much they had enjoyed the interdisciplinary training. Example statements include: "Interdisciplinary training was really helpful. Sometimes we couldn't tell what it was because *it went hand in hand so well ... It was so intertwined that it just flowed. I'm appreciative to have had it. It definitely helped.*"; "It's nice to have the child feedback session so that what you're thinking in your head comes out through the child consultants."; and "Child consultants could get parents focused on the best interests of [the child]. Recently we did a child inclusive mediation and the parents ... were very emotional when [they learned about] their daughter's reaction to the divorce and how their actions [were impacting] their daughter ...".

## **V. Discussion.**

### *A. Overview of Major Findings.*

Theoretically, the field of family law would benefit from the development of interdisciplinary training programs for its students, and in recent years, such programs have been implemented. However, few of these programs have been empirically studied or validated. Thus, there is no guarantee that law students are indeed benefiting from the added training components. The goal of this study was to learn if law students receiving training in family mediation benefited from interdisciplinary training with psychology. The Child Informed Mediation Study (CIMS) incorporated interdisciplinary training of law students while conducting CI and CF mediation interventions (Ballard et al., in press).

The results provide evidence that interdisciplinary law and psychology training increases knowledge gained by law students. Law students experienced significant increases in their knowledge of relevant family law after both baseline training and interdisciplinary training. This is important because it demonstrates that adding a psychological component to law student training does not reduce the students' gains in relevant law information. The interdisciplinary training had the added benefit of increasing law students' knowledge of psychology research findings on divorce and program evaluation research methods, increases not seen among law students in the baseline semester. Such knowledge gains may help law students in real world future family law careers and in understanding the new evidence-based practice movement in law.

Analyses of focus group discussions also suggest that interdisciplinary training had a beneficial impact on the law students' educational experience. Analyses revealed significant differences from pre-training discussions to post-training discussions. Law students had greater confidence in their understanding of mediation and research after receiving interdisciplinary training. Getting to work with another discipline was also associated with gaining new information and enjoyment of the process for law students. This is similar to findings from medicine where the interdisciplinary training of medical doctors with nurses was reported as a valuable learning experience (Croen, Hamerman, & Goetzwl, 1984).

Unfortunately, we were unable to statistically compare the changes within baseline focus group discussions to the changes within interdisciplinary semesters. Visually, we see similar patterns of results for both types of training, but we are unable to statistically determine if the magnitude of change is equivalent across the two training methods. However, the qualitative student quotes, from the focus group discussions, provide further support for the benefits of the new, interdisciplinary training. While both baseline and interdisciplinary semester students described a desire for interdisciplinary training at the start of the semester, at post-training, students in the interdisciplinary semester also expressed that they thoroughly enjoyed the interdisciplinary training they received, felt they had obtained a better understanding of the complexities and difficulties inherent in psychological research, and felt that this knowledge would impact the way they would approach family law in the future.

#### *B. Study Limitations and Future Studies.*

A major limitation of this study was the small sample size. Data were collected for four semesters, only one of which was a baseline semester, limiting the number of students involved and the statistical techniques that could be used. To date, in this research area, it has been difficult for any one study to include large samples because training of clinicians is an intense experience that tends to occur in small groups and involves limited numbers of students each semester. Thus, for example, it took us two years to gather data from even our small sample. Given this issue, additional studies clearly are needed. The field needs to replicate research, with a goal of eventually being able to conduct reviews and meta-analyses across multiple smaller studies to examine whether there is converging evidence for the benefits of interdisciplinary training across studies.

As this clinical training opportunity was an elective course within the law school, we were unable to randomly assign the law students to the family mediation course or not. We also were unable to randomly assign students to receive training as usual or interdisciplinary training due to the limited number of students and faculty available to run such programs (e.g., we could not run both types of training simultaneously because there was only one law professor available to teach the program). The methodological weakness of lack of random assignment is a difficulty in this area of research; for example, Colarossi and Forgey (2001) were unable to randomly assign their participants to a control condition. While our baseline comparison group data was collected the semester prior to our interdisciplinary semesters (i.e., no random assignment), one strength of our study is that both our baseline and interdisciplinary semester law students received similar training in mediation (e.g., the same 40 hour mediation course taught by the same professor); the only difference for the interdisciplinary semester was the added interdisciplinary components, helping to isolate the effects of the new training. Additionally, it is unlikely that students in the baseline and interdisciplinary semesters would have differed in their



initial interest in interdisciplinary work, as at the time students asked to register for the course, they were unaware of the new interdisciplinary training. This builds confidence that our results are due to the interdisciplinary training rather than other factors.

Another limitation of this study was the inability to connect the pre-training and post-training knowledge test scores of individual students, which limited the types of statistical analyses we could conduct. In the future, assigning each student a research identification number could link knowledge tests from the beginning and end of the semester. This would allow researchers to examine the changes for individual students across the semester. Additionally, depending on the recommendation of Institutional Review Boards, future researchers should weigh the pros and cons of grading the student knowledge tests to maximize student preparation for the tests. Similarly, our focus group analyses were limited due to coding discussions at a group level. In the future, focus group discussions could be replaced with individual student interviews that could be coded at the level of the individual, increasing the sample size and allowing pre- and post-semester repeated measure statistical analyses. Doing so would also allow future researchers to examine varying effects of the interdisciplinary training across individual students; for example, perhaps some students liked it more than others and those students may have been more vocal in the focus group discussions, despite the facilitators' efforts to involve all students.

Interdisciplinary work and teaching had already begun during the baseline semester as a collaborative working relationship was established to plan the interdisciplinary project. This might explain, for example, why baseline semester students discussed how much they learned from interdisciplinary training. This finding suggests that a little interdisciplinary training may go a long way, as law students expressed appreciation for the little time they spent with psychology personnel during the baseline semester. It also highlights the difficulties of obtaining a "pure" baseline semester while the faculty are designing and implementing studies of interdisciplinary training; for example, during our baseline semester, psychology faculty were visiting the clinic and talking to the law professor, perhaps creating a positive "buzz" about interdisciplinary training.

### *C. Implications.*

We found converging evidence, from both quantitative (knowledge test and focus group coding analyses) and qualitative (focus group quotes) data, of the positive effects of interdisciplinary training on law students. Opportunities to do research in a real world setting are rare and challenging. Such research requires decisions to be made that optimize internal validity (i.e., a tightly control study) instead of external validity (i.e., less control but more generalizability to other samples). While the nature of this research does not allow for the utmost methodological rigor, it is worthwhile as there are so few empirical studies of interdisciplinary training of law students. But interdisciplinary training should continue to be researched in different university settings and with different disciplines that cross paths in the real world.

The current study results also support calls for increased interdisciplinary training in other areas of teaching and learning. For example, while medical training has become more specialized, patient care is increasingly complex and thus requires medical experts to work well with interdisciplinary teams to provide optimal care; thus, it is the job of faculty to prepare medical students for their careers through interdisciplinary education (Hall & Weaver, 2001). Similarly, business schools emphasize integrating education across disciplines to teach students

how to apply their knowledge to the industries for which they will work upon graduation (Ducoffe, Tromley, & Tucker, 2006). And experts in the field of psychology recommend training clinicians in diverse interdisciplinary topics (Spirito et al., 2003). While interdisciplinary training is intuitively appealing, further research is needed to better understand the benefits and the best teaching methods. The current study is one of very few studies to attempt to do just that.

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## **Fostering teacher candidate dispositions in teacher education programs**

**Lauren Cummins<sup>1</sup> and Bridget Asempapa<sup>2</sup>**

*Abstract: The role of teacher preparation programs is to ensure that candidates are effectively prepared in the knowledge, skills and dispositions needed to be an effective educator. However, dispositions have always been a challenge to the field of teacher education, particularly in response to assessing dispositions and in answering the question; can dispositions be taught? Many professionals in education and career counseling believe that candidates come endowed with the dispositions needed to be an effective teacher and this “endowment” is the reason the candidate has chosen the career of teaching. Though, to a certain degree this premise may hold true, this article discussing a study done in an early childhood teacher preparation program with teacher candidates and demonstrated dispositions can be “taught” if there is intentionality with effective teaching methods related to dispositions. Pre and post assessment results of 99 teacher candidates are compared in an introductory early childhood education course to measure candidates’ tendencies to act in ways conducive to appropriate professional dispositions. A teaching intervention related to dispositions is also discussed and provided the premise that with intentional and effective teaching, comes intentional and effective learning.*

*Keywords: teacher preparation, fostering dispositions, assessment*

Recent trends within school systems have made it increasingly important that teacher education programs ensure their teacher candidates are prepared to become effective teachers in the classroom. In order to ensure this effective preparation, national accreditation bodies, as the National Council for Accreditation of Teacher Education (NCATE), has mandated programs assess the acquisition of knowledge, skills, and dispositions of teacher candidates (NCATE, 2010). While skills and knowledge in the field of education are fairly easy to define, cultivate, and assess, dispositions have always been difficult to define. Cultivating them within teacher education programs has been questionable, and some have even challenged the validity of assessing dispositions (Stooksberry, Schussler, & Bercaw, 2009; Schussler, 2006; Mullin & Jung, 2003; Rhodes, 2008).

Schussler (2006) challenged teacher education programs to consider a greater purpose beyond assessment of dispositions required for program accountability and accreditation. He indicated that it would be more beneficial to clearly define dispositions and to identify how they contribute to and become an intricate part of teacher education programs; in essence, to focus on the scholarship of teaching and learning related to dispositions. By doing so, teacher education programs could tailor their courses and experiences to foster development of dispositions and provide authentic assessments related to them, thus reducing the inordinate amounts of time figuring out how to assess them. Assessment of dispositions would then intentionally and

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effectively measure a candidate's awareness, knowledge, or application through intentional learning experiences and serve the program's improvement cycle.

This study worked off the premise of Schussler and was built on the hypothesis that dispositions can be fostered and supported through teaching interventions provided in teacher preparation courses; answering the age-old question; Are dispositions caught (inherent to personality) or taught (able to be fostered and learned)? In order to shed some light on the complicated tenets associated with this premise, the literature review focused its attention on the definition of dispositions and highlighted the varying views associated with programming for dispositions, including fostering and assessing dispositions. The writers' intent of this study was to build on the premise that dispositions can be fostered within teacher education programs; thereby, encouraging programs to take the responsibility for building experiences that nurture their development. This will then insure that assessment is more meaningful, leading to effective program improvement.

## **I. Literature Review.**

### *A. Defining Dispositions.*

According to Whitsett, Roberso, Julian, and Beckham (2007) studies about dispositions began in the 1960's with Arthur W. Combs' series of studies on personal perceptions of effective helpers (educators). In an effort to distinguish effective helpers from ineffective helpers, Combs, Soper, Goodling, Benton, Dickman, and Usher (1969) came up with five categories of perception; perception about self, perception about others, perception about subject field, perception about the purpose of education and the process of education, and a general frame of reference perception. Perception and disposition were used interchangeably. Combs' studies also identified that dispositions, or an individual's behavior, was a depiction of the perceptions he/she has been exposed to over time. A habit of "thinking and doing" had occurred (DeRos-Voseles & Fowler-Haughey, 2007, p.1). Beteram and Fascal (2002) continued along this line and stated that dispositions were behaviors or traits that were environmentally sensitive; meaning they could be fostered, refined, and weakened by an individual's interactions with others around them. Some of these personality traits could be identified as; responsibility, dependability, creativity, empathy, and professionalism (Davis & Stewart, 2005).

Sociologist J. L. Holland (1997) related career paths to personal dispositions and stated individuals were endowed with dispositions that often propelled them to choose a specific career path. Through his theory, he stated the single most important factor to career choice, satisfaction, and success was personality. He identified six different personality types. Each of the six types (Realistic, Investigative, Artistic, Social, Enterprising, and Conventional) had specific attributes and work categories. Individuals however, could be strong in more than one personality type and gravitated to a career applicable to these traits. For example, the social personality had traits, which worked well in an educational setting and included caring, communicative, responsible, compassionate, helpful, team-spirited, nice, and dependable. An artistic personality had the traits of creative, reflective, original, and imaginative. Holland stated both personalities might gravitate to teaching; since the individual thought they had the capability of changing and improving these same traits within others who would be their own students.

There are several psychological assessments used in career counseling such as the Self Directed Search [SDS] (Holland, Powell, & Fritzsche, 1970-1997), Strong Interest Inventory

[SII] (Donnay, Morris, Schaubhut, Thompson, Grutter, & Hammer, 1927-2005), and NEO Personality Inventory-Revised [NEO PI-R] (Costa & McCrae, 1978-1992) that supported this premise. The SDS and the SII is based on John Holland's theory of vocational choice and identified distinct personality types that work well in specific occupational environments (Holland, Powell, & Fritzsche, 1970-1997). Therefore, through Holland's theory and work, it would seem apparent that candidates came endowed or pre-disposed with the dispositions they would need to be a successful educator when they entered a teacher preparation program. This "endowment" was a direct result of being exposed to the needed attitude, beliefs, and ways of being, which became a part of their personality.

If this premise is true, it could also be said if candidates were weak in professional dispositions, exposure to and application of these dispositions over time during their four-years of preparation could also support and help develop effective dispositions. This is an important premise, because if personality characteristics are developed over time, teacher preparation programs could intentionally use the four years of preparation to foster professional characteristics/dispositions, possibly as effective as candidates who come to programs prepared with them. Diez (2007) identified the fundamental difficulty in defining dispositions lied in the debate of dispositions being fixed and unchangeable versus being flexible and changeable. If dispositions were fixed traits, then development of them is of no importance and very little if any can be done by teacher educators to influence change (Stooksberry, Schussler, & Bercaw, 2009). On the other hand, when dispositions are identified as malleable as proposed by Diez, teacher educators can define their role in effecting change, refocusing their attention to dispositions can and should be 'shaped.'

Much of what is expected in teacher preparation today, related to defining dispositions has a direct implication with accreditation. Accreditation bodies define dispositions for the field and require assessment, which mandates some form of a definition. NCATE (2010) defined professional dispositions as constructive behaviors such as professional attitudes, values, and beliefs exhibited by educators through verbal or nonverbal means to students, families, colleagues, and the communities. In its standards, NCATE specified dispositions should be assessed based on observable traits or behaviors within an educational setting. It also identified two dispositions that must be assessed by all institutions; 1-fairness and 2-the belief that all students can learn. NCATE also stated that for assessment purposes, teacher candidates' dispositions are on target, if the following conditions prevail:

- Candidates work with students, families, colleagues, and communities in ways that reflect the professional dispositions expected of professional educators as delineated in professional, state, and institutional standards.
- Candidates demonstrate classroom behaviors that create caring and supportive learning environments and encourage self-directed learning by all students. Candidates recognize when their own professional dispositions may need to be adjusted and are able to develop plans to do so (NCATE, 2008)

NCATE (2010) also mandated that institutions identify additional professional dispositions based on their own mission and conceptual framework. As a result, many colleges and universities have identified dispositions unique to their conceptual framework and have to some degree created inconsistencies in how dispositions are defined and assessed. This has been confirmed at several universities including Western New York, Eastern Kentucky, University of Vermont and Aubury College (Rinaldo, Denig, Sheeran, Cramer-Benjamin, Vermette, Foote, & Smith, 2009). At Western New York, dispositional values were defined as professional

commitment, professional relationships, and critical thinking. These three values were defined using the three tenets of the university's mission statement (process-product, constructivism, reflective practice). However, at Eastern Kentucky University dispositions were identified as empathy, positive view of others, positive view of self, authenticity, and meaningful purpose and vision at various stages in the program. The University of Vermont identified dispositions as collegiality, response to feedback, interpersonal skills, intrapersonal skills, oral communication and diversity. Washington State University identified dispositions as character, leadership, human interaction, communication, and self-development. Finally, Aubury College defined dispositions as moral and ethical integrity, respect and compassion, personal emotional wellness, passion for teaching, and spiritual sensitivity and purpose. The variations in definitions that have been identified above have matched the variations in how to assess them; from conducting interviews and assessing candidates at the beginning of the program, to writing journals, joining teacher professional organizations, and developing instruments for measuring dispositions for candidates during student teaching.

Other individuals in their work have defined dispositions in a manner that reflected their understanding of how dispositions supported professional practice. For instance, Katz (1993) stated there were three conditions or patterns of behavior that should be exhibited in order to identify if a teacher was demonstrating effective teacher dispositions. The three conditions included; professional behaviors should be exhibited often, the disposition should be done willingly and knowingly, and it should be goal-directed. Katz understood the importance of intentionality behind a teacher's behavior, and recognized dispositions needed to reflect principle-based behavior. This may differ slightly from the latter views on dispositions, since personality traits are not intentional behavior. However, individuals can intentionally respond in educational settings with reflective thought and purpose.

Though there appeared to be no agreement with the definition of dispositions, all researchers appeared to agree that dispositions were critical for teachers to succeed in the profession. Without effective dispositions, teaching and learning would suffer. Therefore, it is critical to not only understand what they are, but also understand strategies that can (if possible) nurture and refine their development.

### *B. Developing and/or Assessing Dispositions.*

A study on dispositions conducted at Arkansas State University Mountain Home, a two-year affiliated with the four-year Arkansas State University (Stewart & Davis, 2005) identified that in order to develop effective dispositions in teacher candidates, students needed to develop certain traits. The university defined the traits as: responsibility, dependability, creativity, empathy and professionalism. Similar to Katz's (1993) intentionality and principle-based behavior, the college's conceptual framework stated expertise in content, knowledge of students, and dispositions formed the basis of teacher beliefs and values. Because of this, the university provided teacher candidates with numerous opportunities to build these traits by shadowing classroom teachers at the beginning of the program, through the end of the program. and provided opportunities to volunteer at social and community organizations where they could improve their diversity awareness, caring, and nurturing qualities. From these experiences, the university assessed what they identified as the most effective source in building effective dispositions, student organizations.

If we revisit earlier theories about learning, it would be found that earlier theorists and philosophers such as Vygotsky and Locke have supported the notion of humans having the



potential to change based on their experiences (Obara, 2009; Aldrich, 1994). Both Vygotsky and Locke proposed that people are social beings and social experiences influence what is learned and developed. Thus, if teacher preparation programs are seen as social experiences that influence learning and development, dispositions could be learned and developed at anytime. Additional studies have supported this view (Splitter 2010, Schulte, Edick, Edwards, & Mackiel, 2004). Stooksberry, Schussler, and Bercaw (2009) defined dispositions by citing Schussler's (2006) and stated that a "disposition was an awareness, inclination, and reflection on behaviors and thinking, not just the behavior or thinking itself" (p. 257). This is important, since a reflective teacher preparation program can support candidates in their awareness and understanding of professional dispositions and help them to reflect on them through continued application in field-based experiences. Splitter (2010) continued along this line by saying that dispositions were conscious responses to situations. He also stated that it was not enough for an individual to be able to define what a disposition was, but an individual must apply these dispositions in the field; demonstrating a willingness on the part of the learner to show what has been internalized and learned.

Since people are by nature, socialized differently, it is quite easy to presume that people's understanding of certain concepts, such as dispositions, will also be different. Perhaps teacher education programs could be developed so that dispositions would actually be part of the teacher education curriculum. Carroll (2005) in his work wrote about how dispositions were developed, stated that dispositions are not developed naturally and that acquiring dispositions can be perceived as a "community effort." In essence, teacher candidates will have to be served by learning communities where instructors and experienced professionals provide the needed scaffolding for teacher candidates related to dispositions.

Programs that have worked off the premise that students come endowed with the necessary dispositions and focused their attention mainly on assessment, working to create a universal assessment system (Harrison, McAfee, & Caldwell, 2002). Henderson State University, Arkansas, conducted a study investigating the interview process that was used as a criterion for admission (Harrison, McAfee, & Caldwell, 2002). The interview was to ensure that teacher candidates had the appropriate teacher dispositions upon entering the program. Assessment and levels of proficiencies were developed using rubrics. The rubric was created and was sent to other colleges within the university for validation and it was approved. A training video that depicted the proficiency levels of *unsatisfactory*, *basic* and *proficient* was also developed to help both students and raters have a better understanding of what each of the levels required. The instrument was used and was considered an effective assessment tool because of inter-rater reliability. In general, most students were satisfied with the process and were able to pass. However, those who did not pass were given remedial interventions to help them get to the recommended standard. The recommendation that was given to meet the standards was to change the proficient level in the rubric to target. This was considered important because target was the specific language used by NCATE. It also provided opportunity for the program to have some impact on development and/or refinement of these dispositions.

In a similar way, the Joint Education Department of the College of Saint Benedict and Saint John's University in Minnesota created a behavioral assessment instrument, which required an interview with a director of student teaching or the department chair during the admission process (Mullin, 2003). Interview questions were focused on intrinsic motivation and the zeal for learning, as well as other relevant dispositions identified by the group such as effective communication, reflection, and collaboration. As students answered questions they were able to

reflect and share life experiences that allowed them to focus on dispositions for effective teaching.

Existing instruments have also been used to assess the extent to which teacher candidates have qualities in place for effective teaching to occur. In an effort to assess teacher candidates' dispositions as required by NCATE, Singh and Stool (2008) developed a disposition tool, which they named Eastern Teacher Dispositions Index (ESTDI). This was a self-assessment instrument that was intended to assess candidates' disposition based on Combs (1969) and his colleague's five characteristic scale of perceiving. Forty-six Likert-type items were developed using these scales. The ESTDI was administered to 86 teacher candidates at a state university located in the rural part of Eastern Connecticut. These were undergraduate and graduate students, but the majority were undergraduate students, who were enrolled in pre-professional courses and introductory graduate courses respectively. It was realized that most students strongly agreed in each of the scales, which indicated that they have a good understanding of the dispositions needed for effective teaching.

In a similar study (Albee & Piveral, 2003), ten dispositions were selected and developed in an instrument to determine effective management process for identifying dispositions in teacher candidates. The unique thing about this process was the fact that the developers decided to use a survey to determine what dispositions seemed relevant to teacher candidates, practicing teachers, professors, and administrators. It was realized that all participants valued similar dispositions. With this information, they developed the instrument using ten dispositions, and then field-tested it with a different sample group using A Pearson Chi-Square. They also identified the dispositions as being valuable. Finally, they needed to ensure that "a disposition monitoring process" was established. It was decided that at the beginning of each field experience candidates would be exposed to this assessment. This was to insure the teacher candidate can be assisted in making a decision as to whether they possess the needed commitment for the profession and be knowledgeable about the level of their own growth in relation to what is ideal for the teaching profession. This whole process helped bring clarification in identifying and monitoring dispositions. Even though this seemed to be a fairly reliable instrument, Albee and Piveral (2003) concluded that further studies would be needed to validate this instrument as reliable.

It is quite apparent that the tenets of defining, fostering and/or assessing dispositions have left holes for teacher preparation institutions and in their ingenuity, programs have tried to fill these holes by putting measures in place to ensure a fair, acceptable means of assessment. Most of these institutions have tried to create assessment methods that support assessment systems and therefore, guarantee the training and education of an effective teacher. However, there is still very little research to support the importance of cultivating and supporting dispositions during teacher preparation to insure success with assessment of dispositions.

## **II. Methodology.**

The catalyst for this study came from the hypothesis that dispositions can be fostered and supported through teaching interventions provided in teacher preparation courses. The study question therefore was; can teaching interventions in a course change the knowledge and understanding levels of students related to dispositions? The study followed a qualitative methodology, with some numerical analysis using mean scores. The levels of learning chosen by the writers reflected Bloom's (1956) levels of learning and included knowledge and understanding of dispositions. Application was not explored. The study was based on the

premise that dispositions can be viewed like other professional skills, mainly observable behaviors that are intentional and applied within an educational setting. Therefore, they can be taught and supported by educational experiences building on the knowledge and understanding needed to be a professional educator. It was also assumed by the writers that some dispositions can be observed and transferred to a variety of settings including a class on campus (i.e. cooperation). However, the most ideal way to observe professional dispositions is to witness them within the context of the profession or to recreate settings having similar expectations on behavior as; case studies, simulations, or role play that can be used in the college classroom, along with the field and clinical experiences where dispositions are put into place and monitored by university supervisors and cooperating teachers.

The setting for this study took place in an urban university in an early childhood education course the candidates took during their freshman or sophomore year. The course; *Best Practices in Early Childhood Education* was a course that provided a foundational understanding in early childhood education, providing content knowledge in such topics as development and learning, early childhood programming, developmentally appropriate practice, professionalism/dispositions, and parent partnerships. Candidates had two field experiences in the course; one was a child-study experience asking candidates to interview a parent and observe a child within the context of their home. The other experience was an observational experience in a K-3 classroom to understand key components of a developmentally appropriate classroom. Both of the experiences had a reflective piece asking candidates to apply course content to what they observed.

The course was also was one of four courses students had to be successful in order to gain entry into upper division for their major. Because the course was placed near the beginning of the sequence of preparation, the study sought to identify if dispositions could be taught through course experiences that increased knowledge and understanding of dispositions. Most, if not all of the candidates would have taken a Foundations Course in Education, and may possibly have taken a reading course, or human ecology course as well, and these courses would have talked to some degree about dispositions. However, the context of teaching about these dispositions in other courses or the notion that candidates may have acquired dispositions through other experiences as family life were not important for the study. The ability to impact knowledge and understanding of dispositions through a teaching intervention was the purpose. Therefore, it was not the intention of this study to compare or contrast data results based on gender, socioeconomics, age, or culture.

The pre-assessment provided data related to what candidates already understood about dispositions by asking them what behavior they would tend to display in a given, professional situation. The post-assessment, which posed the same questions, had the intent of providing data to demonstrate an increased knowledge and understanding as a result of teaching interventions in the course. These results would support the thinking that dispositions could be taught.

During the fall and spring semesters of two academic years, 99 teacher candidates in the above early childhood education course were given a pre and post assessment that were developed by the faculty member who taught the course and is one of the writers of this article. This assessment was to identify the candidates' tendencies or knowledge to act in a certain situation related to the three professional dispositions of collaboration, professionalism, and inclusivity. These three dispositions were part of the College of Education's Conceptual Framework and were required to be assessed for NCATE accreditation. The pre-assessment was

given the first day of class, before any course content was provided and the post assessment was given the last day of class.

Since teaching about dispositions was a normal topic for the course, an assessment related to dispositions was not out of the realm of their experience. However, the researcher filed with the university IRB and candidates were informed prior to taking the pre and post assessment that they had the option of not taking either of the assessments. To respect confidentiality, candidates were asked not to put their names on the assessments and were given a letter or number which was to be recorded in a course notebook by the candidate. The pre-assessments were also put in sealed envelopes with the letter or number written on top to insure respect of confidentiality and to allow the pre-assessment to be passed back to assist in answering a reflective open-ended comparison question on the post assessment.

The design of the pre and post assessment questions was developed by the faculty writer, using the style of the Diagnostic Inventory for Selective Prescription on Self-Evaluation (Harrison, McAfee, Smithey, & Weiner, 2005). However, each question differed from this inventory and was developed to measure behavior tendencies or knowledge linked to the three dispositions of the College of Education for the study (see Appendix 1). Questions 1-5 measured the disposition of *collaboration*. Those who scored a total of five on these five questions (answering 1 for each question) would have the **least** understanding, belief and/or tendency to be collaborative (see Table 1). The total score of 25 on these five questions indicated a **stronger** tendency, belief and/or understanding. Questions 6-10 measured the disposition of *inclusiveness* and reversed the scoring, hoping to eliminate guessing by candidates on the *questions*. Therefore, those who scored 25 for the total of the five questions would have the **least** understanding, belief and/or tendency to be inclusive. The total score of five, for the five questions indicated a **stronger** tendency to be inclusive. Questions 11-15 measured the disposition of *professionalism*. Those who scored a five would have the **least** understanding, belief and/or tendency to be professional. The score of 25 would indicate a **stronger** tendency to be professional. In addition to the 15 Likert questions, there were three open-ended questions and one additional question on the post assessment. A question on the post-assessment asked for a personal reflection related to any change in knowledge and understanding which may have resulted in a changed answer from pre to post assessment.

**Table 1. Scoring Guide-Pre and Post Assessment.**

1-5 Collaboration	5- least likely to have the tendency or understanding of collaboration	25- greatest tendency or understanding of collaboration
6-10 Inclusiveness	5- greatest tendency or understanding of inclusiveness	25- least likely to have the tendency or understanding of inclusiveness
11-15 Professionalism	5- least likely to have the tendency or understanding of professionalism	25- greatest tendency or understanding of professionalism

The three open-ended questions were scored either acceptable or not acceptable based on the congruence of their answers related to the particular answer for each question. Answers that were within the parameters of correctness were scored acceptable, similar to open-ended questions on a test. (see Appendix 2). The questions included:

1-Definition-What is a disposition?

- 2-Do you feel dispositions are important for effective teaching? Why or why not?
- 3-If you answered yes to number two, name the dispositions needed to be an effective teacher?

During the semester of the course, two consecutive weeks towards the end of the semester were devoted to the topic of dispositions. The teaching methods included digital stories created by two practicing teachers; one was a seasoned teacher, the other a new teacher. Within each digital story, the practicing teachers discussed the three dispositions of the college of education, how these applied to their own teaching, and why they were important. After the digital stories, teacher candidates were given discussion questions related to what they saw in these stories. The candidates also played a disposition game, role-played effective and ineffective teacher dispositions, discussed mini case-studies and had small group discussions related to the National Association for the Education of Young Children (NAEYC) Ethical Practices (Feeney, Freeman, & Pizzolongo, 2012).

### III. Results.

Based on results from a paired T-Test (.05167), the data from pre to post assessment was not statistically significant. However, the results from the pre and post assessment did demonstrate some growth in knowledge and understanding by the candidates in all three dispositions. This was demonstrated by increased mean scores on the post assessment in the two dispositions of collaboration (from an average mean score of 4.16 to 4.43 from pre to post) and professionalism (from average means score of 4.30 to 4.52 from pre to post). These increases indicated a positive change in a tendency to exhibit collaborative or professional dispositions. For the disposition of inclusivity, the decrease of mean score (from an average mean score of 2.1 to an average 1.76) indicated this same growth. On average, each of the dispositions differed in mean scores from .2 to .4 (see Table 2).

The aim of the “desired” ratings score was to identify an increase in awareness/knowledge and/or a tendency to display the disposition in educational situations that warranted demonstration of the dispositions (see Table 2). When looking at the change in the distribution of scores (number of candidates) from pre to post, collaboration had an increase of 8%. This was at the desired ratings of 4 or 5 (agree to strongly agree). Question 1 had the most increase at 18% of the candidates scoring in the 4-5 range. Question 1 identified the tendency to join a professional book club with other classroom teachers that dealt with the topic of classroom guidance.

For the disposition of being inclusive, the increase of candidates to the desired range from pre to post was 11%. The largest increase for this disposition was question 10, which asked students to decide between allowing an engaging project to continue or stopping children and asking them to move on, since time and self-discipline were crucial. Twenty-two percent of candidates moved to the desired range from pre to post for this question.

**Table 2. Pre & Post Mean Scores and Distribution.**

Question/ Disposition	N=99	Pre						Post					
Ratings: 1-Strongly Disagree 2-Disagree; 3-Neutral; 4-Agree; 5-Strongly Agree		M	Distribution					M	Distribution				
COLLABORATION			1	2	3	4	5		1	2	3	4	5
Question 1		3.93	1	1	24	51	22	4.38	0	0	8	45	46
Question 2		4.20	0	0	12	55	32	4.47	0	0	8	36	55
Question 3		4.28	0	1	11	46	41	4.57	0	0	7	29	63
Question 4		3.79	0	4	30	48	17	4.00	0	1	21	54	23
Question 5		4.60	0	0	2	36	61	4.74	0	0	1	24	74
Average M		4.16	47 35					4.43	38 52				
			83% agree or strongly agree						91% agree or strongly agree				
INCLUSION			1	2	3	4	5		1	2	3	4	5
Question 6		1.88	38	43	11	6	1	1.48	59	34	4	2	0
Question 7		1.75	38	51	8	1	1	1.54	58	33	4	4	0
Question 8		2.28	22	39	26	12	0	1.86	35	39	17	5	0
Question 9		2.12	23	47	23	6	0	1.99	29	47	18	5	0
Question 10		2.45	15	41	27	15	1	1.94	36	42	13	7	1
Average M		2.1	27	44				1.76	43	39			
			72% strongly disagree or disagree						83% strongly disagree or disagree				
PROFESSIONALISM			1	2	3	4	5		1	2	3	4	5
Question 11		4.61	2	0	2	27	68	4.84	0	0	0	16	83
Question 12		3.88	0	8	19	49	23	4.06	1	5	14	46	33
Question 13		4.06	0	6	14	47	32	4.29	0	3	7	47	42
Question 14		4.22	0	3	8	52	36	4.49	0	1	4	39	55
Question 15		4.74	2	0	2	14	81	4.92	0	0	0	8	91
Average M		4.30	38 48					4.52	31 61				
			87% strongly agree or agree						93% strongly agree or disagree				

For the last disposition of professionalism, there was an increase of 7% of candidates who moved to the desired rating. This disposition had two questions where 99 candidates or 100% were in the desired rating at the post assessment. This included question 11, which dealt with choosing between partying with friends into the late night or staying home in order to be fresh for kindergarten students and question 15, which dealt with looking at parents as integral to an effective early childhood education classroom.

From the data it could be assumed that candidates appeared to have come into the course with a slightly better understanding of the disposition of professionalism than the other two dispositions, with a pre-assessment average mean that was the closest to the desired score than the other two dispositions of collaboration and inclusiveness and with 93% of the candidates scoring in the desired range on the pre-assessment. It can also be assumed that candidates gained a greater understanding of inclusivity, with an 11% increase in scores to the most desired ranged.

Open-ended questions (see Appendix 2- Part I) were rated by the faculty writer to be acceptable or unacceptable based on candidates' answers staying within the parameters of what

was correct for that question. Therefore, these questions were scored similar to open-ended questions on a test. It was not required to have the exact words in any of the three open-ended questions. Out of 99 answers 55% (54 candidates) of the answers were considered unacceptable on the pretest, compared to 16 answers or 16% unacceptable on the post assessment. The most interesting piece of evidence was what candidates perceived as dispositions on the pre assessment. Answers ranged from; “ a way of teaching children, a plan, your opinion or idea on an issue, to how you feel a lesson, project or experience went.” Nineteen of the 89 candidates were unable to provide any definitions compared to two candidates on the post.

For the second question of why dispositions were important for effective teaching; 56% (55 candidates) did not know why dispositions were important on the pretest by either giving an unacceptable answer or leaving the answer blank. Though more candidates could not clearly define what dispositions were in question one, more of the candidates had a sense or may have guessed why these “things” might be important as; “Dispositions affect the classroom, the style of teaching, the environment, class atmosphere.” The post assessment identified 31 candidates with misperceptions of why effective dispositions would be important with answers as; “Teachers need to constantly improve and work towards new goals. Working and learning from each other gives the teacher added practice and continued success.” This demonstrated an increase of 25% of candidates who demonstrated from their answer that they understood the importance of effective dispositions from the teaching interventions.

Question three had 59 candidates or 60% who were not able to name the dispositions that were important for education. Again, specific dispositions were not required to be an acceptable answer, but acceptable, congruent answers. This was reduced to 27% of candidates who could not name what the professional dispositions were for the teaching field on the post assessment. It could be assumed that the 27% were probably students who still did not have a clear understanding of what dispositions were with answers as; “Following developmentally appropriate practices and complying with standards.”

The last question was on the post assessment only. It dealt with candidates’ own perceptions about their change in understanding and why it might have changed. Candidates were passed back their pre-assessments that were identified by letters and numbers only. Eighty-three percent of candidates stated that their perceptions reflected in their answers did change. Seventeen percent of the candidates either did not answer the question or identified that they were not aware if they had a change in perception or not. Of those who did have a change in perception, all identified that course content, including the specific teaching interventions related to professional dispositions were reasons for their change in understanding. Many of the candidates also felt that the course content sensitized them to understand best practices better and hence, increased their knowledge and understanding about professional dispositions.

#### **IV. Discussion.**

The scoring from both the Likert questions and the open-ended questions identified some level of learning and retention related to the three professional teaching dispositions of collaboration, inclusion, and professionalism. Candidates also appeared to have come into the course with a slightly better understanding of the disposition of professionalism than the other two dispositions from the pre-assessment scores (see Table 2). This may have been related to previous courses or field placement experiences in courses, which required them to have an understanding of professionalism. This would definitely be true in the Foundations in Education course, which

required candidates to have field hours in tutoring through local schools and included a college of education handbook, which highlights professional behaviors needed for the field of education. The behaviors of professionalism would also be required in any work-related experience, so application would be easier to apply within the context of course content. Finally, it may have been what students learned as they were growing up, since respect and an ability to meet the expectations of others, which is closely aligned with professionalism may have been learned through their family experiences. It is puzzling that there was still a percentage of candidates in each of the dispositions that did not come to a clearer understanding of the disposition. However, the study's focus was not to measure the effectiveness of the teaching intervention, time spent on task, along with a variety of other learning variables may have come into play.

Question 12; "A team teacher has been consistently abrupt with a child in your class, you feel it is important to talk directly to him/her before you seek the advise of your principal" was the question that candidates struggled with the most. Though professionalism may be understood, how to communicate to colleagues through a line of respect may not have been addressed. Candidates may also have felt more comfortable talking to a principal then directly talking with the teacher who she/he is concerned about. This may be one area that is a weak area for candidates to understand and more direct conversations and case studies may be needed to directly address lines of communication. The evidence is clear however, that experiences that fostered understanding in appropriate teaching skills as dispositions can and should be built overtime. Hence, more than two weeks are needed to have candidates acquire a level of understanding that they could apply in professional situations and additional courses that take the responsibility to provide teaching methodologies related to dispositions was also needed.

The understanding of the disposition of inclusion had the greatest gain at 11% of candidates who changed their answers at the post assessment to be in the acceptable range. In some ways this was not surprising, since it would be safe to assume that the understanding of diversity, collegial relationships, and classroom practices that reflect this disposition may be new to many students, even those who may have come predisposed with the tendency and capability of being inclusive. Therefore, the teaching interventions may have had a greater impact because this disposition provided the greatest room for growth.

Candidates prior knowledge and understanding of dispositions would also be important to consider, since the percentage of change could have been linked to what candidates already understood prior to the course. It would have been interesting to track individual growth of each student to see if candidates who demonstrated a beginning understanding before they entered the course changed their answers, and to what degree. However, the main purpose of the study was to demonstrate interventions (teaching strategies) could have a positive impact on the knowledge and understanding of dispositions, like other skills in teacher preparation. The teaching intervention of two weeks in the semester clarified an understanding of dispositions for most of the candidates, but did not necessarily provide enough depth or experience that solidified this understanding for all candidates.

However, this was not the purpose, particularly since this was a beginning course for the early childhood license. What the course content did do was demonstrate that knowledge and understanding related to professional dispositions can change through the experiences candidates have during their training. This study demonstrated that dispositions can be taught, at least to the point of an increase in knowledge and understanding. Though the numbers in the study did not lend itself to *statistical significance* or a discussion related to statistical analysis, it was evident



from the study that knowledge and understanding of dispositions can and did increase to a degree with teaching methods and strategies related to dispositions. It also demonstrated that not all candidates learn concepts or acquire skills at the same rate. Therefore, sensitivity to individual learning needs is warranted in programs. It is the authors' beliefs that accountability for measuring dispositions cannot be the only responsibility of teacher preparation programs, they must also be responsible for fostering the dispositions needed to be an effective educator and build in experiences as case studies, role play or video analysis to help candidates grow in awareness, understanding and eventually, application.

Though this study did not focus on predisposed dispositions in each candidate, it was evident from some candidate's responses that they did not have the understanding or behavior tendency to act in an expected way related to the three dispositions. However, the study did demonstrate that learning experiences focused on dispositions can have an impact on these tendencies. What would be needed is a follow-up correlation study to track progress on individual candidate's knowledge and understanding on each disposition. There also could be a follow-up study done later in the program to see if course interventions related to dispositions had an impact on candidates' application of dispositions in their clinical experiences as student teachers. It would also be interesting to compare types of teaching strategies used to help candidates learn about dispositions, since pedagogy related to active engagement is what the others believe is also needed when fostering understanding and eventually application of these dispositions in real classrooms.

## **V. Conclusion.**

The teaching profession has an expectation that teacher candidates and practicing teachers clarify and develop academic language for students in all grade levels and in all contents. Higher education faculty who prepare candidates for the field must address this academic language of the field of teacher education. They must also address the critical importance of fostering effective dispositions by choosing learning experiences that build and refine these dispositional skills through the four years preparation.

There is no doubt that candidates may come to teacher education preparation programs prepared with the necessary dispositions and are capable from the beginning of displaying them in the field with a natural ease that makes them look like they have been teaching for years. But others may not, or if they do, they may not understand the situations that warrant such display of professional dispositions. In either case, it is safe to assume that learning experiences that provide candidates with the opportunity to identify, reflect on and apply them will yield an increased knowledge and hopefully, skill in the field. An analysis and comparison of learning experiences linked to assessment results would also demonstrate pedagogically what types of experiences would yield better acquisition and refinement of dispositions and build a more effective robust preparation from awareness levels to application.

This study did not show, nor was it meant to show a correlation between what was learned and how candidates could or could not apply these dispositions. More longitudinal research would need to be done to demonstrate this correlation and follow candidates from beginning courses to their student teaching experience, not only as a group, but also individually. It would be interesting to see if candidates who did not score in the range desired would pick up additional knowledge and skills as they progressed in their course work and field/clinical experiences. It is the hope of the writers that all teacher preparation programs will see the

necessity of going beyond the need to assess dispositions to meet mandated accreditations and embrace the importance of fostering them during the obtainment of the degree. By choosing active experiences within courses that utilize a classroom experience as a case study, candidates will become aware of, gain understanding and skill and finally, be able to apply effective dispositions through the years of teaching.

## Appendices

### Appendix 1. Pre/Post Assessment: Knowledge, Understanding & Beliefs about Teacher Dispositions.

#### PART I

1. **Define:** What is a disposition?
2. Do you feel dispositions are important for effective teaching? Why or why not?
3. If you answered yes to the above question, what would be the dispositions needed to be an effective teacher?

#### PART II

*Please answer the following questions by circling the answer that best fits your current understanding, belief, or behavior tendency at the present time.*

1. You would enjoy joining a teacher candidate lunch book club to learn more about developing effective classroom guidance within early childhood classrooms.

1                      2                      3                      4                      5

Strongly Disagree    Disagree            Neutral            Agree            Strongly Agree

2. You find that you are open to small group experiences and enjoy the opportunity to share, dialogue and exchange ideas and experiences.

1                      2                      3                      4                      5

Strongly Disagree    Disagree            Neutral            Agree            Strongly Agree

3. You find it important to seek out others thoughts and ideas when working out a problem at work.

1                      2                      3                      4                      5

Strongly Disagree    Disagree            Neutral            Agree            Strongly Agree

4. You gravitate towards experiences that put you in a group situation and you find the experience rewarding most of the time.

1                      2                      3                      4                      5

Strongly Disagree    Disagree            Neutral            Agree            Strongly Agree

5. As a teacher, you feel it is your responsible to work as a team member within your grade level and between grade levels.

1                      2                      3                      4                      5

- |  |                   |          |         |       |                |
|--|-------------------|----------|---------|-------|----------------|
|  | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--|-------------------|----------|---------|-------|----------------|
6. If a child with consistent behavioral problems was in my class, my first response would be to get him/or her out of the class, so that other children could get the attention they deserve.
- |   |   |   |   |   |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
- 
- |  |                   |          |         |       |                |
|--|-------------------|----------|---------|-------|----------------|
|  | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--|-------------------|----------|---------|-------|----------------|
7. Children from different cultures, who have English as a second language (ESL), should meet the expectations of the class, without any special interventions, after all, they will need to meet the rigors of an English speaking culture soon enough.
- |   |   |   |   |   |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
- 
- |  |                   |          |         |       |                |
|--|-------------------|----------|---------|-------|----------------|
|  | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--|-------------------|----------|---------|-------|----------------|
8. The principal approaches you in the hallway with a requested to put an autistic child in your classroom. She says however, that she wants you to feel free to say yes or no. You are uncomfortable and feel this child may interfere with the regular classroom so you politely decline, with understanding from the principal.
- |   |   |   |   |   |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
- 
- |  |                   |          |         |       |                |
|--|-------------------|----------|---------|-------|----------------|
|  | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--|-------------------|----------|---------|-------|----------------|
9. You are working with an Asian second grade teacher who is known to be an excellent teacher, but tends to be more reserved, often staying by herself, and two additional teachers who are closer to your age and culture, but have less experienced. You have an issue with a second grade parent and want advice. You plan on going to talk to the two teachers who are closer to your age, since you can relate better to them, even though the Asian teacher has more experience and an excellent rapport with parents.
- |   |   |   |   |   |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
- 
- |  |                   |          |         |       |                |
|--|-------------------|----------|---------|-------|----------------|
|  | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--|-------------------|----------|---------|-------|----------------|
10. When reflecting on your own desire to plan a classroom environment, you feel it is important to have a very strict schedule children can count on daily. Even though they may be engaged in an excellent project, for one day, you need to stop them and move on, since time and self-discipline are crucial for learning.
- |   |   |   |   |   |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
- 
- |  |                   |          |         |       |                |
|--|-------------------|----------|---------|-------|----------------|
|  | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--|-------------------|----------|---------|-------|----------------|
11. Your friends ask you to go to a party that is bound to last all night and into the early morning. It is the second week of the school year and you refuse, knowing that kindergarten children will need all your best attention and energy tomorrow.
- |   |   |   |   |   |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
- 
- |  |                   |          |         |       |                |
|--|-------------------|----------|---------|-------|----------------|
|  | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--|-------------------|----------|---------|-------|----------------|
12. A team teacher has been consistently abrupt with a child in your class, you feel it is important to talk directly to him/her before you seek the advise of your principal.
- |   |   |   |   |   |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
13. A parent who is quite unfriendly has a conversation over the phone with you last night. Your colleague knows that you were going to speak with her, and has spoken several times with you about how she is a “jerk.” When she asks you how it went, you say that it was challenging, but you feel it might work out. She laughs and says come on, tell me the real story. You smile, but say nothing.	1	2	3	4	5
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
14. A colleague is gossiping about another teacher within the school to a group of teachers. You are part of this group and hang around them most of the time. You want to be with this group, but you excuse yourself and go back to your classroom to get some work done.	1	2	3	4	5
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
15. You see parents as an integral part of a child’s learning and make every effort to communicate and build relationships with each parent.	1	2	3	4	5
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

#### Post-Assessment –Additional Add-on Questions

#### PART III

Did you change any answers from pre to post assessment? YES\_\_\_\_\_ NO\_\_\_\_\_

What might have brought about this change? For example, did the digital stories have an impact on your understanding of dispositions? Please be as specific as possible.

#### SCORING GUIDE-Dispositions

The College of Education has defined three specific dispositions that are needed to be an effective teacher. These include;

**Collaborative:** *Candidates who exhibit a collaborative nature* demonstrate an ability to work with others, accept responsibility as required, respect different thoughts and opinions, and contribute to efforts to examine and enact productive solutions. Candidates exhibit these behaviors towards colleagues, school personnel, clinical personnel, students, and mentors.

**Inclusive:** *Candidates who exhibit an inclusive nature* demonstrate respect, empathy, open-mindedness, flexibility in thought, and the ability to anticipate and understand diverse and/or conflicting views, ethnicities, exceptionalities, etc. Candidates exhibit these behaviors towards colleagues, school personnel, clinical personnel, students, and mentors-

**Professional:** *Candidates who exhibit a professional nature demonstrate principled behaviors including ethical conduct, knowledge, respect, inclusiveness, confidence, appropriateness in the context of one's workplace; competence in translating knowledge into effective teaching/learning, counseling, and/or administrative practices and a propensity for both demonstrating and encouraging excellences in self and others. Candidates exhibit these behaviors towards colleagues, school personnel, clinical personnel, students, and mentors.*

**The likert style questions were aligned with these dispositions as follows:**

Questions 1-5 Measure the disposition of collaboration. Those who would score 5 would have the least understanding, belief and/or tendency to be collaborative. The score of 25 would indicate a stronger tendency, belief and or understanding to be collaborative.

Questions 6-10 Measure the disposition of inclusiveness. Those who score 25 would have the least understanding, belief and/or tendency to be inclusive. The score of 5 would indicate a stronger tendency to be inclusive.

Questions 11-15 Measure the disposition of professionalism. Those who score a 5 would have the least understanding, belief and/or tendency to be inclusive. The score of 5 would indicate a stronger tendency to be inclusive.

A question was added to the post assessment to identify if teacher candidates perceived themselves as changing answers and if so, why?

**Appendix 2. Examples of Open Responses.**

*It is possible that each response is represented by more than one candidate. These are examples and not the entire sample.*

**Pre-Assessment**

**Post- Assessment**

**1. Define: What is a disposition?**

**1. Define: What is a disposition?**

Acceptable	Total [45]	Acceptable	Total [83]
-your attitude toward a particular thing.		-attitude, character, belief, moral, and ethical make-up	
-the way you present yourself		of a person (ex. Working or collaboration w/ colleagues,	
-your reactions to situations, how you handle yourself		professionalism)	
-N/A		-the ability to collaborate, be professional, and inclusive	
		to families, diversity; the way you present yourself	
		- It is the beliefs you hold as a teacher; your willingness	
		to work w/others collaboratively, to reflect on your own	
		teaching, or even the discipline you believe in	
Not Acceptable	Total [54]	Not Acceptable	Total [16]
-An essay explaining a situation whether it be teaching		-The teacher's view	
or another.		-It is what a person/teacher's critical task is with a	
-How you feel a project or experience or lesson went.		philosophy backing it	
What could be improved		-Is a situation that affects a teacher. What your thought	
-Your learning methods, the way you approach things.		or philosophy is	

**2. Do you feel dispositions are important for effective teaching? Why or why not?**

Acceptable	Total [44]
-They are important, because it is necessary for teachers to have stances that show that they care about students and what happens in their classrooms.	
- Dispositions affect the classroom, the style of teaching, the environment, class atmosphere.	
-Yes. I feel they are very important for teaching because they affect how you teach a subject, and how much enthusiasm you devote toward it.	

Not Acceptable	Total [55]
-Yes, they help explain and interpret teaching.	
-Yes, because you need to know your material and how it relates to your teaching.	
-Yes, because it makes someone <i>unboring</i> if they are the teacher.	

**2. Do you feel dispositions are important for effective teaching? Why or why not?**

Acceptable	Total [68]
- Yes, certain dispositions are important so that a teacher has strong beliefs and will teach as positively and effectively as possible.	
-Yes, it has an effect on who you are as a teacher. It will affect how you teach.	
-Yes. Teaching requires patience, thinking outside the box, respecting others, and open-mindedness.	

Not Acceptable	Total [31]
-Yes, because I feel it is important to set goals for your classroom.	
-Yes I do. Teachers need to constantly improve and work towards new goals. Working and learning from each other gives the teacher added practice and continued success.	
-Yes, they are effective because they allow students and faculty to view you in a certain way.	

**3. If you answered yes to question 2, what would be the dispositions that would be needed to be an effective teacher?**

Acceptable	Total [40]
-caring, understanding, responsible, trustworthy, good work ethic, organized, friendly, and open	
-flexibility, content knowledge, creativity, enthusiasm, classroom management skills	
-good communication, understanding between students, parents, coworkers	

Not Acceptable	Total [59]
-understanding of everyone's disposition	
-one that allows other peers to comment about topics in ECE	
-having the right materials out on the desks	
-having a lesson plan on your desk	

**3. If you answered yes to question 2, what would be the dispositions that would be needed to be an effective teacher?**

Acceptable	Total [72]
-professionalism, inclusiveness, communicative/collaboration	
-professionalism, timeliness, excitement, eager attitude, helpfulness	
-know your biases, being able to collaborate with teachers, relating well to others and communicating effectively regardless of opinion or expectation	

Not Acceptable	Total [27]
-following developmentally appropriate practices and complying with standards	
-strong positive attitude while writing lessons as well as you teach them	
-good attention skills, able to adapt to certain situations in which people believe in	

**Post Question Only: Did you recall changing any answers from pre to post assessment? N= 83% (answered yes)**

**Why do you feel you made these changes?**

**What classroom/course experiences might have brought about this change?**

I have a better understanding exactly of what a disposition is.

-I was all over before with my answers and now it was either a 1 or a 5 and only one neutral.

-The whole class helped with my answers including learning about child development and standards and what it means to be an effective teacher.

-I have gained a lot more knowledge on dispositions and the early childhood classroom through the activities and code of ethics we discussed.

- I have a better understanding of dispositions and ethics. The classroom activities and videos supported this.
- I feel more strongly about interaction with colleagues. Group discussions and projects enhanced my understanding.
- After this course I feel much more knowledgeable about dispositions. The study of dispositions and acting out the scenarios helped in this understanding.
- My outlook of teacher and children in general has changed after watching the videos and having the field experiences.
- I learned a lot in this class with role-play and so forth, I understand more of how to become an effective teacher.
- I have a better understanding and stronger opinion than before.

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## **Improving student performance in organic chemistry: Help seeking behaviors and prior chemistry aptitude**

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*Abstract: Organic Chemistry is perceived to be one of the most challenging of undergraduate science courses, and attrition from this course may impact decisions about pursuing a professional or academic career in the biomedical and related sciences. Research suggests that chemistry students who are strategic help seekers may outperform those students who avoid seeking help, and that encouraging self-regulated learning behaviors can benefit academically at-risk students. In the current study we present the results of action research conducted in an Organic Chemistry classroom at a large, urban, public university over the course of three semesters. Results suggest that encouraging academic help seeking, a type of self-regulated learning, improves student outcomes. Implications for other science courses and for similar student populations (underrepresented minorities and first generation to attend college) are discussed.*

*Keywords: organic chemistry, student learning, help seeking behavior, higher education, underrepresented students*

### **I. Introduction.**

While many students enter college with the intention to major in science or mathematics, a large percentage exits these disciplines during the early college years (Barr, Gonzalez, & Wanat, 2008; Eaton, 2004; Seymour & Hewitt, 1997). Moreover, attrition rates of female and ethnic/racial minority students from these disciplines have been disproportionately high relative to that of White males (Barr et al., 2008; Seymour & Hewitt, 1997; Tsui, 2007). Surprisingly, research has indicated that students leaving science and mathematics fields are not necessarily weaker academically; rather, a disproportionately “able” or academically successful group of students leaves these disciplines (Barr et al., 2008; Seymour & Hewitt, 1997).

Various factors are known to contribute to what has been termed the “leaky pipeline” (Rosser, 1997) of science and mathematics undergraduates, including a competitive classroom atmosphere (Tobias, 1990) and poor quality teaching (Seymour & Hewitt, 1997). In some cases, loss of interest and subsequent attrition may be related to negative academic experiences, such as earning poor grades, negative experiences with teaching assistants or lab instructors, and minimal or poor contact with professors (Barr et al., 2008). Of particular interest, however, are how negative experiences with Chemistry courses, especially Organic Chemistry, play a key role in discouraging students from persisting in premedical studies (Barr et al., 2008; Lovechhio & Dundes, 2002). Beliefs students hold about their own intelligence (Dweck & Leggett, 1988) lead some who perform poorly in Organic Chemistry toward self-blame due to a belief that their

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failure stems from a lack of ability (entity beliefs about intelligence) rather than a limited background in science (incremental beliefs about intelligence) (Horowitz, 2011).

A number of reform efforts have arisen in response to the high attrition rates of students in STEM (science, technology, engineering, and mathematics) fields. Two well-known efforts of the National Science Foundation (NSF) are Process Oriented Guided Inquiry Learning (POGIL) and Peer-Led Team Learning (PLTL) (Gosser & Roth, 1998; Farrell, Moog, & Spencer, 1999). Both POGIL and PLTL focus on changing traditional science classrooms into more student-centered environments. POGIL replaces traditional lectures with student-focused, problem solving activities, while PLTL utilizes undergraduate peer tutors to run supplementary problem solving sessions for small groups of students. Both POGIL and PLTL have resulted in significant improvements in student retention and performance in a variety of classroom settings (e.g., public universities and private colleges) and across science disciplines (Gosser, 2011; Eberlein et al., 2008). Institutional finances, however, can impact the duration and scope of POGIL and PLTL programs because these programs may impose class size limits or require the hiring and training of peer tutors (Gosser, 2010). For example, although preliminary results with POGIL and PLTL at the authors' institution were promising (Contel, 2009), cost considerations led to the curtailment of these programs.

Cooperative learning theory underpins both POGIL and PLTL (Slavin, 1980). However, *self-regulated learning theory* is also highly relevant to student success in STEM. Self-regulated learning, a sociocognitive theory, posits that individuals can monitor their own learning processes, employ strategies to meet their goals, and modify behaviors in response to feedback, toward better learning outcomes (Zimmerman, 1990). Self-regulated learners attain success by exerting control over important aspects of their learning environments. A significant feature of self-regulated learning is that it can be developed through practice and self-reflection at any stage in the educational process; thus, it is not conceptualized as or static trait related to underlying intellectual abilities or personality traits (Pintrich, 1995). The adoption of self-regulated learning strategies is particularly appropriate for college students who typically are able to exert control over many aspects of their learning environments including planning academic schedules, regulating physical and social environments, monitoring short and long-term performance outcomes, and seeking help when necessary (Pintrich, 1995; Zimmerman & Risemberg, 1997).

Help seeking is one of a number of self-regulated learning strategies postulated by Zimmerman and others (Newman, 1994; Zimmerman & Martinez-Pons, 1986). While several studies have examined self-regulated learning and academic help seeking among college students, relatively few have examined these behaviors in science or mathematics contexts. One study by Dibenedetto and Bembenuddy (2011) demonstrated a positive association between the use of self-regulated learning strategies and science achievement. A study by Nandagopal (2006) found a relationship between the frequency of use of self-regulated learning strategies and science achievement; self-regulated learning strategies accounted for almost as much variance in academic performance as prior grade point average. An intervention study involving remedial math students at a technical college (Zimmerman, Moylan, Hudesman, White, & Flugman, 2011) revealed that training students in self-regulated learning strategies, specifically to review and correct their own quizzes, resulted in treatment students outperforming control students by 25% on a national "gateway" examination.

With regard to help seeking behaviors among chemistry students, Karabenick (2003) found that General and Organic Chemistry students who were *strategic* help seekers performed

better than students who avoided seeking help. (Strategic help seekers were those who sought appropriate help to maximize learning as opposed to those who asked for shortcuts to quickly find solutions to problems). Szu and colleagues (2011) found that higher achieving Organic Chemistry students engaged in help seeking behavior earlier in the semester than lower achieving students. They also found that although student performance in Organic Chemistry was strongly correlated with prior grade point average, study behaviors and concept mapping made a much larger relative contribution to course performance.

Barriers to help seeking may include time constraints, lack of knowledge about available sources of assistance, low perceived need for help, or threat of being regarded as less capable than other students (Ryan & Pintrich, 1997; Ryan, Pintrich, & Midgley, 2001). Low-achieving students, in particular, may perceive a need for help as indicative of their cognitive or academic failures. These students may have lower self-efficacy (Bandura, 1997; Ryan & Shin, 2011), feel too embarrassed to admit failings (Newman, 1994; Shapiro, 1983), or possess less awareness of a need for help (Wood & Wood, 1999). As Marchand and Skinner (2007) suggest, help seeking may have the net result of being most helpful to those who are least in need of help—the strongest students—a phenomenon wherein the “rich ... become richer.”

Academic help seeking may be a particularly difficult undertaking for students who do not share the cultural experiences of the majority of college students. Although there is a paucity of empirical data on racial, ethnic, and cultural differences in academic help seeking behavior, research has identified a tendency to prefer culturally similar versus dissimilar helpers, likely reflecting an in-group bias (Kashima, 2001). Furthermore, students whose parents are less familiar with the American educational process (e.g., immigrants, those not college educated), sometimes report receiving a message that they “just need to study harder” (Horowitz, 2011). According to author GH, the parents of these students may lack a clear picture of what it takes to succeed in pre-medical courses because sometimes it is not about “studying harder,” but rather “studying smarter” by being more strategic about one’s organizational skills and study habits. Newman (2000), for example, showed that parental and mentor socialization of students influences help seeking behavior. And Zimmerman (1990) pointed out that weaker students, who are not self-regulated, talk about working harder rather than talking about the strategies they will utilize to try to improve.

The research cited above suggests, not only that students who are strategic help seekers may outperform students who avoid seeking help, but also that encouraging self-regulated learning behaviors can benefit academically at-risk students. Given the potential significance of students’ outcomes in Organic Chemistry to their educational and professional trajectories, the goal of the present study was to examine whether or not help seeking could significantly improve the course performance of Organic Chemistry students.

## **II. Method.**

### *A. Participants and General Procedure.*

Over the course of three semesters (Fall 2010, Spring 2011, and Spring 2012), an IRB approved, action research study investigated the benefits of academic help seeking in an Organic Chemistry I classroom at a large, public university located in the Northeastern U.S. Author GH was the lecture instructor for all three semesters of this 5-credit, 15-week long course that consisted of three hours of lecture, one hour of recitation, and four hours of laboratory each week.

Historically, the Organic Chemistry I course at this institution has had a high failure plus withdrawal rate (approximately 40%). This was of concern to the authors because of the high degree of diversity of the student population at our institution: approximately 50% of students are ethnic/racial minorities, approximately 40% are from groups underrepresented in STEM disciplines, approximately 60% are from households with annual incomes of less than \$30,000, and approximately 33% of students speak English as a second or third language. Additionally, many students are the first in their families to attend college.

We employed two methods of data collection. The first was an anonymous, online questionnaire, developed by author GH and administered to students immediately following the return of the first midterm exam (at approximately week 7 of the semester). This questionnaire inquired about various aspects of student behaviors and attitudes including help seeking behaviors, perceived need for help, and midterm grade. The second method of data collection entailed objectively tracking student attendance at instructor problem sessions and office hours, noting each instance of student attendance, later summed into a single “total help seeking” score. In addition, the authors collected information regarding the grades students received in General Chemistry II—an immediate prerequisite course for Organic Chemistry I—as a control variable in the analyses. However, students who took General Chemistry II at outside institutions were excluded from analysis because of institutional variability in course content and grading standards.

### *B. Specific Procedures and Analyses.*

#### *Fall 2010: Setting the Stage*

Prior to beginning the Fall 2010 semester, GH developed a course website and syllabus in which she highlighted and emphasized the availability of a variety of help seeking resources for students such as supplementary problem sessions (held on Saturday evenings before quizzes and exams), office hours, free tutoring, online tutorials, etc.

*Analysis 1—Help seeking and midterm performance.* Based on data collected from the anonymous, online questionnaire, we investigated whether the odds of achieving a higher degree of midterm performance varied significantly for different levels of *help seeking behaviors* and *perceived need for help*. Perceived need for help was included as a variable to account for the fact that the strongest students might not seek help simply because they did not need it.

*Analysis 2—Help seeking and overall course performance.* Based on objective tracking of student attendance at problem sessions and office hours, we investigated the impact of *help seeking behavior* on final class grade, while using students’ prior General Chemistry II grade (expressed as grade point equivalents, e.g. 3.0, 2.67) as a control variable. General Chemistry II grades were observed to be strongly correlated with students’ final numerical grades obtained in Organic Chemistry I. The simple Pearson correlation coefficient for this relationship was 0.70 ( $p < 0.001$ ) for the Fall 2010 semester. In other words, approximately half the variability in Organic I grades directly related to how students performed in their previous General Chemistry II class. This finding provided a strong rationale for use of General Chemistry II grades as a control variable.

#### *Spring 2011 and Spring 2012: Fine-tuning*

Based on student feedback and her own observations of student behavior, beginning in Spring 2011, GH offered a greater number of supplementary problem sessions. And instead of holding problem sessions solely before quizzes and exams, she held two problem sessions per week, one during the day (during club hour when no classes meet) and one on a weeknight in the early evening. GH also decided, partly due to personal time constraints, to shorten the problem session lengths from two hours to one hour. Based on student feedback, she also recruited peer tutors to assist during the problem sessions. GH located a number of willing, former students so that, at a minimum, 2-3 people were available to answer student questions. All of the changes implemented in Spring 2011 were maintained in Spring 2012.

*Analysis 3—Help seeking and midterm performance.* As before, based on data collected from the anonymous, online questionnaire, we investigated whether the odds of achieving a higher degree of midterm performance varied significantly for different levels *help seeking behaviors* and *perceived need for help*. Notably, the survey was modified slightly from Fall 2010 to include a question about students' performance in General Chemistry II. This variable was then used as a control variable in Analysis 3.

*Analysis 4—Help seeking and overall course performance.* As in Fall 2010, GH collected her own observational data of student attendance at each of her problem sessions and office hours over the course of the semester. The authors subsequently investigated the impact of *help seeking behavior* on final class grade, while using students' prior General Chemistry II grade as a control variable.

**Table 1. Overview of analyses conducted.**

<i>Fall 2010</i>	N	<i>Spring 2011 &amp; Spring 2012</i>	N
Total Enrolled	214	Total Enrolled	274
Completed Midterm Survey	137	Completed Midterm Survey	140
Included in Analysis 1	111*	Included in Analysis 3	97***
Withdrew from Course	25	Withdrew from Course	25
Included in Analysis 2	157 **	Included in Analysis 4	204**

\* Students with incomplete survey data were excluded.

\*\* Students who withdrew (and who therefore had no numerical course grade at the end of the semester) were excluded, as were students who received incompletes or who did not take General Chemistry II at the home institution.

\*\*\* Students with incomplete survey data or who did not take General Chemistry II at the home institution were excluded.

### III. Results.

#### *A. Fall 2010 (Analysis 1).*

**Help seeking and midterm performance.** The overall response rate for the voluntary survey was 58% (i.e., 137 students at all levels of class performance participated). The majority of respondents reported that they had sought some form of help before the first midterm exam: 58% had attended at least one extra problem session, 52% had attended office hours at least once,

56% had participated in some form of tutoring, and 32% had visited the campus learning center. Midterm grade was self-reported on an ordinal scale (i.e., <25%, 25-45%, 46-65%, 66-85%, or >85%).

We employed logit ordinal regression (O'Connell, 2006) on 111 students with complete data to determine whether the odds of achieving a higher degree of midterm performance varied significantly for different levels of the independent variables of *help seeking behaviors* (i.e., self-reported attendance at problem solving sessions and office hours, categorized as 0 times, 1-4 times, 5-8 times, or more than 8 times) and the control variable of *perceived need for help* (i.e., dichotomized as “agree” or “disagree” with the following statement: “I often feel that I need help understanding the class material”). Odds were expressed as a single cumulative odds ratio for each level of each variable, providing a measure of representation of each group relative to its given reference category. Presentation of a single odds ratio rests on the assumption that regression parameters themselves do not vary for each successive level of performance on the midterm examination, an assumption met upon inspection of the test of parallel lines. Tests of model fitness were also satisfied, and the Nagelkerke pseudo- $R^2$  value, a measure of predictive improvement in the proposed fitted model relative to a null model, was 13.3%.

With regard to office hours, the odds ratios revealed a statistically nonsignificant pattern of positive association of increased office hours visitation with greater likelihood of improved midterm performance (Table 2). As for the impact of problem solving, there was no clear trend despite positive association at all levels (i.e., compared to those who do not attend at all, those who attended at any level had a greater likelihood of a higher level of midterm performance). The only level that showed measurable statistical significance was among those who attended 1-4 times. Compared to those who do not attend at all, such students were approximately 2.5 times more likely to see improved midterm performance. With regard to perceived need for help, there was a positive effect noted that did not achieve statistical significance.

#### *B. Fall 2010 (Analysis 2).*

**Help seeking and overall course performance.** The authors investigated the impact of *help seeking behavior* (i.e., sum of student visits to problem solving sessions and office hours) on final class grade (a continuous variable ranging from 0 to 100), while using students' prior General Chemistry II grade (expressed as grade point equivalents, e.g. 3.0, 2.67) as a control variable. A multiple regression analysis utilizing simultaneous entry of predictors (Cohen, Cohen, West, & Aiken, 2003) was conducted to estimate the model that best predicted final class grade based on two factors: help seeking and prior performance in General Chemistry II. Final class grade was significantly negatively skewed. In order to meet the test assumption of normality for this criterion, a square root transformation appropriate to the raw data was conducted prior to analysis (Tabachnick & Fidell, 2007). All other test assumptions were met satisfactorily. Results revealed that a regression model incorporating as factors help seeking and General Chemistry II performance was statistically significant ( $F = 84.853$ ,  $p < 0.001$ ) accounting for 52.4% of variance in final class grade overall ( $R = 0.724$ ). As shown in Table 3, both factors were positively correlated and independently significant, though prior General Chemistry II performance ( $\beta = -0.687$ ,  $p < 0.001$ ) more so than help seeking behavior ( $\beta = -0.115$ ,  $p = 0.047$ ) in terms of both impact and significance.

**Table 2. Regression analysis for prediction of midterm performance by help seeking behaviors and perceived need for help. (N = 111)**

Variable	Parameter	<i>B</i>	<i>SE</i>	<i>Odds Ratio</i>	95% Confidence Interval
Office Hours (reference = 0 visits)	>8	1.541	0.803	4.669	0.969 – 22.511
	5-8	0.433	1.150	1.542	0.162 – 14.702
	1-4	0.078	0.389	1.081	0.505 – 2.316
Problem Solving (reference = 0 visits)	>8	1.061	1.182	2.889	0.285 – 29.283
	5-8	1.407	0.979	4.084	0.599 – 27.799
	1-4	0.901	0.398	2.462*	1.129 – 5.376
Perceived Need for Help (reference = agree)	disagree	0.380	0.402	1.462	0.668 – 3.212

\*  $p < 0.05$ **Table 3. Regression analysis for prediction of final class grade by General Chemistry II grade and help seeking behavior. (N = 157)**

Factor	<i>B</i>	<i>SE</i>	<i>B</i>	<i>t</i>
General Chemistry II	-1.129	0.094	-0.687	-11.974***
Help Seeking	-0.043	0.021	-0.115	-2.006*

Note. Positive factors possess negative signage due to transformation of the dependent variable.

\*  $p < 0.05$ \*\*  $p < 0.01$ \*\*\*  $p < 0.001$ *C. Spring 2011 and Spring 2012 (Analysis 3).*

**Help seeking and midterm performance.** Survey data from the respondents (45% of those who completed the first midterm) indicated that over 90% surveyed had sought at least one form of help before the first midterm exam. Seventy percent had attended at least one extra problem session, and 50% had attended office hours at least once. Notably, students at all levels of class performance participated in the survey. However, only students who completed General Chemistry II at the authors' university were included in the analysis.

For Spring 2011 and 2012, midterm grade was reported on the following ordinal scale: <25%, 25-39%, 40-54%, 55-69%, 70-85%, or >85%. As before, an ordinal regression of the 97 student cases with complete data was employed to determine whether the odds of achieving a higher degree of midterm performance varied significantly for different levels of the independent variable of *help seeking behaviors* (i.e., self-reported attendance at problem solving sessions and office hours, categorized as 0 times, 1-4 times, 5-8 times, or more than 8 times) and the control variables of *perceived need for help* (i.e., dichotomized as “agree” or “disagree” with the following statement: “I often feel that I need help understanding the class material.”) and



General Chemistry II grade (entered in the form of a continuous grade point equivalent). Odds were expressed as a single cumulative odds ratio for each level of each variable, providing a measure of representation of each group relative to its given reference category. Presentation of a single odds ratio rests on the assumption that regression parameters themselves do not vary for each successive level of performance on the midterm examination, an assumption met upon inspection of the test of parallel lines. Tests of model fitness were met, and the Nagelkerke pseudo- $R^2$  value was 29.7%, representing a noteworthy improvement in modeling over the Fall 2010 analysis.

As shown in Table 4, higher General Chemistry II scores were associated with improved midterm performance—each one-point grade increase improved the odds ratio by a factor of 2.6. As an example, students who earned a grade of “A” as compared to a grade of “C” in General Chemistry II were roughly seven times more likely to achieve a higher level of performance on the Organic Chemistry I midterm. As with Fall 2010, there were no statistically significant findings for office hours. Attendance at problem solving sessions showed a positive, statistically significant association at all levels with a trend of increased likelihood of improvement in midterm performance with increased attendance at problem solving sessions. Perceived need for help was a statistically significant factor; students who disagreed with the statement that they needed help understanding class material had an approximately 3 times greater likelihood of achieving a higher level of performance on the midterm.

#### *D. Spring 2011 and Spring 2012 (Analysis 4).*

**Help seeking and overall course performance.** The authors investigated the impact of *help seeking* (i.e., sum of student visits to problem solving sessions and office hours) on final class grade, while using students’ prior General Chemistry II grades as a control variable. A multiple regression analysis ( $N=204$ ) was conducted to estimate the model that best predicted final class grade based on two factors: help seeking behavior and prior performance in General Chemistry II. Final class grade was significantly and negatively skewed, and a square root transformation was applied. All test assumptions were met satisfactorily. Results revealed that a regression model incorporating as factors help seeking and General Chemistry II was statistically significant ( $F = 89.514, p < 0.001$ ) accounting for 47.1% of variance in final class grade overall ( $R = 0.686$ ). As shown in Table 5, both factors were positively correlated and independently significant, though prior General Chemistry II performance ( $\beta = -0.582, p < 0.001$ ) more so than help seeking behavior ( $\beta = -0.275, p < 0.001$ ) in terms of substantive impact. Of note, we reran this analysis with individual semester of enrollment (i.e., Spring 2011 or Spring 2012) as an additional factor and found its contribution to the model to be insignificant; its inclusion did not alter the pattern of findings.

#### **IV. Discussion.**

Overall, the Fall 2010 data demonstrated that both help seeking and General Chemistry II grades related to Organic Chemistry I course performance, though prior grade showed a stronger effect. Results obtained in Spring 2011 and Spring 2012 were encouraging in terms of their consistency with Fall 2010 results, but also in terms of the noticeable improvement in the measured contribution of help seeking to overall class performance. Specifically, the restructuring and

rescheduling of problem sessions may have resulted in greater student attendance at these sessions.

**Table 4. Regression analysis for prediction of midterm performance by General Chemistry II grades, help seeking behaviors, and perceived need for help. (N = 97)**

Variable	<i>Parameter</i>	<i>B</i>	<i>SE</i>	<i>Odds Ratio</i>	<i>95% Confidence Interval</i>
General Chemistry II	grade points	0.950	0.240	2.586***	1.614 – 4.141
Office Hours (reference = 0 visits)	>8	1.278	1.332	3.589	0.263 – 48.862
	5-8	-0.554	1.127	0.575	0.063 – 5.233
	1-4	0.254	0.398	1.289	0.590 – 2.812
Problem Solving (reference = 0 visits)	>8	1.852	0.573	6.373**	2.071 – 19.590
	5-8	1.957	0.618	7.078**	2.106 – 23.784
	1-4	1.125	0.544	3.080*	1.061 – 8.944
Perceived Need for Help (reference = agree)	disagree	1.091	0.505	2.977*	1.106 – 8.020

\*  $p < 0.05$

\*\*  $p < 0.01$

\*\*\*  $p < 0.001$

**Table 5. Regression analysis for prediction of final class grade by General Chemistry II grade and help seeking behavior. (N = 204)**

Factor	<i>B</i>	<i>SE</i>	$\beta$	<i>t</i>
General Chemistry II	-0.979	0.088	-0.582	-11.174***
Help Seeking	-0.055	0.010	-0.275	-5.278***

Note. Positive factors possess negative signage due to transformation of the dependent variable.

\*\*\*  $p < 0.001$

Our results indicated that when a diverse group of undergraduate students participates in help seeking, performance in a challenging, gatekeeping course like Organic Chemistry I can improve. However, our data also revealed that some students sought help infrequently, or not at all. Descriptive survey data provided some rationale for why this was the case. For example, in Spring 2011, although the vast majority of respondents indicated comfort in seeking help from recitation and lecture instructors, 50% indicated that the times available to obtain help did not match their personal schedules. Among the schedule constraints respondents faced, 80%

indicated managing a full course load, 60% indicated family responsibilities, and 56% indicated work responsibilities.

Other factors unrelated to scheduling may also have discouraged certain students from seeking help. For example, GH observed that students who present as more self-confident seem more comfortable seeking help while poorly performing students seem ashamed of their lack of knowledge or afraid that asking questions will bother or annoy the instructor. These student behaviors may be related, in part, to SES and parents' levels of education. GH speculates that students who grow up in wealthier households may take steps to ensure that their academic needs are met, as compared to students from less privileged backgrounds. It also seems that some students (perhaps because their parents are college educated) are savvy about how to succeed in college, whereas other students are not as proactive about getting help when they needed it. These possibilities are supported by the ethnographic work of Annette Lareau (2011), who found that children raised by college educated parents grow up feeling more entitled and more comfortable asserting their needs in school settings.

The degree to which students' self-regulated behaviors are learned from parents or influenced by the beliefs students hold about their own intelligence and self-efficacy remains to be determined. Preliminary data from our research (not presented above) suggests that better midterm performance is correlated with knowing where to go for advice or information and knowing which questions to ask when one feels "stuck." Better midterm performance was also associated with feeling comfortable letting instructors and peers know that one is struggling with the class material. These findings have implications for the development of interventions to encourage help seeking behavior in those less inclined to seek out such services on their own. For example, instructors could be trained to teach students to adopt behaviors that stronger students seem to demonstrate already (e.g. picking up and reviewing graded materials, making lists of questions they need help with, or creating flash cards). Before intervening, it would be instructive to explore students' help seeking orientations (e.g., whether one is an "instrumental" or "executive" help seeker) (Karabenick & Dembo, 2011), their beliefs about their ability to exert control over their learning environments, and their basic ability to communicate needs to a peer or instructional tutor. By understanding the unique needs of students, focused interventions could be developed that target specific barriers to effective help seeking. Ultimately, that of greatest benefit to students remains not merely the receipt of help but the receipt of the right type of help for their particular struggles.

Every semester GH observes that some Organic Chemistry I students exhibit worrisome behaviors that seem contrary to the mode of self-regulated learning. For example, some students avoid seeking help while others avoid obtaining feedback (e.g., fail to retrieve exams and quizzes); still others avoid meeting with the instructor or even attending class (where the instructor provides suggestions about what to focus on and how to study). When these students perform poorly, they may resort to self-blaming, believing that their failures are due to a lack of ability (entity beliefs about intelligence), rather than due to lack of a strong science background (incremental beliefs about intelligence) (Dweck & Leggett, 1988). Clearly there is a role here for education around issues of ability and intellect, which could be incorporated into the academic helping relationship.

A notable finding in this study was the strong association between General Chemistry II and Organic Chemistry I grades. This finding initially surprised the authors, given the limited content overlap between these courses. It appears, however, that the General Chemistry II grade likely taps into not just General Chemistry knowledge, but also prior overall science background

and science study skills. Students at our university with strong high school science backgrounds often anecdotally report that General Chemistry is not difficult for them. By contrast, students with weak high school backgrounds tend to report the opposite. This supports our hypothesis that skill at seeking help can impact Organic Chemistry I performance. It also supports the notion that training weaker students to adopt appropriate help seeking behaviors can improve their performance.

*Limitations.* The study was limited in terms of the types of data available to the researchers. We did not possess demographic data (e.g. gender, race/ethnicity, parental educational achievement) that could have improved the explanatory power of our models. In addition, because we altered the survey between the Fall 2010 and Spring 2011 and 2012 semesters, we were unable to compare findings directly between these semesters.

This study also excluded transfer students, which limits the generalizability of our findings, since a number of students in Organic Chemistry I were transfers. This exclusion is of concern because it has been observed (Kobrak, 2010) that transfer students who take General Chemistry II outside of our university encounter particular trouble when they take Organic Chemistry I at our institution.

Another limitation is that in our final course grade analyses (Analyses 2 and 4), all students who withdrew (who did not complete the course) had to be excluded. This is of concern because it is likely that the majority of these students withdrew because they were performing poorly in the course.

## **V. Conclusions.**

While a number of studies discuss self-regulated learning and academic help seeking among college students, relatively few have examined these behaviors in science or mathematics contexts. Over the course of several semesters at a large, urban, public university, the current study explored the potential impact upon performance in Organic Chemistry I of several variables including student participation in academic help seeking activities, such as attendance at problem sessions and office hours. While results indicated that prior demonstration of aptitude through General Chemistry II grade was the best predictor of current performance in Organic Chemistry I, other variables had a significant impact including engaging in help seeking (particularly attendance at problem solving sessions) and a lower self-perceived need for help (perhaps indicating greater confidence in one's potential to master course material). This study has important implications for others who teach introductory science courses, especially for those who teach underrepresented students, because it supports the findings of Zimmerman et al. (2011) that encouraging students to engage in self-regulated learning behaviors may benefit underrepresented and at-risk students.

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## **Who says: “No Fair!”? What personality and an experiment in educational value tell us about perceptions of costs and benefits of research pool requirements**

**Lisa DeMarni Cromer<sup>1</sup>, Shannon M. Reynolds, and Mitchell D. Johnson**

*Abstract: Human subject pools (HSPs) are the basis for much psychological research. There is an explicit assumption that participants receive benefits from their participation, however there is little empirical research about the costs/benefits of participation. We conducted two studies with undergraduate psychology students to evaluate factors that can affect the cost/benefit ratio. Study 1 (N=46) examined Big Five personality characteristics and number of psychology courses taken, in relation to perceived benefits. There were depreciating returns for on-going participation but no personality differences in ratings. Study 2 (N=50) used a quasi-experimental design to manipulate educational value. Half of the participants completed an educational assignment that integrated their HSP research experience into course material. Students who completed the educational assignment had a strong sense of contributing to scientific knowledge whereas students who had no such assignment did not. Implications for increasing educational value in HSPs are discussed.*

*Keywords: Human subject pool, educational value, integrative assignment, student perceptions of research*

### **I. Introduction.**

Human Subject Pools (HSPs) are a valued resource for psychological research. They are used by three quarters of universities (Miller, 1981; Sieber & Saks, 1989) and one third of four-year institutions (Landrum & Chastain, 1999). Approximately 70% of personality and social psychology studies and 90% of perception studies are conducted with college students in HSPs (Kulich, Seldon, Richardson, & Servies, 1978). Given the widespread use of HSPs, studies about the costs and benefits of HSP research participants' experiences have widespread applicability to psychological research and ethics in the United States.

The relatively small body of research about HSPs has focused on researchers' concerns. HSP meta-research has sought to identify idiographic differences among participation characteristics. For example, meta-research has focused on individual differences that relate to predictors of early or late participation in the semester, finding that women tend to participate earlier in the semester than do men (Aviv et al., 2002; Cooper, Baumgardner, & Strathman, 1991; Roman et al., 1995; Witt, Donnellan, & Orlando, 2011). Research into personality aspects of participation has found that participants higher in conscientiousness, agreeableness (Witt, Donnellan, & Orlando, 2011) and introversion (Aviv et al., 2002) participate earlier in the semester. Some studies have examined pragmatic obstacles to research participation from participants' perspectives. Other research has focused on factors related to volunteerism, suggesting that there are individual differences in who may be more likely to see the benefit of

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research participation. We summarize the literature relevant to United States research pools and then focus on the issue of costs and benefits for research participants.

### *A. Individual Differences in Willingness to Volunteer for Research.*

Presumably, volunteer research participants experience some value or benefit from their volunteerism. When we examine research on volunteerism in HSPs, there are some individual differences between volunteers and nonvolunteers. This may illuminate who is more likely to perceive benefits from HSP participation. Martin and Marcuse (1958) prescreened 400 psychology undergraduates. These students were categorized into “volunteers,” i.e., they volunteered to do additional studies and “nonvolunteers,” i.e., they did not respond to subsequent research invitations. Volunteers were higher on intelligence (as measured by self-report ACT scores) than nonvolunteers, and female volunteers were more sociable than female nonvolunteers (Martin & Marcuse, 1958).

Numerous other traits have been observed in individuals who elect to participate in research. Jews are more likely to participate in interviews than are Protestants and Catholics (Fischer & Winer, 1969). Willingness to volunteer in an HSP has been related to having more left-wing political views and being less conventional (Rosen, 1951; Rosenthal & Rosnow, 1975) and to being lower on authoritarianism (Rosnow & Rosenthal, 1976). Volunteers are more aggressive and higher in need for achievement (Rosenthal & Rosnow, 1975), and they are more agreeable and open to experience than are nonvolunteers (Dollinger & Leong, 1993). Amongst volunteers, extraverts are more likely to participate in face-to face research than internet-based research (Aviv et al., 2002).

### *B. Beneficence in Research.*

The Belmont Report (U.S. Department of Health, Education, and Welfare: The National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979) articulated an ethical obligation of beneficence in research. In other words, researchers should work to maximize the possible benefit to research participants. This standard is also found in the American Psychological Association’s ethics code (American Psychological Association, 2002). Benefits, however, may be in the eye of the beholder, and as such, perception of benefits is an important consideration for Institutional Review Boards (IRB) and others (e.g., professors) who are responsible for assuring participants’ welfare. All studies must weigh the participants’ costs and benefits; this balance is explicitly stated in IRB applications. In the present research, we consider costs and benefits as they relate to participation in HSPs, over and above the usual consideration of cost and benefits for any particular study. At the level of HSP participation, we consider cost to relate to factors such as possibly feeling coerced to participate, as well as negative feelings and experiences such as boredom, stress, perceptions of fairness (or unfairness) with regard to a HSP requirement or offer for extra credit. Meanwhile, benefit relates to learning from the experience, satisfying curiosity, intellectual stimulation and interest, altruism, and the opportunity to earn extra credit. Importantly, these are not objective measures of cost or benefit. Rather, these are individuals’ subjective perceptions of their experiences. We review this scant literature on costs and benefits below.

### *C. Perceptions of Cost and Coercion in HSP Participation.*

Some authors have suggested that coercion may be a concern about research conducted with HSPs (Miller & Kreiner, 2008; Miller, Kreiner, Ryan, & Smith, 2010). In a 2005 survey of IRBs, Wille (2005 as cited in Miller et al., 2010), found that a third of IRBs had explicit procedural concerns in order to prevent coercion. The most recent edition of the American Psychological Association ethics code, Standard 8.04b, addresses coerciveness in requirements for course credit, noting that it is essential that participants be given choices that include equitable alternatives to research participation (APA, 2002). In short, instructors can require students to be directly involved in research and can require their participation in person, as long as there is an equitable alternative such as reading and summarizing empirical papers (Smith, 2003). Implicit in this assumption is that reading about research and writing a summary is equitable in time and effort to the research requirement. Some investigators have attempted to document whether the assumption of equitability is consistent with students' experiences. Foot and Stanford (2004) found that students viewed these alternatives as either boring or too time-intensive compared to the research sessions. Another study found that students thought research participation and summarizing articles were equally coercive (Trafimow, Madson, & Gwizdowski, 2006). Miller and Kreiner (2008) found that students reported feeling coerced to participate and viewed offers of extra credit from instructors to also be coercive, but then reported the overall participation was worthwhile. Additionally, the participants reported that they did not object to receiving extra credit or being paid for their research participation (Miller & Kreiner, 2008). The authors noted the apparent contradiction and speculated that participants may not have fully understood the word "coercion" used in the query.

Previous research that examined participants' personality primarily focused on whether personality predicted differences in participants' behavior. Researchers found that personality type was related to when participants signed up for studies (early or late in the semester). Only two studies examined personality as it related to perceptions of one's HSP experience. Carver (1980) found that Type A (high strung) personality types perceived higher levels of coercion than did Type B (easy going) personality types. The idea that perceived costs of research participation could vary by personality type was later pursued by Miller and colleagues. Miller et al., (2010) used a common Five Factor Model (FFM) of personality called the Revised NEO Personality Inventory (NEO PI-R). The NEO PI-R measures five broad domains of personality: Neuroticism, the tendency to experience negative emotions, Extraversion, the tendency to be social and assertive, Openness, creativeness and be willing to try new experiences, Agreeableness, the ability to get along with others and be friendly, and Conscientiousness, being thorough and careful (Costa & McCrae, 1985). Miller and colleagues (2010) used different vignettes that depicted five different recruiting strategies to research studies and had participants rate perceived level of coercion. The authors found that personality did not impact views of coerciveness. Nonetheless, Miller and colleagues did find a within subjects effect for type of recruitment depicted in the vignettes. The highest level of coercion was perceived in a vignette in which a professor simply asked students to participate in research. There was a lower level of perceived coercion when a professor was said to offer monetary incentives, and even less perceived coercion when a professor was said to ask students to stay after class to participate. The vignette rated least coercive was a professor offering extra credit to those who participated. From this research, it appears participants view coercion as being related to how direct and personal the requests for participation were.

Taxing students' time is another potential cost to an HSP requirement. When queried for criticisms of HSPs, participants complained about studies being difficult to schedule (Elicker, McConnell, & Hall, 2010). Elicker and colleagues pointed out that the most common reason students do not participate in research was having limited time to participate followed by general scheduling conflicts. This research pointed to important considerations for reducing costs to students, including having a reasonable number of study selection options and a variety of study session days and times.

#### *D. Perceptions of Benefits to HSP Participation.*

Objective measures of educational benefits have shown that research participants learn from their research experiences. Students' knowledge about research methods was greater when they participated in experiments than when they studied from a textbook (Darling et al., 2007; Thieman, Clary, Olson, Dauner, & Ring, 2009). Objective tests of knowledge-based questions also showed a better understanding of ethics after participating in research (Rosell, Beck, Luther, Goedert, Shore, & Anderson, 2005). Nonetheless, there is no work that queries parameters for learning. In particular, it is unknown whether participants gain more knowledge with more hours of research participation (Miller, 1981).

Perception of learning is also an important parameter to measure. The educational value of participating in research is often used to justify an HSP requirement and is the purported benefit that balances the cost of participation. Furthermore, an educational component to research participation is implicit in federal regulations about human subjects' research, and is monitored by IRBs. If participants perceive educational value, it would provide support for the view that research offers benefits to participants. Similar arguments have been made regarding perceptions of coercion. Leak (1981) and Scott-Jones (2000) noted that it is not whether *researchers* state there is coercion but rather *participants' perceptions* of coercion that should determine whether or not coercion is present. Regarding perceptions of educational benefits of research, participants' perceptions present a generally positive picture (Darling, Goedert, Ceynar, Shore, & Anderson, 2007). Consistent with objective studies of knowledge, subjective studies evidenced that students reported having a better understanding of research methodology and of research ethics after participating in experiments. Furthermore, students reported that research participation augmented their knowledge more than equivalent hours of classroom instruction (Darling et al., 2007; Elliott, Rice, Trafimow, Madson, & Hipshur, 2010).

In contrast to these positive impressions about research participation, Brody, Gluck and Aragon (2010) found an absence of positive views when they interviewed 65 students about their experiences. Although Brody and colleagues did not probe for positives, the authors also noted that positive responses were not spontaneously offered; this suggests that students' first impression of research may not be that it is educational for them. These studies also did not evaluate whether or not there is an optimal amount of research participation that can provide benefits. If indeed research participation is beneficial and positive for students, it would be helpful to know how much participation provides the most benefit (e.g., number of hours or studies) and whether or not there are diminishing returns after some amount of research participation.

### *E. The Current Study.*

In the present research we sought to examine the individual benefits that may be gained from HSP participation, and if the perception of benefits is correlated to the amount of participation in research. We wanted to compare responses of students who were new to the HSP compared to those who had participated over multiple semesters. This would allow us to detect whether there is a limited value in HSP participation or whether there are cumulative benefits over repeated participation.

We also were interested in bringing together the individual difference literature (i.e., conservatism, and personality) with perceived level of costs (e.g., coerciveness) and benefits (e.g., educational value) of research. HSP studies (reviewed above) have shown that individual differences do relate to many HSP variables, such as when during the semester a student will participate (Witt, Donnellan, & Orlando, 2011), which personality types are more likely to participate in any kind of research (Dollinger & Leong, 1993; Martin & Marcuse, 1958; Rosen, 1951; Rosenthal & Rosnow, 1975), and which personalities are more likely to participate in face-to-face studies (Aviv et al., 2002). However only two studies (Carver, 1980; Miller, 2010) have examined personality differences as they relate to perceptions of research participation. Unfortunately, Carver (1980) used broad Type “A” and “B” personality traits, which are not well-defined personality constructs (Friedman & Booth-Kewley, 1988; Ganster, Schaubroeck, Sime, & Mayes, 1991). Although Miller found no differences for personality type, the study did not unpack these analyses into specific hypotheses. Because personality has been examined and found to be related to other HSP variables, there may be a possible “file drawer” problem. The “file drawer” problem was first described by Rosenthal (1979). Rosenthal asserted that the literature was biased because null results generally did not get published; hence information about the absence of group differences or the absence of associations between variables was not disseminated. This issue remains prevalent today, yet null findings do need to be communicated to the scientific community (Howard, Lau, Maxwell, Venter, Lundy, & Sweeny, 2009). Given that personality differences that may relate to HSP participation is a relatively new area of inquiry, and a previous “file drawer” problem may have existed, we sought to examine personality variables as they related to different perceptions of research experiences. In particular, we were interested in whether Conscientiousness and Openness to experience would relate to positive or negative views of research participation, and if agreeableness would relate to the perceived educational value and fairness of required participation. To our knowledge, this is the first study that examines differences in personality as it relates to perceived educational value and fairness. Personality, by definition, characterizes the way one thinks, behaves, and feels (Allport, 1961), so it is extremely relevant to perceptions of costs and benefits.

We were interested in extending earlier research by Rosen (1951) and Rosenthal and Rosnow (1975) that found research volunteers held more liberal political views than non-volunteers. Both of these former studies were conducted in traditionally liberal states (authors were in California, Massachusetts, and Pennsylvania). Given that the current research is conducted in a conservative state, we wanted to investigate the generalizability of these earlier findings; in short, we wondered if liberalism would also equate to attitudes about research when in a predominantly conservative state.

*Hypotheses 1 and 2.* As an extension of our discussion about Miller’s (1981) observation that little is known about whether participants believe that they gain more knowledge with more hours of research participation, we sought to examine this relationship. Our prediction was that

(1) perceptions of benefits would decline as research hour requirements increase. To test this, we correlated the number of psychology courses taken prior to the most recent participation, and the number of positive and negative comments that each student generated in response to open-ended questions about the value and experience of HSP participation. (2) We predicted that students who had more negative views of the research and HSP would have been required to complete more total research hours in the current semester.

*Hypotheses 3 and 4.* We sought to examine whether personality variables would account for individual differences in perceptions of research experiences. Because only one published study (Miller, 2010) sought to examine HSP experiences and personality (and failed to find differences), we thought that it would be useful to determine whether in fact individual differences could explain positive or negative experiences with research. Specifically, we predicted that: (3) Individuals who were higher on personality variables of Openness to experience, Conscientiousness, and political conservatism would be more likely to be positive (versus negative) in their views about their HSP experiences. (4) We also predicted that individuals who were higher on Big Five Agreeableness would be more likely to rate the research requirement as being fair (versus unfair).

## **II. Methods - Study 1.**

Data were collected during one semester. Students participated either for a research requirement or extra credit, as determined by their course instructor. Participation was optional; this study was offered amongst several other studies. Data collection was anonymous.

### *A. Procedure.*

Participants who had completed at least two hours of research in the semester were eligible to participate. This was tracked by an online system (Sona<sup>TM</sup>). Sona<sup>TM</sup> is an online software product that is licensed by the Psychology department. All research (online and on site) is administered through this system. Two hours of research was chosen as a baseline for all participants to ensure that they had at least minimal exposure to participation before answering questions about how they viewed those experiences. They were contacted by mass email notification through the Sona<sup>TM</sup> system. They were given a research assistant's email to contact if they wished to receive a password for the online study. Responses were completed online on the Sona<sup>TM</sup> system affording anonymity and automatic credit granting. The survey took fewer than 30 minutes to complete. Debriefing was provided online, and participants were encouraged to print this out, or contact the researcher for a paper copy.

### *B. Participants.*

The study was conducted at a private Midwestern university. At this university, 128 students had registered in the HSP (as determined by number of accounts in the online administration system, Sona<sup>TM</sup>). Seventy-four participants responded to the invitation to complete the survey and received a password. Of these, 62% subsequently took the online survey (and all completed once started). One participant was excluded from analyses due to selecting an option to not be included in any publications. The final sample ( $N = 46$ ) consisted of 40 women and 6 men. The mean age was 21.43 ( $SD = 5.60$ ). Table 1 details additional demographic information.

**Table 1. Study 1 Demographic information for the HSP ( $N = 46$ ).**

	Minimum	Maximum	Mean	SD
Age	18	53	21.43	5.60
Political affiliation	1 (liberal)	7 (conservative)	3.98	1.57
Year in school	1	5	2.61	1.26
GPA*	2.3	4.0	3.41	0.47
Total psychology classes taken	1	36	6.43	6.29
Extra credit hours	0	10	1.87	2.71
Required research hours	2	8	5.87	1.98
BFI Extraversion	2	5	3.32	0.78
BFI Agreeableness	3	5	4.09	0.60
BFI Conscientiousness	3	5	3.79	0.51
BFI Neuroticism	2	4	2.91	0.63
BFI Openness	2	5	3.47	0.59
Female (%)	87			
View HSP experience positively (%)	72			
View HSP experience as fair (%)	89			
View Sona <sup>TM</sup> positively (%)	100			

\*GPA compares to a mean of 3.22 for the College of Arts and Science at this university, per Dean's office report.

### C. Measures.

Demographic questions included gender, GPA, academic classification, academic major, and employment status. Participants also were asked about the number of psychology courses they had taken, number of required research hours that semester, intention to complete extra credit research hours, and how many research hours they planned to complete as compared to number of hours reading and summarizing articles.

*Political Conservatism.* Political affiliation was measured with a single subjective question: "Please indicate which option best describes your political affiliation" and responses were provided on an 8 point Likert scale where *Liberal* = 1, *Moderate* = 4, and *Conservative* = 8.

*Big Five Inventory.* Personality was measured with the 44-item Big Five Inventory (BFI; John, Donahue, & Kentle, 1991) self-report questionnaire. The BFI has five scales consistent with the five-factor model: Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness. Internal consistencies for the five scales range from .79 to .87, with a mean .83 (John, Donahue, & Kentle, 1991; John, Naumann, & Soto, 2008). The internal consistencies in the current data set ranged from .69 (Openness and Neuroticism) to .85 (Extraversion). The BFI also has a mean convergent validity correlation of .95 with the NEO PI-R scales (John, Naumann & Soto, 2008).

The BFI means for a sample ( $N = 6076$ ) of 21 year-olds are: Extraversion = 3.25 ( $SD = .90$ ), Agreeableness = 3.64 ( $SD = .72$ ), Conscientiousness = 3.45 ( $SD = .73$ ), Neuroticism = 3.32 ( $SD = .82$ ), and Openness = 3.92 ( $SD = .66$ ; John & Srivastava, 1999). Five one-sample  $t$ -

tests showed our sample means statistically differed from the normative sample because our sample was higher on Agreeableness ( $t(45) = 5.09, p = .0001, d = -.68$ ), and Conscientiousness ( $t(45) = 4.52, p = .0001, d = -.54$ ), but lower on Neuroticism ( $t(45) = 4.41, p = .0001, d = .56$ ), and Openness ( $t(45) = 5.17, p = .0001, d = .72$ ). See Table 1.

*HSP Experiences Questionnaire (HSP-EQ)*. The HSP Experiences Questionnaire was developed by the first author in order to obtain feedback regarding students' experiences in the HSP. The original intention for this measure was to provide evaluative information in order to learn about students' experiences as participants and to potentially guide changes to the HSP. All questions were open-ended to allow students to express as much as they wanted about their HSP experiences. Coding categories were developed by evaluating participants' responses.

*Coding of HSP-EQ*. Question 1, "Why did you choose to do the experiments instead of the alternative assignment? (OR why did you do the alternative assignment instead of the experiments, if that applies to you)?" Open-ended responses were coded into five categories: (1) *it was easier*, (e.g., "For me, spending hours participating in a study was easier than doing the alternative assignment") (2) *contribute to research*, (e.g., "I think it is important to support the research that graduate students are doing.") (3) *for educational or learning purposes* (e.g., "Better experience—allows you to get a different perspective," "It's also a nice deviation from "normal," written schoolwork," "I wanted first hand experience at what participating in psychology research was about."), (4) *it was more interesting, fun, or they were curious* (e.g., "I thought participating would be more interesting," "It's fun to get the experience," "I chose to participate in experience due to the curiosity."), or (5) *felt coerced* (e.g., "I thought that the alternate assignment would result in a lower grade.") A distinction we made between categories 3 and 4, was that category 3 was coded if the implied goal was to learn something and to contribute to an academic knowledge base, as compared to category 4 that suggested more of a novel component with a shorter term goal. Each participant's response could have multiple components, each of which would be coded although no single component was ever double coded.

Participants' opinions of the research requirement were assessed in question 2, "What do you think of the experiment requirement?" Negative responses included statements suggesting (1) *fewer required hours* or (2) *unfair*, "It's difficult for athletes to find spare time to do it." Positive views were coded as (1) *motivating the participant to become involved in research* (e.g., "It's helpful, otherwise I wouldn't be motivated to get involved at all"), (2) *educational* (e.g., "It's nice to learn the research side of psychology, and to get to see the tests that we talk about in class."), or (3) *generally positive*, such as "*it was okay*" and "*I liked it*." Coders only provided one code for each participant because nearly all of the participants only provided a single response. For the few cases in which more than one response was given, we coded the first response on this question. Thus, for this question, response category frequencies are independent and dichotomous. These scores were included in the overall summed score of responses, and question 2 was also used as an stand alone dependent variable in the logistic regression used to test hypothesis 2.

Question 3, "What do you think is valuable about participating in research studies?" was coded as (1) *no value*, (2) *educational* (e.g., "Learning how the process works, e.g. informed consent, debriefing, etc." or (3) *contribute to research* (e.g., "It provides data for professor's research."). Frequencies for these items do not sum to 100% because of the double coding and therefore are not independent, thus only descriptive statistics (frequencies) are provided. No

single portion of a statement was ever double coded, however a compound sentence that touched on two categories, would have each part of the sentence coded separately.

Question 4 queried dislikes of the research requirement: “Is there anything about the research/experiment requirement that you do not [sic] like?” Responses included: (1) *too few experiment choices*, (2) *too many hour requirements*, (3) *experiments took too long or were difficult to schedule*, or (4) *general complaints* (e.g., “Some of the studies are lengthy and monotonous”). The modal response was (5) *no dislikes*; when this question was left blank it was also coded as “*no dislikes*.”

Question 5a, “Is the experiment requirement fair?” was coded *yes* or *no*. Question 5b “Why or why not?” was coded (1) *educational*, (2) *contributes to research*, or (3) *that it was a reasonable requirement*, (e.g., “Because it's just like a participation credit in any other class, and students are given ample time to complete it”). Responses explaining why the experiment requirement was unfair included statements that (1) *it was educational for others but not me*, (2) *the participation should be extra credit*, (3) *unfair study exclusion factors or too few options*, and (4) *exploitative or too demanding* (e.g., “Other departments don’t require it and as a undergrad student we don’t get any results therefore for us it seems pointless”).

Question 6 assessed the participant’s opinion of his/her debriefing experience. Responses towards the debriefing were coded as (1) *positive/helpful/necessary*, (2) *negative/not helpful/unnecessary*, (3) *no debriefing experience*, or (4) *a neutral statement* (e.g., “It was brief and to the point.”)

Question 7 assessed the participants’ experience with the electronic sign-up system. This was coded as either positive (e.g., “I liked it a lot more than signing up on paper, it is fast, easy, and instant”) or negative. However, no negative responses were given.

The faculty investigator, graduate student, and undergraduate student were all trained on the coding method. The graduate and undergraduate student independently coded all the participants’ responses. Coding meetings were held weekly to discuss and resolve discrepancies. The primary investigator served as judge for discrepancies, so the final code reflected her agreement with one of the two coders. The two independent raters agreed 96% of the time.

Across all of the open ended questions, we summed the number of codeable positive responses in order to obtain a measure of how positive respondents were. The range was 2 to 9 for each participant. We also summed the number of codeable negative responses in order to obtain a measure of how negative respondents were. The range of values was 0 to 5 for each participant. All respondents had a summed positive and a summed negative score. These scores were negatively correlated (Pearson’s  $r = -.684$ ,  $p = .0001$ ), indicating a strong relationship with the variables, yet not so correlated as to be redundant. The more positive respondents were about their HSP experience, the fewer negative things they had to say.

### III. Results from Study 1.

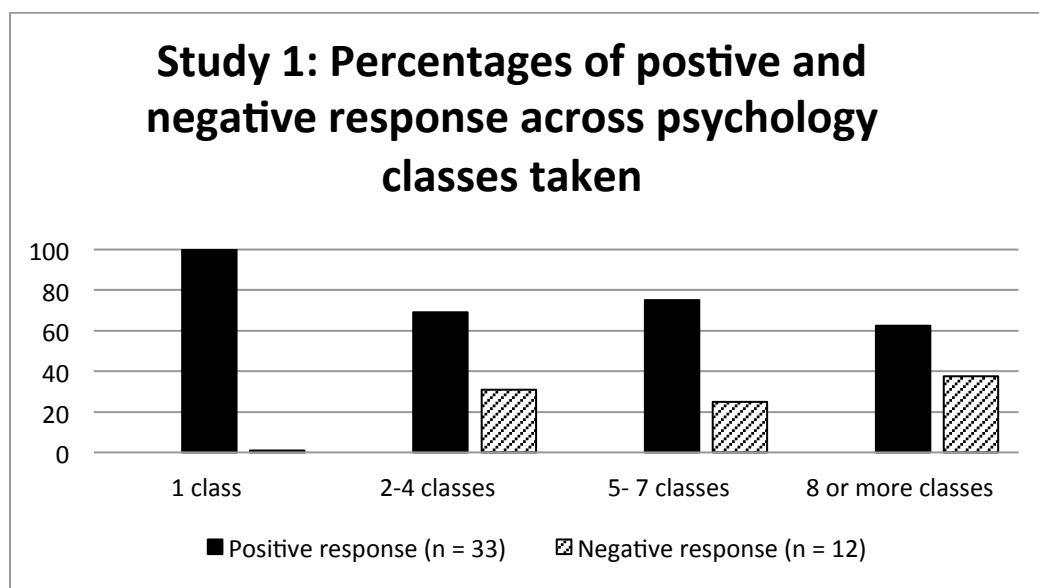
#### A. Descriptive Statistics.

Seventy-two percent of participants thought the research experience was educational or positive. Most respondents (89%) thought the research requirement was fair. Although 41% reported liking *everything* about the research requirements, the most common complaint was that the sessions were hard to fit into their schedules (26%), followed by 11% of the sample not liking an aspect of one of the experiments or feeling coerced into participating. While 52.2% of the sample



thought the debriefing was helpful, 17.4% said it was unhelpful, and 30.4% did not report on debriefing or said they had never experienced one. To further examine how previous HSP experience and personality may influence these views of the HSP experience, we tested hypotheses 1-4 below. Because the sample was 87% female, we did not include gender in any of the analyses for lack of power which could have been misleading in the results.

*Hypothesis 1.* We predicted that perceptions of benefits would decline as research hour requirements increase. We examined the number of psychology classes participants had taken at our institution and proportion of individuals who rated the experiment as educational and/or positive (see Figure 1). Negative comments per number of psychology classes are also shown in Figure 1.



**Figure 1. Study 1: Percentage of positive and negative responses across number of psychology classes taken by students.**

All the students who had taken only one psychology class provided a positive response to question 2, “What do you think of the experiment requirement?” In comparison, there were fewer positive responses from participants who had taken more than one class that required research participation. There were also more negative views about experiences for individuals who had taken two or more classes. As stated above, we computed a summed score of the number of positive responses for all of the questions and a summed score of the total number of negative responses for each respondent. These summed positive and negative values were correlated with the total number of reported psychology classes taken. Number of psychology classes taken was used because at the institution in which this study was conducted, all psychology classes require students to complete between 1-4 hours of research experience as part of the course requirement (either reading and summarizing an article or participating in a research study). Most students choose to participate in research over reading and summarizing an article. The more psychology classes a student takes, the more research experience s/he has. Number of psychology classes was a better estimate than year in school because some senior students were not psychology majors, had only taken one psychology class, and only participated in one hour of research. Both correlations were significant (one-tailed because we hypothesized more classes would result in more negativity and less positivity). More classes related to fewer

positive responses, Pearson's  $r = -.248$ ,  $p = .048$ , and more classes related to more negative responses about the HSP, Pearson's  $r = .411$ ,  $p = .005$ .

*Hypothesis 2:* To determine whether negative views of research were related to the number of required research hours across all psychology courses in which participants were currently enrolled, we performed a logistic regression, regressing participants' views of the research experience as positive = 1 or not = 0 (based on each participant's dichotomously coded answer to question 2), on a categorical predictor of research hours required. We coded research hours required into a categorical variable because examination of a histogram revealed that number of hours required was essentially a bimodal distribution. Five or fewer hours were dummy coded 0, and 6 or more were dummy coded 1. The full model was statistically significant,  $\chi^2 (1, N = 46) = 4.70$ ,  $p = .03$ , indicating that the model was able to distinguish between those who thought the research experience was positive and those who did not. The model as a whole explained between 9.7% (Cox and Snell R square) and 14% (Nagelkerke R squared) of the variance in views of the research experience, and correctly classified 71.7% of the cases. The odds ratio of .193 indicated that respondents were about 20% more likely to report the research pool experience as negative if they were required to complete 6 or more hours of studies in a semester.

*Hypothesis 3.* To examine if individuals high on Openness to Experience, Conscientiousness, and political conservatism were more likely to rate their research experience as positive (versus negative), we conducted a direct logistic regression. The model contained three independent continuous variables (Openness, Conscientiousness, and political conservatism). The dependent variable was a dichotomous 1 = positive, 0 = negative experience score (based on question 2). The full model was not statistically significant,  $\chi^2 (3, N = 46) = 5.66$ ,  $p = .129$ , indicating that the model did not distinguish between individuals who found the research experience to be positive or not. See Table 2 for means and standard deviations. These results may reflect the fact that the majority of the sample (72%) considered the research requirement a positive experience.

*Hypothesis 4.* To examine whether individuals who were higher on Big Five Agreeableness were more likely to view the research requirement was fair, responses to question 5a were coded into 1 = fair, 0 = unfair. A logistic regression with Agreeableness as the predictor was not statistically significant,  $\chi^2 (1, N = 46) = 1.024$ ,  $p = .312$ . Failure to find a significant difference may be due to the majority (89%) of the sample viewing the requirement as fair.

**Table 2. Study 1: Means and standard deviations for positive and negative groups.**

Group	Openness scale score	Conscientiousness scale score	Political affiliation
	Mean (SD)	Mean (SD)	Mean (SD)
Positive group ( $n = 33$ )	3.42 (0.63)	3.72 (0.45)	3.79 (1.60)
Negative group ( $n = 12$ )	3.58 (0.45)	4.02 (0.60)	4.42 (1.51)

#### IV. Discussion for Study 1.

The results indicate that participants of this HSP generally viewed the research experience as positive and fair. Nonetheless, we observed depreciating returns to students as they participated in the HSP over multiple classes. It is important to note that 100% of participants who were partaking in the HSP for the first time had a positive experience in the HSP. The proportion of positive views of the HSP diminished for the other groups, with 69% in 2-4 classes, 75% in 5-7 classes, and 63% in 8 or more classes having positive ratings. There were increased negative views across more HSP participation, with 31% in 2-4 classes, 25% in 5-7 classes and 38% in 8 or more classes reporting negative views of HSP experiences. Both trends (increasing negativity and decreasing positivity about HSP experiences) were significant when correlated to number of psychology classes taken. This provides evidence that there are educational benefits to students who participate for the first time. This statistically significant finding speaks to the strength of the effect because our sample was small, yet differences still emerged. Regarding the question about whether students continue to receive benefits from higher levels of HSP participation in a given semester, some but not all students reported benefits and these benefits were reduced with increase exposure to research studies. When we dichotomously coded participants into requirements for 6 or more hours compared to 5 or fewer hours, we found that those with higher demands were less likely to view their experience as positive (hypothesis 2). From a cost/benefit perspective, this suggests that upper division classes that require HSP participation may need to augment the HSP experience in order to maintain a high level of educational benefit for students. Alternatively, departments may consider setting a ceiling on the number of research hours that are required of students in a given semester. Some of the variability in responses may have to do with the different types of research in which students were able to participate. At the university where this research was conducted, there are several different types of research, and so it is possible that some students' benefits were augmented if they participated in different kinds of studies over time (e.g., personality, psycho-physiological, trauma), exposing participants to different methodologies and different content areas of psychology.

Despite the increase in negative views, it is important to note that overall participants continued to report positive views of their participation (that outweighed the negative views). As an anonymous reviewer pointed out, it may be that participants' increasing experience in human subjects research and their additional courses in psychology may have taught them critical thinking skills that enabled them to see these experiences in a more balanced light.

Personality did not relate to attitudes about HSP participation. This finding was consistent with Miller (2010) who also noted that personality did not relate to perceptions of research experience. This suggests that student reports about research experiences being positive, fair, or valuable, is not driven by a personality difference of being more agreeable or conscientious; rather, it suggests that there is a general positive experience for most students who participate in research. In contrast to previous work (Rosen, 1951; Rosenthal & Rosnow, 1976), we did not find that political affiliation related to perceptions of HSP experiences. This may be related to the current sample being in the moderate range on a self-report measure of conservatism. Rosen (1951) used a fascism scale, and in Rosenthal and Rosnow (1976) authoritarianism was the construct discussed. The measure in the current study may not have elicited as strong responses as a fascism or authoritarianism scale, which may have limited sample variance. The absence of significant differences is often regarded as a non-finding in research and can result in a "file drawer" problem. We include it here because it is noteworthy

that personality and individual differences may not have a large impact on attitudes toward HSPs, suggesting that variance in attitudes has more to do with different experiences (under the control of HSP administrators and researchers) rather than individual differences. In effect, this can put the onus on the HSP administrators and experimenters to ensure that all participants receive benefits. For example, a department's HSP may incorporate an educational assignment that encourages integration of the research experience into course material. The value of an integrative assignment that relates the HSP participant experience to course material is the focus of Study 2 below.

## **V. Study 2.**

Broadly speaking, when surveyed, HSP participants appear to feel satisfied with their experiences and they find participation to be educational. Nonetheless, participants who are new to HSP experiences rate their experiences more positively than do participants who have repeatedly participated. Possibly, the decrease in favorable perceptions could be explained by educational value, in that those with previous experience have less to learn from additional participation. It follows then, that if we could increase educational value of HSP participation, positive ratings would also increase. In the present study, we used a quasi-experimental design in order to test the relationship of attitudes toward HSP participation and educational value, by enhancing educational value of research participation for one group.

### *A. Intentionally Educating about Research.*

The question of whether HSP participation is of implicit educational value, or whether educational value can be explicitly enhanced, is empirical. One suggestion for increasing the educational value of HSP participation was to incorporate an integrative assignment into the research experience (Richardson, Pegalis, & Britton, 1992). Richardson and colleagues (1992) administered an integrative assignment after each research session. The assignment was five brief questions about the research that asked, “(a) the area of psychology relevant to the study, (b) data collection techniques used (e.g. survey, interview, observation), (c) potential practical applications of findings, and (e) relation of the study to course material” (p. 12). They then gave a questionnaire assessing all students’ perceptions of the overall education benefit of the research sessions, the benefit of the debriefing experience, how related the research was to the course, and an overall evaluation of the research experience. In this naturalistic research, they found that students who completed the integrative assignment rated the research sessions as more educational and relevant to course content. Specifically, students who completed the integrative assignments thought the research sessions allowed them to better understand psychology experiments, generated more interest in the debriefing explanation, and had larger educational emphasis. This study was naturalistic and there was no experimental control for who took the integrative assignment. In the present study, we sought to replicate the Richardson et al. (1992) findings using a quasi-experimental design.

*Hypothesis 1.* We predicted a significant effect for the integrative assignments, in that the group that completed the integrative assignments (Group 1) would have a greater proportion of individuals who rated their experiences as positive/ educational and fair than Group 2, which did not complete the integration assignments.

## **VI. Methods – Study 2.**

Data were collected at the end of two semesters as part of an assessment of students' research pool experience. Because this was part of a regular educational assessment, IRB approval was not sought prior to data collection (American Psychological Association, 2002). The University IRB gave the authors permission to use these existing data after they were collected.

### *A. Procedure.*

Data were collected in paper and pencil form, in class, for both groups. The professor gave the students the HSP-EQ described in Study 1, and asked them to complete it in order for her to understand their research experiences and to possibly help improve those experiences in the future. The professor then left the room while the students responded to the questions. This took about 10 minutes, and students did not receive any compensation or incentive for completing the questions. Participation was voluntary as well as anonymous.

### *B. Participants.*

Participants were enrolled in an introductory psychology class at the same private Midwestern university in Study 1. Each student either participated in four hours of psychology research as part of their course requirement, or read and summarized four journal articles (of their choice).

Demographic information was not collected because it was not pertinent to the standard course evaluation. Most students were White. It is a requirement that they be at least 18 years of age in order to participate in research studies (age of consent). Students who were not of the age to consent read and summarized the four journal articles for their course requirement. For Group 1 the class composition was: 35.4% Freshmen, 38.2% Sophomores, 17.6 % Juniors, and 8.8% Seniors. For Group 2 the class composition was: 36.7% Freshmen, 30% Sophomores, 20 % Juniors, and 13.3% Seniors.

### *C. Research Design.*

Participants signed up for studies on the Sona<sup>TM</sup> electronic system, which could be accessed on and off campus at any time of the participants' choosing. This is a quasi-experimental research design with the assignment to Group 1 or 2 being naturalistic because we collected evaluation data as part of regular course evaluations. The integration activity was initially incorporated into the course to enhance learning, based on previous research (Richardson, Pegalis, & Britton, 1992). The choice to not give the integration activity to the second group was an intentional manipulation for this study.

In addition to their research experience, students in Group 1 completed two assignments that were designed to help them integrate their research participation into their psychology course. The assignment was to answer four questions about the research participation. These questions were adapted from Richardson et al. (1992) and were designed to help students see a didactic value to research participation. Specifically, students needed to identify the name of a study they had completed, a book chapter and section that would describe the study (e.g. personality), and to think critically about whether the validity of the study was compromised due to the college student sample. Responses were graded on a 10-point scale by a graduate teaching

assistant. The points for these two assignments accounted for 5% of students' grades. Students who opted to do alternative assignments of reading empirical studies completed these assignments based on research articles they read and summarized.

For the purposes of the current investigation, the integration assignment was eliminated from the course for Group 2 participants. So, although Group 2 completed the same number of study hours as Group 1 (or read and summarized four articles), they did not have an integrative assignment, in which they would have reflected on their research experience and incorporated it into the course material.

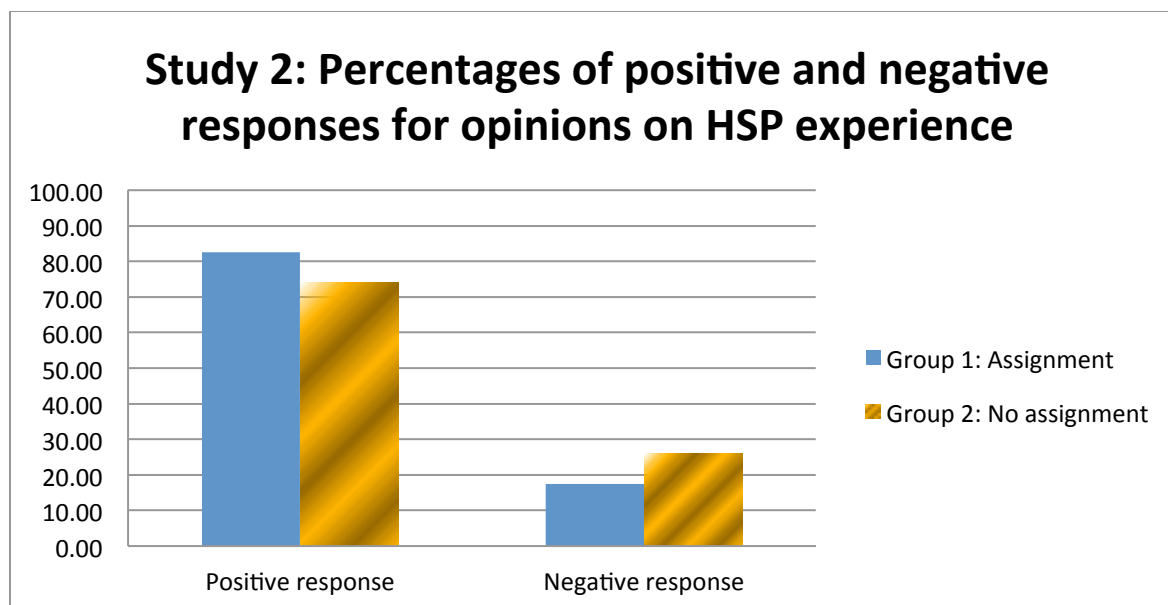
#### *D. Measures.*

*HSP-EQ.* The HSP-EQ that was used in Study 1 was also used in Study 2. We utilized the coding scheme described in Study 1 and the same two coders. Coding agreement was 92%.

### **VII. Results from Study 2.**

There were a total of 50 participants in the two groups. All but one participant chose to participate in research rather than complete the alternative assignment. The most frequently reported reason for choosing the research option was curiosity (56.6%) about what the research session would be like, followed by the research session was easier (41.5%) than the alternative assignment. The majority (77.4 %) thought the HSP experience was educational or positive, and 71.7% of the sample reported viewing the research requirement as fair. Reasons why students viewed the research requirement as fair included it was a reasonable class requirement (37.7%), it was educational (15.1%), or the participation contributed to research (18.9 %). For those who said the research requirement was not fair (22.6%) the reasons included it was too demanding or exploitative (18.9%), the studies were too few in options or had unfair exclusion factors (1.9%), and finally 3.8% thought the research should be extra credit rather than a class requirement. The most frequent response to the question asking what the participant did not like about the research requirement was no complaints (37.7%), followed by having scheduling difficulties (26.4%), and then 20.8% of the sample not liking an aspect of the experiment or viewing the research requirement as exploitative. About half (49.1%) of the participants thought the debriefing was helpful, 9.4% thought it was unhelpful, 13.2% did not receive a debriefing, and another 5.7% gave a neutral comment about the debriefing (e.g., "It was short"). All participants reported positive views about Sona<sup>TM</sup>.

*Hypothesis.* We predicted that Group 1, which completed the integrative assignments, would be more positive in their answers about whether or not the research experiences were educational or positive compared to Group 2, which did not complete the integration assignment. Figure 2 shows the proportions of students who viewed the experience as positive. Overall, students thought that the requirement was educational, regardless of condition. In addition, for the entire sample, 71.7% thought the research requirement was "fair" with proportions as follows: 72% of Group 1 and 71.4% of Group 2.



**Figure 2. Study 2: Proportion of students who viewed HSP as educational/positive and negative.**

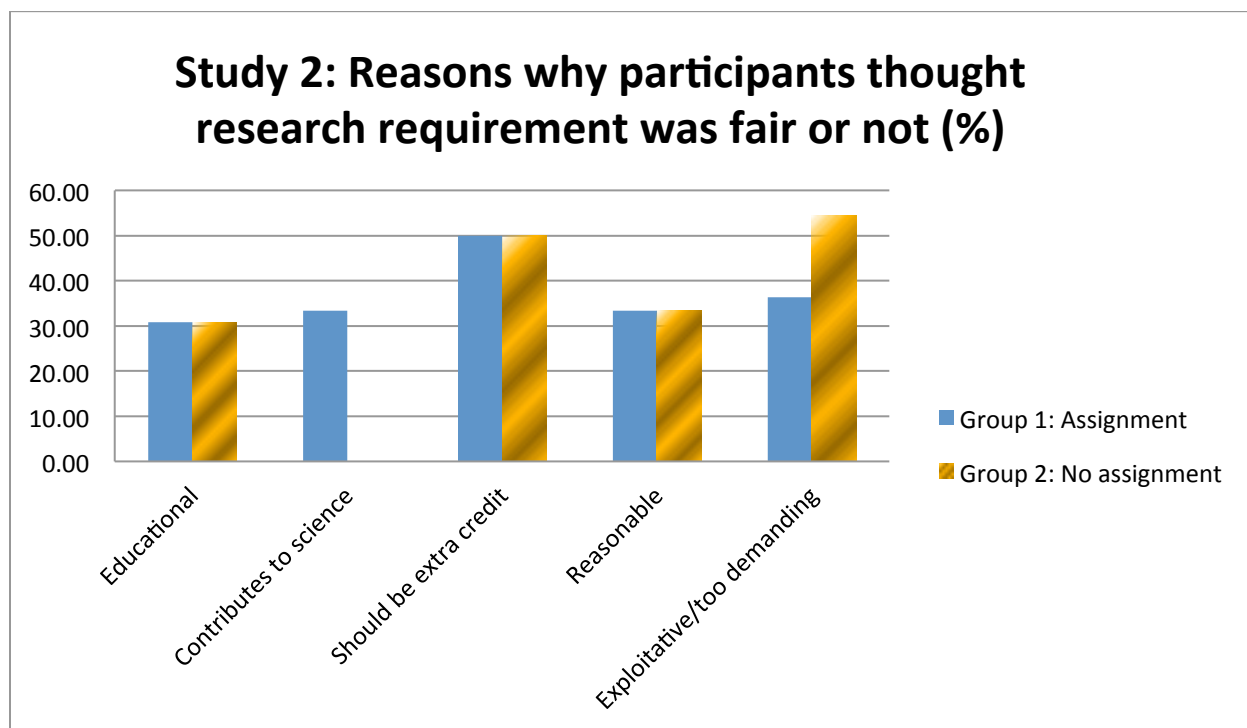
Figure 3 shows the reasons why students thought the research requirement was fair or unfair. The effect of not doing the integrative assignment (Group 2) appears to be that a greater proportion of students thought the research requirement was exploitative and the belief that they contributed to science was eliminated (i.e., a loss in this as an altruistic benefit of research participation). While Group 2 (no assignment) did contain the most participants who endorsed negative views (26%) of the research requirement as compared to Group 1 (17% participants reported negative views), this result was not statistically significant  $\chi^2(1, N = 50) = 0.527, p = .47$ . We were unable to conduct chi square analyses on between group differences for reasons why the research requirement was perceived to be fair or not fair, because assumptions of the analyses were not met (minimum  $n=5$  in each cell).

## VIII. Discussion for Study 2.

The second study was designed to evaluate whether educational value and overall ratings of the HSP experience could be increased by changing aspects of how HSP requirements are incorporated into the departmental curriculum. By experimentally manipulating the educational component of the research requirement, we were able to test its relationship to students' perceptions of educational value and fairness.

Based on these qualitative data, there was a consistent trend that overall participants viewed their HSP experiences as positive. Nonetheless, we saw a change in responses to open-ended questions when there is no integrative assignment. That is, more students appeared to feel exploited and none of them thought they were contributing to science. The integrative assignment asked students to determine, "If this study was published in your introductory psychology textbook, what chapter would be the best choice?" It appears that the effect of this assignment, possibly attributed to this question, was that students not only integrated their experience into what they were learning, but they gained an additional benefit of feeling like they were contributing to science. This is an important aspect of the research experience, when

weighing the costs and benefits of research – that students may gain a sense of pride, altruism, or importance for their contribution. What specifically was driving this finding will be a question for future study.



**Figure 3. Study 2: Reasons why student thought research requirement was fair.**

### VIII. Summary.

Researchers and educators are ethically bound to ensure research requirements provide an educational experience for undergraduate student participants (APA, 2002). Our findings support the notion that this is occurring, and these findings are consistent with the extant literature. Students generally hold positive perceptions of their research participation and consider it an educational experience (Darling et al., 2007; Elliott et al., 2010). Study 1 contributes to the current literature by assessing the relationship between specific individual differences and demographic characteristics and students' perceptions of fairness and educational value. We found that as students take more psychology classes, and get more experience participating in research, they retain a stable level of positive views of the HSP. However, they also gain more negative views of the HSP, which on the whole could mean that their overall views are more balanced. On the face of it, it may be that the greatest educational benefit is for students in introductory psychology courses who are getting exposed to research for the first time. On the other hand, there could be continued benefits while more balanced (i.e., also seeing the drawbacks of participation) as students develop more nuanced thinking and critical thinking skills.

Study 2 extends the literature by assessing methods designed to increase students' positive perceptions of HSP experience. Since participants report more negative views of HSP as they participate in more research session, we attempted to enhance the educational experience of research participation for students by giving an integrative assignment that allows them to incorporate their research experience with textbook knowledge. We found that overall positive



and educational views were not substantially different with the addition of the integrative assignment. Thus, general ‘happiness’ with participation may not change when an assignment is added. Nonetheless, it is noteworthy that the group which did an integrative assignment believed that they were contributing to science whereas the other group did not. Also, when participants completed the integrative assignment, they less frequently expressed views of having been exploited in the research.

## **IX. Limitations and Future Directions.**

There are several strengths to the current set of studies. We were able to extend the literature by examining questions related to HSP experiences that have not yet been conducted. It is a strength that we were able to use a quasi-experimental design to examine the impact of an educational assignment. There are several limitations to the current work. Because this research was conducted at a small, private college, we had limited power; interesting trends that were not statistically significant in this Study may have been significant with a larger sample. Furthermore, the sample in study 1 was predominantly female, and subsequent research could benefit for examining gender differences in research experiences. Also, because this is a private college in a conservative state with incoming freshman ACT scores averaging 28 points and higher, we potentially have a limited sample in terms of variability of responses. Additionally, our sample statistically differed from the normative sample on four of the five personality variables. Our sample was more agreeable and conscientious and less neurotic and open to experience, which could contribute to the positive attitudes and perceptions of the HSP. It is possible that larger schools with a more diverse student body would have more variance in student responses.

Because evaluating students’ experiences of HSP is a relatively new area of research, we used free-response questions. The limitation here is that students may well have had additional views –both positive and negative – that would be expressed if prompted. We were limited in coding responses to non-leading questions that were designed to provide students an unrestricted opportunity to express their opinions of the research requirement. The results of our study illustrate the need for a measure that can accurately capture the fine nuances and changes in students’ opinions.

Given that the use of HSPs is widespread in the United States and given the ethical obligation psychologists have to positive benefit/cost ratios for participants, studies of this nature are important. Moyer and Franklin (2011) noted that psychology departments typically do not evaluate the educational benefit to participants. The potential for educational benefits and good attitudes from participants is an area that could have pervasive benefits for psychological research in general. It is possible (although as yet, not empirically documented) that increasing the positive attitudes of participants could decrease the costs of administering HSPs. There could be fewer email complaints, few no-shows, and generally easier administration if participants’ experiences are positive. Furthermore, we hope that studies in the future will attempt to relate the feeling of contributing to science to the overall quality of data that is collected by researchers using the HSP. For example, we would predict that there would be fewer invalidated subjects’ data when participants feel responsibility of contributing to science and this perception could increase motivation to follow instructions and to do one’s best to meet study demands.

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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. Reviews: Literature reviews illuminating new relationships and understanding, meta-analysis, analytical and integrated reviews, etc
3. Case studies: To be considered a case study, a manuscript should focus on an intense analysis of a specific teaching situation or problem that led to a solution. Case studies should have the following components: description of the teaching situation or problem, solution or solutions attempted, quantitative or qualitative analysis of the effectiveness of the solution, reflection on the implications and possible generalization to other settings or populations
4. Invited Comments: Comments about previously published manuscripts
5. Invited Essays: Discussion of a topic not tied to a previously published manuscript

## Submissions

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

- 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.
- Reviews: Literature reviews illuminating new relationships and understanding, meta-analysis, analytical and integrated reviews, etc.
- Case studies: To be considered a case study, a manuscript should focus on an intense analysis of a specific teaching situation or problem that led to a solution. Case studies should have the following components: description of the teaching situation or problem, solution or solutions attempted, quantitative or qualitative analysis of the effectiveness of the solution, reflection on the implications and possible generalization to other settings or populations.
- Invited Comments: Comments about previously published manuscripts
- Invited Essays: Discussion of a topic not tied to a previously published manuscript.

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

**John Dewey<sup>1</sup> and Marie Curie<sup>2</sup>**

*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.**

Submissions should be double-spaced. The final manuscript should be prepared in 12-point, Times New Roman, and single-spaced. Page setup should be set for US Letter. 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 contact information<sup>3</sup>. The abstract should be indented 0.5" left and right from the margins, and should be in italics.

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

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

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

#### *A. Plagiarism.*

It is essential that authors refrain from plagiarism. Plagiarism is a violation of ethics and, in serious cases, will lead to a manuscript being rejected by this journal. No future manuscripts will be accepted from authors who have submitted a plagiarized manuscript.

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<sup>3</sup>Footnotes should be in a 9 point Times New Roman font.



### *B. Unique work.*

This journal does not accept previously published work. We also do not accept work that is being considered for publication by another journal. If your manuscript is accepted, you will be required to sign a form stating that your manuscript has not been previously published.

## **II. Section and Sub-Section Headings.**

### *A. Major Sections.*

Major section headings should be flush-left, bold-faced, and Roman numeral numbered. Major section headings should have one-line space before and after. The first paragraph(s) of the article do not require a major heading.

### *B. Sub-Sections.*

Sub-section headings should also be flush-left, in italics, and alphabetically numbered. Sub-section headings should have a one-line space before and after. Sub-sub-sections should appear at the beginning of a paragraph (i.e., with an 0.5" indent, followed immediately by the text of the sub-sub-section), with the heading also in italics.

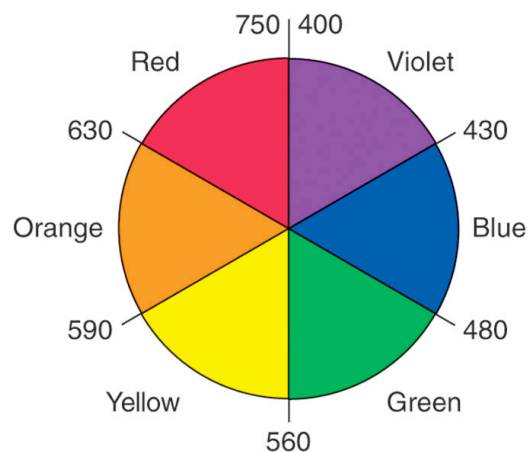
## **III. Tables and Figures.**

Tables and figures should be inserted in the text where the author believes they best fit. They may be moved around a little to better correspond to the space requirements of the Journal. If necessary, tables and figures may occupy an entire page to ensure readability and may be in either portrait or landscape orientation. Insofar as possible, tables should fit onto a single page. All tables and figures should be germane to the paper. Tables should be labeled as follows with the title at the beginning (in bold), with data entries single-spaced, and numbered. Column labels should be half-line spacing above data.

**Table 1.** The title of the table.

<b>Unit</b>	<b>Length, inches</b>
Point	1/12
Pica	1/6

Figures should have their captions follow the image. Captions should be single-spaced, with title in bold. Additional text should not be in bold. The Editorial staff may adjust layout to allow optimal use of space.



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

### Acknowledgements

Acknowledgements should identify grants or other financial support for this research by agency (source) and number (if appropriate). You may also acknowledge colleagues that have played a significant role in this research.

### Appendix

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