THE RELATIONSHIP BETWEEN UNDERGRADUATE, BACCALAUREATE

NURSING STUDENT ENGAGEMENT AND USE OF ACTIVE LEARNING

STRATEGIES IN THE CLASSROOM

Ann M. Popkess

Accepted by the Faculty of Indiana University, in partial
fulfillment of the requirements for the degree of Doctor of Philosophy

_____
Judith Halstead, DNS, RN, ANEF, Chair

_____
Anna McDaniel, DNS, RN, FAAN

Doctoral Committee

_____
Mary L. Fisher, PhD

October 14, 2009

_____
Lillian Stokes. PhD, FAAN

ACKNOWLEDGEMENTS

I did not travel this journey alone. I want to thank my family, friends and colleagues for their unending support, humor and encouragement over these past few years. My deepest thanks is to my children for allowing me the time away from them to pursue this dream. This is time we will not recover, but my hope is that someday they will understand the importance of lifelong learning and I will have served as their role model.

I want to thank my research committee, especially Dr. Judy Halstead, for her guidance, thoughtful critique, support and encouragement when I needed it most. I thank Dr. Anna McDaniel for her expertise in statistical analysis and methodology and for assisting me with the interpretation of the data and Drs. Mary Fisher and Lillian Stokes for their wisdom and gentle encouragement along the way. I appreciate the validation of my research by these experts. It is with great admiration that I offer Dr. Dan Pesut and Dr. Diane Billings thanks for the initial inspiration provided to me on this journey.

I also want to thank colleagues and researchers who have shared their research, instruments and expertise along the way, helping to further my knowledge of educational research and active learning. Dr. Robert Gonyea, Dr. Laurie Schreiner, Dr. Charles Bonwell, Dr. Anne Perry, Dr. Mary Mulcahy and Dr. Victoria Scott all graciously gave of their time and talents in assisting me with developing instruments and providing guidance for this study.

I thank my friends and colleagues who assured me repeatedly that I could succeed. My friend and colleague, Dr. Kay Gaehle demonstrated meticulous attention to my requests to review my writings; Dr. Cindy Schmidt, Dr. Rhonda Comrie and Dr.

iv

Kathy Ketchum allowed me access to their classrooms for my pilot study and offered countless words of encouragement even on the darkest of days; my dear friend and mentor, Mary Ann Jobe who inspires me to dream big; and Jean Auffarth who offered solace and humor as my traveling companion at the beginning of our doctoral programs.. All of these women along with my esteemed doctoral colleagues at IUPUI, provided support and friendship in ways only women can. The therapeutic weekends at the lake, impromptu shopping trips, long phone calls and frequent emails, and evenings out helped nourish my soul and sanity during this challenging journey.

I am grateful to my immediate and extended family for their strength and encouragement to move forward during these difficult past years. I especially want to thank my sister, Kate, for her support while she was struggling to climb her own mountain. My deepest appreciation is extended to my mother, who reminds me daily what it means to be strong and determined.

It is with intense pride and happiness that I end this journey of my last educational degree. It was transformational for me as an educator and a nurse. I love teaching and I love learning. As I begin my future career as a nurse researcher, my hope is to inspire this love in others as well.

ABSTRACT

Ann M. Popkess

THE RELATIONSHIP BETWEEN UNDERGRADUATE, BACCALAUREATE

NURSING STUDENT ENGAGEMENT AND USE OF ACTIVE LEARNING

STRATEGIES IN THE CLASSROOM

Nursing schools are facing demands to admit and graduate increasing numbers of students to meet the needs of the future healthcare system. Nursing schools must therefore admit, retain and graduate qualified applicants, able to provide care in complex healthcare environments. Educators are challenged to identify the best educational practices to retain and engage learners in the learning process. Research has indicated that student engagement contributes to student success in college. Learning environments may influence student engagement through the use of active learning strategies in the classroom. The purpose of this descriptive study was to explore the extent of engagement reported by nursing students in classrooms and determine relationships among student engagement, demographic and academic variables and learning environments. Astin's (1985) Input-Environments-Output model provided the framework for this study, linking student characteristics, and student engagement in learning with outcomes of learning.

A sample of 347 undergraduate baccalaureate nursing students from 5 mid-western schools of nursing completed the Adapted Engaged Learning Index (AELI) and the Active Learning Environments Scale (ALES), measuring their level of engagement and perceived degree of active learning in the classroom, respectively. Subjects also provided demographic data including age, academic level, type and number of hours

worked off campus, and prior learning experience. T-test and ANOVA analyses were conducted to compare group differences on demographic, learning environments (active, passive and mixed) and levels of engagement.

Results indicated a significant ($p \leq .001$) difference in the level of student engagement related to the perceived active learning occurring in the classroom. Students in active and mixed learning environments reported higher engagement levels than those in passive learning environments. Students over 25 years ($p = .003$), students with higher GPA's ($p \leq .05$) and junior students ($p \leq .001$) reported significantly higher engagement scores than their counterparts. Findings from this study indicate that student engagement in the learning process may be positively influenced by an active learning environment in the classroom.

Judith Halstead, DNS, RN, ANEF, Chair

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Chapter 1

Introduction

Healthcare organizations expect nurse graduates to provide high levels of care, in challenging environments often with inadequate staffing levels under high stress circumstances. Nursing schools are enrolling and graduating increasing numbers of students to meet the demands of a critical shortage of nurses in all fields. However, data from the American Association of Colleges of Nursing (AACN) indicates that nursing schools turned away nearly 50,000 qualified baccalaureate and graduate school applicants in 2008 due to insufficient numbers of faculty, clinical sites, classroom space and preceptors among other issues. It is imperative that schools, therefore, retain qualified, admitted students and prepare graduates who think critically, demonstrate proficient psychomotor skills and engage in reflective practice. The challenge for schools of nursing is to identify the best educational practices to retain and engage learners, ensuring that graduate nurses attain the skills needed to practice in increasingly complex and demanding healthcare environments. Research in nursing education indicates that grade point average and past science grades predict academic success in nursing students (Arathuzik & Aber, 1998; Campbell & Dickson, 1996). Higher education findings suggest additional variables influence college success, such as social and academic engagement, student characteristics and college environment (Carini, Kuh, & Klein, 2004; Pascarella & Terenzini, 2005; Pike & Kuh, 2005). Academic engagement is the concept of interest for this study.

Academic engagement is a function of student characteristics and college learning environments that "involve students in doing things and thinking about the things they

1

are doing," (Bonwell & Eison, 1991, p. iii). Evidence supports the idea that educational best practices, such as those described by Chickering and Gamson (1987), enhance active learning which promotes academic engagement (Astin, 1993; Pascarella & Terenzini, 2005; Umbach & Wawrzinski, 2005b). In particular, research about the practice of active learning as a method of promoting student engagement demonstrates positive effects on student problem solving, critical thinking and persistence in college students (Berger & Milem, 1999; Braxton, Milem, & Sullivan, 2000; Kember & Gow, 1994; Yoder & Hochevar, 2005).

Statement of the Problem

Research in nursing education has focused on factors such as grade point average, past science grades, academic ranking, and the relationship of these variables to passing the National Council Licensure Exam as a measure of student success (NCLEX) (Arathuzik & Aber, 1998; Campbell & Dickson, 1996; Crow, Handley, Morrison, & Shelton, 2004; Ofori & Charlton, 2002). According to Astin, other factors that promote positive student outcomes must be considered. The academic environment, which includes student engagement in academics with peers and faculty, along with faculty use of active learning strategies are important variables in student success. Much of the research in nursing education measuring student success does not include these variables, is exploratory in design and uses non-random sampling techniques, limiting the generalizability of any conclusions.

In contrast, the impact of active learning strategies on student learning outcomes has been well documented in the higher education literature. Active learning strategies, based in constructivist learning theory, engage students in activities that encourage

2

reflection upon ideas and how those ideas are used (Bonwell & Eison, 1991; Michael, 2006). Research measuring the impact of active learning strategies on student success in nursing and other disciplines has demonstrated improved meaningful learning (McKeachie, Pintrich, Yi-Guang, & Smith, 1986; Michael, 2006), improved exam scores (Yoder & Hochevar, 2005), knowledge retention (Beers & Bowden, 2005) and retention in school (Astin, 1993; Jeffreys, 2004). Based on a pilot study using the *National Survey of Student Engagement* (NSSE) ("National Survey of Student Engagement," 2005) with 1000 subjects in each major, nursing students reported being engaged in active and collaborative learning significantly less than peers in education and other health professions (p<.001). Specifically, nursing students reported themselves as less engaged in group work outside of class, asking questions in class, tutoring students, and making class presentations than their peers (Popkess & McDaniel, 2007). In a similar study of 2001 NSSE data, education majors reported higher levels of active and collaborative learning than students in humanities, physical sciences and health related major categories (Carini & Kuh, 2003). If nursing students are less engaged than their counterparts, it could be the result of several factors. Students could be engaged in other types of activities (work, family) that reduce their ability to engage in learning or, perhaps the NSSE is a better measure of institutional engagement and not specifically academic engagement in the classroom. Additional research to examine variables such as student engagement in learning at the classroom level and its relationship to nursing student outcomes could clarify these findings further.

In comparison to other disciplines, nursing education literature does not focus on describing engagement in classroom environments. Instead, the literature primarily

describes exploratory methods to study students' learning preferences and teaching styles (Berg & Lindseth, 2004) related to variables such as age (Walker et al., 2006) and learning style (Rassool & Rawaf, 2007). None of these studies evaluates the relationships of variables with student outcomes. Research in higher education literature demonstrates positive relationships between age, teaching learning activities, gender and other student and environmental characteristics to student engagement and learning outcomes, but little is known of their effect on nursing student engagement (Kuh, Kinzie, Buckley, Bridges, & Hayek, 2007). These findings point to a need to further investigate variables such as age, gender, and teaching strategies to determine the relationship between nursing student engagement and student learning in varying learning environments.

Purpose of Study

The first purpose of this study was to assess the extent of undergraduate student engagement and its relationship to teaching strategies used in learning environments that exist in selected Midwestern baccalaureate schools of nursing. A second purpose was to determine if relationships exist between select student demographic characteristics and student engagement in varying learning environments. It was anticipated that students in learning environments that promote active learning will demonstrate increased student engagement. In contrast, students in more passive learning environments would demonstrate lower scores in student engagement. It was also anticipated that certain student characteristics may impact student engagement. Students who have prior learning experience, are older, female and non-minority have demonstrated higher levels of student engagement in the literature (Kuh, Kinzie, Cruce, Shoup, & Gonyea, 2007; Lundberg, Schreiner, Hovaguimian, & Miller, 2007). In addition, the number and type of

hours worked in college impacts student success. Working on-campus or in work-study programs related to their career goals has demonstrated a positive effect on some student's engagement in college (O'Brien & Shedd, 2001).

Much of the literature relating student characteristics to engagement outcomes is inconclusive, however variables such as grade point average (GPA) need to be assessed in order to control for their potential effect on environment (Astin, 1985). In this study, it is expected that nursing student characteristics such as age, gender, ethnicity, prior learning experience, GPA, type of work and hours a student works influence a student's ability to engage in different learning environments. This study explored variables such as student age, gender, ethnicity, most recent GPA, expected course grade, prior learning experience, and hours and type of work for pay, in order to assess relationships with engagement levels.

Significance

A critical shortage of nurses is projected to continue beyond the year 2020 (AACN, 2007b). Compounding this is the aging of the nation's nursing workforce, a lack of nursing faculty prepared at the doctoral level and the challenge to schools of nursing to graduate increasing numbers of students capable of functioning in diverse and highly complex health care systems with limited resources (AACN, 2007a). The current nursing faculty shortage is a cause for concern among nurse educators. With increasingly scarce faculty resources and a projected need for 1.2 million new and replacement nurses by 2014, it has never been more imperative that nursing programs attract, retain and graduate capable students (AACN, 2007b). Evidence from professional organizations indicate that while schools of nursing have increased enrollment since 2000, alarmingly

high attrition rates of minority students has resulted in lower retention and graduation rates (AACN, 2008; Childs, Jones, Nugent, & Cook, 2004; Peter, 2005). Further knowledge of the relationship between active learning strategies that enhance engagement and the retention of minorities is needed.

External agencies have described quality initiatives that demand reforms in health care professions education with a focus on core competencies of health care professionals. These competencies center around delivering quality, patient centered care, using evidence-based practices and informatics (*Health Professions Education: A bridge to quality*, 2003). In order to meet these demands, nurse educators must develop strategies to enhance student-learning outcomes using innovative teaching strategies that engage students in the work of learning. Determining the extent of nursing student engagement in various learning environments is important to support the development of teaching strategies that increase student engagement and improve student outcomes.

Research linking student engagement to improved academic performance largely reflects analysis at the institutional level. Because individual effort and involvement are the critical indicators of college impact, institutions have focused on development of academic, interpersonal and social offerings to improve student engagement (Pascarella & Terenzini, 2005). The discussion of student outcomes, however, requires looking more discreetly at student engagement in the classroom. This study contributed to the limited nursing education literature that describes engagement as a function of student learning with the future goal of developing teaching interventions that enhance engagement.

Theoretical Framework

Astin (1984, 1993), in his model of involvement, explained the effects that college has on students. Astin (1985) described involvement as the amount of physical and psychological energy a student devotes to educational experiences, similar to the definition of student engagement. In his model, Astin explained three elements: Inputs, Environments and Outcomes (I-E-O) (See figure 1). *Inputs* refer to the characteristics of the student at the time of entry in college. Input measurements include standardized test scores such as ACT and SAT, and other demographic variables (gender, ethnicity, socio-economic status, career choice, subjects taken in high school, and religion). *Environment* measures refer to programs, policy, faculty, peers, and educational experiences the student is exposed to during college. Environment measures include institutional characteristics, student peer group and faculty characteristics, curricular measures, and measures of involvement in educational activities. *Outcomes* refer to the student's characteristics after exposure to the environment. Student characteristics are described by type of outcomes (affective or cognitive) and type of data. Examples of cognitive psychological outcomes include knowledge, critical thinking and academic achievement. Cognitive behavioral outcomes include career development, income and level of educational attainment. Examples of affective psychological outcomes include values, attitudes or beliefs and satisfaction with the college experience.

Figure 1. *Astin's Theory of Involvement: Inputs-Environments-Outcomes Model*
     (Astin, 1994)

Inputs	Environments	Outcomes

Inputs
Student characteristics
Gender
Age,
Ethnicity,
GPA (High school)
 	
-Any existing characteristics for which a measure of change is desired
	Environments
	-Before college entry
	Institutional characteristics
	Curricular measures
	    Progressive
	    Individual
	    Integrative
	Faculty environment (ex)
	    Research orientation
	    Use of active learning
	Peer environment
	After college entry
	Individual (student) involvement:
	    Academic involvement
	    Involvement with peers/faculty/work
		Outcomes
		Psychological
		Behavioral
		Affective
		Cognitive

Involvement, according to Astin (1993), is described primarily as behaviors, such

as the amount of physical and psychological energy a student devotes to the academic

experience. Astin (1985) maintained five assumptions about involvement: 1) involvement

requires investment of energy in objects (tasks, people, activities); 2) involvement is

continuous; 3) involvement has both quantitative and qualitative features; 4) the amount

of learning or development is directly proportional to the quality and quantity of

involvement; and 5) educational effectiveness of any policy or practice relates to its

capacity to induce student involvement. It is reasonable to assume based on these

postulates, that increased active learning in the environment between students and faculty

would result in increased engagement in the classroom.

Astin's (1984) model focused primarily on the behaviors in which a student

engages: participating in campus organizations, interacting with faculty and peers,

attending campus events, and spending time studying, for example. According to Astin (1984), what the individual thinks or feels is not as important as what the individual does and how he or she behaves that defines involvement. Although Astin (1984) defined the term involvement synonymously with engagement in his model, the focus is primarily on behaviors that influence or describe student engagement.

Bean (2005) indicated that defining engagement solely as a behavioral construct is insufficient. Participating in events without the psychological commitment "…indicates that they are unimportant to the student and thus ineffectual in changing the student." (Bean, 2005, p. 2). Bean (2005) extends Astin's framework of student engagement with a definition of engagement that includes the psychological domain. Bean's (2005) model viewed engagement as an outcome in itself with multidimensional aspects. This theoretical perspective supposes six elements lead to engagement: (1) student background variables, (2) the socializing environment, (3) the student's personality, (4) communication between the student and agents in the environment, (5) the student's assessment of the communication, and (6) the student's intention or decision to engage. As a student experiences engagement, two feedback cycles come into play. The feedback cycles of development and engagement occur simultaneously and continuously and are influenced by the student's background characteristics and the psychological and social aspects of engagement. Bean proposed the need to assess further the concepts that influence engagement in his model, with engagement as the dependent variable. Bean's model provided the support for the assessment of the multidimensional psychological as well as behavioral constructs of academic engagement in this study.

In Astin's Inputs-Environments-Outcomes (I-E-O) model, outcomes described as student characteristics after exposure to college (such as GPA, academic achievement measures), are thought to be influenced by inputs or student characteristics at the time of entry to college (such as gender, age, ethnicity, admitting GPA). In addition, environments such as institutional characteristics, curricula, faculty and peer environment, as well as individual involvement experiences of students in college mediate the relationship between inputs and outcomes (Astin, 1996). Astin (1993) proposed that student involvement on many levels (e.g., involvement with peer groups, involvement with faculty and in academic work) enhances almost all aspects of learning and academic performance. In one analysis, the use of active learning, described as giving presentations in class, taking essay exams and working on independent research projects demonstrated significant positive effects on student retention in college (Astin, 1993).

In summary, research using the I-E-O model demonstrates how students approach general education, and to a lesser extent, how the faculty delivers the content are more important than the formal curricular content or structure in determining outcomes. More specifically, Astin's (1993) model purports that a crucial factor in the development of the undergraduate student is the degree to which "the student is actively engaged or involved in the college experience" (p. 425). In essence, the quality and quantity of engagement influences the amount of learning that takes place. Astin's (1993) work describes that retention, as one of the effects of involvement at the institutional level, is facilitated by student-student and student-faculty interaction, among other things.

Astin's (1993) model of inputs-environments-outcomes provided the framework for this study. Although the model focuses on the student involvement behaviors at the institutional level, it is possible to narrow the focus to the classroom level. Little research exists however describing student engagement in the classroom. Therefore, for the purposes of this descriptive study, the focus was on nursing student perceptions of their psychological, behavioral and cognitive engagement in various types of learning environments.

Research Questions

The research questions that guided this study were:

1.   To what extent do undergraduate baccalaureate nursing students in a sample of selected Midwestern schools of nursing report engagement as measured by the Adapted Engaged Learning Index (AELI)?

2.   To what extent do undergraduate baccalaureate nursing students in selected Midwestern schools of nursing report the use of active learning strategies in classroom learning environments as measured by the Active Learning Environments Scale (ALES)?

3.   Do undergraduate baccalaureate nursing students in active, mixed or passive learning environments as measured by the Active Learning Environments Scale differ on reports of student engagement as measured by the Adapted Engaged Learning Index?

4.   What is the relationship between demographic variables (age, gender, ethnicity, academic classification, prior degree status), academic variables (hours and type of work for pay, reported term GPA, expected course grade) and reported student engagement as measured by the Demographic Tool and Adapted Engaged Learning Index?

11

Assumptions

The assumptions of this study were based on the combined works of Astin's (1984) framework of involvement and Bean's (2005) conceptual model of student engagement. According to Astin's (1984) theory of involvement, it was expected that students who participate in more active learning environments would perceive that they are more engaged in learning and report higher levels of engagement on the Adapted Engaged Learning Index (AELI). It was assumed that students who are female, older and non-minority and who work at jobs in their major would report higher levels of student engagement using the AELI (Kuh, Kinzie, Buckley, Bridges, & Hayek, 2006; Lundberg et al., 2007).

Definition of Terms

Inputs as Student Characteristics

Conceptual Definition

Inputs are the background characteristics that students bring to the college experience (Astin, 1994; Bean, 2005). Measurement of existing student characteristics or inputs prior to the college experience is necessary to establish baseline in order to control for possible effects on student engagement. Prior research has suggested that student characteristics such as gender, race, student classification status (freshman, sophomore, junior, senior) may influence the level of engagement experienced in college (Kuh, 2003). These variables are included because of the potential relationship that each has to student engagement based on previous studies (Lundberg et al., 2007; Pike & Kuh, 2005).

Operational Definition

Grade point averages (GPA) must be included as an input variable in order to measure any type of grade change as an outcome. Since obtaining access to student records without individual consent would be prohibitive, students self-reported their cumulative college GPA as of the most recent semester and their expected course grade in the courses they referenced in the study. One meta-analysis on the accuracy of self-reported grades suggested that college students with higher cognitive skills and higher GPA's tend to report their GPA's more accurately (Kuncel, Credé, & Thomas, 2005). Therefore, since students in nursing school are assumed to have met rigorous admission criteria, students were asked to self-report their most recent cumulative GPAs and expected course grade as an output measure of academic achievement.

Previous college experience has been reported to be a factor in student engagement in learning. In particular, nursing students with previous baccalaureate degrees have demonstrated increased involvement in learning with improved outcomes (Seldomridge & DiBartolo, 2007; Walker et al., 2006). These students tend to be older in age with varying learning style preferences related to generational differences, so the confounding variable of age will also be assessed for effects on engagement. In this study, students were asked to self-report any prior college experience as prior degrees earned.

In addition, it has been reported that students of color tend to perceive college campuses as less supportive than their white peers (Schwitzer, Griffin, Ancis, & Thomas, 1999). This suggested a need to understand if racial or ethnic background may contribute to a student's ability to engage in successful learning strategies in college.

The effect of gender on engagement is inconclusive in the literature. Educational experiences being equal, women tend to be more academically engaged, while men tend to be more engaged in non-academic activities ("National Survey of Student Engagement," 2007). Gender differences have also persisted within minorities, but research has countered this with evidence that within African Americans, men and women appear to demonstrate equal academic engagement (Harper, Carini, Bridges, & Hayek, 2005).

Studies evaluating the effects of working on engagement in college are conflicting. Working part-time on campus less than five hours was associated with positive gains in GPA (Strage et al., 2002). Other studies reported a decrease in GPA resulting from working, which decreases study hours (Toutkoushian & Smart, 2001). Additionally, student employment responsibilities compatible with college life tended to enhance academic outcomes while those incompatible with student roles hinder success and create stress. Nursing literature does not differentiate between types of employment, however, several authors have reported employment as a hindrance to success (Aber & Arathuzik, 1996). In this study, students were asked to provide the estimated number of hours worked per week on and off campus for pay and whether or not their work related to nursing or health care.

For the purposes of this study, student characteristics were defined as age, gender, ethnicity, academic classification (freshman, sophomore, junior or senior), degree status (prior educational degrees), self-reported cumulative GPA and estimated course grade, and hours worked on or off campus for pay and whether or not work was related to nursing or healthcare.

Environments-Student Engagement

Conceptual Definition

The concept of student engagement is multidimensional and involves behavioral characteristics to which Astin (1985) referred in his description of student involvement. Astin's use of the term *involvement* is synonymous with the conceptual definition of *engagement*. Astin (1985) defined student involvement as "the amount of physical and psychological energy that the student devotes to the academic experience" (p. 134). The primary focus of the model is on behaviors in which the student engages, such as: Attending classes, studying, interacting with faculty and peers, working, and volunteering.

Bean (2005) concluded that engagement is not fully described by behavioral components alone. He noted that "participating in events without committing psychological energy to them indicates they are unimportant to the student and thus ineffectual in changing the student...Behavior without thought is not likely to lead to gains associated with engagement" (pp. 2-3). The author of the Engaged Learning Index, from which the AELI used for this study is derived, adopted the use of Bean's description of psychological engagement as an extension of Astin's work on involvement, for purposes of expanding the definition of engagement (Schreiner & Louis, 2006).

For the purposes of this study, a conceptual definition of student engagement recognizes its multidimensionality and includes behavioral and cognitive-psychological aspects. Engagement is the energy invested in learning as evidenced by involvement in specific learning activities (behavior), attention to the learning (cognitive/psychological), and cognitive processing (cognitive) that occurs by the learner.

Operational Definition

Behavioral engagement activities that include participation in classroom procedures or instructional content served as one source of data for this study using an adapted version of the Engaged Learning Index (ELI) instrument (Schreiner & Louis, 2006). For the purposes of this study, student engagement was measured, according to the Adapted Engaged Learning Index (AELI), as participation or involvement in learning (behavioral), meaningful processing (cognitive/psychological), and focused attention (cognitive) components according to the tool. Each component is described in the following paragraphs.

According to Shreiner and Louis, (2006) meaningful processing represents cognitive processing of new information and efforts to relate new material to pre-existing knowledge and determine its personal relevance. The ability to connect new information and relate it to existing knowledge requires a learner to be attentive to interpreting knowledge or experiences, as well as placing a priority on what is learned, thus engaging them in the learning process.

Participation represents student learning through active involvement and contribution to classroom discussions. Focused attention describes the learner's cognitive attentiveness during class and reflects the level of interest a student has in the classroom learning experience. Asking questions, participating in discussion and being attentive all demonstrate engaged learning behaviors (Schreiner & Louis, 2006).

The original tool developed by Schreiner and Louis (2006) contained 15–items with a four-point Likert scale and referenced student experience in multiple classrooms. For this study, permission was obtained to adapt the tool by rewording five items to

reflect a student experience in a single course and included a six-point Likert scale to assist in response discrimination (L. Schreiner, personal communication, October 21, 2008). In the adapted tool, student engagement was operationalized as student behaviors demonstrating meaningful learning application (9-items), participation in the classroom (3-items), and focused attention(3-items) as assessed by the student's response to a Likert scale (Schreiner & Louis, 2006).

Environments-Active Learning

Conceptual Definition

Astin (1985, 1994) defined active learning as students taking more responsibility for their learning and becoming engaged or involved with activities that enhance their own learning. Other research described active learning from the purview of the instructor as the process of making the students the center of their learning (Warren, 1997). As a teaching strategy, active learning is a learner-centered approach used by the instructor that encourages students to use higher order thinking skills such as problem solving, synthesis, and evaluation (Braxton et al., 2000; Carnell, 2007; Kember & Gow, 1994). Additionally, Kember and Gow (1994) identified the role of the student-centered instructor as one who develops trust, self-direction and responsibility for learning in the learner. In this study, active learning was conceptually defined as the involvement of students in learning strategies that encourage students to take responsibility for learning.

Operational Definition

Chickering and Gamson (1987) described indicators of effective educational practices as manifest in behaviors such as student-faculty contact, cooperation among students, active learning, prompt feedback, time on task, high learning expectations and

17

respect for diverse talents and ways of learning. Chickering and Gamson's (1987) ideas about active learning reflect those of Astin's I-E-O theory (1993). The extent to which faculty encourage behaviors such as increased student contact, collaborative learning environments and student participation in learning in the classroom, they are facilitating active learning environments.

Active learning was operationalized to include activities such as student's participation in presentations, cooperative learning groups, experiential learning; peer evaluation; writing in class, computer-based instruction, role playing, simulations games, peer teaching and small discussion groups in the classroom environment (Bonwell & Eison, 1991; McKeachie, 2002). For the purposes of this study, the extent that the environment reflects active or passive learning strategies was assessed using a tool comprised of 11 questions adapted from the Flashlight Current Student Inventory set of validated questions about teaching-learning practices specific to active learning. These questions were scored as the Active Learning Environments Scale ("Teaching Learning Technology Group," 2002).

Outcomes-Academic Achievement

Conceptual Definition

Academic achievement describes the student after exposure to college and can be classified by type of outcome (affective or cognitive) and type of data (psychological or behavioral) (Astin, 1994). Academic achievement is a cognitive-psychological outcome commonly measured as grade point average or performance on objective tests of ability. According to Astin (1994), grades reflect a student's performance relative to other students rather than how much has been learned and should be interpreted with caution.

Research has demonstrated, however, that self-reported GPA is likely to be the best predictors of student achievement available, given the impracticability of obtaining actual student transcripts (Kuncel, Crede, & Thomas, 2005).

Operational Definition

Engagement variables that are associated with GPA, after the effects of environment and input characteristics are controlled, include among others, student faculty contact, giving class presentations and hours spent studying. Negative associations include working full-time, hours spent partying, and being a member of a social fraternity/sorority, among others (Astin, 1994). In this study, students were asked to self-report their most recent end-of-semester GPA on a 4- point scale as a measure of overall academic achievement as well as the expected grade for the course in which they completed the questionnaire.

Overview of Chapters

The remaining chapters of this dissertation are organized in the following way. Chapter 2 presents a comprehensive integrated review of the literature relating to three major areas of this study: (1) student engagement in higher education and nursing literature; (2) active learning as a teaching and learning strategy in higher education and nursing literature; and (3) the relationship between active learning and student engagement in the literature.

Chapter 3 describes the methodology, instruments and quantitative statistical analysis performed. Reliability and validity data of the Adapted Engaged Learning Index (AELI) (Schreiner & Louis, 2006) is discussed as well as the results from the Active Learning Environments Scale (ALES) pilot study. Chapter 4 presents the findings from

the data collection process and data analysis. Chapter 5 provides a summary of

conclusions and discusses further implications for research. Included are

recommendations for the study of engagement in nursing students in varying learning

environments and the link to outcomes of learning.

Chapter 2

Introduction

This chapter critically examines the literature describing the relationship between student engagement and active learning on the development of student outcomes in the classroom within the context of Astin's Student Involvement Theory (I-E-O) (Astin, 1984). A literature search of the concept of engagement and active learning was conducted in the education, psychology and nursing databases. The search included the use of the keywords: Academic engagement, academic connectedness, student engagement, active learning and cooperative learning. The review was limited to research studies with sample populations of students and or faculty in higher education. A discussion of the literature includes:

1. Student engagement in higher education and nursing education literature

2. Active learning as a teaching and learning strategy in higher education and nursing education literature.

3. The relationship of active learning and student engagement in the literature

In summary, conclusions regarding the gaps in knowledge in the literature surrounding the relationship between student engagement and active learning and the subsequent student outcomes are discussed.

Literature Review

Student Engagement

Analysis and critique of the literature in higher education on student engagement reveals studies across affective, cognitive and behavioral domains with the use of a variety of definitions and proxies for measurement. Literature related specifically to

nursing student education and engagement is sparse. Literature related to student engagement in higher education is reviewed first followed by nursing education studies. The conclusion addresses gaps remaining in the literature for future study.

Student engagement and its impact on learning are widely studied in higher education literature. In much of the literature on this subject, researchers highlight the need for developing an understanding of engagement and its relationship to meaningful student learning (Astin, 1994; Carini et al., 2004). With the increased diversity of learners in higher education, the challenge of engaging students in their learning in order to experience success becomes even more imperative.

The initial study of student engagement began with the development of the National Survey of Student Engagement (NSSE) in the late 1990's. Institutions began to assess engagement of students through the use of a nationally administered survey, *The College Student Report ("National Survey of Student Engagement," 2005)*. Colleges and universities began to assess engagement of their students and gain a better understanding of levels of engagement of first year and senior students. Student engagement, as described by the authors of the NSSE is "the extent to which students are engaged in empirically derived good educational practices and what they gain from their college experience" (Kuh, 2002, p.1). Because of the research generated through the administration of NSSE, institutions are better prepared to offer students support for enhancing and encouraging academic engagement and fostering student success in college.

The NSSE provides a rich source of student reported data on engagement cited in many higher education studies of student engagement. Most studies evaluate student

engagement outcomes in general terms, due to the proprietary nature of individual student data such as grades. However, in one study, Carini, Kuh and Klein (2004) compared findings of 1058 students at 14 colleges on the NSSE instrument to student reported GPA, graduate record exam scores, scholastic achievement test (SAT) scores and the RAND corporation critical thinking tests in an attempt to determine the relationship between engagement and academic performance. Student engagement demonstrated small but statistically significant partial correlations with GRE and RAND test scores (r= .04-.13, p<.05). Modest statistically significant relationships were found between student engagement scores and GPA (r= .06-.12, p<.05). In addition, students with lower SAT scores appeared to benefit more from certain types of engagement than their counterparts, particularly with reference to their GRE and RAND scores and to a lesser extent their GPA. The implications were that increased engagement of those students most at risk may have the most substantial results. Cross-sectional data threatens the validity of the results in that multiple factors such as institution and varying student characteristics over time were not controlled in this design. The study extends the knowledge of engagement and its relationship with student academic performance using a large, stratified non-random sample of students.

In a separate secondary data analysis of a national data set, Pike and Kuh (2005) used a stratified random sample of data from 3,000 students who took the College Student Experiences Questionnaire (CSEQ) to evaluate the differences between first- and second-generation college students, their background characteristics, level of engagement and reported gains in intellectual development. The CSEQ asks students to report the frequency with which they engage in activities that represent good educational practices

related to positive learning outcomes (Kuh, Pace, & Vesper, 1997; Pace, 1984). The final sample included over 1100 freshman, representing six Carnegie classifications and 16% were minorities. In the model tested, engagement was demonstrated to be significantly positively related to minority-group membership (β = .103, p<.001), educational aspirations (β = .151, p<.001) and living on campus (β = .071, p< .05). The findings revealed that first generation students reported statistically significant less learning gains and tended to be less-engaged overall. In contrast, students with other characteristics (females, minorities, and students living on campus and pursuing advanced degrees) reported to be more engaged and obtained greater gains in learning outcomes. This study indicated that the challenges of first generation college students are indirectly related to their parent's college status and more directly the result of student's educational aspirations and their living arrangements while attending college. The findings of this study are limited in that the use of secondary data may not represent initial randomized responses and the actual number of minority cases was too small to render significant findings at the specific ethnic level (N=180).

The effect of environment on student engagement has been well described in the literature (Astin, 1994; Kuh, Kinzie, Buckley et al., 2007; Kuh, Kinzie, Schuh, Whitt, & Associates, 2005). The emphasis in the literature is on the relationship between what institutions and faculty can do to engage the student. Using the National Survey of Student Engagement (NSSE) ("National Survey of Student Engagement," 2005), Kuh (2003) described engagement as the extent to which colleges and universities involve students in activities that promote student learning and link engagement to student achievement. Research that described the environment in terms of the instructional

methodology used in nursing and medical student classrooms has demonstrated increased student engagement in classrooms using problem based or team based learning strategies (Ahlfeldt, Mehta, & Sellnow, 2005; Kelly et al., 2005).

Individual student outcomes of engagement are evaluated infrequently, due to the difficulty of obtaining actual student outcomes matched to the national databases assessing engagement. The college impact models seek to explain the institutional and individual characteristics that have an effect on student outcomes in college (Astin, 1984; Pace, 1984; Pascarella, 1985; Tinto, 1975). At the institutional level, outcomes that result from engagement include persistence in and commitment to an institution (Berger & Milem, 1999; Braxton et al., 2000). At the student level, outcomes include increased quality of learning and personal achievement as measured by grade point average (GPA), and general academic gains (Gonyea, 2005; Pike & Killian, 2001; Pike & Kuh, 2005). Kuh (2003), in his study of institutional engagement, identified student reported gains such as acquiring job related skills; broad general education; writing and speaking clearly; problem solving and independent learning as some of the outcome measures of engagement in the NSSE. Outcomes of engagement are less well defined in the literature as "self reported gains" (Kuh, 2003) or GPA, intellectual, personal and social and communication skills (Gonyea, 2005; Pascarella & Terenzini, 2005; Pike, 1995; Pike & Kuh, 2005).

Gonyea (2005) used structural equation modeling to examine the relationships between constructs of academic engagement (reading and writing, tutoring, studying time, library time and computer experience) and three desirable outcomes (GPA, gains in intellectual skills and general education gains) in undergraduates in a large, Midwestern

university. The models generated demonstrated that various forms of engagement are antecedents to different learning gains, linking variables with different outcomes in the three respective models. Statistically significant effect sizes (in parentheses) were found for the variables in the model for academic engagement as defined by five activities on the different outcomes of GPA, intellectual gains, and general education gains, respectively: Reading and writing (.09, .57, and .09), study time (.14), attending a tutoring center (.10), and writing experiences (.09, .08) and computer experiences (.21). Only reading and writing had significant effects on all three outcomes measured. This study indicated that further exploration of specific types of engagement is necessary in order to link them to specific learning goals. Limitations of this study included its lack of generalizability due to the single institution sample, the use of self-reported estimates of gains causing the "halo error" effect and the use of data from first year students that may not reflect the full possibilities of outcomes early in the spring of their first year of college.

A longitudinal study conducted by Berger and Milem (1999) tested the effects of student characteristics, involvement and perception of faculty and peer support on a student persistence model from the first to second years in college. Involvement in this study is described as student-faculty interactions, similar to the term used by Astin (1984) and related to Kuh's (2002) description of student engagement. Data were collected at three points in time from a panel of 718 students in fall, spring and fall of 1995 at a highly selective southeastern university. Using multivariate analysis, the authors described a significant positive indirect effect of faculty involvement on institutional commitment (β=.21, p< .05) and peer involvement (β= .19, p< .01). Subsequently, faculty

involvement demonstrated significant direct effects on student persistence (β= .19, p≤ .19). These studies support the work of Kuh and others that described engagement at the institutional level because of social and academic activities that create positive student outcomes such as persistence and commitment to the institution.

In contrast to previous studies, Handelsman, Brigg, Sullivan and Towler (2005) described student engagement related to experiences in the classroom as compared to institutional experiences and perceptions. The authors utilized a non-random sample at a single institution to develop an instrument (*Student Classroom Engagement Questionnaire*) to measure engagement in classroom settings. Factor analysis revealed 23 items loaded on four factors accounting for 42.69% of the variance in the measure of engagement. The four factors were identified as: skills engagement, emotional engagement, participation engagement and performance engagement. The reliability of factor measures was established with coefficient alphas ranging from .76-.82 (p<.01) and correlations between factors ranging from .23-.44 (p<.01) supporting a four factor structure. Convergent and discriminant validity was established using regression analysis and multivariate analysis of variance on four factors using goal orientation as the independent variable. The results showed that emotional engagement is related to several indicators of student engagement while performance engagement related to the presence of performance goals only. This study emphasizes engagement as multidimensional, requiring a more balanced approach to measurement to produce comprehensive view of student engagement.

In a separate but further analysis, course grades of 40 students in a liberal arts math class were obtained. Regression of grades on the four engagement factors revealed

that student engagement factors explained 26-30% of the variance in homework, midterm and final exam grades. Engagement factors were statistically significant predictors of grades, but varied by the grade or assignment. No single engagement factor predicted homework, midterm or final exam grades, suggesting that the variation in significance of predictors of types of engagement on grades is explained, in part, by the nature of the course, tests and assignments given in the course from which the students were sampled. This study emphasizes the need to look at student engagement in the classroom due to the variability and multidimensionality of engagement across students and types of courses. Although this study lacks generalizability, it is one of few that explore student engagement at the classroom level.

The extent to which the teacher is engaged might also contribute to student engagement. Ahlfeldt, et al. (2005) studied over 50 faculty in a midwestern university who received various levels of training in problem-based learning (PBL) and measured the self-reported perception of engagement by students in each of their classes. A 70-item national survey of engagement was adapted to include 14-items with an alpha reliability of 0.84 and administered to students. The authors reported an average engagement score for the intervention group and compared that to the NSSE results from 2000. The correlations between engagement and course level (r=0.40, p<.000) and engagement and PBL level (r=0.57, p<.000) were positive and statistically significant. The authors also measured class size compared to engagement and found significant negative correlations (r=-0.52, p<.000). This study demonstrated that as class size decreases, engagement levels increase. Mono-method bias, lack of a control group and reactive self-report

threaten validity in this study due to the use of only self-report by students and faculty to measure engagement.

The findings from studies of academic engagement in higher education literature link engagement to academic achievement. Engagement at the institutional level includes student-faculty interaction, academic challenge, active and collaborative learning, enriching educational environments and supportive campus environments (Carini, et al., 2004). Engagement at the student level includes skills, emotion, participation and performance (Handelsman, et al., 2005). Institutional and student level engagement result in a variety of positive student outcomes and gains. At the institutional level, engagement is the extent to which students are involved in educationally purposeful activities (Kuh, 2003) and results in persistence and commitment to the institution (Berger & Milem, 1999). At the student level, increased engagement results in improved grades, GPA, and academic gains (Gonyea, 2005; Handelsman, et al., 2005). The difficulty in comparing these studies is the use of a variety of tools and methods to measure engagement and the use of self-reporting instruments without adequate psychometric testing.

Lack of similar instruments used to measure engagement across institutions or in classrooms, make comparisons across studies challenging. Cognitive and emotional engagement is more subjectively defined than behavior and have been measured using various researcher-developed instruments. Emotional engagement is defined as a person's reaction to a situation and therefore requires measures of self-report to capture perceptions of feelings and beliefs about the meaningfulness attached to a task or event. Cognitive engagement refers to the attention and thoughtfulness given to a task or idea. Researchers have used a variety of mixed methods to capture the cognitive domain,

including teacher reports, student self-reports, and researcher observations. While the cognitive and emotional domains of engagement appear to be related to academic persistence, commitment and engagement, these domains are difficult to isolate. The literature supports relationships between certain student characteristics (gender, ethnicity and living arrangements) and level of student engagement as well as perceived positive learning gains (Pike and Kuh, 2005). While research supports the link between institutional engagement and persistence, the literature lacks research linking specific antecedents of engagement (such as active learning strategies) to student outcomes.

Engagement in Nursing Literature

Few studies in nursing education research literature measure student engagement directly. Most studies included teaching methods and student learning strategies as variables that relate to outcomes other than engagement, per se. These studies are reviewed in the section titled active learning, as they more appropriately reflect the study of active learning strategies and their effects on student learning. Two studies directly address student engagement and will be discussed in this section.

Popkess and McDaniel (2007) conducted a secondary data analysis of 3000 randomly selected students in nursing, health professions and teaching majors from the NSSE dataset. Using a descriptive, correlation design, NSSE data collected from freshmen and seniors during 2003 were analyzed. Selected demographic data (freshman or senior status, gender, and ethnicity) and NSSE data measuring five benchmarks of engagement were analyzed using ANOVA and t-tests to determine significant relationships. Freshman were found to be significantly less engaged than seniors in four of five NSSE benchmarks (p=.000). Nursing and health profession's majors perceived

themselves to be significantly less engaged in active and collaborative learning than their

peers in education majors (p= .05). Nursing students perceived themselves as

significantly more academically challenged than their peers in education and other health

professions majors (p=.000). Results indicated that although nursing students are engaged

in rigorous curricula, they do not perceive themselves to be engaged in student-centered

and interactive pedagogies (Popkess & McDaniel, 2007). Limitations of this study

included the lack of minority representation in the sample and the fact that engagement

represented only one factor in determining student outcomes. Other learning outcomes

were not addressed in this study.

Feingold et al. (2008) evaluated team learning as an instructional method using

structured interviews and observations of baccalaureate nursing students with the

STROBE Classroom Observation Tool (O'Malley et al. 2003) to measure levels of

student engagement during various classroom activities. The researchers used a

convenience sample for the observations, from which students were self-selected to

participate in interviews. Students in team-learning environments were on task more than

50% of the class time, and engaged in instructional activity 84% of the time. Learner-to-

learner engagement was the predominant engagement behavior observed. Student

interviews revealed that they valued learning through discussion and listening to other

points of view; identifying this with critical thinking. Limitations of this study include a

one-group design with no comparison to non-intervention groups, as well as lack of

generalizability of the findings. No outcome measures (exam scores or grades) were

reported. Further research on the relationship between active learning environments and

engagement in this population is warranted and the purpose of this research study.

Active Learning

Astin (1985) described active learning as students taking more responsibility for their learning. Techniques that encourage this type of learning include independent study; internships; assisting faculty with research and small discussion groups. Other research described active learning from the purview of the instructor. According to Chickering and Gamson (1987), students who engage in active learning, must read, write, discuss or be engaged with solving problems and, most importantly, utilize higher order thinking skills such as analysis, synthesis and evaluation.

As a learning and teaching strategy, active learning encompasses a broad range of instructor and student activities. In addition, active learning strategies can be considered process indicators for student engagement as a measure of what faculty do to create learning partnerships with students or what students do in learning activities that promote educationally purposeful learning (Conti, 2004). For the purposes of this study, student perceptions of learning environments and their self-reported measure of engagement were the variables of interest.

Active learning is a student-centered approach that includes increasing student time on task, involves students in learning and takes advantage of peer learning experiences (Barr & Tagg, 1995; Bonwell & Eison, 1991). Interventions that increase student engagement in learning, thus, center on developing faculty in the role of the facilitator of active learning. Strategies that promote active learning include increasing student time on task, involving students in discussion and problem solving and taking advantage of peer learning opportunities and frequent learning assessment (Casem, 2006; Michael, 2007). Active learning instruction includes strategies such as peer tutoring,

writing across the curriculum, case-method instruction, problem-based learning, debates, role-playing and simulation (Bonwell & Eison, 1991). The use of active learning strategies has demonstrated a positive influence on engagement and academic gains as measured in several studies (Kelly et al. 2005; Kuh et al. 1997; Umbach & Wawrzinski, 2005a). These studies are discussed further.

Kelly et al. (2005) evaluated problem based learning, team learning and lecture strategies in an observational study using a tool specifically developed by the researcher to obtain data from brief observations of individual learners in the classroom. Trained observers compared patterns of engagement behaviors between students and among students and instructors. Statistically significant differences in patterns of engagement over the different instructional strategies was obtained ($\chi 2$= 20, N=3,884, p<.01). Students in problem based and team-learning classrooms demonstrated significantly more learner-to-learner engagement compared to those in lecture settings. In contrast, significantly more learner-to-instructor engagement was evident in team-learning classrooms than in problem-based learning classrooms, supporting the premise that team learning is grounded in more teacher facilitation behaviors than problem-based learning. This study supported the use of various learner-centered strategies to promote student and instructor engagement in the classroom.

In a secondary data analysis of the College Student Experiences Questionnaire, Kuh, Pace, & Vesper (1997) identified three factors of college student performance (faculty-student contacts, cooperation among students and active learning) through factor analysis and estimated correlations with student gains in general education, intellectual skills and personal-social development (N=911). Further analysis using multiple

regression demonstrated that active learning had the strongest positive influence on academic gains in general education (β=.27-.36, p< .0005) while adjusting for learning environment (Carnegie classification) and background characteristics. The limitations of this study included the inability to control for contextual differences in learning that might arise from the varying institutions such as student majors and educational philosophies on different campuses. Although the study demonstrated that active learning influences academic gains, this broad criterion requires further description to determine what specific types of gains result from active learning.

Umbach and Wawrzynski (2005) completed a secondary analysis of two national engagement databases to determine which faculty behaviors and attitudes were related to student behaviors and linked to positive student outcomes. Using hierarchical linear modeling to compare 22,033 first year student data with 14,336 faculty responses from 137 institutions, student-faculty interactions were significantly positively related to student engagement for both first-year and senior students in course related interactions (β= .09-.16, p=.001). Active and collaborative learning was significantly positively related to student engagement (β = .05-.16, p=.05) and self-reported gains (β= .04-.10, p=.05). This study suggests that students are more engaged when faculty employ active and collaborative learning techniques and engage students in higher-order thinking in the classroom. Although the study incorporated controls of student characteristic variables such as gender, age, race, full-time, and others, student and faculty samples were not matched and therefore no direct causal relationship can be established between faculty attitudes and behaviors and student gains. In addition, the effect sizes of the coefficients are small (Lipsey, 1990).

In a mixed-methods design, Kember and Gow (1994) developed a tool measuring teacher orientation as knowledge-transmission or learning-facilitation and administered it to faculty in two institutions in Hong Kong representing 15 departments (N=170). Student learning quality in each department was examined using the Biggs Study Process Questionnaire (SPQ), which assesses students' approach to studying on three scales: a deep approach, a surface approach and an achieving approach. Study results indicate learning facilitation approach is strongly negatively correlated with surface learning studying approaches (r=-0.61, p=.01) and positively correlated with a change in achieving approach (r=.45, p=.05). Knowledge orientation is strongly negatively correlated with deep learning approaches (r=-0.79, p=.01). In other words, faculty who perceived themselves as using interactive, problem-solving, motivational approaches to teach, tended to engage students in more meaningful study approaches. The small sample size and limited site study lacks generalizability.

Active Learning in Nursing Education Research

Examples of nursing research literature have demonstrated active learning in the classroom and its positive effect on student outcomes (Beers & Bowden, 2005; Patterson Johnson & Mighten, 2005; Pugsley & Clayton, 2003). In two of three studies, students performed significantly better on exams when active learning strategies were used in the classroom, although there appeared to be no significant difference in overall course grades and standardized exam scores (Beers & Bowden, 2005; Patterson Johnson & Mighten, 2005).

Beers and Bowden (2005) compared the effects of problem-based learning versus traditional lecture strategies on long-term knowledge retention of diabetes content in a

quasi-experimental design using a convenience sample of 46 baccalaureate-nursing students. Statistically significant differences between mean scores on Posttest 1 and Posttest 2, given one year later, were assessed for the problem-based learning group (t = 4.86, df = 31, p=0.001). The mean score on Posttest 2 (m= 6.23) was significantly higher than the mean score on Posttest 1 (m= 4.98).

Patterson-Johnson and Mighten (2005) compared exam scores of two groups of students in subsequent medical-surgical nursing courses in a quasi-experimental study. One group received instruction using structured group discussion and lecture (experimental) and the other lecture only (control). A statistically significant difference was found between the mean examination scores of the experimental and control group (t (167) = 2.596, p<.010).

Pugsley and Clayton (2003) evaluated student attitudes toward a research class taught using experiential learning activities such as problem solving, class discussion and research projects compared with those taught using more traditional lecture style strategies. The instrument used to measure student attitudes was adapted from an existing tool and content validity was assessed by faculty from "various disciplines." Internal consistency revealed Cronbach's alpha of .91 for junior students and .86 for senior-level students. Junior level students in the experiential course demonstrated statistically significantly more positive attitudes toward nursing research than their counterparts in the traditional class (t(42)= 3.981; p=.001). Although this study used small, nonrandom sampling strategies that limit generalizability, there appears to be a positive relationship between the use of active learning and student perceptions about course content. No student outcomes were assessed in this study.

Active and collaborative learning are pedagogical strategies that enhance student engagement using student-centered learning strategies. Active learning strategies enhance student engagement through increased student-faculty interaction, higher order thinking and problem-solving, and leads to student gains in learning.

Conclusions

In summary, the literature reports the impact of college on students and supports that engagement is one factor that distinguishes students who benefit from the college experience from those who do not. The phenomena of engagement has been defined using different labels, including the concept of involvement (Astin, 1984), and student effort toward educationally purposeful activities (Kuh et al., 2005). Engagement results in positive student gains, institutional commitment and persistence (Berger & Milem, 1999; Carini et al., 2004; Gonyea, 2005; Kuh et al., 1997). No matter how labeled, the premise is the same: student outcomes are related to the amount of effort that students put into their college experience. Student engagement appears to influence the quality of learning as well as personal development in college students, and is influenced by characteristics of students, teachers and pedagogies used in the classroom. Engagement, therefore, is contextual and varies based on the type of learning activity and teaching strategies employed by the student and faculty (Gonyea, 2005). Further evaluation of the impact of learning environments that involve active learning strategies and students' perceived engagement is supported by this literature review.

Chapter 3

Introduction

This chapter describes the methodology, instruments and statistical analysis used

to measure the extent of student engagement in various classroom learning environments

in baccalaureate nursing schools. The relationships between student characteristics,

classroom learning environments and student engagement were assessed. In this chapter,

the research instruments are described, psychometric data and pilot study results of the

AELI and ALES instruments are provided and analytical procedures are outlined.

Limitations of the study conclude the chapter.

Research Questions

Four research questions guided this study to determine relationships between

student engagement and classroom environment:

1.   To what extent do undergraduate baccalaureate nursing students in a sample of

selected Midwestern schools of nursing report engagement as measured by the Adapted

Engaged Learning Index (AELI)?

2.   To what extent do undergraduate baccalaureate nursing students in selected

Midwestern schools of nursing report the use of active learning strategies in classroom

learning environments as measured by the Active Learning Environments Scale (ALES)?

3.   Do undergraduate baccalaureate nursing students in active, mixed or passive

learning environments as measured by the Active Learning Environments Scale differ on

reports of student engagement as measured by the Adapted Engaged Learning Index?

4.   What is the relationship between demographic variables (age, gender, ethnicity,

academic classification, prior degree status), academic variables (hours and type of work

for pay, reported term GPA, expected course grade) and reported student engagement as measured by the Demographic Tool and Adapted Engaged Learning Index?

Setting

The setting for the study was five baccalaureate schools of nursing in the states of Indiana and Illinois representing a regional sample. State approved schools of nursing were identified by an internet search of the respective State Boards of Nursing (IL or IN) websites. Deans, directors or department chairs were contacted by the researcher to establish willingness to participate and identify courses and faculty for participation. Faculty were contacted by email to obtain final approval and schedule survey administration dates. The researcher administered the survey to students in the classroom and students were asked to reference the class they were presently attending in their responses.

Sample

Undergraduate baccalaureate nursing students were identified using a purposive, regional sample of nursing classes selected by Deans or Directors in five Midwestern undergraduate baccalaureate schools resulting in a sample of 347 nursing students. Five schools were selected from two states, Illinois and Indiana, due to resource limitations of the researcher. Deans or directors from ten selected schools received a hard copy and electronically mailed letter explaining the proposed study and were contacted by phone five working days later and asked to participate. In order to target students in a traditional program, criteria for courses selected by the Deans and directors were restricted to: (1) sophomore, junior or senior level courses offered to undergraduate, pre-licensure nursing students; (2) courses offered for academic credit (not continuing education) (3) courses

that met face-to-face 80% or more in a physical learning environment; and (4) courses with didactic (lecture) or simulated learning laboratory components. Simulated learning laboratory environments were defined as courses taught using application of theoretical knowledge which may include hands-on experience and return demonstration, case scenarios with standardized patients, high and low fidelity human patient simulators, mannequins or computer software that "actively involve learners in applying the content of the lessons" (Rowles & Brigham, 2005, p. 308).

Exclusion criteria for this study included courses where students: (1) engaged in learning in a clinical agency site (hospital, nursing home or other clinical agency with live patients; (2) exclusively enrolled in accelerated or second-degree option programs; or (3) were seeking a baccalaureate completion degree. The researcher's employing institution and doctoral institutions were excluded, due to inherent conflicts of interest in recruiting students and faculty. Clinical courses with live patients are excluded from this study due to the variability in clinical sites and expected active learning that occurs in this type of environment that would bias the results of the study. Students seeking a baccalaureate completion degree (RN-BS) or enrolled in an accelerated option program were excluded from this sample as they represent a different population of students with varying motivation and needs for student engagement, thus contaminating the pool of participants.

The researcher was able to contact faculty directly via electronic mail or phone from the course list provided in order to request access to classes to administer the survey, in all but one institution. Faculty participation at this institution was coordinated through the Director who identified willing faculty participants. Faculty or deans and

directors who declined participation or were non-responders were eliminated from the sample. The researcher did not disclose participation or non-participation of faculty to the dean or director. Data was collected anonymously from the subjects, ensuring confidentiality and avoiding coercion of the students by the faculty. A total sample size of 347 student participants was obtained from five sites, three in Illinois and two in Indiana.

Design

A non-experimental, ex-post facto design was used to examine undergraduate baccalaureate nursing student engagement as measured by administration of the Adapted Engaged Learning Index (AELI) and Active Learning Environments Scale (ALES). Ex-post facto research involves no manipulation of the independent variable and its purpose is to determine if certain preexisting conditions, (in this case the learning environment as either active or passive) are associated with differences in group participant's engagement levels. Random assignment to groups was not possible. It is necessary, however, to control for variables which may influence the association under investigation (McMillan & Schumacher, 2001). In this study, control of variables such as student characteristics and learning environments was managed through the selection of subjects and inclusion and exclusion criteria of sample courses and students as described in the previous section.

Research Instruments

Three tools were administered to students to obtain data for analysis. A demographic tool was developed by the researcher to obtain student characteristics as input data, and self-reported GPA and estimated course grade as outcome data. The

Active Learning Environments Scale (ALES), developed by the researcher, measured the independent variable of active learning in the classroom, and reported student perceptions of active learning in the course. The Adapted Engaged Learning Index (AELI) measured dependent variables related to the construct of classroom engagement. A pilot study of all three tools was conducted with 107 purposively sampled students at the researcher's university to obtain reliability and validity data for the instrument. A description of each tool and variables follows as well as a discussion of the pilot study.

Demographic Tool

Student characteristics and academic variables were measured using an eight item demographic tool constructed by the researcher (Appendix A). These items were included because of a potential relationship each has to student engagement, based on previous research (Kuh, Kinzie, Cruce et al., 2007). Each independent variable is operationally described below.

Student Characteristics

Age. Students were asked to indicate their age as scale data.

Gender. Students indicated gender and race as categorical responses listed in alphabetical order. Gender prompts are male or female.

Race/Ethnicity. Prompts are American-Indian/Alaska Native, African-American, Asian/Pacific Islander, Hispanic origin, White and Multiethnic listed in alphabetical order.

Academic rank. Students indicated their current academic rank based on their years in college as Sophomore (2 years), Junior (3 years) or Senior (4 years or greater).

Academic Variables

Grade point average. Students estimated their cumulative college GPA as of the most recent semester (based on a 4.0 scale).

Expected course grade. Students stated their expected letter grade (A through F) for the course in which they completed the tool.

Hours worked per week/associated with health care. Students provided a range estimate of the average number of hours worked for pay per week. In addition, they were asked to identify if their work was associated with health care or nursing (yes/no). A "not applicable" response was provided in the case of students who do not work for pay.

Prior learning experience. Students indicated any prior degree and learning experience with a categorical response as high school graduate, attended college without degree or previous degree (Associate's, Bachelor's, Master's, or Doctorate).

Active Learning Environments Scale (ALES)

Learning environments that promote active learning strategies are one of the independent variables that affect student engagement, according to Astin's I-E-O framework. It was expected students would reflect higher levels of engagement in the learning environments that are perceived to include more student-centered, active learning teaching approaches.

Learning environments were measured using the ALES. The ALES was composed of thirteen questions adapted from the Teaching Learning and Technology Group, Inc. Flashlight Online survey (TLT Group, 1998) and the literature on active learning. Flashlight Online v. 1.0 is a database of questions designed to measure active learning and use of technology in the classroom. The Flashlight database is a set of

validated questions utilized by researchers to assess student and faculty use of teaching strategies and technology in academic settings to obtain the student's perception of a selected learning environment. Eleven items were selected based on their relevance to describing active learning environments as expressed in the subscale "Active Learning" (TLT Group, 1998). Eleven items reflected categorical frequencies (three or more times, one or two times or not at all) with which students reported engagement in specific active learning activities in the course during the current semester. Two items were scored on a 4 point Likert scale and reflected the students' overall perceptions of the classroom learning environment. The final version of the ALES instruments is in Appendix B.

Adapted Engaged Learning Index (AELI)

For the purposes of this study, student engagement was conceptualized using behavioral, psychological, and cognitive aspects. Student engagement in the classroom has been measured using and adapted version of the Engaged Learning Index (ELI) instrument (Schreiner and Louis, 2006). The original ELI was a fifteen-item tool that measured the multidimensional nature of an individual student's engagement in the learning process. Each item is a positive or negative statement to which the student responds with varying levels of agreement on a five-point Likert scale (1= strongly disagree 5= strongly agree). Negative items are scattered throughout the instrument in order to prevent response fatigue and were reverse scored upon data entry. The instrument was initially tested on a sample of (N=1270) undergraduate students in five different four-year colleges and universities across the United States, with an average response rate of 22% (Schreiner & Louis, 2006).

44

As a result of the pilot study conducted by this researcher, five items from the original ELI were adapted to reflect a single course versus multiple courses and a six-point Likert scale, to allow for increased response discrimination, was included. This revised 15-item tool is referred to as the Adapted Engaged Learning Index (Appendix C). Student engagement was measured in three dimensions as student behaviors: the use of meaningful processing (nine items); demonstrating participation in the classroom (3 items) and as focused attention (3 items) on the Adapted Engaged Learning Index.

Psychometric Testing of Instruments

A pilot study measuring reliability and validity of the ALES and AELI instruments was conducted with a convenience sample of 107 students at the researcher's university. Permission was received from the IUPUI Institutional Review Board and the study site Research and Grant Review Committee (L. Williams, personal communication, November 11, 2008). Faculty were solicited via an email to allow the researcher to access courses in the Fall, 2008. Three courses, one from each academic level (sophomore, junior and senior), were selected from those consenting faculty. Students were then asked to complete the tools anonymously in each course. Consent for participation was implied through the return of the tool. Validity and reliability results of the ALES tool will be discussed first, followed by validity and reliability results of the AELI tool.

ALES Validity. Prior to the distribution of the ALES tool to students, content validity was established in two phases. Face validity was determined through the review of the items by a panel of three expert educators in higher education who were asked to determine item clarity, relevancy to active learning and conciseness of wording. The

reviewers suggested changes in wording to two items on the ALES tool, relevance to

active learning was questioned for two items and one item was deemed to need major

revision. Revisions were made based on these comments and a content validity index was

established during the second phase of validity testing. Two content experts were

identified to rate the items using a 4-point scale measuring the relevance of the item to

active learning (1- not representative of active learning, 4- representative of active

learning). A content validity index (CVI) for each item and for the total instrument was

computed. The CVI for each item was calculated based on the proportion of reviewers

rating the item a 3 or 4. The level of inter-rater agreement for less than 4 reviewers must

be 1.00 (Lynn, 1986) in order to retain the item. Three items scored less than 1.00 based

on content expert review, and were eliminated from the tool. The proportion of remaining

items (13/16) rated a 3 or 4 and revealed a total instrument CVI of .81, exceeding the

validity requirement recommended by Grant and Davis (1997). Minor suggested changes

in wording were incorporated into the final 13-item version of the tool (Appendix D).

   ALES Reliability. Internal consistency reliability coefficients (Cronbach's alpha)

were computed on the ALES instrument from pilot data. According to DeVillis (2003)

recommended reliability coefficient alphas of .80-.90 are acceptable for a non-

experimental study. The overall Cronbach's Alpha for this tool was $\alpha = 0.89$. Data from

107 students was analyzed using SPSS v 16.0. The distributive frequency of the

participants by academic level is presented in Table 1.

Table 1. Pilot Study Student Distribution by Academic Level (n=107)

	Frequency	Percent
Sophomore	41	38.3
Junior	36	33.6
Senior	30	28.0
Total	107	100.0

Inter-item correlations for the ALES tool are presented in Appendix D. All item-total correlations were above r=.50, with the exception of item 4 (r = .493). According to DeVellis (2003) items with higher item-total correlations are more desirable. Deleting this item did not significantly improve the alpha coefficient, and therefore the item was left in (DeVellis, 2003).

AELI Validity. Schreiner and Louis (2006) established content validity through the use of a student focus group to ensure items were clearly worded and had high face validity. Fifteen undergraduate students participated in a 90-minute focus group, where the instrument was completed and each item discussed thoroughly. The instrument instructions for completion and wording of three items were revised as a result of the feedback from the focus group (Schreiner & Louis, 2006).

Using principal component factor analysis, Schreiner and Louis (2006) determined validity using varimax rotation with three components extracted. These three components: meaningful processing (27.67%), participation (14.48%), and focused attention (12.04 %) accounted for 54.19% of the total variance. In addition, ELI scores of groups who were expected to differ in their levels of engagement (high/low learners, athletes/non-athletes, high/low satisfaction with college, first-generation college students

with those whose parents attended college) were compared based on prior research. Significant group differences with large effect sizes were reported between high-low level learners and those with high-low satisfaction with college in the domains of meaningful processing (F- 141.63, d= 1.33) and focused attention (F=44.97, d= .76) (Schreiner & Louis, 2006).

Convergent validity is when measures of the same construct have relatively strong correlations, regardless of the methods used to measure (Figueredo, Ferketich, & Knapp, 1991). For example, previous research has demonstrated that engagement is predictive of self-reported learning gains (Gonyea, 2005; Kuh, Kinzie, Buckley, Bridges & Hayek, 2007). Thus, if ELI is a measure of engagement, it should be predictive of student's self-reported learning. Schreiner and Louis (2006) completed a regression analysis of students' self-reported learning on the 15 retained items, revealing that 34.5% of the variation in self-reported learning was accounted for by the items on the final ELI instrument.

In this research study, only wording changes were made to the original 15 item tool, addressing the need to refer to a single "class" instead of "classes" in five items. As a result of these minor changes, further validity testing of the AELI was not conducted.

AELI Reliability. Schreiner and Louis (2006) established internal consistency reliability for the original 20-item ELI using Cronbach's alpha ($\alpha = .91$). Five items with item-total correlations below r= .45 were identified for removal, pending exploratory factor analysis. Based on the factor loadings, item total correlations and reliability analysis, the same five items were removed from the instrument. The remaining 15 items were examined for internal consistency. The first scale, consisting of nine items, was

labeled meaningful processing and had a coefficient alpha of .90. The second scale,

participation, included three items with a coefficient alpha estimate of .74. The third

scale, focused attention, contained three items with a coefficient alpha estimate of .79

(Schreiner & Louis, 2006).

     The AELI performed similarly in the pilot study conducted by this researcher.

The pilot instrument Cronbach's alpha consisting of 15 items was α= .88. Items 12, 13,

14 and 15 were reverse coded for purposes of interpretation due to their negative

wording. Scale coefficient alphas comparing the original findings of Schreiner and Louis

(2006) and this pilot study are presented below.

Table 2. AELI Scale Alpha Coefficients in Original Schreiner and Louis (2006) Findings Compared to Pilot Study.

Scale	Cronbach Alpha (Number of Items)	
	Original AELI (2006) (n=1270)	Pilot Study (2008) (n=107)
Meaningful Processing	.90 (9)	.92 (9)
Participation	.74 (3)	.70 (3)
Focused Attention	.79 (3)	
		.90 (3)
Instrument	.91 (20)	.88 (15)

     A table of the AELI inter-item correlations from the pilot study are included in

Appendix E. Corrected item total correlations were all greater than r= .50, with the

exception of items 10, 11, and 12. According to DeVillis (2003), items with the lowest

item total correlations would be candidates for exclusion, with a subsequent increase in

alpha. Removal of these items did not significantly improve the instrument's Cronbach

alpha, and were therefore left in the adapted tool.

49

Data Collection Procedures

After identification of ten schools of nursing, deans and directors were mailed a

letter and contacted by phone to determine their willingness to participate in the study

(Appendix F). If the dean or director agreed, they were asked to identify six courses and

the corresponding faculty from their school to participate in the study. The faculty were

mailed a cover letter (Appendix G) describing the purpose of the research and requesting

participation, as well as elements of IRB approval and confidentiality. The researcher

contacted faculty by phone or email after one week to determine their desire to participate

and schedule a date for data collection after mid-semester. This allowed students

adequate time to experience the course in order to answer related survey items. Data

collection was completed in spring, 2009.

The researcher requested to administer the tools to students in the last 15 minutes

of scheduled class time, absent the course instructor. A letter of informed consent

describing the study was provided to each student with the tools (Appendix H). Students

were asked to answer the survey with regard to the class they were attending when

completing the tool. Completion of the survey was deemed implied consent to participate.

No individually identifying information was collected on the survey. The surveys were

color coded based on class and school and known only to the researcher. All surveys

were locked in a filing cabinet in the researcher's office until completion of the data

analysis and submission of the dissertation, at which time the raw data will be destroyed.

Due to time and cost constraints, only one attempt was made to collect data per

classroom. Sampling of identified courses continued until a minimum dataset of 300

participants was met or exceeded. According to Dillman (2000), a total sample size of

300-400 respondents (student surveys) corresponds to a confidence level of 95% (alpha = .05) and a +/- sampling error of 5%. DeVillis (2003) suggests that 5-10 respondents per item is adequeate for statistical analysis. All data is reported in aggregate form, ensuring that no student, class, faculty or school responses are identifiable.

Statistical Analysis

Descriptive and inferential statistics were used to analyze the data from the instruments. Reliability data was computed on the instruments using Cronbach's alpha coefficient. Descriptive statistics were used to organize and summarize the demographic data and answer research questions one and two. Inferential statistics (ANOVA and t-tests) were used to analyze differences between groups described by level of active learning environments and the level of engagement. The analysis for research question is described in detail.

Research Question One

To what extent do undergraduate baccalaureate nursing students in a sample of selected Midwestern schools of nursing report engagement as measured by the Adapted Engaged Learning Index (AELI)? A descriptive analysis of mean scores and standard deviations on three subscales was performed. Mean scores for each subscale (meaningful learning, participation and focused attention) were compared. Mean total engagement scores for the each subject were computed.

Research Question Two

To what extent do undergraduate baccalaureate nursing students in selected Midwestern schools of nursing report the use of active learning strategies in classroom learning environments as measured by the Active Learning Environments Scale?

Subjects were scored on a 3 point scale, based on the number of times they reported engagement in active learning activities in the course. Descriptive analysis of mean scores and standard deviations of each of the 8-items measuring active learning from the Active Learning Environments Scale was computed.

Research Question Three

Do undergraduate baccalaureate nursing students in active, mixed or passive learning environments, as measured by the Active Learning Environments Scale, differ on reports of student engagement as measured by the Adapted Engaged Learning Index?

Total scale mean scores and subscale mean scores on the AELI were computed. ANOVAs were calculated for the AELI and compared to student responses on the ALES, according to the level of active learning perceived. Classroom learning environments were classified according to the total score on the instrument. Total scores for the ALES instrument ranged from 11-33, a 22-point range. The total range was divided into thirds to establish cut scores for the three possible learning environment types as follows: Passive environments were scored as 11-18, mixed environments from 19-26 and active environments as 27-33. Alpha was set at .05 to reduce the risk of Type I error. Scheffé's post hoc test for significance was assessed when significant group differences were found (Kerlinger & Lee, 2000). Effect sizes of significant results were assessed using eta squared.

Research Question Four

What is the relationship between demographic variables (age, gender, ethnicity, academic classification, prior degree status), academic variables (hours and type of work

for pay, reported term GPA, expected course grade) and reported student engagement as measured by the Demographic Tool and Adapted Engaged Learning Index?

Independent sample t-tests were conducted using the AELI mean engagement scores and student demographic variables of gender (male/female), race (white/non-white) type of work (health related/non-health related) and prior learning (degree/no degree) to determine if any relationships between variables exist. Analysis of variance tests were performed to compare mean engagement scores on the academic variables of academic level (sophomore, junior and senior), expected course grade (A , B, or C) and reported term GPA (A, B or C average) to determine if there were significant relationships. If missing data comprised less than 5% of cases in variables analyzed, the data was deleted. The Scheffé post hoc test for significance was assessed for significant group differences. Cohen's d was analyzed to determine the effect size of any significant relationships (Kerlinger & Lee, 2000).

Limitations

Limitations of this study include the use of a non-random regional Midwestern sample, which may not be representative of all schools in the United States and limits generalizability of the findings. In addition, the validity of self-reports is of potential concern in this study, since students completed the AELI, ALES and demographic questionnaires. Research has demonstrated that self-reports can be valid under certain circumstances. The most important factor is the respondent's ability to provide accurate information in response to a question. The second factor is their willingness to provide truthful information. In order to increase the validity of student self-reports, research has

demonstrated that people respond more accurately under five general conditions (DeNisi & Shaw, 1977; Pike, 1995):

1. The information requested is known to the respondents.

2. Questions are clear and unambiguous.

3. The questions refer to activities within the past six months to one year.

4. The respondents think the items merit a serious and thoughtful response.

5. Answering the questions does not threaten or embarrass the privacy of the respondent.

In order to increase validity of the questionnaires, questions adhered to the above guidelines through content and construct validity testing. The researcher collected data personally to protect students from threat or embarrassment in responding about the class or faculty in the survey.

An additional limitation is that the sample of students was drawn from a regional, non-random sample of schools. The sample lacks ethnic and gender diversity which contributes to the limited ability to generalize any findings. The results may not represent the true variation in learning environments in each of the institution and should be interpreted with caution. Failure to control for other confounding variables that may have an affect on student engagement such as preferred learning strategies and faculty teaching styles may affect the reliability of the findings. The items for the ALES tool were adapted from an existing dataset and developed by the researcher and reliability and validity in this sample has not been determined.

Chapter 4

Results

This chapter presents the results of the research study. First, the sample obtained
for this study is discussed. Next, the demographics of the sample are presented and last,
research questions 1-4 were answered through analysis of the data and use of descriptive
and inferential statistics. A summary of the data analysis is presented as the conclusion to
the chapter.

Sample

Baccalaureate students from two states, Indiana and Illinois, were selected from a
purposive sample of ten accredited schools of nursing. The schools were identified from
the respective state board of nursing websites, along with the dean or director and
contacted via letter to solicit participation. Five schools agreed to participate and faculty
from each school were identified by the dean or director and contacted by the researcher.
The five schools represented four public state/urban universities, and one private college.
Visits by the researcher to three schools in Indiana and two schools in Illinois resulted in
a final sample of 347 baccalaureate nursing students from nine different classrooms
completing all three instruments. Further demographic description of the sample follows.

Demographics

A total of 347 baccalaureate students completed the demographic instrument, of
which 221 (64%) were from three Indiana schools and 126 (36%) were from two Illinois
schools. A total of 311 (89.6%) respondents were female and 33 (9.5%) were male. The
majority of the respondents were between the ages of 19 and 29 years (88.4%) and were
white (90%). Three respondents did not provide their age, four did not provide their race.

Nearly half of the respondents were seniors (48.1%), one-third juniors (33.4%) and the remainder sophomores (18.4%). Respondents were asked to describe how many hours they worked for pay. Nearly three-fourths of the respondents (72%) reported working for pay, and over half (57%) reported working in a health related field. The majority of respondents reported having prior learning experience as high school diplomas (68.3%) and reported having a bachelor's degree in another field (13%). Since accelerated option students were excluded from the study, this result represents students in traditional baccalaureate programs who had received degrees in other fields. Demographic data is described in Table 3.

Table 3. Demographic and Academic Characteristics of Participants (n= 347)

Characteristic	n	%
Age (years)		
19-29	307	88.4
30-39	21	6.0
40 and above	16	4.6
Missing	3	.01
Gender		
Female	311	89.6
Male	33	9.5
Missing	3	0.9
Academic Level		
Sophomore	64	18.4
Junior	116	33.4
Senior	167	48.1

Table 3. Demographic and Academic Characteristics of Participants (n= 347) continued

Race/ethnicity	n	%
White	314	90.5
Multiracial	10	2.9
African American	5	1.4
Asian American-Pacific Islander	4	1.2
Hispanic	4	1.2
Other	6	1.7
Health related work hours		
None	92	26.5
1-7	61	17.6
8-15	93	26.8
16-21	60	17.3
More than 21	37	10.7
Missing/invalid	4	1.2

Data Analysis

Research Question One

To what extent do undergraduate baccalaureate nursing students in a sample of

selected Midwestern schools of nursing report engagement as measured by the Adapted

Engaged Learning Index (AELI)? To examine question one, mean subscale scores for

the Adapted Engaged Learning Index instrument and a total mean score for engagement

were obtained using descriptive statistics. Subscales measured by the tool included

meaningful processing (items 1-9), participation (items 10-12), and focused attention

(items 13-15). The results of the analysis are described in Table 4.

Table 4. Mean, Median, Standard Deviation and Skewness of Subscale Scores and Total Mean Engagement Score for Adapted Engaged Learning Index Tool (n=347)

Subscale	Mean	Median	SD	Skewness
Meaningful processing	4.37	4.44	.88	-.713
Participation	4.23	4.33	1.04	-.089
Focused Attention	3.51	3.67	1.38	-.084
Total				
Active Engaged Learning Index	4.17	4.27	.87	-.259

Respondents reported the highest mean level of engagement in the meaningful

processing subscale, defined as the cognitive processing of new information and

assimilation into personal relevance and pre-existing knowledge (Schreiner & Louis,

2006). Participation, representing students' involvement in active learning in the

classroom, was the next highest mean score. The lowest mean subscale score was focused

attention, or the respondent's cognitive attentiveness in class. The total mean engagement

scores corresponded to the "mildly agree" category (4.0) on the tool. Of note is the higher

mean score on the meaningful processing subscale, which is least able to be observed by

faculty as a discernable classroom behavior. In addition, the data is negatively skewed,

indicating a non-normal distribution with respondents tending to answer more positively

(agree/strongly agree) to the items. As a result, Levene's test of homogeneity was

performed with each ANOVA to determine group homogeneity. Frequency tables for

items 1-15 of the Adapted Engaged Learning Index appear in Table 5. Means and

standard deviations of each item are presented in Table 6.

Table 5. Frequency Table of Responses to Adapted Engaged Learning Index

Item	Strongly Disagree n (%)	Mod Disagree n (%)	Mildly Disagree n (%)	Mildly Agree n (%)	Mod Agree n (%)	Strongly Agree n (%)
1. I can usually find ways of applying what I'm learning…to something in my life	5(1.4)	9 (2.6)	13 (3.7)	87 (25.1)	151 (43.5)	82 (23.6)
2. I feel energized by the ideas I'm learning in this class	7(2.0)	16 (4.6)	26 (7.5)	135 (38.9)	132 (38.0)	30 (8.6)
3. I feel as though I am learning things that are worthwhile	4(1.2)	12 (3.5)	16 (4.6)	69 (19.9)	155 (44.7)	91 (26.2)
4. I am learning a lot in this class this semester	8(2.3)	13 (3.7)	27 (7.8)	96 (27.7)	110 (31.7)	93 (26.8)
5. I find myself thinking about what I'm learning in the class even when not in class	11(3.2)	28 (8.1)	60(17.3)	104 (30.0)	87 (25.1)	56 (16.1)
6. I often discuss with friends what I'm learning in this class.	13(3.7)	41(11.8)	59(17.0)	129 (34.6)	72 (20.7)	41 (11.8)
7. I usually think about how the topics discuss in class might be connected to previous learning	5(1.4)	13 (3.7)	28 (8.1)	109 (31.4)	136 (39.2)	56 (16.1)

Table 5. Frequency Table of Responses to Adapted Engaged Learning Index continued

8. When I am learning about a new idea, I think about how I might apply it in practical ways.	3 (0.9)	11 (3.2)	23 (6.6)	109(31.4)	130(37.5)	68(19.6)
9. Sometimes I get so interested in studying….I spend extra time trying to learn more about it.	21 (6.1)	55(15.9)	96 (27.7)	100(28.8)	48(13.8)	26 (7.5)
10. I regularly participate in class discussions	14 (4.0)	31 (8.9)	77 (22.2)	117(33.7)	66(19.0)	41(11.8)
11. I ask my professor questions during class if I don't understand	16 (4.6)	27 (7.8)	59 (17.0)	104(30.0)	80(23.1)	60(17.3)
12. Sometimes I am afraid to participate	123(35.4)	79(22.8)	74 (21.3)	49(14.1)	16 (4.6)	6 (1.7)
13. Often I find my mind wandering during class	27 (7.8)	50(14.4)	56 (16.1)	107(30.8)	61(17.6)	46(13.3)
14. In the last week, I've been bored in this class a lot.	42(12.1)	57(16.4)	82 (23.6)	80(23.1)	49(14.1)	37(10.7)
15. It's hard to pay attention in this class.	52(15.0)	62(17.9)	73 (21.0)	85(24.5)	40(11.5)	35(10.1)

Note: N= 347

Table 6. Means and Standard Deviations of AELI Items (n= 347)

Variable	Mean	SD
1. I can usually find ways of applying what I'm learning…to something in my life	4.78	1.03
2. I feel energized by the ideas I'm learning in this class	4.34	1.06
3. I feel as though I am learning things that are worthwhile	4.82	1.05
4. I am learning a lot in this class this semester	4.63	1.20
5. I find myself thinking about what I'm learning in the class even when not in class	4.16	1.31
6. I often discuss with friends what I'm learning in this class.	3.94	1.32
7. I usually think about how the topics discuss in class might be connected to previous learning	4.52	1.07
8. When I am learning about a new idea, I think about how I might apply it in practical ways.	4.65	1.11
10. I regularly participate in class discussions	3.92	1.29

Table 6. Means and Standard Deviations of AELI Items (n= 347) continued

Variable	M	SD
11. I ask my professor questions during class if I don't understand	4.13	1.37
12. Sometimes I am afraid to participate	4.65	1.31
13. Often I find my mind wandering during class	3.24	1.45
14. In the last week, I've been bored in this class a lot.	3.57	1.49
15. It's hard to pay attention in this class.	3.70	1.52

Research Question Two

To what extent do undergraduate baccalaureate nursing students in selected

Midwestern schools of nursing report the use of active learning strategies in classroom

learning environments as measured by the Active Learning Environments Scale?

To examine question two on the ALES, descriptive analyses of items 1- 11 were

conducted to determine student's perceptions of active learning in the classroom. Items

12 and 13 were analyzed to determine student's overall perceptions of active learning in

the classroom. A frequency table of results is presented in Table 7.

Table 7. Frequency Table of Responses to Active Learning Environments Scale

Responses:	None at all n (%)	One or two times n (%)	Three or more times n (%)
Developed presentations	176 (50.7)	156 (45.0)	15 (4.3)
Produced drafts of assignments[a]	154 (44.4)	163 (47.0)	29 (8.4)
Studied notes and handouts[a]	57 (16.4)	124 (35.7)	165(47.6)
Participated in role play[b]	239 (68.9)	79 (22.8)	25 (7.2)
Worked on assignments out of class	58 (16.7)	173 (49.9)	116(33.4)
Tutored other students[a]	295 (85.0)	38 (11.0)	12 (3.5)
Participated in case studies in class	75 (21.6)	168 (48.4)	104(30.0)
Participated in simulations[a]	128 (36.9)	91 (26.2)	127(36.6)
Discussed ideas with instructor[a]	104 (30.0)	172 (50.1)	70 20.2)

61

Table 7. Frequency Table of Responses to Active Learning Environments Scale continued

Responses:	None at all n (%)	One or two times n (%)	Three or more times n (%)
Reflected on what I learned	25 (7.2)	174(50.1)	148(42.7)
Received peer feedback	134 (38.6)	169(48.7)	44(12.7)

Item	Strongly Disagree (n%)	Disagree (n%)	Agree (n%)	Strongly Agree (n%)
Instructor developed environment that encouraged participation	15(4.3)	14(4.0)	169(48.7)	149(42.9)
I felt comfortable participating in active learning process[c]	12(3.5)	15(4.3)	178(51.3)	140(40.3)

Note: N= 347 [a]N=346 [b]N= 343 [c]N=345

Students reported the most frequently used active learning strategies as studying notes and handouts prior to class (47.6%), reflecting (42.7%), participating in simulations (36.6%) and working on assignments outside of class (33.4%). More than half of the students reported never engaging in tutoring (85%), role play (68.9%) and developing presentations (50.7%). Nearly half of the students reported engaging infrequently (1-2 times) in active learning activities of reflection (50.1%), discussing ideas with instructor (50.0%), and working on assignments out of class (50%), peer feedback (48.7%), producing drafts of assignments (47%), and developing presentations (45%). Of note is the frequency of use of individual, out of class activities such as studying notes, reflection and working on assignments out of class as active learning strategies as opposed to in class active learning activities. Active learning activities appear to occur more frequently outside of class in this sample.

The mean scores, standard deviations and item total correlations of the responses to the Active Learning Environments Scale (ALES), items 12-13 are reported in Table 8.

Table 8. Mean Item Scores and Correlations for Items 12 and 13 ALES
(1-Strongly agree, 4-Strongly disagree)

Response	M	SD	Item-total correlations	p
Instructor developed environment that encouraged participation	1.70	.74	.365	.000
I felt comfortable participating in the active learning process	1.71	.71	.351	.000

Note: n= 347   Cronbach alpha = .70

Students reported agreement with the statements that the instructor developed an

environment that encouraged participation and that they felt comfortable participating in

the active learning process. This is in contrast to the reported lower frequency with which

they engage in actual active learning experiences in the classroom as described in the

preceding paragraph.

Research Question Three

Do undergraduate baccalaureate nursing students in active, mixed or passive

learning environments as measured by the Active Learning Environments Tool differ on

reports of student engagement as measured by the Adapted Engaged Learning Index?

Examination of question three required conducting an ANOVA on the reports of

mean student engagement, as measured by the AELI, and the scores on the ALES

indicating an active, mixed or passive environment. Learning environments were

classified as active, mixed or passive based on a total possible range of scores for the

instrument, divided into three ranges. Total scores for the ALES instrument ranged from

11-33, a 22- point range. The total range was divided into thirds to establish cut scores for

the three possible learning environment types as follows: Passive environments were

scored as 11-18, mixed environments from 19-26 and active environments as 27-33.

Results of the ANOVA suggest that students reported total engagement scores varied significantly based on the type of reported active learning environment (F (2, 344) = 16.90, p = .000). See table 9.

Table 9. One-Way Analysis of Variance Summary for Type of Active Learning Environment and Engagement Scores

Source	df	SS	MS	F	Eta Squared
Between Groups	2	25.91	12.95	16.90***	.09
Within Groups	344	263.68	.77		
Total	346	289.59			

Note: ***p≤.001, **p≤.01, * p≤.05

Since significant results were obtained based on the use of the total engagement score, Scheffe's post hoc test of significance was used to determine the nature of the differences between types of learning environments. This analysis revealed that the students in passive learning groups mean engagement score (M= 3.68, SD= .93) was significantly lower than that of the mixed (M= 4.18, SD= .84) or active (M=4.54,SD= .85) learning groups. The effect size, eta squared, (η^2= .09) indicated a small portion of the variance in engagement score is attributable to the type of learning environment. While the active learning group's mean engagement score was higher than the mixed learning environment group's score, these groups did not differ significantly on their mean total engagement scores.

Further analysis revealed statistically significant differences on all three engagement scales between active, passive and mixed learning environments with active learning group mean scores higher in all three scales. The majority of students were classified in active (n=28) and mixed (n=202) learning environments. Of note, the

64

meaningful processing scale had the highest mean score, participation the next highest

and focused attention the lowest score across all three learning environments (Table 10).

Table 10. Mean, Standard Deviations and One-Way Analysis of Variance Comparison of Three Types of Learning Environments

Variable	Active (n= 28)		Mixed (n= 202)		Passive (n= 117)		ANOVA	
	M	SD	M	SD	M	SD	F (2, 346)	Eta Squared
Meaningful Processing	4.98	.73	4.50	.81	4.00	.90	20.85***	.108
Participation	4.84	.79	4.36	1.04	3.87	.96	14.64***	.078
Focused Attention	3.79	1.47	3.67	1.27	3.16	1.49	5.78**	.033
Mean engagement score	4.54	.85	4.18	.84	3.68	.93	16.90***	.089

Note: ***$p \leq .001$, **$p \leq .01$, * $p \leq .05$

Research Question Four

What is the relationship between demographic variables (age, gender, ethnicity,

academic classification, prior degree status), academic variables (hours and type of work

for pay, class size, reported term GPA, expected course grade) and reported student

engagement as measured by the Demographic Tool and Adapted Engaged Learning

Index?

Examination of question four required conducting independent sample t-tests on

demographic items (gender, race, age, number of hours and type of work, and prior

learning experience) and the mean total engagement score from the AELI. In addition,

one way ANOVA's were conducted on academic levels (sophomore, junior and senior),

expected course grade (A, B, C) and reported term GPA (A, B, C) and mean engagement

scores. The results of these analyses are summarized in the following paragraphs.

T-Test Analysis. In an independent samples t-test comparing the mean

engagement scores of students under age 25 and 25 years and older found a significant

difference between the means of the two groups (t(345) = -2.98, p= .003). The mean

engagement score of the students over 25 (M= 4.32, SD= 1.04) was significantly higher

than those 25 years and younger (M=3.96, SD= .87). Cohen's d for an independent

samples t-test was calculated to determine effect size of the relationship. The effect size

(*d*= .90) indicates a large portion of the variance in total engagement score is related to

age differences of those younger and older than 25 years. Further analysis revealed a

significantly large effect size (*d*= 1.00) of only one engagement scale, participation, in

students older than 25 years. These results are depicted in table 11.

Table 11. **Means, Standard Deviations and One-Way Analysis of Variance Comparing Engagement Scales and Student Age**

Variable	Less than 25 years		25 years or more		ANOVA	
	M	SD	M	SD	F (1, 345)	*d*
Meaningful Processing	4.35	.82	4.47	1.09	1.15	na
Participation	4.11	.99	4.72	1.08	21.16***	1.00
Focused Attention	3.44	1.34	3.77	1.49	3.30	na
Mean engagement score	3.96	.87	4.32	1.04	8.875**	0.90

Note: ***p≤.001, **p≤.01, * p≤.05

There was no significant difference found in mean engagement scores based on

gender (t(342) = .441, p=.659). The mean engagement score of females (M=4.03, SD =

.90) did not differ significantly from males (M=3.96, SD= 1.00). It is important to note

the small number of males in the sample (n=33) compared to females (n= 314). There

was also no significant difference in engagement scores based on race (white/non-white)

(t(345) = -1.08, p=.280), hours worked (less than or greater than 15 hours) (t(341) =

-.075, p=.941) or type of work (health related/non-health related) (t(315) p= -1.62, p=.106) and mean engagement scores. It is important to note that though the non-white student group was pooled, it reflects a small number of students in the sample (n =33). This small sample size could affect the ability to detect significant differences in sample mean engagement scores related to racial or ethnic differences.

There was no significant difference between engagement scores and number of hours worked. The mean engagement score of students working 15 hours or less (M= 4.02, SD= .88) did not differ from those working more than 15 hours (M= 4.03, SD= .97). It is interesting to note that students who did not work in health care (M= 4.13, SD =.84), had a slightly greater, though not significantly different, mean engagement score than their counterparts who worked in health care (M= 3.96, SD= .93).

There was no significant difference found on engagement scores between students who had prior degrees and those that did not (t(337) = -1. 663, p=.10). Mean engagement scores for those students with degrees (M= 4.212, SD = 1.06) were slightly higher, but not significantly different, than those without degrees (M= 3.98, SD= .86). See table 12 for the results of all corresponding t-tests.

Table 12. Independent T-Test Group Differences for Engagement Scores Based on Gender, Race/Ethnicity, Age, Number of Hours and Type of Work, and Prior Learning Experience

Variable (n)	M	SD	df	t	d
Gender			342	.441	
Male(33)	3.96	1.00			
Female(314)	4.03	.90			
Race/ethnicity			345	-1.08	
White (314)	4.02	.89			
Non-white(33)	4.20	1.11			
Age			345	-2.98**	.90
Under 25 years(276)	3.96	.87			
25 years or older(71)	4.32	1.04			
Number of hours worked			341	-.075	
15 hrs or less(246)	4.02	.88			
More than 15hrs(97)	4.03	.98			
Type of work			315	-1.621	
Healthcare(198)	3.96	.93			
No healthcare(119)	4.12	.84			
Prior learning			337	-1.663	
Degree(69)	4.21	1.06			
No degree(270)	3.98	.86			

Note: ***p≤.001, **p≤.01, * p≤.05

ANOVA Analysis. An analysis of variance was computed to compare mean engagement scores of students from each academic level (sophomore, junior, senior). A significant difference was found among levels. Scheffe's test of significance was used to determine the nature of the differences between the academic levels. This analysis revealed that junior students had significantly higher mean engagement scores (M= 4.37, SD= .84) than sophomore (m = 3.95, SD= .95) or senior students (M= 3.84, SD= .89). A test of effect size using eta squared (η^2= .068) revealed a small proportion of variance in engagement scores related to academic level. See table 13.

Table 13. One-Way Analysis of Variance for Academic Level (Soph, Junior, Senior) and Engagement Scores

Source	df	SS	MS	F	Eta Squared
Between Groups	2	19.57	9.785	12.47***	.068
Within Groups	344	270.01			
Total	346	289.59			

Note: ***p≤.001, **p≤.01, * p≤.05

Further analysis of engagement subscales by academic level indicated that students differed significantly on each engagement subscale by academic level, though the effect sizes were relatively small (table 14). Across all levels, student's meaningful processing score was highest in juniors and seniors, with participation next highest and focused engagement scale score the lowest.

Table 14. Mean, Standard Deviations and One-Way Analysis of Variance Comparison of Three Academic Levels

Variable	Sophomore		Junior		Senior		ANOVA	
	M	SD	M	SD	M	SD	F (2, 344)	Eta Squared
Meaningful Processing	4.24	1.00	4.77	.70	4.15	.87	19.75***	.103
Participation	4.25	1.04	4.42	1.04	4.10	1.02	3.29*	.019
Focused Attention	3.37	1.30	3.91	1.29	3.27	1.41	8.06***	.045
Mean engagement score	3.96	.95	4.37	.84	3.84	.89	12.47***	.068

Note: ***p≤.001, **p≤.01, * p≤.05

The mean scores of student engagement were compared to the reported expected course grade in the class in which the survey was taken, using a one way ANOVA. No significant difference was found (F(3, 343) = 1.284, p= .280). See table 15.

Table 15. One-Way Analysis of Variance for Expected Course Grade and Engagement Scores

Source	df	SS	MS	F
Between Groups	2	3.22	1.072	1.284
Within Groups	343	286.37	.835	
Total	346	289.59		

Note: ***p≤.001, **p≤.01, * p≤.05

Of note is that no student reported an expectation of a failing grade. Students expecting a grade of C reported a higher mean engagement score (M= 4.18, SD= .70) than students expecting an A (M=4.04, SD =.91) or B (M=4.00, SD=.95), though not significant in this sample. Again, a small number of students reported expecting to earn a "C" grade (n=22), affecting the ability to detect significance. Students who are earning a lower grade might be expected to be more engaged in active learning, in an effort to improve their grade outcome.

Analysis comparing student's mean engagement score and reported GPA for the term revealed a significant difference ($F_{(2, 339)}$ =- 4.503, p= .012). A test of effect size (η^2 = .026) revealed a small proportion of variance in engagement scores related to reported term GPA. See table 16. Scheffe's test of significance was used to determine the nature of the differences. The analysis revealed student's reporting a GPA in the "A" range had a significantly higher mean engagement score (m = 4.38, SD= .89, p=.018) than those earning a "B" average (M= 3.96, SD= .90, p=.018). There was no significant difference in mean engagement scores between students reporting a "C" GPA and either of the other two groups (table 17).

Table 16. One-Way Analysis of Variance for Reported GPA and Engagement Scores

Source	df	SS	MS	F	Eta Squared
Between Groups	2	7.21	3.61	4.503*	.026
Within Groups	339	271.55	.80		
Total	341	278.76			

Note: ***p≤.001, **p≤.01, * p≤.05

Table 17. Means, Standard Deviations, Significance of Reported Term GPAs (Sheffé's Test)

	Mean Engagement Scores	
Reported Term GPA	M	SD
A	4.38	.89
B	3.96	.90
C	4.22	.87

Note: ***p≤.001, **p≤.01, * p≤.05

Summary

The overall purpose of this research study was to determine the relationship between student engagement and the use of active learning strategies in the classroom. Several statistically significant relationships were found between engagement scores and classroom environments and demographic variables.

The data indicated that there is a significant, though small, difference between student engagement scores in classrooms using passive learning strategies than those in classrooms using active learning strategies. Students described engaging more frequently in meaningful processing activities that relate more to cognitive functions such as studying notes or handouts, reflecting on their learning and were less engaged in participation activities such as participating in case studies, role play, simulations, tutoring other students or developing presentations. Interestingly, the majority of students indicated that they agreed with the statement that instructors "developed and environment that encouraged participation" and that students "felt comfortable participating in active learning", however, the data reflected that most are not engaging in participation in the classroom on a frequent basis.

Demographic variables that had a significant relationship with engagement scores were age and academic level. The only academic variable that had a significant relationship with engagement was reported term GPA. The variable with the largest effect on engagement was age. Students over age 25 had significantly higher mean engagement scores than those under age 25. Junior students mean engagement scores were significantly higher than both sophomores and seniors with a small effect size. Students reporting a term GPA of "A" had significantly higher engagement scores than

those reporting a "B" GPA. Students reporting a "C" GPA did not differ significantly on their total mean engagement scores with either "B" or "A" students. There were no other statistically significant differences of demographic or academic variables and engagement scores.

Chapter 5

Discussion of Results

Summary

The intent of this non-experimental, ex-post facto study was to determine the relationships between student engagement, select demographic characteristics and active learning strategies used in nursing classrooms in select Midwestern baccalaureate schools. Institutional review board approval was obtained from Indiana University. Additional approval from the research sites was obtained through the directors or deans, as required. State approved baccalaureate schools of nursing in Indiana and Illinois were purposively selected to participate in this study. Criteria for inclusion of courses from the selected schools included courses offered to traditional baccalaureate nursing sophomore, junior or senior students in a face-to-face environment at least 80% of the time receiving academic credit and may include didactic or simulated learning laboratory experiences. Letters of inquiry to participate were sent to the deans or directors of ten schools in Indiana and Illinois that met the above criteria. Deans and directors were asked to identify faculty who may be willing to allow their classes to participate in the study. Three instruments were utilized for data collection. The Demographic Tool, The Adapted Engaged Learning Index (AELI) and The Active Learning Environments Scale (ALES). The instruments were pilot tested for reliability, validity and clarity of wording with students (n=107) from the researcher's employing university, prior to the study. For the study, the researcher visited five schools to administer the instruments in nine different classrooms, resulting in a study sample size of n=347 baccalaureate students.

The following research questions were proposed in this study:

1.　　To what extent do undergraduate baccalaureate nursing students in a sample of selected Midwestern schools of nursing report engagement as measured by the Adapted Engaged Learning Index (AELI)?

2.　　To what extent do undergraduate baccalaureate nursing students in selected Midwestern schools of nursing report the use of active learning strategies in classroom learning environments as measured by the Active Learning Environments Scale (ALES)?

3.　　Do undergraduate baccalaureate nursing students in active, mixed or passive learning environments as measured by the Active Learning Environments Scale differ on reports of student engagement as measured by the Adapted Engaged Learning Index?

4.　　What is the relationship between demographic variables (age, gender, ethnicity, academic classification, prior degree status), academic variables (hours and type of work for pay, class size, reported term GPA, expected course grade) and reported student engagement as measured by the Demographic Tool and Adapted Engaged Learning Index?

The results indicated that there was a significant, though small, positive difference between student engagement scores in classrooms using more active learning strategies than those in classrooms using more passive learning strategies. Variables that had a significant relationship with engagement scores were age, academic level and reported term GPA. The variable with the largest effect on engagement was age. The findings of the study are discussed in more detail in the following sections of this chapter.

This study yielded several significant findings. The following paragraphs discuss each of the research questions and the respective findings. An analysis of the results with the researcher's conclusions is also included.

Extent of Engagement Reported by Nursing Students

Overall mean engagement scores were higher than the midpoint of the AELI scale, with respondents reporting a mean engagement score of 4.04 out of 6.0 on a 6-point Likert scale. Engagement subscale means will be discussed in each of the following paragraphs.

Students reported the highest mean engagement scores in the subscale of meaningful processing (M= 4.37) reflecting a measurement of cognitive processing of new information and relation of this information to pre-existing material or knowledge (Schreiner & Louis, 2006). This cognitive processing function is described in the literature by several authors as the psychological energy or commitment expended by a student during the academic experience (Astin, 1993; Bean, 2005). Cognitive functions measured by the tool related to the amount of psychological energy students put forth in their learning. Items reflected their perceptions of their ability to make connections with previously learned material, the value placed on the learning process and content, thoughts about learning both in and out of the classroom, application of the material in practical ways, time spent thinking and discussing the content, and feelings about learning (Schreiner & Louis, 2006). Meaningful processing as a measure of engagement, though not readily observable, seems to relate to student perceptions of the quality of their learning. It is important to note that students may indeed be engaged cognitively in

the learning process without faculty awareness, and this engagement may be reflected in their perception of the quality and satisfaction of their learning experience. Academic variables of self-reported expected course grades and term GPA are discussed further in this section. Learning outcomes were not assessed in this study.

Students reported a slightly lower mean score in the participation subscale (M=4.23). This subscale represents students' active involvement and contributions during class discussions.This is consistent with at least one other study conducted by this researcher in a secondary analysis of NSSE (2003) data where nursing students and other health professions majors perceived themselves as less engaged in active and collaborative learning than their peers in education (p=.05) (Popkess & McDaniel, 2007). These participation activities are described in the literature as behavioral indicators of engagement or "involvement" and are directly proportional to the amount of learning that occurs (Astin, 1985). Therefore, it might be expected that if nursing students perceive themselves as less engaged in active learning in the classroom, they are not maximizing their learning potential.

The focused attention subscale had the lowest mean score overall (M=3.50) and statistically lower mean scores across two other variables (learning environment and academic level). This subscale represents a student's ability to pay attention in class. Student's ability to pay attention and focus on the learning process can affect the quality and degree of learning. The data reflected that students in passive learning environments, and senior students tended to have the lowest mean focused attention scores.

Extent of the Reported Use of Active Learning Strategies in the Classroom

Student respondents most frequently reported engaging in active learning activities that would likely occur outside of the classroom such as reflecting on learning, studying notes and handouts, and working on assignments outside of class. This is supported by the definition in the literature that active learning involves students taking more responsibility for their learning (Astin, 1994). Students who are using active learning strategies, therefore, would likely engage in activities beyond the classroom to enhance their learning. Over 60% of students identified participating in simulations at least one or two times in the semester.

Student respondents identified discussing ideas with instructors, receiving peer feedback, participating in case studies in class, and producing drafts of assignments to a lesser extent as active learning strategies used in the classrooms surveyed. This finding is consistent with this researcher's previous findings in a pilot study. Nursing students perceived themselves to be less engaged in active and collaborative learning than some peers in other majors, according to findings from the NSSE, 2003 data (Popkess and McDaniel, 2007).

Perhaps the most interesting finding was those active learning strategies reported as not used at all by the respondents. Tutoring other students, participating in role play, and developing presentations were cited by more than 50% of the students as never being used in the courses. In contrast, student respondents overwhelmingly answered positively that the instructor encouraged participation and that the students felt comfortable participating in active learning. There are several explanations for this apparent contrast in results. Students may have defined participation differently from the items on the

instrument. Administration of the instrument during weeks 7-8 in the semester may have not allowed for the implementation of some of the strategies to be practiced in the classroom. Classrooms were not randomly selected and therefore may not be a representative sample of all types of instruction. In addition, length of time spent in class was not included in the data collection of this sample. It is possible that this variable would impact the use of active learning strategies in the classroom.

It is important to remember that active learning is not the only method through which student engagement and subsequent learning gains are achieved. Instructor orientation, physical environment and type of content and course material lend themselves to the use of a variety of teaching strategies. In addition, instructors were not surveyed in this study and therefore only the student perceptions are reflected in the results.

The results of this study indicate that although students identified that instructors encouraged participation in the classroom, the most frequently used active learning strategies were those occurring outside the classroom. This finding supports research in higher education that reports learning occurs beyond the classroom.

Reports of Student Engagement as a Factor of Active, Mixed or Passive Learning Environments

The results of this study revealed a significantly lower mean engagement score in the passive learning groups than that of the mixed or active learning groups. However, there was no difference between the active and mixed learning groups mean engagement scores. The effect size of this variable on engagement was small, indicating that there are

other factors not assessed in this study that would contribute to the engagement score besides the type of active learning environment.

A secondary finding that the active learning and mixed learning group did not differ significantly on the mean engagement scores is not surprising. This could be attributed to the difficulty of determining significance between a narrow range of the categories (0, 1-2 and more than 3) and the arbitrary distinction of the score ranges on the ALES between active, passive and mixed environments. However, this finding indicates that even a small level of active learning experiences in the classroom mixed with passive learning strategies, could improve engagement in learners.

More detailed analysis of the subscales of the engagement variable revealed that students reported being engaged in meaningful processing to a greater degree than participation or paying attention in class. Since this type of engagement is difficult for faculty to observe, it is possible that students are engaged in learning without overt faculty awareness.

It appears that students rated instructors as supportive of an active learning environment, and rated themselves as comfortable participating in the active learning process, even though the majority of students are not engaging in active learning activities in the classroom. As a result, students perceive their instructors to be promoting active learning and participation in ways other than assessed by these instruments.

The Relationships Between Demographic and Academic Variables and Student

Engagement Scores

Significant results of t-tests performed on demographic variables of age are discussed first, followed by non-significant results of race/ethnicity, gender, number of hours and type of work and prior learning experience.

Student Characteristics. There was a significant difference between those over twenty-five and younger than twenty-five years of age on mean engagement scores with a large effect size (Lipsey, 1990). It was expected that a significant relationship would be demonstrated between students who are older and engagement. One explanation for this is that older students tend to receive better grades and are highly motivated. Further analysis indicated that the only subscale contributing to this finding was participation. Older students reported more participation in class than younger students. This is consistent with other research using the same engagement tool (Schreiner and Louis, 2006). The lack of significantly different means on the other subscales (meaningful participation, focused attention) might be attributed to the small sample size.

Males and females did not differ significantly on engagement scores. One explanation for this is the small number of males in this study (n=33) compared to females (n=311), making detection of significant results more challenging in this sample. This is however consistent with other findings in the literature (Schreiner and Louis, 2006).

The relationship between student race/ethnicity and engagement has been mixed in the literature (NSSE, 2005; Schreiner and Louis, 2006). In addition, different minority types tend to have unique needs when it comes to engaging in learning. The results of this

study did not demonstrate significant results among race and engagement. Again, the number of non-white students in the study (n=33) make detecting significance differences in this sample difficult. If minority students do have different needs related to engagement, the inability to measure the quality of engagement activities in this study may not have allowed for detecting differences among race.

Academic Variables. In contrast to the researcher's expectation, there was not a significant difference in engagement scores when comparing those students with prior degrees and those without. In the sample, 14.7% reported having received bachelor degrees or higher education. In order to have achieved a prior bachelor degree, students would be at least 22 years of age. Since students with prior degrees tend to be older, it would be reasonable to assume they may be more engaged in learning, as were the students over age 25 in this sample. Since this was not the case, other factors may be assumed to influence engagement beyond prior educational status.

Additionally, it was expected that students working full time would be less likely to engage in studying outside the classroom and students working in the health field might be more engaged in their studies. These results were not found. There were not significant findings between engagement scores and number of hours worked or type of work in this study.

Academic Classification. Junior students in this sample had significantly higher mean engagement scores than sophomores and seniors. Seniors had the lowest mean engagement score over all academic levels. One explanation is the potential for the variation in types of courses or instructors in the varying academic levels across the study sample, which was not controlled for in this design. Another explanation for this

deviation is that the survey was administered in mid-Spring semester, and senior students could have been more focused on their anticipated graduation and expectant role transition and not as engaged in learning activities as their sophomore and junior peers.

Engagement and Expected Course Grade/GPA

No student expected to receive a failing grade (D or F) in the sample of respondents. Therefore, the analysis compared the difference in engagement scores of students expecting A's, B's and C's in the courses in which they completed the instruments. Though no findings were significant, it is interesting to note that students expecting C grades reported the highest mean engagement scores. Students may have increased their engagement activities in an effort to improve their own grade. In contrast, nearly the opposite effect of term GPA and engagement was found in the final analysis. Students with the highest GPA ("A") were found to have significantly higher mean engagement scores than students reporting a "B" GPA. Self-motivation, learning goals and past experience in school are just a few of the variables that may have an affect on a student's course grade and subsequent GPA in college. Students who participated in the study may have been higher achievers, and those with lower grades may have chosen not to participate, which may have biased the sample towards students with "A" grades. A single measurement of engagement in one course may be more reflective of students reported "expected course grades" than their term GPA, but this was not able to be verified by the researcher.

Limitations

This study has several limitations. The first concerns the sample. The sample was non-random, and had limited representation from men and minorities, thus limiting generalizability of the findings as well as the ability to detect significance among small size groups. Future studies should include a more diverse representation of minorities through purposively sampling schools with higher enrollment levels of these student types. In addition, the study measured only self-reported findings, rather than objectively assessing GPA or other measures of learning. Other studies should consider using actual GPA, grades as well as standardized test scores (ACT/SAT, NCLEX scores) as a measure of student outcomes.

Faculty who were asked and offered their classrooms to participate in this study may have self-selected because of their own use of active learning in the classroom. This self-selection may have resulted in a biased sample of students in active learning or mixed learning classrooms, which may not be representative of the population. Future studies should include a random sample of faculty and classrooms from various locations to control for this potential bias.

Timing of this study was mid-semester, in order to allow for students to be enrolled for adequate periods to assess their classroom activities. However, in some cases, this may have been too early in the course to have been able to assess the activities. In addition, some classrooms were involved in tests or test reviews and one had endured a "power outage" immediately before the researcher's arrival, which could have influenced the student responses more negatively. Due to time and cost constraints, the researcher

was only able to make one visit per campus and was therefore subjected to the faculty and students available during that timeframe.

Faculty perceptions of active learning strategies and teaching styles were not assessed in this study. Therefore, further validation of what was actually occurring in the classroom environment related to the use of active learning strategies is not possible. The use of a triangulation method of faculty and student assessment as well as researcher observations in the classroom could provide further validation of the use of active learning strategies and its relationship to engagement in the classroom.

Further psychometric testing of the ALES tool is warranted to establish construct validity using principal component analysis. Finally, this study failed to control for confounding variables such as instructor teaching styles, course type, school characteristics, and student learning preferences that may have an effect on student engagement in the classroom and the reliability of these findings.

Finally, class size was intended to be collected at the point of distribution of the instruments. In several of the classrooms it was not possible to determine class size, as several groups of students were given the instrument in a hallway after class was dismissed. Therefore, data was not entered for all of the classrooms and this variable was not able to be assessed for its possible relationship to engagement.

Implications for Educational Practice

One purpose of this study was to determine the extent of nursing student engagement in active learning environments to support the development of teaching strategies that increase student engagement and improve student outcomes. As a result of these findings, it would be reasonable to assume that increasing the quantity of active

learning in the classroom would positively impact student engagement. In addition, even incremental increases in active learning activities such as case studies, peer tutoring and role playing may increase student engagement and improve student outcomes.

The subscales of engagement help to provide a more comprehensive view of engagement. More traditional behavioral indicators of engagement such as participation and paying attention do not paint the whole picture of student engagement in the classroom. Students clearly engage in learning outside of the classroom through meaningful processing such as reflection and studying and this should be recognized and encouraged.

Above all, engagement does not appear to be related to gender, race/ethnicity and other demographic variables over which students feel that they have little or no control, such as work hours and prior educational degrees. Older students who tend to feel more comfortable asking questions and participating in class should be encouraged to serve as role models and mentors for those younger and less comfortable participating. Faculty should monitor for these behaviors and include opportunities for all students to participate and ask questions, using alternative mediums such as online or email discussions.

Conclusion

This study examined the relationships between specific demographic variables, academic variables, types of active learning environments and student engagement as measured by students self reporting on three instruments. The literature in nursing and higher education supports that active learning promotes student engagement and

subsequently leads to improved student outcomes (Astin, 1984; Kuh, 2005; NSSE, 2005; Schreiner and Louis, 2006). The results of this study supported these findings.

The data indicated that there is a significant, though small, difference between student engagement scores in classrooms using passive learning strategies than those in classrooms using active learning strategies. Students described engaging more frequently in meaningful processing activities that relate more to cognitive functions such as studying notes or handouts, reflecting on their learning and were less engaged in participation activities such as participating in case studies, role play, simulations, tutoring other students or developing presentations. The majority of students indicated that they agreed with the statement that instructors "developed and environment that encouraged participation" and that students "felt comfortable participating in active learning", however, the data reflected that most are not engaging in participation in the classroom on a frequent basis.

Age and academic level were the only demographic variables that demonstrated significant relationships with engagement. The variable with the largest effect size was age. Students over age 25 had significantly higher mean engagement scores than their peers under age 25. Junior students had higher mean engagement scores than both sophomores and seniors. The only academic variable that demonstrated a significant relationship with engagement was the reported term GPA. Those students reporting high GPA's (A) had higher mean engagement scores than either B or C average students.

In summary, student engagement in the classroom is influenced by a variety of academic and demographic factors as well as the use of active learning strategies in the classroom. Students involved in more active learning experiences both in and out of the

classroom demonstrate higher engagement scores on the AELI instrument. Older students tended to have higher engagement scores than their younger counterparts. However, junior level students tended to be more engaged than their senior or sophomore counterparts. Junior students may have demonstrated higher engagement scores most likely due to the timing of the survey administration in the Spring, when seniors were likely less focused on classroom behaviors. Most importantly, faculty have the opportunity to influence engagement in students through the use of active teaching strategies that promote engagement through cognitive processing, focused attention and participation activities.

Recommendations for Future Research

One variable that was not measured in this study was the instructor's level of engagement in the classroom as well as their perceptions of the use of active learning strategies. A study to identify and measure faculty behaviors that promote engagement in the classroom would allow for comparison of student and instructor perceptions and increase the validity of the measurement of active learning environments.

Further study of the type of active learning and its relationship to engagement, would enhance the understanding of the difference between various levels of active learning in the classroom. Perhaps, as suggested by this study, there are qualitative differences in active learning occurring in the classroom that impact engagement, versus the amount of activities or times they occur. Use of a triangulated method of survey (student and faculty), classroom observation and focus groups to assess the use of active learning would provide the ability to compare and validate research findings.

Increased sample size and randomnization of subjects may improve the reliability of this study. Repeating this study using a national, random sample of schools would improve the diversity of subjects, allowing for more detailed analysis of engagement based on ethnic or racial background which would increase the generalizability of any findings.

Astin (1984) described psychological, cognitive, behavioral and affective outcomes related to the level of involvement of students in college. Further description and measurement of these outcomes such as NCLEX pass rates, student career GPA, career satisfaction would provide a more complete understanding of how engagement through active learning impacts students in college and beyond.

Appendices

Appendix A Demographic Tool

Instructions: This questionnaire is designed to gather information about you as a student in this class. Your replies are anonymous and will be compiled as a group. No individual student identifiers will be made public. Completion of the questionnaire will be deemed consent to participate in the study.

Please provide your answer in the blank.

1. What is your age? _____

2. At the end of last term, what was your Grade Point Average at this institution?

(A= 4.0, B=3.0, C= 2.0)? _____

3. At this time, what is your expected letter grade for this course: _____
 (A B C D F)

Please mark only one box with an "X" next to the response the best answers the question for you.

4. What is your gender:
☐ Female
☐ Male

5. Please indicate your race: (select multiethnic if you belong to more than one race)
☐ American Indian/Alaskan Native
☐ African American /Black
☐ Asian American/Pacific Islander
☐ Hispanic Origin
☐ White
☐ Multiethnic

6. What is your current classification in college based on years of attendance?
☐ Sophomore (2 years)
☐ Junior (3 years)
☐ Senior (4 years or more)

7. On average, how many hours per week do you spend working for pay?
☐ 0
☐ 1-7 hours
☐ 8-15 hours
☐ 16-21 hours
☐ More than 21 hours

8. Is your work associated with health care or nursing?
☐ Yes
☐ No

9. Other than your current college experience, please indicate your prior learning experience to date:
☐ 1= Graduated from high school
☐ 2=Attended college but did not complete degree
☐ 3=Completed an Associate's degree in field other than nursing (A.A., A.S., etc.)
☐ 4=Completed a Bachelor's degree (B.A.,B.S., etc.)
☐ 5=Completed a Master's degree (M.A.,M.S., etc.)
☐ 6=Completed a Doctoral degree (Ph.D., J.D , M.D.)

This questionnaire is a series of statements about activities you may have participated in during this course. You may have participated in some, all or none of these behaviors. There is no right or wrong answer. Please indicate as best as you can how many times you have participated in each of the following behaviors **in this course as of right now. Your replies are anonymous and will be compiled as a group. No individual student identifiers will be made public. Completion of the questionnaire will be deemed consent.**

Since this course began, how **frequently** have you done each of the following **in this course**? **As a learner:** *Select only one response per question.*	Three or more times	One or two times	None/Not at all
1. I developed a presentation to give to other students in this class	○	○	○
2. I produced one or more drafts of an assignment for this course before producing the final product	○	○	○
3. I studied notes, handouts and/or readings prior to coming to class sessions.	○	○	○
4. I participated in role playing in the course.	○	○	○
5. I worked on assignments with other students in or out of this class.	○	○	○
6. I tutored other students in or out of this class.	○	○	○
7. I participated in case studies or problem-solving exercises in this class.	○	○	○
8. I participated in human patient or "hands on" simulations for this class.	○	○	○
9. I discussed ideas and concepts taught in this course with instructor.	○	○	○
10. I reflected on what I am learning in this class.	○	○	○
11. I received feedback from my peers about my work.	○	○	○

Indicate how strongly you **agree** or **disagree** with the following statements. *Select only one response per question.*	Strongly Agree	Agree	Dis- agree	Strongly Disagree
12. The instructor developed a learning environment in which the students were encouraged to participate in class	1	2	3	4
13. As a learner, I felt comfortable participating in the active learning process.	1	2	3	4

Appendix C Adapted Engaged Learning Index

This questionnaire is a series of statements about activities and beliefs you may have about this course. You may agree with some of the statements and disagree with others. There are no right or wrong answers. Please indicate your feelings about each of these statements **related to this course as of right now**. Please be truthful and describe your beliefs or behaviors as they are, not as you want them to be. **Your replies are anonymous and will be compiled as a group. No individual identifiers will be made public. Completion of the questionnaire will be deemed as consent to participate in the study.**

Indicate how strongly you *agree* or *disagree* with each of the following statements : *Select only one response per question*	Srtongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	
1. I can usually find ways of applying what I'm learning in this class to something else in my life.	1	2	3	4	5	6
2. I feel energized by the ideas that I am learning in this class.	1	2	3	4	5	6
3. I feel as though I am learning things in this class that are worthwhile to me as a person.	1	2	3	4	5	6
4. I am learning a lot in this class this semester.	1	2	3	4	5	6
5. I find myself thinking about what I'm learning in this class even when I'm not in class.	1	2	3	4	5	6
6. I often discuss with my friends what I'm learning in this class.	1	2	3	4	5	6
7. I usually think about how the topics being discussed in this class might be connected to things I have learned in previous courses.	1	2	3	4	5	6
8. When I am learning about a new idea in this class, I think about how I might apply it in practical ways.	1	2	3	4	5	6
9. Sometimes I get so interested in something I'm studying in this class that I spend extra time trying to learn more about it.	1	2	3	4	5	6
10. I regularly participate in class discussions in this class	1	2	3	4	5	6
11. I ask my professor questions during class if I do not understand.	1	2	3	4	5	6
12. Sometimes I am afraid to participate in this class.	1	2	3	4	5	6
13. Often I find my mind wandering during this class.	1	2	3	4	5	6
14. In the last week, I've been bored in this class a lot of the time.	1	2	3	4	5	6
15. It's hard to pay attention in this class.	1	2	3	4	5	6

Item	M	SD	Inter-item correlation
1. I developed a presentation to give to other students in this class.	0.95	1.28	.625
2. I produced one or more drafts of an assignment for this course before producing the final product.	1.87	1.15	.552
3. I studied notes, handouts and/or readings prior to coming to class sessions.	2.72	1.00	.623
4. I participated in role playing in the course.	1.22	1.61	.493
5. I worked on assignments with other students in or out of this class.	2.06	1.34	.542
6. I tutored other students in or out of this class.	0.48	1.18	.638
7. I participated in case studies or problem-solving exercises in this class.	2.36	1.22	.611
8. I participated in human patient or "hands on" simulations for this class.	1.30	1.54	.562
9. I discussed ideas and concepts taught in this course with instructor.	1.70	1.34	.626
10. I reflected on what I am learning in this class.	2.40	1.22	.523
11. I received feedback from my peers about my work.	1.76	1.25	.609
12. The instructor developed a learning environment in which the students were encouraged to participate in class.	1.53	1.08	.602
13. As a learner, I felt comfortable participating in the active learning process.	1.75	1.08	.565

Note: coefficient alpha (α)= .89

Item	M	SD	Inter-item correlation
1. I can usually find ways of applying what I'm learning in this class to something else in my life.	4.95	1.12	.58
2. I feel energized by the ideas that I am learning in this class.	4.50	1.14	.76
3. I feel as though I am learning things in this class that are worthwhile to me as a person.	5.00	1.09	.71
4. I am learning a lot in this class this semester.	5.15	.99	.61
5. I find myself thinking about what I'm learning in this class even when I'm not in class.	4.24	1.41	.72
6. I often discuss with my friends what I'm learning in this class.	4.00	1.36	.64
7. I usually think about how the topics being discussed in this class might be connected to things I have learned in previous courses.	4.77	.97	.68
8. When I am learning about a new idea in this class, I think about how I might apply it in practical ways.	4.64	.99	.58
9. Sometimes I get so interested in something I'm studying in this class that I spend extra time trying to learn more about it.	3.45	1.39	.58
10. I regularly participate in class discussions in this class.	4.16	1.26	.24
11. I ask my professor questions during class if I do not understand.	4.39	1.34	.28
12. Sometimes I am afraid to participate in this class.	4.83	1.35	.09
13. Often I find my mind wandering during this class.	3.42	1.32	.55
14. In the last week, I've been bored in this class a lot of the time.	3.86	1.32	.64
15. It's hard to pay attention in this class.	4.14	1.33	.66

Note: coefficient alpha (α)= .88

First name and last name
School
Street address
City or town, State, Zipcode

Dear title and last name:

As part of the Doctorate of Philosophy in Nursing requirements of Indiana University, I am studying student engagement in relation to different learning environments in Schools of Nursing. I am interested in surveying sophomore, junior and senior pre-licensure baccalaureate students in non-clinical laboratory and classroom learning environments. I plan to begin data collection in mid-October, 2008.

The purpose of this letter is to ask you to identify courses and faculty at your institution who may be willing to participate in the research study I am conducting for my dissertation. In addition to meeting my own educational goals, I believe the findings of the study should benefit all nursing students and faculty.

The survey data will be kept strictly anonymous and confidential. This means that nursing schools and student/faculty names will not be identifiable. Code numbers on the top of each survey will allow me to track the number of responders from each school and type of classroom environment. The code sheet will be locked in the researcher's workplace file drawer and the data destroyed two years after the research is completed. Furthermore, study results will be presented in an aggregate form only. I have received approval from the Indiana University Institutional Review Board and have the entire document available for your review.

I will be contacting you approximately 5 working days from the date of this letter to establish your willingness to participate. I hope you will be able to identify **six courses and corresponding faculty** that I may contact to establish their willingness to allow me to survey their students.

Please feel free to contact me with any questions.

Ann M. Popkess RN MSN
apopkes@siue.edu

Appendix G Faculty Cover Letter

First name and last name
School
Street address
City or town, State, Zipcode

Dear title and last name:

As part of the Doctorate of Philosophy in Nursing requirements of Indiana University, I am studying student engagement in relation to different learning environments in Schools of Nursing. I am interested in surveying sophomore, junior and senior pre-licensure baccalaureate students in non-clinical laboratory and classroom learning environments. I plan to begin data collection in mid-October, 2008.

Your Dean/director has identified your course as one that meets the criteria for this study. The purpose of this letter is to request that you allow me to schedule time to attend your class after mid-October and survey your students. I estimate I will need 15 minutes of class time.

The survey data will be kept strictly anonymous and confidential. This means that nursing schools and student/faculty names will not be identifiable. Code numbers on the top of each survey will allow me to track the number of responders from each school and type of classroom environment. The code sheet will be locked in the researcher's workplace file drawer and the data destroyed two years after the research is completed. Furthermore, study results will be presented in an aggregate form only. I have received approval from the Indiana University Institutional Review Board and have the entire document available for your review.

Your participation in this research is completely voluntary, but essential to our knowledge of teaching and learning in nursing education. If you have any questions or would like a copy of the findings of the research, please contact me using the information provided below. I thank you for your time and consideration in advance.

I will be **contacting you in approximately 7 business days** from the date of this letter to discuss your willingness to participate and scheduling arrangements.

Sincerely,

Ann M. Popkess RN MSN
apopkes@siue.edu
618-650-3992

Appendix H Student Cover letter

Dear Student:

As part of the Doctor of Philosophy in Nursing for Indiana University, I am conducting a research study on student engagement in relation to different learning environments in Schools of Nursing.

If you choose to participate, you will be asked to fill out three questionnaires that will be provided to you attached to this form. The survey data will be kept strictly anonymous and confidential. This means that nursing schools and student/faculty will not be individually identifiable. No individual student data will be shared with faculty or schools. Code numbers on the top of each survey will allow me to track the number of responders from each school and type of classroom environment. The code sheet will be locked in the researcher's workplace file drawer and the data destroyed two years after the research is completed. Furthermore, study results will be presented in an aggregate form only. I have received approval from the Indiana University Institutional Review Board and have the entire document available for your review.

The risks of this research study to you are minimal. I estimate it will take about 10 minutes to complete the surveys. If you choose not to participate, you may turn in a blank copy of this tool without any consequences.

If you choose to participate, the data your provide in this research study is essential to extending knowledge of teaching and learning in nursing education. I expect that nursing education faculty will be able to use my research to make more effective decisions about educating nursing students.

Your participation in this study is voluntary. You can stop participating at any time. Refusing to participate or incomplete survey completion will not result in any penalty of grade or other benefits to which you are entitled in this class. Your instructor will not be involved in any of the data collection procedures.

If you have any questions or would like a copy of the findings of the research, please contact me using the information provided below. I thank you for your time and consideration in advance.

Sincerely,

Ann M Popkess
Principal Investigator
apopkes@siue.edu
618-650-3992

References

AACN. (2007a). Nursing Faculty Shortage Fact Sheet. Retrieved December 19, 2007,

from http://www.aacn.nche.edu/Media/FactSheets/FacultyShortage.htm

AACN. (2007b). Nursing Shortage Fact Sheet. Retrieved October 3, 2007, from

www.aacn.nche.edu

AACN. (2008). *2007-2008 Enrollment and graduation in baccalaureate and graduate

programs in nursing.*

Aber, C., & Arathuzik, D. (1996). Factors associated with student success in a

baccalaureate nursing program within an urban public university. *Journal of

Nursing Education, 35*(6), 285-288.

Ahlfeldt, S., Mehta, S., & Sellnow, T. (2005). Measurement and analysis of student

engagement in university classes where varying levels of PBL methods of

instruction are in use. *Higher Education Research and Development, 24*(1), 5-20.

Arathuzik, D., & Aber, C. (1998). Factors associated with National Council Licensure

exam registered nurse success. *Journal of Professional Nursing, 14*(2), 119-126.

Astin, A. W. (1984). Student involvement: A developmental theory for higher education.

Journal of College Student Development, 24, 297-308.

Astin, A. W. (1985). *Achieving Educational Excellence*. San Francisco: Jossey-Bass.

Astin, A. W. (1993). What matters in college? *Liberal Education, 79*(4).

Astin, A. W. (1994). *What matters in college: Four critical years revisited*. San

Francisco: Jossey-Bass Publishers.

Astin, A. W. (1996). Involvement in learning revisited: Lessons we have learned. *Journal

of College Student Development, 37*, 123-133.

Barr, R. B., & Tagg, J. (1995). From teaching to learning: A new paradigm for
undergraduate education. *Change, 27*, 12-25.

Bean, J. P. (2005). *A conceptual model of college student engagement.* Paper presented at
the Association for the Study of Higher Education, Philadelphia, PA.

Beers, G. W., & Bowden, S. (2005). The effect of teaching method on long-term
knowledge retention. *Journal of Nursing Education, 44*(11), 511-514.

Berg, C. L., & Lindseth, G. (2004). Students' perspectives of effective and ineffective
nursing instructors. *Journal of nursing education, 43*(12), 565-568.

Berger, J. B., & Milem, J. F. (1999). The role of student involvement and perceptions of
integration in a causal model of student persistence. *Research in Higher
Education, 40*(6), 641-662.

Bonwell, C. C., & Eison, J. A. (1991). *Active Learning: Creating excitement in the
classroom* Washington, DC: The George Washington University.

Braxton, J. M., Milem, J. F., & Sullivan, A. S. (2000). The influence of active learning on
the college student departure process: Toward a revision of Tinto's theory. *The
Journal of Higher Education, 71*(5), 569-590.

Campbell, A. R., & Dickson, C. J. (1996). Predicting student success: A 10-year review
using integrative review and meta-analysis. *Journal Of Professional Nursing,
12*(1), 47-59.

Carini, R. M., & Kuh. (2003). Tomorrow's teachers: Do they engage in the right things
during college? *Phi Delta Kappan*, 391-398.

Carini, R. M., Kuh, & Klein, S. P. (2004). Student engagement and student learning: Testing the linkages. Unpublished Paper presented at the meeting of the American Educational Research Association.

Carnell, E. (2007). Conceptions of effective teaching in higher education: extending the boundaries. *Teaching in Higher Education, 12*(1), 25-40.

Casem, M. L. (2006). Active learning is not enough. *Journal of College Science Teaching, 35*(6), 52-59.

Chickering, A. W., & Gamson, Z. F. (1987). Seven principles for good practice in undergraduate education. *AAHE bulletin, 39*(7), 3-7.

Childs, G., Jones, R., Nugent, K. E., & Cook, P. (2004). Retention of African-American students in baccalaureate nursing programs: Are we doing enough? *Journal Of Professional Nursing, 20*(2), 129-133.

Conti, G. J. (2004). Adult Learning Methods: A guide for effective instruction. In M. W. Galbraith (Ed.), (Third ed.). Malabar, FL: Krieger Publishing Company.

Crow, C. S., Handley, M., Morrison, R. S., & Shelton, M. M. (2004). Requirements and interventions used by BSN programs to promote and predict NCLEX -RN success: A national study. *Journal of Professional Nursing, 20*(3), 174-186.

DeNisi, A. S., & Shaw, J. B. (1977). Investigation of the uses of self-reports of abilities. *Journal of Applied Psychology, 62*, 641-644.

DeVellis, R. F. (2003). *Scale development: Theory and application* (2nd ed. Vol. 26). Thousand Oaks, CA: Sage.

Dillman, D. A. (2000). *Mail and internet surveys: The tailored design method* (Second ed.). New York: John Wiley and Sons.

Feingold, C. E., Cobb, M. D., Hernandez Givens, R., Arnold, J., Joslin, S., & Seller, J. (2008). Student perceptions of team learning in nursing education. *Journal of Nursing Education, 47*(5), 214-222.

Figueredo, A. J., Ferketich, S. L., & Knapp, T. R. (1991). More on MTMM: The role of confirmatory factor analysis. *Research in Nursing and Health, 14*(387-391).

Gonyea, R. M. (2005). *The relationship between student engagement and selected desirable undergraduate outcomes in the first year of college.* Indiana University, Bloomington, IN.

Grant, J. S., & Davis, L. L. (1997). Selection and use of content experts for instruments development. *Research in Nursing and Health, 20*, 269-274.

Handelsman, M. M., Briggs, W. L., Sullivan, N., & Towler, A. (2005). A measure of college student course engagement. *The Journal of Educational Research, 98*(3), 184-191.

Harper, S. R., Carini, R. M., Bridges, B. K., & Hayek, J. C. (2005). Gender differences in student engagement among African American undergraduates at historically black colleges and universities. *Journal of College Student Development 43*(3), 271-284.

Health Professions Education: A bridge to quality. (2003). Washington, D.C.: Institute of Medicine .

Jeffreys, M. R. (2004). *Nursing student retention: Understanding the process and making a difference*. New York, NY: Springer Publishing Co.

Kelly, P. A., Haidet, P., Schneider, V., Searle, N., Seidel, C. L., & Richards, B. (2005). A comparison of in-class learner engagement across lecture, problem-based learning and team learning using the STROBE classroom observation tool. *Teaching and Learning in Medicine, 17*(2), 112-118.

Kember, D., & Gow, L. (1994). Orientations to teaching and their effect on the quality of student learning. *The Journal of Higher Education, 65*(1), 58-74.

Kerlinger, F. N., & Lee, H. B. (2000). *Foundations of Behavioral Research* (4th ed.): Wadsworth: Thomson-Learning.

Kuh, G. (2002). The national survey of student engagement: Conceptual framework and overview of psychometric properties. Indiana University Center for Postsecondary Research and Planning.

Kuh, G. (2003). What we're learning about student engagement and NSSE. *Change, 35*(2), 24-32.

Kuh, G., Kinzie, J., Buckley, J., Bridges, B., & Hayek, J. (2006). *What matters to student success: A review of the literature*: National Postsecondary Education Cooperative.

Kuh, G., Kinzie, J., Buckley, J., Bridges, B., & Hayek, J. (2007). *Piecing together the student success puzzle: Research, propositions and recommendations* (Vol. 32).

Kuh, G., Kinzie, J., Cruce, T., Shoup, R., & Gonyea, R. (2007). *Connecting the Dots: Multi-faceted analyses of the relationships between student engagement results from the NSSE, and the institutional practices and conditions that foster student success*. Bloomington, IN: Indiana University Center for Postsecondary Research.

Kuh, G., Kinzie, J., Schuh, J. H., Whitt, E. J., & Associates. (2005). *Student success in college: Creating conditions that matter*. San Francisco: Jossey-Bass.

Kuh,G., Pace, C. R., & Vesper, N. (1997). The development of process indicators to estimate student gains associated with good practices in undergraduate education. *Research in Higher Education, 38*(4), 435-453.

Kuh, G. D. (2003). What we're learning about student engagement and NSSE. *Change, 35*(2), 24-32.

Kuncel, N. R., Crede, M., & Thomas, L. (2005). The validity of self-reported grade point averages, class ranks and test scores: A meta-analysis and review of the literature. *Review of Educational Research, 75*(1), 63-82.

Lipsey, M. W. (1990). *Design Sensitivity: Statistical power for experimental research*. Newbury Park, CA: Sage Publications.

Lundberg, C. A., Schreiner, L. A., Hovaguimian, K. D., & Miller, S. S. (2007). First-generation status and student race/ethnicity as distinct predictors of student involvement in learning. *NASPA, 44*(1), 57-67.

Lynn, M. R. (1986). Determination and quantification of content validity. *Nursing Research, 35*(6), 382-385.

McKeachie, W. J. (2002). *McKeachie's Teaching Tips: Strategies, research and theory for college and university teachers* (11th ed.). Boston, MA: Houghton-Mifflin.

McKeachie, W. J., Pintrich, P. A., Yi-Guang, L., & Smith, D. A. F. (1986). *Teaching and learning in the college classroom: A review of the research literature*. Unpublished Eric Document. Regents of the University of Michigan.

McMillan, J. H., & Schumacher, S. (2001). *Research in education : A conceptual introduction* (5th ed.). New York: Longman.

Michael, J. (2006). Where's the evidence that active learning works? *Advances in Physiology Education, 30*, 159-167.

Michael, J. (2007). Faculty perception about barriers to active learning. *College Teaching, 55*(2), 42-47.

National Survey of Student Engagement. (2005). Retrieved December 22, 2005, from http://www.indiana.edu/~nsse/

National Survey of Student Engagement. (2007). Retrieved June 6, 2008, from http://www.indiana.edu/~nsse/

O'Brien, C., & Shedd, J. (2001). Getting Through College: Voices of low-income and minority students in New England. Washington, DC: Institute of Higher Education Policy.

O'Malley, K. J., Moran, B. J., Haidet, P., Seidel, C. L., Schneider, V., Morgan, R.O., et al. (2003). Validation of an observation instrument for measuring student engagement in health professions settings. *Evaluation and the Health Professions, 26*(1), 86-103.

Ofori, R., & Charlton, J. P. (2002). A path model of factors influencing the academic performance of nursing students. *Journal of Advanced Nursing, 38*(5), 507-515.

Pace, C. R. (1984). *Measuring the quality of college students experiences: An account of the development and use of the College Student Experiences Questionnaire*. Los Angeles: Higher Education Research Institute, Graduate School of Education, University of California.

Pascarella, E. T. (1985). College environmental influences on learning and cognitive

    development: A critical review and synthesis. In J. Smart (Ed.), *Higher*

    Education: Handbook of theory and research (Vol. 1, pp. 1-61). New York:

    Agathon.

Pascarella, E. T., & Terenzini, P. T. (2005). *How college affects students: A third decade*

    of research. San Francisco: Jossey-Bass.

Patterson Johnson, J., & Mighten, A. (2005). A comparison of teaching strategies:

    Lecture notes combined with structured group discussion versus lecture only.

    Journal of Nursing Education, 44(7), 319-322.

Peter, C. (2005). Learning-Whose responsibility is it? *Nurse Educator, 30*(4), 159-165.

Pike, G. (1995). The relationship between self reports of college experiences and

    achievement test scores. *Research in Higher Education, 36*, 1-21.

Pike, G., & Killian, T. (2001). Reported gains in student learning: Do academic

    disciplines make a difference? *Research in Higher Education, 42*, 429-454.

Pike, G., & Kuh. (2005). First and second- generation college students: A comparison of

    their engagement and intellectual development. *The Journal of Higher Education,*

    76(3), 276-300.

Popkess, A., & McDaniel, A. M. (2007). Baccalaureate nursing student's responses to the

    National Survey of Student Engagement. Unpublished Manuscript. Manuscript

    submitted for publication.

Pugsley, K. E., & Clayton, L. H. (2003). Traditional lecture or experiential learning:

    Changing student attitudes. *Journal of Nursing Education, 42*(11), 520-523.

Rassool, G. H., & Rawaf, S. (2007). Learning style preferences of undergraduate nursing students. *Nursing Standard, 21*(32), 35-41.

Rowles, C. J., & Brigham, C. (2005). Strategies to promote critical thinking and active learning. In D. M. Billings & J. A. Halstead (Eds.), *Teaching in Nursing: A guide for faculty* (Vol. 2nd Edition). St. Louis, MO: Elsevier.

Schreiner, L. A., & Louis, M. C. (2006). *Measuring engaged learning in college students: Beyond the borders of NSSE*. Paper presented at the Association for the Study of Higher Education.

Schwitzer, A. M., Griffin, O. T., Ancis, J. R., & Thomas, C. (1999). Social adjustment experiences of African American college students. *Journal of Counseling and Development, 77*, 189-197.

Seldomridge, L. A., & DiBartolo, M. C. (2007). The changing face of accelerated, second Bachelor's degree students. *Nurse Educator, 32*(6), 240-245.

Strage, A., Baba, Y., Millner, S., Scharberg, M., Walker, E., Williamson, R., et al. (2002). What every student affairs professional should know: Student study activities and beliefs associated with academic success. *Journal of College Student Development, 43*(2), 246-266.

Teaching Learning Technology Group. (2002). Retrieved April 29, 2008, from http://www.tltgroup.org/Flashlight/CSI/CSI.htm

Tinto, V. (1975). Dropout from higher education: A theoretical synthesis of recent research. *Review of Educational Research, 45*, 89-125.

TLT Group, (1998). CTL Silhouette Current Student Inventory (Publication. Retrieved May 6, 2008, from American Association for Higher Education: http://ctlsilhouette.ctlt.wsu.edu/ctlsilhouette2_5/

Toutkoushian, R., & Smart, J. (2001). Do institutional characteristics affect student gains from college? *Review of Higher Education, 25*(1), 39-61.

Umbach, P. D., & Wawrzinski, M. R. (2005a). Faculty do matter: The role of college faculty in student learning and engagement. *Research in Higher Education, 46*(2), 153-179.

Umbach, P. D., & Wawrzinski, M. R. (2005b). Faculty do matter: The role of college faculty in student learning and engagement. *Research in Higher Education, 46*(2), 153-184.

Walker, J. T., Martin, T., White, J., Elliott, R., Norwood, A., Mangum, C., et al. (2006). Generational (age) differences in nursing students' preferences for teaching methods. *Journal of Nursing Education, 45*(9), 371-374.

Warren, R. G. (1997). Engaging students in active learning. *About Campus, Mar-April*, 16-20.

Yoder, J. D., & Hochevar, C. M. (2005). Encouraging active learning can improve student's performance on examinations. *Teaching of Psychology, 32*(2), 91-95.

Curriculum Vitae
Ann M. Popkess

Education:
MSN, St. Louis University, St. Louis University, Nursing Administration, 1992
PhD, Indiana University, Indianapolis IN, Leadership/Nursing Education, 2010

Professional Experience
Southern Illinois University Edwardsville, School of Nursing, Primary Care and Health Systems Nursing, Instructor   Appointed: 1998

Expertise and Research Interests
Higher Education/Administration
Active and Collaborative learning
Student Engagement
Nursing Administration

Funding Received
Excellence in Undergraduate Education Grant. "Development of Web-based self-directed, modular nursing skills course." 2000. PD: Dr. Kathy Ketchum, Co-PD: Ann Popkess, Kay Gaehle. Funded.

Excellence in Undergraduate Education Grant, 2002. "Development of a Web-based course for the RN-BS curriculum" EUE project #02-40. PD: Ann Popkess. Partially funded.

Nurses's Educational Fund: Dissertation Scholarship, 4000.00, from 2007 to 2008

Sigma Theta Tau, Epsilon Eta Chapter: Research Grant, 250.00, from 2006 to 2007

Indiana University Purdue University SON: Graduate Research Award, 1100.00, from 2006 to 2007

Indiana University SON: Graduate Research Award, 1200.00 from 2008-2009.

Presentations
Gaehle, K., Ketchum, K. & Popkess, A. (2001). Developing a web-based, self-directed modular nursing skills course", Poster. University of Memphis Creative Nursing Education Seminar, March, 2001, Memphis, TN.
Popkess, A. (2003). Transition of a traditional RN-BS program to a web-based format: Issues and answers. Illinois Distance Learning Conference, Chicago, March 2003.
Popkess, A. & Beaman, M. (2004). "Testing Analysis of Fall 2002 and Spring 2003 Graduates, Unpublished work, co-author.
"Faculty Portfolio Development," SIUE SON Faculty Workshop, January, 2005.
Popkess, A. & McDaniel, A., (2006). Are Nursing Students Engaged? A study of baccalaureate nursing students and their responses on the NSSE, *Blessing-Reiman School of Nursing, Pi Pi Research Day, Sigma Theta Tau International*, Quincy, IL.

Popkess, A. & McDaniel, A. (2008). Baccalaureate nursing student's responses to the National Survey of Student Engagement, *MNRS Annual Meeting*, Midwest Nursing Research Society

Beatty, M. & Popkess, A. (2008). Integrating Human Patient Simulation (HPS) into a Young-Middle Age Adult Nursing Course, IUPUI Clinical Education Redesign Conference, November 7-8, 2008. Indianapolis, IN.

Popkess, A. & McDaniel, A. (2009). Are Nursing Students Engaged in Learning? *Nursing Education Perspectives.* Accepted for publication, June, 2009.

SIUE Committee Assignments
Technology Task Force (appointed), 2008
Undergraduate Curriculum Committee, 2005-present
Student Affairs Committee, member 1999-2005
Peer Evaluation Review Committee (elected) 1999-2000, 2000-2001
Undergraduate Curriculum Review Committee (appointed) 2000
Holy Rosary Health Fair Planning Committee (appointed) 2000
Dean's Advisory, elected, 2000-2001
Faculty Advisory and Community Relations (appointed) 2000-2001
Nominating Committee, (elected), co-chair 2004-2005

Honors and Awards Information
2008, Writing for Publication Award, Sigma Theta Tau Honor Society, Epsilon Eta, Southern Illinois University Edwardsville
2006-2007, Teaching Excellence Award Nomination, Office of Assessment, SIUE

Membership Information
Sigma Theta Tau, Member, 1992-present
Epsilon Eta Treasurer, 2002-2004
Leadership Succession chair, 2005-2006
Illinois Nurses Association, 1999-2001, Membership Committee
Association of Community Health Nurse Educators, 2003-2004
National League for Nursing, 2005 member
Midwest Nursing Research Society, 2004-present, member
MNRS Education Research Section Awards Committee, 2007-present, member