ACTIVE LEARNING STRATEGIES IN CLASSROOM TEACHING:
PRACTICES OF ASSOCIATE DEGREE NURSE EDUCATORS
IN A SOUTHERN STATE

by

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A DISSERTATION

Submitted in partial fulfillment of the requirements
for the degree of Doctor of Education
in the Department of Educational Leadership,
Policy, and Technology Studies
in the Graduate School of
the University of Alabama

TUSCALOOSA, ALABAMA

2012
ABSTRACT

The complex role of today’s nurses warrants higher levels of critical thinking and clinical judgment skills. Critical thinking is recognized as an essential component of nursing practice by the National League for Nursing (NLN). Nursing graduates must be prepared to practice as competent healthcare professionals in a highly complex, diverse, and ever-changing environment. Critical thinking is crucial to providing safe, competent, and skillful nursing practice. Important decisions related to patient care require nurses to master critical thinking skills. Critical thinking skills can be developed with practice. Nurse educators are obligated to create learning environments that support critical thinking. Not only is it important what students learn, but equally important is how they learn. Traditional teaching methods should be transformed to improve learning experiences and facilitate lifelong learning. Teaching strategies that involve experience by “doing” and dialogue with “others” will promote more significant learning. There is a lack of evidence of consistent teaching methods among nurse educators. Nursing graduates with an associate degree outnumber those with a bachelor’s degree but overall do not perform as well on the nurse licensure exam as baccalaureate graduates. The purpose of this dissertation research was to examine which teaching methods community college associate degree nurse (ADN) educators in a southern state were utilizing in the classroom to enhance student learning and develop critical thinking in nursing students enrolled in fundamentals and/or medical-surgical nursing courses. The researcher sought to answer six research questions: 1) What teaching strategies are community college associate degree nurse educators who teach fundamentals and medical-surgical nursing courses using in the classroom to enhance student
learning and develop critical thinking? 2) What barriers are encountered when utilizing ALS in
the nursing classroom? 3) What are the perceived benefits of utilizing ALS in the nursing
classroom? 4) Is there a difference in the frequency of utilization of teaching strategies that
involve experience by “doing” and experience by “observing”? 5) Is there a difference in the
frequency of utilization of teaching strategies that involve dialogue with “self” and dialogue with
“others”? 6) What is the perceived effectiveness of teaching strategies used by associate degree
nurse educators in the classroom to enhance student learning and develop critical thinking?
ACKNOWLEDGMENTS

I would like to express my appreciation to my committee chair, Dr. Linda Dunn, and to my committee members, Dr. Becky Atkinson, Dr. David Hardy, Dr. Aaron Kuntz, and Dr. Roy Ann Sherrod. Thank you for your patience and guidance in helping me reach my goal.

I would like to express my appreciation to Michael Walker for his assistance in conducting the statistical tests for my study.

I would like to express my gratitude to Dr. Rick Houser for his recommendations and guidance in the statistical analyses of this study. Dr. Houser, I appreciate your willingness to take time out of your busy schedule to help me. You’re awesome!

I would like to express my gratitude to Sherri Edwards, my editor and typist. Sherri, you helped me in a tremendous way.

I would like to express my gratitude to Laura Ballard for all of her assistance and encouragement over the last five years. Laura, you’re the best!

I would like to express my appreciation to my program chair, Mary Jo, and to my colleagues, Allison, Brandy, Pam, and Sarah, for their words of encouragement and the many “little ways” they helped me through this journey. A special thanks to Allison who has been with me from the start.

Above all, I would like to express my love and appreciation to my family who have always encouraged and believed in me--my husband, Kenneth, my daughter Kendra, my son Kellen, and my parents Daniel and Dorothy Fields.
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CHAPTER 1
INTRODUCTION

Nurses are expected to provide safe and competent patient care in a highly complex, technologically advanced, and ever-changing healthcare environment (Benner, Sutphen, Leonard, & Day, 2010; Candela, Dalley, & Benzel-Lindley, 2006). The role of the nurse is becoming increasingly complex, which demands higher levels of critical thinking and clinical judgment skills than previously (Cook, 2011; Lisko & O’dell, 2010). Nurses are expected to make responsible and rational decisions in order to ensure safe and competent patient care (Cook). Today’s nursing graduates face a different world than their predecessors (O’Dwyer, 2007). The demands of contemporary healthcare on nurses are greater than ever before and changes in nursing education are warranted in order to prepare new graduates to meet these demands (Greenwood, 2000; Lofmark, Smide, & Wikblad, 2006; O’Dwyer). Of utmost importance is the ability to meet the healthcare needs of patients in a safe, ethical, and holistic manner. Nursing graduates are expected to provide compassionate, safe, and effective care in multiple settings while keeping abreast of rapid advances in healthcare (Benner et al., 2010). Nurses are accountable for delivering high quality, evidence-based, patient-centered care to diverse populations of all ages (Institute of Medicine [IOM], 2010). Both the National League for Nursing Accrediting Commission [NLNAC] (2008) and the American Association of Colleges of Nursing [AACN] (2008) recognize critical thinking as an essential competency of nursing graduates and encourage nursing education programs to incorporate innovative and complementary teaching and learning strategies as a means to enhance student learning.
Instructional methods should promote active learning and teach students how to analyze and evaluate the pertinence of information and how to apply the information in various settings and situations (Simpson & Courtney, 2002). Strategies such as questioning, small-group activities, role playing, debate, case studies, simulation, puzzles, and problem solving can be utilized by nurse educators to enhance students’ critical thinking abilities (Simpson & Courtney). Typically, traditional nursing education practices have not led to the acquisition of higher order thinking skills. However, traditional instructional strategies continue to occupy predominance in the nursing classroom, with lecture being the primary format for instruction (DeMarco, Hayward, & Lynch, 2002; Schaefer & Zygmont, 2003; Young & Diekelmann, 2002).

All nursing programs teach students the competencies deemed essential for practice that are measured by the National Certification Licensing Examination (NCLEX) for RNs (American Association of Community Colleges [AACC], 2011). However, the associate degree is pursued initially by more minorities and those residing in rural settings (AACC). Associate degree nursing education programs have graduated more students annually than baccalaureate programs for nearly two decades (AACC). Both levels of graduates are vital to building a strong national nursing workforce (AACC). Nonetheless, associate degree nurse graduates have not performed as well overall as baccalaureate degree nurse graduates on the NCLEX-RN for more than half of the last decade.

Benner et al. (2010) identified three professional apprenticeships of the nurse: (a) acquiring and using knowledge and science, (b) developing clinical reasoning and skilled know-how, and (c) internalizing ethical comportment. The authors admonished nurse educators to change their approach to teaching in order to effectively integrate these three apprenticeships. Included in their recommendations are integrating classroom and clinical teaching, and
emphasizing clinical reasoning and multiple ways of thinking. Porter-O’Grady (2001) asserted that existing models of nursing education are inadequate as today’s nursing skills focus more on utilizing technology to provide patient care. The author endorsed emerging models that are based on innovative technological advances.

Nursing programs are faced with the challenge of accommodating the changing needs of the healthcare environment by preparing professionals that engage in lifelong learning and self-critique and are able to think critically through processing and linking information (Brandon & All, 2010). The educator influences meaningful learning by the kind and organization of information presented, how the information is sequenced, and which instructional strategies are employed (Novak, 2003). Changes are needed in both didactic and clinical courses (Brandon & All) and must enhance or improve nursing practice. In 2003, the National League for Nursing (NLN) called for student-centered, interactive, and innovative nursing programs and curricula. Innovative pedagogical strategies are needed to foster self-regulated and meaningful learning. Best practices should be identified and the science of nursing education developed through ongoing pedagogical research (NLN, 2003).

Knowledge acquisition (learning) and the development of critical thinking skills are important outcomes of nursing education. In 2005, the NLN admonished nursing educators to base curriculum decisions, teaching practices, and evaluation methods on current research findings and to move away from a focus on content coverage. Faculty must collaborate as change agents to develop a curriculum based upon best practices and situated in active learning as a shift toward nursing education reform. Traditional teaching methods should be transformed to improve learning experiences and facilitate lifelong learning (Franklin, 2006). Educators must employ educationally sound and research-based pedagogies (Diekelmann, Ironside, & Gunn,
Billings (2003) asserted that nurse educators should incorporate learning strategies that facilitate active learning, fuel critical thinking, and assure professional role advancement. In addition, the author admonished nurse educators to expand the discipline of nursing and nursing education through inquiry and analytical skills.

According to Fink (2003), teachers should be responsible for designing learning experiences and supporting learning on multiple levels. In this respect, they help students become more aware of their own responsibility for learning and facilitate their development of becoming self-directed, lifelong learners (Fink). The author did not discredit traditional forms of teaching, but rather suggested that the incorporation of new ideas with traditional practices will result in more effective forms of teacher-student interactions. Fink identified principles of good teaching based on educational research, including the use of active forms of learning, to be incorporated into course design in order to promote quality teaching that in essence will result in significant learning. Prince (2004) asserted that outcomes such as the acquisition of knowledge and skills and student retention should factor in the determination of whether active learning has merit. Williams and Calvillo (2002) asserted that a positive learning environment supports active learning, recognizes diversity among learners, and incorporates multiple teaching formats and methods. Gale (2006) posited that immersive environments engage students in dynamic learning and active participation. Structuring the learning environment to maximize learning necessitates including a variety of teaching methods and resources to accommodate diverse learning styles.

Today’s Students

Students in today’s classrooms represent a diverse group of learners with a variety of experience, age, and talents (Amerson, 2006; Johnson & Romanello, 2005; McDonough &
Osterbrink, 2005; Rothgeb, 2008; Williams & Calvillo, 2002). Educators must consider how these characteristics influence and guide thinking and action of the learner and are challenged to develop learning opportunities using effective pedagogies that will accommodate diversity (Johnson & Romanello) and facilitate the development of critical thinking (Fountain & Alfred, 2009). No single teaching strategy will accommodate the preferred learning strategy for these diverse learners (Flanagan & McCausland, 2007; Royse & Newton, 2007). A variety of teaching methods and resources should be utilized to accommodate the variety of learning styles (Williams & Calvillo). When multiple teaching strategies are incorporated into the classroom, students recognize and acquire information in a number of ways (Flanagan & McCausland). Educators who use a variety of formats and assignments are more apt to accommodate all students’ learning styles (Johnson & Romanello; Williams & Calvillo). At the same time, students are exposed to a variety of ways of learning that encourages them to use all their learning potential, thus maximizing their learning (Johnson & Romanello; Williams & Calvillo). Hence, teaching strategies should encourage student engagement and self-directed learning in order to promote understanding of complex concepts and retention of material (Flanagan & McCausland).

Nursing curricula should be learner-centered, innovative, and interactive (Brandon & All, 2010). Learning objectives are key considerations when selecting which instructional strategies to employ (DeYoung, 2009). Outcomes should define what students are to do, advance learning toward goals, produce material for formative or summative assessment, and generate data to improve future teaching and students’ learning (Gale, 2006). Multiple assessment strategies should be employed in the classroom and clinical settings to evaluate learners’ abilities (Candela, et al., 2006; Fink, 2003). Educators should select teaching strategies that are best suited to meet
curricular needs and facilitate achievement of course objectives (Royse & Newton, 2007). By introducing a variety of teaching strategies, students will be challenged to find ways to solve problems by assuming responsibility for their own learning as adults (Royce & Newton). Included in, but not limited to, these strategies are lecture, discussion, and audiovisuals (DeYoung).

Technology should also be incorporated into the nursing classroom as a means to augment instruction (IOM, 2010). This strategy can be used as an effective teaching tool (Kalmakis, Cunningham, Lamoureux, & Ahmed, 2010). Today’s students are familiar and comfortable with innovative teaching strategies and rapid information retrieval (Flanagan & McCausland, 2007; Kalmakis et al.; Moellenberg & Aldridge, 2010). These technologically competent “millenials” are group oriented and have a propensity for multitasking (Pardue & Morgan, 2008). Millennials prefer interactive activities such as group work and simulations (Pardue & Morgan).

Traditional Strategies

Students are both familiar and comfortable with traditional teaching strategies such as lecture and PowerPoint presentations (Diekelmann, Swenson, & Sims, 2005). Although lecture provides an effective way of providing a large amount of factual information in a short period of time, it encourages passive learning and should not be the predominant method of presentation (Kalmakis et al., 2010; Scheckel, 2009; Williams & Calvillo, 2002). Walker (2003) asserted that the lecture method does not draw out student input and forfeits the opportunity for students to determine what information is essential to know. Although nursing students prefer passive instruction approaches (Sand-Jecklin, 2007), Al-Modhefer and Roe (2009) posited that the
primary disadvantage of the lecture is in not lending itself to interactivity. Students assume a passive role as the lecturer informs rather than explores how the content is relevant to clinical practice (Al-Modhefer & Roe). According to DiPiro (2009), passive lectures only encourage learning at the lowest cognitive levels, whereas active learning promotes learning at higher cognitive levels. Valiga (2009) posited that lecture is not as effective a strategy for promoting thinking as other strategies. The author admonished educators to discard traditional practices of teaching and evaluation strategies in order to promote students’ development of critical thinking.

Conversely, Oermann (2004) posited that the lecture method has benefits for nursing education as it affords an opportunity for teachers to deliver essential information for learning and clinical practice. Di Leonardi (2007) also purported that the lecture method can be an effective teaching strategy when it is used appropriately. Active learning methods can be integrated into the lecture to provide effective instruction (Di Leonardi; Oermann). Students remember more content when brief activities are introduced into the lecture (Prince, 2004). Learning will be enhanced when strategies focus on problem solving, critical thinking, and making the connection between lecture and clinical practice (Oermann). Discussion, role play, case studies, and scenarios are interactive methods that enhance students’ learning (Hayden, 2009). Experiential learning opportunities, such as questioning, group work, multimedia, and hands-on learning activities, can be integrated into traditional strategies (Pardue & Morgan, 2008). In addition, Moellenberg and Aldridge (2010) contended that interactive lecture methods can be used to increase classroom participation and engagement by including tactics such as questioning, discussion, film clips, anecdotal stories, and demonstrations. The educational experience of both associate degree (ADN) and baccalaureate degree (BSN) students can be enhanced by reforming traditional teaching methods (Diekelmann, Swenson, & Sims, 2005).
Non-traditional Strategies

Active learning involves more than merely listening and note-taking (Jordan, n.d.; Paulson & Faust, n.d.). Prince (2004) identified the two core elements of active learning as introducing student activity into the traditional lecture and promotion of student engagement. Students must participate in the learning process through engagement in tasks such as writing, reading, reflecting, thinking, and talking (Meyers & Jones, 1993; Paulson & Faust). With active learning, more emphasis is placed on developing skills rather than the transmission of information (Paulson & Faust).

Active learning strategies are a means to increase attention and interactive learning in the classroom (Moredich & Moore, 2007). Formats and techniques that encourage active learning are more student-centered, thus promoting student involvement, facilitating self-direction, development of critical thinking, problem-solving skills, and deep learning (Johnson & Romanello, 2005; Williams & Calvillo, 2002). Formats may include discussion, group work, lecture, case studies, concept analysis, and concept mapping (Johnson & Romanello; Oermann, 2004; Williams & Calvillo). Participation of the learner in higher-order thinking tasks, such as analysis, synthesis, and evaluation, will facilitate the development of skills and knowledge acquisition and application (Jordan, n.d.). Active learning can be used with all levels of learners (Paulson & Faust, n.d.).

Adults learn best by active participation through a variety of delivery modes (Phillips, 2005; Royse & Newton, 2007). By utilizing various learning strategies, students will be challenged to find ways to problem solve and critically think (Royse & Newton). Active learning strategies are an effective technique for ensuring that students have opportunities for optimal learning and growth regardless of the class size and discipline (Yazedjian & Kolkhorst, 2007).
Frequently, students are passive learners and occupy a place of anonymity in the classroom (Yazedjian & Kolkhorst). Because of this anonymity, students typically are not engaged in the learning process (Yazedjian & Kolkhorst). Yet, students should be active participants in their learning and instructors should employ active learning strategies to facilitate lifelong learning (Sawyer, 2006). Students learn better in an environment that builds on their existing knowledge and when they express their developing knowledge (Sawyer). Students need to learn integrated and usable knowledge and should be able to take responsibility for their own lifelong learning (Sawyer). Yoo and Yoo (2003) purported that, in order for students to gain realistic knowledge, they should solve problems in real situations and experience the causes and effects of their actions.

Theoretical Framework

Nursing students are expected to develop higher order thinking skills to enhance their ability to think critically and purposively, thus making sound clinical judgments. Nurse educators have a responsibility to facilitate nursing students’ acquisition of knowledge and the development of critical thinking skills in their preparation to become competent healthcare professionals. In order to ascertain essential information regarding the teaching practices of community college associate degree nurse educators who teach fundamentals or medical-surgical nursing courses in a southern state, Fink’s (1999) Model of Active Learning (see Appendix A) was used to guide the development of the research survey (see Appendix I).

Fink’s Model of Active Learning identifies two principle components: experience and dialogue. According to the author, all learning activities involve some kind of experience or some kind of dialogue. Experiences involve either “doing” or “observing.” “Doing”
experiences are activities where the learner is actually performing the activity that one wants them to learn. “Observing” experiences transpire when learners listen to or watch someone else demonstrate an activity related to what they are learning. Both types of experiences are considered to be valuable to learning. Both types of experience can be further differentiated into direct and indirect engagement. Direct “doing” involves engagement in action in a real life situation. Nursing students are involved in direct “doing” when they care for patients in the clinical setting. Indirect “doing” affords an opportunity to engage in learning in a simulated setting without encountering the risks and consequences associated with making mistakes in a real situation. Case studies, games, simulations, role play, and small group work provide opportunities for nursing students to practice problem solving and decision making. With direct observation, students observe relevant phenomena they are trying to learn about. In clinical learning rotations, nursing students are able to directly observe phenomena such as the clinical manifestations of disease processes or corrective surgical procedures related to certain disease processes. Indirect observations can expose students to a broader perspective of phenomena in which they might not have the opportunity for direct contact. The use of film clips and videotapes can enhance nursing students’ understanding of various issues and processes.

Learning experiences categorized by the researcher as “doing,” for this study, were identified as case study, concept map, cooperative learning, group work, PBL, role play, team learning, question and answer pairs, games, debate, discussion, clicker questions, flash cards, and puzzles. Learning experiences categorized by the researcher as “observing,” for this study, were identified as lecture, PowerPoint presentation, simulation, video, vignette, and scenario.

Fink (1999) identified two types of dialogue. These are “dialogue with self” and “dialogue with others.” “Dialogue with self” involves learners thinking about what they are
learning, how they are learning, and the significance of the knowledge gained. Nursing students can develop a learning portfolio, keep a journal, or respond to one-minute papers to demonstrate how they are dialoguing with self. “Dialogue with others” involves a learner exchanging with someone other than them self and can include the teacher, students, or others. Nursing students can dialogue with others through participating in group discussion, simulation debriefing, problem-solving activities, and interaction with guest speakers.

Learning experiences categorized by the researcher as “dialogue with self,” for this study, were identified as clicker questions, flash cards, puzzles, concept map, lecture, PowerPoint presentation, role play, scenario, video, and vignette. Learning experiences categorized by the researcher as “dialogue with others,” for this study, were identified as debate, discussion, games, question and answer pairs, simulation, case study, cooperative learning, group work, PBL, and team learning.

Fink (2003) asserted that more “doing” and “observing” experiences related to the subject of the course are more beneficial to the learner and that direct experiences are most helpful. However, because these experiences are not always available and possible, indirect experiences can suffice as an alternative strategy to enhance significant learning. Instructors should also ensure that students are provided ample opportunities to engage in the reflection process of learning. Fink (1999) also purported that learners are more apt to experience more significant and meaningful learning when instructors sequence and structure learning activities so that students regularly transition between experience and dialogue.
Problem Statement

Factors such as increased incorporation of technology, continuous advances in knowledge, changing needs of society, high acuity patients with multiple health problems, and mandates by national organizations and accrediting agencies such as the Institute of Medicine (IOM) and The Joint Commission (TJC) are contributing to the rapidly changing healthcare environment. The increasing diversity and complexity of nursing practice necessitates the development of higher level thinking and clinical reasoning abilities. Associate degree nurse educators have been mandated by the NLN to prepare nurses who can think critically and to transform their conventional teaching practices by actively engaging students in the learning process, as well as document the effects of these instructional strategies.

Purpose of the Study

The purpose of this descriptive study was to examine which teaching methods community college associate degree nurse faculty members in a southern state were utilizing to enhance student learning and develop critical thinking in fundamentals and/or medical-surgical nursing courses. The nursing fundamentals course is typically taught in the first nursing semester. It offers a very basic introduction to nursing concepts, skills, and techniques of nursing practice and is the foundational unit for the more advanced areas of study in successive medical-surgical nursing courses. The fundamentals course introduces the process of critical thinking necessary for making accurate and appropriate clinical decisions and initiates a change in the thinking habits of beginning nursing students. Medical-surgical nursing courses in each successive semester build on the fundamentals course. More emphasis is placed on fundamentals and medical-surgical nursing content than specialty areas such as mental health.
and obstetrics. Medical-surgical nursing content is applicable in any nursing course and concepts are interwoven throughout the nursing curriculum. The National Council Licensure Examination for Registered Nurses (NCLEX-RN) primarily tests nursing concepts rooted in fundamentals and medical-surgical nursing.

Few studies have addressed the use of active learning strategies in the nursing classroom and even fewer have addressed associate degree nursing education. This study will provide further research and information regarding best practices in undergraduate nursing education. Because there are more associate degree nursing graduates than baccalaureate degree nursing graduates and with the expectation of continued increased enrollment in associate degree programs, the purpose of this study was to identify which teaching methodologies are being used in associate degree nursing education fundamentals and medical-surgical courses to enhance student learning and the promotion of higher order thinking skills. This acquisition of astute clinical judgment is necessary for preparing graduates to be competent practitioners in diverse and complex health care environments. The nurse researcher sought to elicit this information from a survey of all associate degree community college nurse faculty members in a southern state who taught fundamentals and/or medical-surgical nursing courses during the time of the study.

Significance

Student learning should be the emphasis of teaching. Nursing education has undergone transformation since it was first recognized as a discipline (Parker & Schoenhofer, 2008). The primary purpose of nursing education is to facilitate knowledge development of the provision and evaluation of nursing care (Parker & Schoenhofer). It is imperative to select appropriate
teaching methodologies and create learning experiences that will foster new ways of thinking and knowing and development of the values and skills that are unique to the discipline of nursing (Parker & Schoenhofer).

Research that addresses instructional approaches in nursing education is limited and there is a lack of evidence of consistent teaching methods (Diekelmann & Ironside, 2002; Ferguson & Day, 2005; Schmitt, 2002). In 2003, the NLN called for transformative and innovative nursing education. This change necessitated a shift from traditional to new pedagogies (NLN, 2003) that actively engaged students in the educational endeavor (NLN, 2005) and prepared students for practice in a rapidly changing healthcare environment. In addition, nursing educators were admonished to expand their evidence-based academic inventory and alter conventional teaching and learning methods as well as document the effects of the innovation being undertaken in an effort to further develop the science of nursing education (NLN, 2003).

The NLN (2007) acknowledged the importance of supporting pedagogical research in an effort to build the science of nursing education by recognizing best practices in teaching and learning. The NLN admonished nurse educators to engage in research that would change nursing education and to document the efficacy and value of transformation efforts. Schmitt (2002) posited that research is needed to determine which educational models facilitate achievement of desired educational outcomes. The AACN (2002) admonished nurse faculty to reaffirm the necessity of pedagogical research in the learning environment. Diekelmann and Ironside (2002) argued for the inclusion of small studies, multi-method/multisite studies, and replication studies across all levels of nursing education that utilized scientific or interpretive approaches and recognized both conventional and innovative pedagogies. The authors purported that more research to investigate innovative practices utilized in nursing education in an effort to establish
best practices in teaching and learning and to determine the usefulness of teaching approaches was warranted. Ferguson and Day (2005) asserted that research with a particular focus on outcomes is necessary to validate the effectiveness of teaching strategies and develop the science of nursing education, thus facilitating the establishment of evidence-based nursing education. The authors argued that unless confirmation is produced to support alternative methods, nurse educators will continue to rely on traditional teaching practices. Nurse educators are admonished to question their own educational practices and validate their effectiveness through systematic research (Ferguson & Day).

This researcher was interested in stimulating students’ pursuit of learning and was seeking ways to improve and enhance classroom instruction. The researcher teaches in both fundamentals and medical-surgical nursing courses in an associate degree nursing program at a public university in the southern state under study. Because of the necessity to adequately prepare students for their roles as professional nurses and to be successful on the licensure exam, it was vital to identify which strategies ADN educators use to foster learning and develop critical thinking skills. Nurse educators must integrate innovative and interactive tools in the classroom to actively engage students in the learning process to enhance their learning and acquisition of critical thinking and clinical judgment skills. It was anticipated that findings from the study would facilitate the development of the science of nursing education and contribute to best practices in nursing education.

Research Questions

The researcher sought to address six main research questions. These questions were as follows:
1. What teaching strategies are community college associate degree nurse educators who teach fundamentals and medical-surgical nursing courses using in the classroom to enhance student learning and develop critical thinking?

2. What barriers are encountered when utilizing ALS in the nursing classroom?

3. What are the perceived benefits of utilizing ALS in the nursing classroom?

4. Is there a difference in the frequency of use of teaching strategies that involve experience by “doing” and experience by “observing”?

5. Is there a difference in the frequency of use of teaching strategies that involve dialogue with “self” and dialogue with “others”?

6. What is the perceived effectiveness of teaching strategies used by associate degree nurse educators in the classroom to enhance student learning and develop critical thinking?

Assumptions

The assumptions identified for this research study were as follows:

1. Educators completing the survey instrument provided honest answers.

2. Participants in this research study possessed the necessary skills needed to complete the online survey.

3. Participants in this research study had access to the Internet through their respective programs.

4. Participants in this research study were familiar with active learning strategies.
Limitations/Delimitations

Limitations

The results of this study addressing community college associate degree nurse educators’ choice of teaching strategies to facilitate learning of nursing content and the development of critical thinking were limited by the sample of educators who received the survey. The researcher only surveyed community college associate degree nurse educators from a southern state who taught fundamentals or medical-surgical courses. The use of this nonprobability convenience sample could potentially threaten external validity and prohibit the generalization of findings to other associate degree nurse educators. Additional surveys of nurse educators at other community colleges would be required to determine whether the results of this survey could be generalized to all associate degree nurse educators at community colleges. The sample used for this study was large enough to be considered adequate, but may be considered small when compared to all community college associate degree nurse educators in the U.S. In addition, a sampling error may result from a larger number of female nurse educators (Fowler, 2009), although female nurse educators substantially outnumber male educators in nursing programs overall. A third potential source of sampling error was if responses were affected by factors other than the facts on which the response should be based (Fowler). Another possible limitation was response bias, which results from the use of a survey instrument. Lack of data resulting from unanswered items could produce information that is consistently different from the target population (Fowler). However, a forced answering design may cause participants to opt out of the survey early or entirely and increase non-response error as well (Albaum, Wiley, Roster, & Smith, 2011). Completion rates can sometimes be improved by providing *don’t know*, *no opinion*, or *prefer not to respond* options rather than forced answering (Albaum et al.). In an
effort to limit response bias, the 5-point Likert-type effectiveness rating scale was balanced with an equal number of favorable and unfavorable choices, including a *neutral/no opinion* option (Friedman & Amoo, 1999). In addition, the online survey method may have resulted in a response return rate limitation. Finally, the survey instrument was researcher-developed and only had face validity (Keough & Tanabe, 2011).

**Delimitations**

Only community college associate degree nurse educators in a southern state who teach fundamentals or medical-surgical nursing courses were asked to complete the survey.

**Definitions**

*Active learning strategies.* Bonwell and Eison (1991) defined active learning strategies as teaching activities that require students to participate and think about what they are doing. For the purposes of this study, active learning strategies were defined as any instructional strategy that promotes active learning. These strategies include, but are not limited to, case study, problem-based learning, games, simulation, role play, discussion, group work, audience response systems (clickers), concept mapping, and scenarios.

*Learning.* Vandeveer (2009) defined learning as the process by which one understands, clarifies, and applies meaning of knowledge acquired. For the purposes of this study, learning was defined as knowledge acquisition of nursing content.

*Critical thinking.* Scheffer and Rubenfeld (2000) defined critical thinking as practicing cognitive skills through analysis, application of standards, discriminating, seeking information, reasoning logically, making predictions, and transforming knowledge. For the purposes of this
study, critical thinking was defined as the ability to accurately recognize patient problems, formulate a solution, and intervene appropriately in a variety of settings.

*Lecture.* Gumbs (2001) defined lecture as a manner of teaching in which the instructor conveys the information while students work autonomously to attain their educational goals. For the purposes of this study, lecture was defined as delivering nursing content by means of verbal instruction, including PowerPoint presentations.

**Summary**

In summary, nurse educators must utilize teaching strategies that will prepare graduates to function effectively and efficiently in the ever-changing and complex healthcare environment. This study focused on the identification of which strategies community college ADN educators in a southern state employed to enhance student learning and develop critical thinking skills when teaching content in fundamentals and medical-surgical nursing courses. Identification of the teaching methods used by ADN educators will provide an essential contribution to the developing science of nursing education.

The following chapter will elaborate on an extensive review of which active learning strategies are utilized for instruction in the professional disciplines of engineering, medicine, and nursing with an emphasis on nursing. The literature review begins with a discussion of the history of associate degree nursing. Following that will be a brief discussion of the nursing shortage, nursing education, employment, licensure, accreditation, active learning, and critical thinking. The chapter concludes with studies focusing on the nontraditional teaching strategies utilized in general education, engineering, medicine, and nursing.
Chapter 3 provides an overview of survey research and describes the research methodology, including the research design, research questions, population and sample, instrument, data collection procedure, and data analysis procedures. Chapter 4 will provide a description of the sample and present the results of the study. The final chapter will elaborate on discussion and conclusions from the research findings as well as implications for nursing education and nursing research.
CHAPTER 2

REVIEW OF LITERATURE

The purpose of the literature review was to explore how ALS have recently been utilized in education. The researcher focused on general education and the professional programs of engineering, medical, and nursing education. The review was begun using the following key search words: active learning, active learning strategies, innovative teaching strategies, alternative learning strategies, general education, higher education, critical thinking, and associate degree nursing. The online databases of CINAHL Plus with Full Text, ProQuest Nursing and Allied Health Source, ERIC (EBSCO: online), PubMed, JSTOR, Academic OneFile, Science Direct, Wiley Online Library, and The Chronicle of Higher Education were utilized for the literature search through The University of Alabama’s electronic resources. The literature review identified how ALS have been utilized in the classroom in higher education. The findings included both anecdotal articles and empirical research. The literature called for more research in all disciplines.

This literature review provides various background information and research relevant to this study. The chapter begins with a discussion of the objectives of higher education. This discussion is followed by a discourse on the history of associate degree nursing. Following that is a brief dialogue of the nursing shortage, nursing education, employment, licensure, accreditation, and critical thinking. Further discussion will examine active learning and how it has been used lately in general education. The chapter concludes with studies focusing on the nontraditional teaching strategies utilized in the professional disciplines of engineering,
The author chose to focus on engineering and medical education because, like nursing, they are both regarded as professional disciplines. Medical education was also selected because, similar to nursing, it too has both a clinical component as well as a didactic component. Although engineering education does not have a clinical component per se, each program of study typically requires successful completion of some type of practicum.

Higher Education

The U.S. Department of Education Commission on the Future of Higher Education (2006) identified specific objectives for American higher education. Included in, but not limited to, these objectives are high quality instruction, creation of new knowledge, incorporation of technology, and acquisition of workplace skills. Institutions of higher learning are expected to demonstrate their ability to provide students with a high quality education (Pascarella, Seifert, & Blaich, 2010). This initiative demands that we change the way in which teaching and learning are carried out in our higher education institutions. Faculty members must be willing to explore beyond traditional methods to enhance our ways of knowing. Students and instructors each share the responsibility for the quality of learning (Axelson & Flick, 2010). Though students must put forth effort to acquire knowledge and skills, the instructor must strive to provide an environment that is conducive to facilitate student learning (Axelson & Flick).

The National Survey of Student Engagement (NSSE, n.d.) tool was developed as a means to assess the effectiveness of educational practices of institutions of higher learning. Students are queried about their involvement in active and collaborative learning and enriching educational experiences (NSSE, 2011). Institutions are expected to provide learning opportunities that will involve students as active participants. Student engagement can be
accomplished in a variety of ways including writing, using technology, and problem solving (Kuh, 2003). Institutional practices that lead to high levels of student engagement include student-faculty contact, cooperation among students, active learning, and prompt feedback (Kuh). These proven educational practices facilitate student learning (Kuh). Educators should incorporate these educational practices as a means to enhance student learning (Pascarella et al., 2010).

Employers in American society today are demanding higher levels of knowledge and skill from their workforce (Bok, 2006). Faculty members play a pivotal role in what students learn and how they learn (Bok). Because of the academic freedom that educators are afforded, the quality of education that students receive is influenced by each faculty member’s personal attitudes and values (Bok). The majority of American faculty members consider the ability to think critically as the most important aim of undergraduate education (Bok). Bok acknowledged this aim of undergraduate education as well as the identification of other key aims including the ability to communicate well, development of ethical principles, and acceptance of diversity.

History of Associate Degree Nursing

The first associate degree nursing program was established in 1952 in response to a critical nursing shortage (Boland & Finke, 2009; Haase, 1990). The project that introduced two-year nursing programs began at Teacher’s College, Columbia University (Mahaffey, 2002). In 1958, the W. K. Kellogg Foundation funded implementation of the project at an additional seven sites in four states (Haase). The pilot programs attracted non-traditional students (Mahaffey). Many were older, married, widowed, or separated. The number of male students was also higher than in traditional programs. The new approach to educating registered nurses had extraordinary
Graduates were successful on the licensing exams and functioned capably as staff nurses in the healthcare setting (Mahaffey). As a consequence, the number of junior or community college associate degree programs grew to nearly 700 in a 25-year span (Mahaffey).

The curriculum was based on approximately half general education courses and half nursing courses (Mahaffey, 2002). Emphasis was on the patient, not the disease (Mahaffey). Today’s typical curriculum consists of approximately 30 general education credit hours and approximately 38 nursing credit hours (Boland & Finke, 2009). General education hours include biological and social science courses, and nursing courses include content related to medical-surgical, psychiatric and mental health, maternity, and pediatric nursing care (Boland & Finke). Fundamental concepts are taught early in the program with progression to complex concepts in the second year (Mahaffey). Some programs include management, geriatrics, and community health content (Boland & Finke). Nursing courses incorporate clinical experiences in various healthcare settings, with a primary emphasis being in the hospital setting.

Today there are over 900 ADN programs in the U.S. (National Organization for Associate Degree Nursing [N-OADN], 2006). Typically, associate degree nursing programs are located in vocational or community colleges but some programs are situated in four-year colleges and universities (Boland & Finke, 2009; Mahaffey, 2002). The programs generally require 2 years to complete (Boland & Finke). The popularity of these programs continues to be based on factors such as lower tuition rates, proximity, program length, and reputation (Mahaffey). Associate degree programs continue to attract a higher percentage of adults and minorities, including males. Associate degree programs are committed to providing a solid foundation in preparing graduates to provide safe client care in a complex healthcare
environment (N-OADN, 2001). Graduates are prepared to fulfill entry-level positions in various healthcare settings.

Nursing Facts

Nursing Shortage

In 2008, there were more than 135,000 registered nurse (RN) vacancies (AACN, 2010a). It is predicted that the RN workforce will remain consistent with the size it is now and fall nearly 20% below the projected RN workforce requirements (American Nurses Association [ANA], n.d.). Projections are that the U.S. nursing shortage will reach between 800,000 (AACN, 2010b) to more than 1 million nurses by the year 2020 (Health Resources and Services Administration [HRSA], n.d.). The nursing shortage is most acute in hospitals. Analysts also project that the continued complexity of acute care nursing will require a 36% increase in hospital RN’s by the year 2020 (AACN, 2010b). Worsening nursing shortages will threaten the safety and quality of healthcare in the U.S. (Warner & Misener, 2009). In order to address the nursing shortage issue and meet the nursing care demands in the U.S. healthcare system, the number of nursing graduates will need to be increased by 90% (AACN, 2010b).

Basic Nurse Education

While enrollment in diploma nursing programs is declining, enrollment in both associate degree and baccalaureate degree programs is steadily increasing. However, the most common avenue for an initial registered nurse (RN) education in the U.S. is the associate degree nursing (ADN) program (HRSA, 2010). The number of ADN graduates employed in nursing has grown dramatically in the last 30 years. In 1980, only 18.7% of the workforce was ADN graduates.
compared to 17.6% BSN graduates (HRSA). Whereas the number of BSN graduates today has almost doubled, the number of ADN graduates is more than two and one half times greater than in 1980 (HRSA). According to a 2008 HRSA survey, ADN graduates comprised 45.4% of U.S. RNs (an increase from 42.9% in 2004), whereas 34.2% (an increase from 31.5% in 2004) were graduates of a Bachelor of Science (BSN) program. Of the more than 3 million U.S. RNs in 2008, associate degree graduates outnumbered bachelor degree graduates by more than 300,000 (HRSA, 2008). Currently, nursing graduates who hold the associate degree as their highest degree earned is 60% (Benner et al., 2010).

Employment

More than 2.5 million RNs (nearly 80%) were employed in nursing in 2008 (HRSA, 2010). Of these nurses, 45.4% held an associate’s degree, 34.2% held a bachelor’s or master’s degree, and 20.4% held a diploma degree (HRSA). Hospitals were the most common employment setting for U.S. RNs (HRSA). In 2004, 57.4% of RNs were employed in hospitals (HRSA). The number increased by 17.7% in 2008, the first increase since 1984 (HRSA). More than 66% of these RNs were employed as staff nurses who provided direct patient care, whereas 12.5% worked in management or administrative positions (HRSA). Nearly 11% worked in hospital outpatient clinics, 1.5% worked in long-term care hospitals, and 2% worked in psychiatric hospitals. Nearly 90% of RNs less than 25 years of age worked in hospital settings, yet only 53% of RNs aged 55 or older worked in a hospital setting. Of the remaining working RNs, 6.4% worked in home health agencies, 5.3% worked in nursing homes or extended care, 10.5% worked in ambulatory care, and 7.8% worked in public/community health (HRSA). More than 29% of RNs working in 2008 reported being extremely satisfied with their primary position.
in nursing, while 51.8% reported being moderately satisfied and 11.1% reported being
dissatisfied (HRSA). More than half of the RNs reported working at least 40 hours per week and
more than 27% reported working at least 7.5 hours of overtime each week.

License

The National Council of State Boards of Nursing (NCSBN) developed the National
Council Licensure Examination for Registered Nurses (NCLEX-RN) to test the entry-level
competence of nursing graduates seeking licensure as RN’s (NCSBN, n.d.). The exam measures
critical competencies that have been deemed necessary to perform both safely and effectively as
a practicing entry-level nurse (NCSBN). Most exam items are constructed on an application or
higher cognitive level (NCSBN, 2010a). The majority of exam items require candidates to
utilize problem-solving skills in order to select the appropriate response (NCSBN, 2010a). The
passing standard is re-evaluated every 3 years in order to ensure that the passing standard
accurately reflects the amount of nursing ability required to practice as a competent entry-level
graduate (NCSBN, 2010b). The passing standard for candidates who took the exam in 2009 was
-0.21 logits. Because higher patient acuity levels warrant increased knowledge, skills, and
abilities to ensure safe and effective care, the passing standard was changed to -0.16 logits,
effective April 1, 2010 (NCSBN, 2010b). Nursing graduates must pass the National Council
Licensure Examination (NCLEX) before they receive licensure to practice as a registered nurse.

In 2009, more than 134,000 U.S. educated nursing graduates took the registered nurse
licensing examination (NCSBN, 2009). Of these candidates, 78,665 were associate degree
graduates and 52,241 were baccalaureate degree graduates. Mississippi graduates comprised
1,863 of the total candidates. Of the Mississippi candidates, 1,389 were ADN graduates and 474
were baccalaureate graduates (Mississippi State Board of Nursing [MSBN], 2009). Eighty-six percent of the ADN graduates were successful on their first attempt and 89% of the BSN graduates were successful on their first attempt (MSBN). The percentage of all U.S. ADN graduates who passed the examination on the first attempt was 87.61%, while the percentage for all U.S. BSN graduates was 89.49% and the overall pass percentage for candidates was 88.42% (NCSBN). More than 140,000 U.S. educated nursing graduates took the registered nurse licensing examination in 2010 (NCSBN, 2010c). Of these candidates, 81,618 were graduates of ADN programs and 55,414 were graduates of BSN programs. Of the 1,688 Mississippi nursing candidates, 1,284 were graduates of ADN programs and 404 were graduates of BSN programs (MSBN, 2010). Eighty-seven percent of the ADN graduates were successful on their first attempt and 86% of the BSN graduates were successful on their first attempt (MSBN). The percentage of all U.S. ADN graduates who were successful on their first attempt was 86.46%, whereas the percentage of all U.S. BSN graduates who were successful on their first attempt was 88.69% and the overall pass percentage for candidates was 87.41% (NCSBN, 2010c). In 2011, more than 144,000 U.S. educated nursing graduates took the registered nurse licensing examination (NCSBN, 2011). Of these candidates, 82,764 were graduates of ADN programs and 58,246 were graduates of BSN programs. Of the 2,125 Mississippi nursing candidates, 1,571 were graduates of ADN programs and 554 were graduates of BSN programs (MSBN, 2011). Eighty-eight percent of the ADN graduates were successful on their first attempt and 87% of the BSN graduates were successful on their first attempt (MSBN). The percentage of all U.S. ADN graduates who were successful on their first attempt was 86.99%, whereas the percentage of all U.S. BSN graduates who were successful on their first attempt was 89.09%, and the overall pass percentage for candidates was 87.89% (NCSBN, 2011).
Accreditation

The NLNAC, the Commission on Collegiate Nursing Education (CCNE), and state boards of nurse examiners include NCLEX pass rates as accreditation criteria for nursing programs (Manning, 2008). All associate degree nursing programs are accredited through the NLNAC. Nursing programs that are accredited through the NLNAC must maintain an NCLEX-RN passing rate equal to or above the national average (NLNAC, 2008). Accreditation criteria require nursing schools to place emphasis on the development of critical thinking in their curricula. It is anticipated that enrollment in ADN programs will continue to increase. Thus, it is imperative that educators embrace teaching and learning strategies that will enhance knowledge acquisition and the development of critical thinking skills to help ensure the success of their graduates on the NCLEX-RN and thereby continue ADN program accreditation.

Critical Thinking

Critical thinking is a necessary skill for nurses. The NLNAC mandates teaching of critical thinking in all accredited nursing programs. The complexity of today’s healthcare environment warrants the preparation of nursing graduates who possess the ability to think critically and problem solve in a variety of situations and practice settings (Wheeler & Collins, 2003). Nursing graduates must utilize critical thinking skills in order to facilitate positive outcomes for patients. DiPiro (2009) asserted that abilities such as critical thinking, communication, and problem solving are necessary skills that students need in order to be prepared for professional practice. Students must be able to transfer knowledge across domains in order to think critically (Papastrat & Wallace, 2003). Nurse educators can provide learning opportunities in the classroom to facilitate the development of clinical reasoning (Baker, 2000;
Gierach & Evenson, 2010). Critical thinking and problem solving should be integrated throughout the nursing curriculum (Tomey, 2003; Wheeler & Collins). Nurse educators are challenged to utilize instructional strategies that will facilitate this process. Development of critical thinking requires varied instructional approaches (Kostovich, Poradzisz, Wood, & O’Brien, 2007). Active engagement in the learning process will foster the development of critical thinking skills (Wheeler & Collins). Nurse educators can meet the challenge of facilitating students’ development of critical thinking by incorporating creative strategies in the classroom (Simpson & Courtney, 2002).

Su and Juestel (2010) purported that instructors should model thinking skills in the classroom and then provide opportunities for students to practice their own clinical reasoning. The authors used a case study format in the classroom to teach medical-surgical nursing content, followed by a 1-hour simulation activity, and then concluding with the development of a concept map. The interactive activities helped the students to make connections between classroom content and clinical practice. Key questions were used while teaching the content as a means to stimulate critical thinking among students, as well as during and after the simulation experience. Most students responded positively to the teaching strategies and became more aware of their thought processes. Instructors were able to assess their thinking skills during simulation and debriefing and provide relevant feedback.

Kalmakis et al. (2010) concurred that the development of critical thinking skills in the classroom is facilitated by making the connection between didactic learning and clinical practice. The authors used simulation case studies to emphasize concepts being taught in two didactic nursing courses. Case study simulations based on the lecture content were enacted by three to five student volunteers and broadcast into the nursing classroom. Observers were given a
handout that asked key questions to reflect upon as the simulation was broadcast. At the conclusion of the simulation, the instructor involved the entire class in discussion and reflection. Students were actively engaged in learning and provided with opportunities to develop critical thinking during the simulation exercises.

Active Learning

Pedagogical practices that incorporate active learning should be the primary means of instruction in today’s nursing classroom. Lectures and PowerPoint presentations are common teaching methods used by nurse educators (Clark, Nguyen, Bray, & Levine, 2008). However, when used solely these strategies do not engage the student as an active participant in the learning process. Nursing graduates are expected to be able to think critically and problem solve. Passive teaching methods such as lecture and PowerPoint will not foster critical thinking (Clark et al.). Interspersing interactive activities throughout the nursing lecture can invigorate the learning environment, engage the students as active participants, and meet the needs of a variety of learning preferences (Amerson, 2006). Less reliance on lecturing and more interaction with and among students through active learning strategies is indicated (Valiga, 2009). Williams (2001) asserted that faculty should modify their teaching methods by replacing or reducing the traditional lecture with other methods that will require the learner to ask what, how, and why to facilitate the development of professional practice skills in order to become competent practitioners. Emphasis should be placed on learning and understanding essential information rather than the coverage of content (DeYoung, 2009; Speziale & Jacobson, 2005). Active learning strategies can be utilized to augment the nursing lecture (DeYoung; Oermann, 2004).
Learners have a better understanding and higher retention of subject matter when the information involves active rather than passive learning, especially when connected to real life situations (Becker & Glascoff, 2005). Active learning strategies facilitate understanding by requiring students to employ higher thought processes (Becker & Glascoff). By incorporating real clinical situations that generate reasoning responses in students, an integration of theory and practice results from students learning what they need to know to be able to address patient situations in the clinical setting (Cooke & Moyle, 2002). When students acquire information in a meaningful context and relate it to prior knowledge and experiences, they are able to form connections between the new information and prior knowledge to develop better and more linked conceptual understanding (Krajcik & Blumenfeld, 2006). Students engage in real, meaningful problems and actively construct their own knowledge through participation in real-world activities, thereby developing deeper understanding (Krajcik & Blumenfeld). Kolodner (2006) purported that students should be involved in discussion and activities that ask them to reflect on their experiences in order to make hands-on learning more effective. Utilizing active learning strategies in the nursing classroom will accommodate for individual learning styles while facilitating the development of meaningful lifelong learning. This meaningful learning will translate into critical thinking and clinical judgment skills that perpetuate safe and effective patient care. Additionally, familiarity and experience with active learning will facilitate continued competence through self-directed learning that can be adapted to any practice setting.

Adults learn best in an active learning environment with varied delivery modes (Royse & Newton, 2007; Tomey, 2003). Incorporating active learning strategies to teach nursing content will promote meaningful learning (Clayton, 2006) and facilitate lifelong learning (Speziale & Jacobson, 2005). Students should be exposed to a variety of instructional methods that will
promote critical thinking and problem solving (Walker, 2003). Techniques such as problem-solving, reflective exercises, concept mapping, and dialogue can be utilized to create knowledge and facilitate understanding (Brandon & All, 2010; Hoke & Robbins, 2005; Sandstrom, 2006). DeYoung (2009) identified active learning techniques as students actively manipulating the content they are learning while utilizing such measures as writing, discussion, questioning, and reflection. According to Schaefer and Zygmont (2003), student-centered learning activities such as group work and case studies will foster critical thinking skills. Other strategies purported to enhance or promote critical thinking include discussion, questioning, problem-based learning (PBL), concept mapping, collaborative learning, and one-minute papers (DeYoung; Oermann, 2004). In addition to these strategies, Lowenstein (2011) identified games, debates, critiques, computer-based interactive programs, and high-fidelity simulation as innovative teaching/learning strategies that will facilitate the development of critical thinking.

The benefits of incorporating active learning strategies in the classroom are many. Active learning strategies promote social interaction among students and accommodate a variety of learning styles, most notably visual, auditory, and kinesthetic learners (Phillips, 2005). Active learning strategies enhance the learning experience and increase the retention and retrieval of knowledge for long-term learning (Yazedjian & Kolkhorst, 2007). These strategies can be employed in any setting, whether in a traditional classroom or in an online class (Phillips). By employing active learning strategies, instructors facilitate the development of students’ critical thinking abilities and increase their conceptual understanding (Krajcik & Blumenfeld, 2006; Yazedjian & Kolkhorst). This understanding allows students to make the connection between the abstract and real-world application (Yazedjian & Kolkhorst). In order to apply concepts learned in a particular context to new problems, learners must possess a deep understanding of
these concepts (Novak, 2003). Conceptual organizing in nursing education is a vital part of critical thinking (Vacek, 2009). Instructors should be enthusiastic and determine to employ active learning strategies in their classroom that will best support the learning process (Michael, 2007).

General Education

Student engagement has been linked favorably to learning and critical thinking (Carini, Kuh, & Klein, 2006; Smith, Douglas, & Cox, 2009). As noted, various approaches have been used to engage students as active participants in the learning process. While some studies have evaluated student perceptions of the learning experience, others have measured outcomes such as content mastery and critical thinking. This section examines how active learning has recently been used in general education courses.

Cooperative Learning

Cavanaugh (2011) combined cooperative learning activities with weekly math lectures over the course of a 13-week semester. A total of 147 students were enrolled in the course. The 50-minute lectures were interspersed every 10 to15 minutes with cooperative learning tasks such as case studies, vignettes, small group work, and whole class discussion. Students were asked to complete an anonymous questionnaire at the end of the semester to describe their experiences with cooperative learning. Of the 94 respondents, most thought the format had helped them learn and understand the unit content. A few thought that too little content was delivered. All of the respondents felt that the activities helped keep their interest and attention during each class session.
Huxam (2005) had similar reactions from students in a science class. The author utilized problem-solving exercises or discussion sessions with each weekly lecture session over a span of 5 years. Each lecture session included at least two interactive sessions. Students were divided into small groups of two to three members per group and allotted three to six minutes to discuss the problem. Discussion of the correct answer immediately followed the group discussion. Overwhelmingly, students identified the interactive sessions as the most favorable aspect of the lectures. Additionally, test scores demonstrated improved performance on topics covered during the interactive sessions.

Likewise, Knight and Wood (2005) used cooperative learning in a developmental biology course to facilitate student engagement and learning. Classes met twice a week for 75-minute periods. Students were assigned to groups of three to four at the beginning of the semester and were asked to sit and work together in both lecture and lab sessions. Lectures were also interspersed with multiple choice questions aimed at assessing conceptual understanding. A pretest was administered during the first week of the semester and the same questions were embedded in the final examination. Students scored higher on the posttest and achieved a higher course grade than students in the previous semester where a traditional lecture format had been the choice of instruction.

Conversely, Vreven and McFadden (2007) found no significant benefit to student performance when cooperative learning was used in a general psychology course. The study was conducted among two sections of the course over a 3-week interim term. Both sections had more than 150 students enrolled and utilized 3-hour daily lecture periods, online quizzes, and in-class examinations. Each class utilized one in-class activity or in-class discussion. The cooperative learning section was divided into small groups of two to five members. The think-
pair-share model was utilized for the cooperative learning group. Students were presented with a statement, discussed their thoughts among the group for five minutes, and then shared their responses with the class. The same procedure was used for the control section except students worked individually. A 16-item pre- and post-test was administered to assess students’ knowledge of course material. A different version was used for the post-test. Student motivation was also measured at the beginning and end of the course. Even though all students increased their knowledge, there was no significant difference noted between the two groups’ performance based on instructional method. Ironically, a significant drop in motivation was noted among the cooperative learning group. The authors speculated that perhaps cooperative and collaborative learning techniques were more beneficial in traditional courses due to the time constraints of a compressed course.

**Role Play**

McCarthy and Anderson (2000) found role play and collaborative exercises were effective methods to enhance student performance in introductory history and political science courses. The history class was divided into eight sections. Each group met with a teaching assistant one time a week outside of class time. Six of the groups were assigned roles to facilitate in-class discussion whereas the other two groups were told to be prepared to discuss the material the other two groups were to role play. Two weeks later, all of the groups took the same exam. Students in one section of the political science class worked in pairs on an in-class activity. Students in the other section received the same information by traditional lecture. Both sections took the same in-class exam one week later. In both courses, students who participated
in the active learning activities scored significantly higher on the exams than those who received traditional instruction.

Games

Grimley (2011) used computer game modules to actively engage students in an educational psychology course. Students attended 2-hour lecture or computer sessions and 2-hour weekly labs for the first 6-week term. A formal assessment of their content understanding was performed at the end of the first 6 weeks. Students attended 2-hour labs during the second 6-week term and were required to design, develop, and evaluate a game module using content from the first term. The second-term content focused on game design and theory. Half of the content was delivered via standard lecture and the other half via computer module. Students’ perceptions of the experience were positive and indicated they felt more challenged, stimulated, and involved with the active learning activities. Overall, scores were better for content that was taught with the computer modules compared to instruction via traditional lectures.

One-Minute Paper

The one-minute paper was originated in the 1980s by Charles Schwartz; however, variations to the method have been seen since its origin (Stead, 2005). Typically, students are asked to write a brief response at the end of class as to what was the most important thing learned for the day and what remained unanswered. The technique encourages students to be active listeners and fosters higher cognitive thinking (Stead).

The one-minute paper proved to be beneficial to student learning in economic history courses. Stead (2005) used the one-minute paper method in first- and second-year undergraduate
economic history courses. The author responded to two or three questions at the start of the next class for the first-year course. For the second-year course, the author responded approximately one half of the time via e-mail to the whole class and the other half via in-class discussion. Students were asked to respond to an anonymous, instructor-developed Likert-type scale at the end of the term. Students across both years rated the technique above average as a learning tool, although they did not think it was necessary to use the technique with every lecture.

Debate

Debate was originated by Protagorus of Athens as a teaching strategy more than 2400 years ago, but has historically been restricted in the university setting to competitive debate teams (Kennedy, 2009). The strategy fosters the development of critical thinking and oral communication skills (Kennedy).

Debates were perceived by students in microeconomic and macroeconomic courses to be beneficial to learning and development of critical thinking. Vo and Morris (2006) used the strategy to actively engage students in a challenging learning environment. Students were divided into groups and assigned a debate topic. Students researched the topic independently but worked together in small groups to derive the best supporting defense for their argument. Each group debated for one class period. Participants responded to an anonymous, 5-point Likert-type questionnaire at the end of the semester. Students overwhelmingly agreed the instructional technique enhanced their learning and critical thinking.

Results were similar for Dundes (2001), when the author used debate as an instructional strategy in a criminal justice course. Students selected two topics at the beginning of the semester. Two months into the semester, the students were paired into five debate teams. Four
other students served as audience members for each team. The debates were held simultaneously in separate rooms and lasted about 40 minutes. Afterwards, all of the groups reconvened in the classroom to summarize the main points of the arguments. Students evaluated the experience as enjoyable and beneficial for learning.

**Clickers**

Wood (2004) used clickers successfully in a large developmental biology course to actively engage students. Multiple choice clicker questions were interspersed throughout the lectures. Students voted individually on each question. When the histogram revealed a split vote, the students discussed the question with their neighbor and then voted again. Most of the time, a large percentage of the wrong answers were changed to the correct one. The majority of the students liked using the clickers.

As noted, interactive teaching strategies have been incorporated successfully with traditional teaching strategies in a variety of general education courses. The next section will focus on how interactive teaching strategies have been incorporated into engineering education.

**Engineering Education**

The most frequent forms of active learning utilized by engineering faculty are cooperative learning, collaborative learning, and problem-based learning (Prince, 2004). With cooperative learning, students work together on group activities but are assessed individually (Prince). Learning is promoted through cooperation, as opposed to competition, among the group members (Prince). Collaborative learning involves students working together in small groups toward a universal goal (Prince). Emphasis is placed on learning through interactions
with others (Prince). Problem-based learning (PBL) introduces a problem at the beginning of the instruction sequence that provides the framework and stimulus for the learning that occurs (Prince). Problem-based learning started at McMaster Medical School in the 1960s in an effort to produce graduates who could think critically and solve difficult problems (Major & Palmer, 2001). Although students usually work together in small groups, self-directed learning is the primary emphasis of PBL (Prince). Various instructional methods can be used to facilitate the learning process and may include lecture, instructor-facilitated discussion, guided decision making, or cooperative learning groups (Woods, Felder, Rugarcia, & Stice, 2000). Students learn how to learn through PBL because the process emphasizes learning by doing (de Camargo, & Mizukami, 2005; Quinn & Albano, 2008; Steinemann, 2003).

Collaborative learning enhances academic achievement, student attitudes, and student retention (Prince, 2004). Cooperative learning promotes interpersonal relationships, improves social support, fosters self-esteem, and enhances academic achievement (Prince). Problem-based learning produces positive student attitudes, improves long-term retention of knowledge, promotes better study habits, fosters development of problem-solving skills, life-long learning skills, and critical thinking skills (Prince). A discussion of nontraditional instructional strategies recently used in engineering education identified in the literature review follows.

**Problem-based Learning (PBL)**

Steinemann (2003) utilized PBL methodology in a graduate level civil engineering course as a means of developing problem-solving skills in the classroom that would transfer to professional practice through actual hands-on learning. The author designed and taught a course on sustainable urban development. The emphasis was on making the college campus more
sustainable. The class met once a week for 3 hours throughout the term. Students were to identify an actual problem and then devise a solution plan that could be implemented. Students were encouraged to collaborate with stakeholders in the campus community as they worked on their sustainability plans. Open discussions of the students’ activities were conducted each week. Students gave oral presentations of their work every 2 weeks as well as providing written updates on their progress and the learning process each week. The instructor provided individual feedback on the presentations concerning delivery and content. In addition, students also provided oral and written presentations to campus administrators and other community stakeholders who could influence campus policies and practices.

At the end of the term, the students submitted a report on their final project and a written report of lessons that were learned from the process. Students completed anonymous evaluations of the course several times throughout the term. Overall, comments were very favorable. Most of the students welcomed the independence associated with the PBL process. Interestingly, less than 5% of the students desired more guidance from the instructor. The students perceived that PBL was an effective instructional approach for gaining knowledge and problem-solving skills necessary for professional practice. In addition, they realized the value of collaboration and learning from others.

Likewise, using PBL as a viable alternative to traditional instructional approaches in civil engineering education was validated by de Camargo Ribeiro and Mizukami (2005). The authors utilized the approach in a fifth-year civil engineering administration theory course. The class met for 100 minutes once a week for 2 months. Students were divided into nine groups with five to six students per group. Case studies were utilized to present a professional or administrative dilemma that engaged the students in discussion, information gathering, and problem solving.
One problem was presented per week for a total of six dilemmas during the span of the course. Students alternated roles of scribe, spokesperson, and leader. The spokesperson for each group was responsible for presenting the group’s solution of the dilemma to the whole class for debate among the class. Students evaluated themselves and each other at the end of each session. They evaluated the problem and the approach together at the end of each session. Students also completed a questionnaire for a final evaluation of the course. As anticipated, the methodology was regarded as favorable for instruction and as meeting course objectives; although, some perceived that the content was not covered in depth enough. In addition, some students’ level of motivation for participation declined toward the end. Overall, the students felt the approach facilitated the development of communication, problem-solving, and teamwork skills.

Similarly, Quinn and Alban (2008) utilized a PBL approach for design and implementation of a senior civil engineering project. Two students worked together initially to design a hospital facility. The students designed the facility using two different structural approaches based on knowledge from previous coursework. Each student was then asked to identify a topic for independent learning in regard to the design of this facility. This self-directed learning experience required the student to identify and use a variety of resources to supplement previous learning in formulating solutions to the real-world problem. Resources included structural analysis software, government manuals, journal articles, and the Internet. The students perceived the PBL approach as a very positive self-paced, self-directed learning experience. The instructor validated that the experience enhanced learning by engaging the student in the process of learning how to learn while providing a mechanism to demonstrate competency and professional development.
Case Study

Case studies can reinforce traditional instruction. Students develop critical thinking skills necessary for professional practice when case study is utilized for instruction (Bennett, 2009; Mau, 2009).

Mbarika, Sankar, and Raju (2003) utilized a case study approach to examine the relationship between gender and higher-order cognitive skills of 140 undergraduate sophomore and junior-level business and engineering majors. Findings suggested that female students perceived greater value of the instructional approach than did male students. The authors used multimedia to augment a case study based on a real-world engineering and technical problem involving a power plant. The purpose of the case study was to teach students how to plan and implement a real-world project and how to prioritize alternative solutions using a software support system. Videos depicted plant managers and engineers engaged in a discussion of issues. A CD-ROM was developed to present the problem to the students. Videos, pictures, animation, and audio were incorporated to explain engineering concepts. Students could opt to read a written version of the case study. The CD-ROM was made available in a computer lab.

The study was conducted over two quarters. Participants in the study were 149 students. Very few had any prior engineering or information systems experience. The classes were comprised of 41 females and 99 males. Students evaluated the effectiveness of the method for facilitating understanding of a typical managerial problem using a 5-point Likert-type scale as well as supplemental written comments. Both male and female students perceived improvement in learning and thought the use of the system improved the learning process. However, females perceived a higher incidence of self-reported learning of concepts than their male counterparts. Females also perceived they learned more from the multimedia aids and group discussions than
males did. Female students felt more challenged and thought their higher-order skills were improved compared to their male classmates.

Case study can accommodate any type of learning environment. Bennett (2009) was successful in integrating the tool in a traditional lecture-based class. The author augmented the multidisciplinary class with a 1-hour game format case study. Four 2-hour lecture sessions were used to introduce the class of 70 students to issues and situations they were likely to encounter in their professional practice as surveyors, developers, and land managers. Approximately half of the class had previous property management experience through vocational placement and 10% of the class was currently in the surveying profession. The final 1-hour session consisted of a game based on risk management, using content to reinforce topics covered in previous lectures.

The game used PowerPoint slides to depict a scenario based on a real-life situation. The instructor chose one student to keep score and lead discussions. Twenty-five students were randomly given a piece of information relevant to the issues presented. Some of the information was deliberately given as misinformation and some was not useful until combined with other information. The students collaborated to make decisions concerning the dilemma at hand. Each successive dilemma was encountered based on the previous decision the group had made. There was a total of nine events. Resources were limited and allocated on a point system based upon the decisions made. Extraneous factors were simulated by a roll of the dice at various times. The game was lost if any of the resources were reduced to zero. The game was won if each resource remained above zero.

The instructor elicited course evaluations through a feedback questionnaire. More than 70% of the students responded. Students generally agreed the game was both fun and effective
for learning. Interestingly, there was unanimous agreement that the game session was the
favored session.

Scenarios

Scenarios are similar to case study and PBL in that they engage the student in problem
solving (Mau, 2009). Scenarios challenge students to think critically, analyze facts, and apply
learned material to a relevant situation (Mau). They differ from PBL in that there is no or little
independent learning involved (Mau).

The effectiveness of scenarios as an instructional tool was demonstrated by Mau (2009)
in a prerequisite core course designed to teach legal matters to first-year, first-semester students
enrolled in a polytechnic university. All first-year students were required to take the course,
regardless of their program of study. Approximately 180 students were enrolled in the entry-
level course, representing four different programs of study. These programs of study were
engineering (HDE), surveying (HDS), property management (BSPM), and surveying (BSS).

The entire class met once a week for a 90-minute lecture. The students were divided into
tutorial groups of 25 to 30 students per group, irrespective of program of study, which also met
weekly for 90 minutes. Attendance at the group sessions was mandatory. The instructor
conducted three of the groups, while a part-time lecturer conducted the others. The lecture was
comprised of two parts: (1) a formal PowerPoint presentation based on legal principles, and (2)
the use of Socratic questioning and a scenario. No lecture was used in the tutorial sessions.
Occasionally PowerPoint slides were projected to assist with recall. A white board was used to
diagram relationships of information in the scenario.
Course assessment was based on a team project (30% of grade) and a final examination (70% of grade). The final examination was an 80-item multiple choice format based on scenario-based and short-form questions. Students evaluated the course by means of a standard 5-point Likert-type scale questionnaire and an instructor designed 5-point Likert-type questionnaire that evaluated students’ perceptions of learning and development of critical thinking and reasoning skills. In addition, 12 students from the instructor-led focus groups were interviewed. Course evaluations were varied, but generally positive. Of note, all 12 focus group students thought the scenarios were effective for instruction and linked theory and application. A total of 175 students took the final examination. The average failure rate among the four programs was 32.4%. Interestingly, higher perception ratings assigned to the learning experience and teaching and learning activities for achieving learning outcomes correlated with better performance on the examination. The author concluded that the combined methods were generally effective, but that further study and perhaps some modification of the delivery method were warranted.

Interactive Lectures

Van Dijk, Van Den Berg, and Van Keulen (2001) validated that interactive lectures are a viable alternative to traditional lecture. The authors utilized a pre-test/post-test control group design with two experimental conditions. First-year engineering students were randomly assigned to one of three groups. A 10-item multiple choice pre-test was given to measure prior subject knowledge. The pre-test was completed by 109 students. Students in each group then attended a 90-minute lecture given by the same instructor. The subject matter was the same, but the delivery manner was different. Students in the control group ($n = 35$) received a traditional
lecture where no input was solicited from them. Any questions asked of the students were
supposed to be of a rhetorical nature where no response was expected. Students in the first
experimental group (n = 16) were asked questions during the lecture and were expected to
respond anonymously with an electronic voting device. The results were displayed after each
voting session and feedback was provided on each question. The second experimental group (n
= 35) was asked the same six questions during the lecture. The voting results were displayed but
no correct answers were given initially. Students were then given an opportunity to discuss the
questions among themselves and vote again. The correct answer was then displayed and the
lecturer gave feedback. These same six questions were asked of the control group but in a
rhetorical manner.

A 10-item multiple choice post-test was given on lecture content after the experimental
lecture. Both tests were completed by 86 students. In addition, students were asked to complete
a questionnaire to evaluate the lecture. The questionnaires differed for each group. The
questionnaire was completed by 106 students. The control group was asked to respond to
questions about their motivation for the lecture and general questions concerning lecturing
practices. The experimental groups were asked to respond to the same questions, as well as,
questions regarding the use of electronic voting devices and peer instruction in lecture. Four
observers also attended and evaluated the experimental lectures on a 5-point scale.

Pre-test mean scores demonstrated comparable results between the three groups, with no
significant difference in the pre-test scores among the three groups. Whereas the control group
and the experimental group using the electronic voting device and peer instruction did not differ
significantly on the post-test scores, the experimental groups did. Students in the experimental
group using peer instruction and electronic voting devices were the most stimulated to be
involved with the subject matter and students in the control group were the least stimulated. However, students in the control group were the most activated, while students in the experimental group using only the electronic voting devices were the least activated. Interestingly, students in the electronic voting device group were significantly more positive about the effects of the strategy than students in the electronic voting device and peer instruction group.

*Simulation*

Simulation provides opportunities for students to practice making decisions in lifelike situations. Simulation is more effective than case study because feedback on performance and decision making is immediate (Chen & Levinson, 2006). Simulations create conditions in which students can apply learned knowledge to solve problems (Zhu, Xie, & Levinson, 2011).

Chen and Levinson (2006) experimented with simulation as a means of enhancing classroom learning. The authors were interested in determining what effect simulation would have on learning and development of problem-solving and decision-making skills pertinent to transportation network systems. The simulator was incorporated as an instructional strategy in a senior/graduate level civil engineering course. The class was randomly divided into two groups. The control group received a case study assignment, while the treatment group received a simulator assignment. A pretreatment survey indicated both groups were comparable in terms of academics, demographics, professional background, and computer proficiency. Learning style assessment revealed 15 of the 28 students preferred learning through watching and 20 of the 28 students preferred learning through doing.
Although barriers such as course design issues and lack of complexity were identified, the simulator was found to be an effective strategy for some areas of learning and problem-solving skills. A post-treatment survey revealed the treatment group perceived the assignment significantly improved their understanding of the subject matter as well as their ability to identify relationships and establish priorities. Both groups performed equally well on the final exam in the areas of four-step travel demand modeling and development process of a network pattern. However, the treatment group performed significantly better in terms of decision-making and problem-solving skills.

Zhu et al. (2011) further demonstrated the effectiveness of simulation for promoting learning and problem solving in the classroom. The authors developed a modern transportation planning software package for a required junior level civil engineering course in an effort to simplify understanding and planning of transportation modalities and processes. The class met for a 2-hour weekly lecture session and a 1-hour weekly computer lab. A pre-class survey collected demographic data. Of the 53 students who were initially enrolled in the course, only 37 completed the course. Of the 37 students who completed the course, 36 were engineering students and were equally represented among the three levels of sophomore, junior, and senior standing.

Zhu et al. (2011) used three project assignments to incorporate the software into the classroom setting. The first two assignments helped familiarize students with the online simulator and travel demand modeling. The third assignment required students to create a redevelopment plan of certain aspects of the city’s transportation network and to evaluate the plan using the online software. Students’ knowledge gained was evaluated by a quiz on the subject. A post-class survey evaluated students’ perceptions of learning outcomes, effectiveness
of the tool for learning, and development of judgment skills. Students were generally satisfied with the project. Their overall assessment of the simulation was positive. Students typically agreed that the simulation was an effective learning tool and facilitated development of judgment skills, yet they were neutral about being able to practice what they had learned from lectures. Not surprising, students who preferred visual learning were more likely to gain from simulation-based instruction, while active learners were more likely to improve their judgment skills.

As noted with general education, some interactive strategies have been used successfully in engineering education courses. Results and perceptions were similar to those found with general education courses. The following section will focus on nontraditional strategies used recently in medical education courses.

Medical Education

During recent years, medical education has introduced teaching strategies aimed at promoting active learning (Haidet, O’Malley, & Richards, 2002). It is anticipated that these innovative methods will improve teaching and learning outcomes (Haidet et al.). However, most postgraduate trainee instruction continues to be delivered through didactic lectures (Schackow, Chavez, Loya, & Friedman, 2004). A review of the literature found few studies addressing innovative teaching strategies in medical education. A discussion of the most recent nontraditional strategies that have been employed is presented next.
**Team Learning**

Team learning promotes active learning among participants. Team learning can be integrated into large group lecture sessions (Haidet et al., 2002). Health sciences education has the potential to benefit from this instructional approach (Haidet et al.).

Haidet et al. (2002) used a modified team learning approach to teach evidence-based practice principles involving use of diagnostic tests during a noontime lecture series for internal medicine residents. The authors conducted the same 1-hour session at two teaching hospitals. Sixteen residents attended the first session and 11 residents attended the second session. More than 95% participated in the entire session each day. A 1-page handout relevant to the teaching content was provided. Participants were divided into small groups and required to work on three tasks. Class discussion followed each small group work session. Evaluation was based on observations and pre- and post-session 5-point Likert-type surveys. Students were asked to rate their attitude toward the usefulness of the content in daily practice and their engagement in learning with the instructional strategy. The majority of the participants were noted as staying on task. Residents rated their engagement in learning as high and thought the lecture content was useful for their daily practice.

**Simulation**

Simulation mimics many of the physical features of an actual patient (McLaughlin, Doezema, & Sklar, 2002). Simulation has been used to assess skills competence (Jude, Gilbert, & Magrane, 2006). Simulator training provides students with opportunities to practice procedures and make errors without causing actual patient harm (Jude et al.; McLaughlin et al.).
McLaughlin et al. (2002) incorporated simulation into their emergency medicine curriculum as a means to teach and assess core competencies. Fifteen scenarios with varying degrees of complexity were developed for the 3-year curriculum. The first year focused on developing competencies in basic emergencies. Scenarios were designed to familiarize residents with the simulator and each other. The focus in year two was increasing awareness and prevention of cognitive error. The primary emphasis was on teamwork among various disciplines encountered in the emergency environment. Third-year residents dealt with more complex situations and transitioned to the role of facilitator/instructor of junior resident simulations. Debriefing followed each simulation encounter. Participants were given the opportunity to provide oral and written evaluations of each other and the simulation session. Overall, evaluations were very positive. Residents thought the scenarios were realistic and perceived increased confidence in their resuscitation skills. Because of the limitations of valid assessment tools using human simulation, the authors recommended formative assessment only of competence demonstration.

Reznek et al. (2003) further demonstrated the usefulness of simulation as a teaching tool for emergency medicine. The authors utilized simulation in an emergency crisis management course. The emphasis was on learning crisis management behaviors rather than individual performance. Participation was voluntary, and 13 residents participated in the study. To set the stage, participants were shown a 5-minute video depicting a commercial airliner crash resulting from human errors. The video was followed by a 15-minute lecture on human error theory and vital crisis management behaviors. Participants were then oriented to the simulator. A 15-minute video of an actual trauma resuscitation was shown before the simulated crisis scenario began. One participant acted as the primary physician and another acted as the first responder.
The roles were reversed in subsequent scenarios. The remaining participants observed the simulation via video link in a conference room. Each simulation lasted 20 to 30 minutes and each debriefing session lasted approximately 30 to 40 minutes. Participants evaluated the course based on a 5-point Likert-type survey. Evaluations were favorable. The participants enjoyed the course and thought the knowledge gained would be helpful in practice. Though the participants thought the simulation would be most beneficial for residents, they felt it would also benefit medical students and attending physicians.

Other specialty areas have demonstrated the effectiveness of simulation for medical training. Jude et al. (2006) incorporated simulation in an 8-week obstetrical clerkship. The 33 medical students who participated in the study were divided into four groups. Sixteen students were assigned to the control groups. Seventeen students were assigned to the intervention groups. All students attended a formal lecture on labor and delivery. Afterwards, the instructor used a mannequin to demonstrate delivery techniques. Students in intervention groups one and three practiced vaginal deliveries on the obstetrics simulator under the guidance of a faculty member. Students in control groups two and four received no further formal instruction. All students were asked to evaluate their perceived confidence in performing a vaginal delivery immediately after the training session using a 4-point Likert-type scale. Students who received simulator training felt more confident to perform the procedure with minimal or no assistance. Interestingly, there were no significant gender differences in reported confidence levels for either group. A larger sampling of students was recommended for future study.
Audience Response Systems

The retention rate for factual information presented in traditional lecture is not as lasting as information presented in interactive lectures (Schackow et al., 2004). An audience response system is one method for promoting active participation during lecture (Schackow et al.). Audience response systems can enhance the educational experience (Latessa & Mouw, 2005).

Schackow et al. (2004) conducted a prospective controlled crossover study to ascertain whether use of an audience response system would improve learning outcomes of family medicine residents. Twenty-four residents participated in the study. Residents were initially assigned to either a control group for basic or interactive lecture or an experimental group for audience response system lecture based on their last name (A-J versus K-Z). In subsequent months, the participants crossed between groups in an effort to expose them to all lecture methods equally. Each month a 1-hour lecture was chosen from the noontime core lecture series to be presented to the residents. The lecture was initially presented in traditional lecture format or as an interactive lecture with multiple choice questions. The second format was use of an audience response system. Multiple choice questions were interspersed throughout the PowerPoint slides before the content was divulged for both the audience response system groups and the interactive groups. A 10-item multiple-choice post-test based on lecture content was given at the end of each lecture for all groups. The same quiz was administered 1 month later. Statistical Package for the Social Sciences (SPSS) 11.5 statistical software was used to analyze the data. Basic lecture groups’ average scores were poor on both tests. Audience response system groups’ average scores were much better initially, but dropped one month later. Interactive groups’ average initial scores were quite good initially, but dropped at the 1-month retake. Further research was recommended to ascertain whether improved learning through an
audience response system could lead to improved clinical outcomes. Even though both audience response system and interactive lectures enhanced learning, it is likely that use of an audience response would be more effective than interactive lecture where large groups are concerned.

Latessa and Mouw (2005) tested the effectiveness of an audience response system with a group of medical educators. The participants were given six hypothetical situations regarding treatment of non-patients and were asked to respond to questions via the audience response system. The authors then gave a 20-minute lecture on the topic and polled the audience on the same questions again. Participants were asked to evaluate the effectiveness of the audience response system using a 4-point Likert-type scale. Responses were very positive. Most thought they were more attentive to the lecture and learned more than in a traditional lecture format. All agreed learning was more enjoyable. A majority (92%) were likely to consider use of an audience response system for their work. The authors recommended further study with other types of learners, larger groups, and inclusion of control groups to further validate learning enhancement.

Nontraditional strategies have also been found to be effective in medical education courses. The last section of this chapter will highlight the nontraditional strategies that have been used recently in nursing education courses.

**Nursing Education**

A review of recent literature found few studies that addressed the use of active learning strategies in the nursing classroom and even fewer addressing associate degree nursing education. Phillips (2005) recommended active learning strategies to enhance online continuing nursing education. The author identified the benefits of online learning as being efficient, cost-
effective, and accommodating a variety of learning styles, specifically auditory, visual, and kinesthetic. Additional recommendations included assessing learner needs, providing effective and timely feedback, measuring learner outcomes, and making revisions for improvement based on learner input (Phillips). Schaefer and Zygmont (2003) recommended formal and informal interventions for faculty to improve the learning environment for both faculty and students. Barriers to a student-centered learning environment should be eliminated and students’ preferences for learning should be assessed (Schaefer & Zygmont). A further discussion of how nurse educators have recently utilized active learning strategies in the classroom follows.

*Problem-based Learning, Experiential Learning, Cooperative Learning, and Team-based Learning*

*Problem-based learning.* Problem-based learning (PBL) enhances self-directed and lifelong learning and facilitates critical thinking and clinical reasoning (Baker, 2000). Problem-based learning serves as a catalyst to introduce students to the process of evidence-based practice. The primary instructional strategy of PBL is questioning (Baker). Initially, students work together in small groups of six to nine, ideally, to gather data on a particular problem posed by the instructor. Students then work together in subsequent meetings to analyze the data and solve the problem. Students use a variety of resources to gather information about the problem such as electronic, multimedia, and print (Baker). Student learning is evaluated based on learning objectives (Baker). Evaluation tactics may include didactic testing, portfolio, case study, presentation, or a scholarly paper (Papastrat & Wallace, 2003). Grades may be based on individual or group performance and may be assigned by peers and/or faculty (Papastrat & Wallace).
Beers (2005) compared test scores of students who were taught diabetes content utilizing PBL with other students who were taught the same content with traditional lecture format. Whereas no statistical difference was identified in the scores, problem-based learning was found to be equally as effective as lecture for promoting student learning. The purpose of this study was to investigate the effect of teaching method on objective test scores of students who were taught diabetes content utilizing problem-based learning and those who were taught the same content with traditional lecture. Eighteen junior nursing students enrolled in the fall semester course were taught the content per the lecture method, whereas 36 junior nursing students enrolled in the spring semester were taught the content using PBL. Both groups had prior experience with PBL modules.

Both groups were administered a pre-test and a post-test. Both courses had the same instructor and objectives. The 10-item multiple choice pretest developed by Health Education Systems, Inc. (HESI) tested students’ basic knowledge of pathophysiology and pharmacological concepts. The 10-item multiple choice post-test developed by HESI evaluated students’ knowledge of planning, implementing, and evaluating nursing care of diabetic patients. An independent t test was utilized to compare both sets of scores. No statistical difference was found in the scores. Problem-based learning was as equally effective as lecture for promoting student learning. Nurse educators must consider the learning needs of students, resources available, and the appropriateness of various teaching methods. Further research is needed to address what classroom practices should be implemented.

The effectiveness of PBL as a nursing educational strategy was validated by Papastrat and Wallace (2003). The authors developed a PBL scenario to teach medication administration to a class of 35 first-semester baccalaureate nursing students before they began their clinical
experience. The primary emphasis was on identification and prevention of medication errors using a Failure Mode Analysis (FMA) and Human Error Mode and Effects Analysis (HEMEA). The scenario depicted a medication error that involved an older adult patient. The patient experienced a significant change in condition that necessitated admission to the intensive care unit. The instructors provided specific questions and statements related to the scenario to guide the initial discussion. Students examined data, made inferences from the data, and developed a plan of action to address the problem. In order to facilitate the transfer of knowledge to the clinical setting and allow opportunities for evaluation of proposed solutions, students and faculty collected data regarding preventable adverse drug events during the following 10-week clinical experience. Student evaluations of using PBL as an adjunct teaching strategy were very positive. Identified strengths of the strategy included stimulation of thinking, real-world context, collaboration, and learning from others. Some of the weaknesses identified were group size, dislike of group work, time demands, and unequal share of workload within groups. When asked to vote on having a PBL assignment or an individually graded paper in a subsequent nursing course, the majority of students favored the PBL assignment.

Choi (2003) demonstrated that PBL was an effective strategy when delivered through the Internet. Students at two universities enrolled in a sophomore level fundamental nursing course participated in the PBL program. The 4-week learning module was developed to reflect realistic data and involved three scenarios. Each scenario depicted the same patient but with a different progression of disease. Students were expected to make inferences based on data presentation and identify strategies for problem resolution. Results were compiled in a resource database for all students to access. Discussions took place through Bulletin Boards. One university tutor assumed the role of facilitator, while another tutor at the second university assumed the role of
observer. Students were brought together in a classroom at the end of the process to discuss each problem and solutions.

A 10-item 4-point scale online survey at the conclusion of the program examined student satisfaction and learning effectiveness. In addition, open-ended questions examined students’ attitudes about the program. Eighty-six percent of the students responded to the survey. None of the students had prior experience with PBL or any clinical practice experience. Overall, students were reasonably satisfied with the Web-based PBL educational program. Students especially thought the program was helpful for learning and facilitating critical thinking. Major advantages of the program included its Web-based format, motivation for self-directed learning, development of critical thinking, and application of knowledge to clinical practice. Disadvantages were time requirements, technological barriers, and inadequate discussion and feedback.

_Experiential learning_.

Pugsley and Clayton (2003) compared attitudes between students who participated in an experiential nursing research course and those who participated in a lecture nursing research course. Students participating in the experiential method exhibited significantly more positive attitudes than those in the lecture course. Twenty-five junior-level students participated in the experiential model, which consisted of a small group problem-solving activity, a mini-research project, and research article critiques. Nineteen senior-level students participated in the traditional method course, which consisted of lecture format, article critiques, and comprehensive examinations. A 15-item survey using a 5-point Likert-type scale developed by Swenson and Kleinbaum (1984) was used to measure students’ perceptions and attitudes about the course. A two-tailed $t$ test identified significant differences between the
experiential method and the traditional method. Students participating in the experiential method exhibited significantly more positive attitudes towards nursing research than those in the lecture course. These findings support the effectiveness of experiential courses, though further validation of the study with a larger sample is recommended.

Lisko and O’dell (2010) integrated moderate-fidelity simulation into a junior level medical-surgical nursing course in an effort to foster critical thinking and management of critical health incidents. The implementation of the curricular change occurred over the full 15-week semester. The skills laboratory was the site of clinical experiences for the first 2 weeks, using scenario-based presentations and skills demonstrations. Clinical post-conferences for the remaining weeks focused on patient encounters and incorporated lab data, medications, skills performance, and any change in patient condition. Students were evaluated in individual 1-hour sessions in the skills laboratory with their clinical instructor the final week of the semester, using faculty developed scenarios and moderate-fidelity manikins that simulated hospitalized patients. Theory content and skills that had been taught during the semester were incorporated into the scenarios. Students were expected to assess a critical situation, determine an appropriate intervention, implement the skill, and then evaluate the response to the intervention.

Students and faculty evaluated the experience and the overall evaluation was positive. Students felt increased confidence in caring for high acuity patients and thought the scenarios integrated classroom, laboratory, and clinical experience to foster critical thinking. Benefits identified by the faculty included maximized learning and effective decision making.

Coyle-Rogers and Putman (2006) enhanced learning through additional hands-on learning opportunities. The authors paired sophomore nursing students in their first clinical semester with experienced certified nursing assistants at a geriatric clinical facility. Students
assisted the nursing assistants with routine care including bed-baths, bed-making, and transfer for a 3.5-hour session. Both the students and the nursing assistants gained insight of the other’s role and thought the experience was positive and worthwhile.

Cooperative learning. Cooperative learning involves students working together in groups to expand information on a specific topic and then sharing their results with the class (Bender, 2007). Copp (2002) utilized cooperative learning group work to teach students about the Nurse Practice Act. The mean score on a multiple quiz was lower when compared to a previous class who were taught the same content utilizing the traditional lecture format. Nonetheless, overall, students’ comments were favorable in response to the group activity. The class of 17 senior nursing students was divided into five learning groups in a leadership/management course. The content was divided into 1-hour sessions. The first session was a short lecture on the Nurse Practice Act (NPA), the Illinois Department of Professional Regulation, and the Board of Nursing. Each student received a worksheet comprised of two sections. The first had general questions related to the NPA and each group was responsible for finding answers to these questions. The second section had five different scenarios related to application of the NPA to nursing practice. Each group was assigned a scenario to report findings at the next class session during an informal discussion.

The instructor asked questions to clarify issues and assist students to apply the information to other situations, as well as stimulate further discussion. Students evaluated the session with a modified version of the Critical Incident Questionnaire (CIQ) developed by Stephen Brookfield (1995). Five questions were from the CIQ and five were developed by the instructor. Overall, student comments were favorable regarding the group activity. Thirteen
students felt most engaged during the large group discussion, whereas seven reported they felt
distanced during that particular time. A seven-item multiple choice quiz was administered 4
days after the class session. The mean score on the quiz was 72.3% compared to 88.8% for a
previous class of 23 students who were taught the NPA using the traditional lecture format. The
author recommended that faculty continue to examine how nursing content is taught, find ways
to motivate and engage students as active participants in the learning process, and evaluate
whether teaching/learning methods are effective in helping students meet expected course
outcomes.

Baumberger-Henry (2005) investigated how cooperative learning techniques combined
with case study impacted nursing students’ perceptions of problem-solving and decision-making
skills compared to other teaching-learning methods utilized in a medical surgical course.
Students with previous cooperative learning experience had a better self-perception of problem-
solving skills than those without previous experience, but no difference was found between
students’ self-perception of decision-making skills and cooperative learning. However, students
who had previous experience with case study had better self-perception of both problem-solving
and decision-making skills than those without case study experience.

The author used a quasi-experimental pre-test to post-test static group comparison with a
convenience sample of 123 students from three ADN programs. The experimental group
\( n = 31 \) used case study with small number cooperative learning groups for each class session.
One comparison group \( n = 24 \) was taught through lecture only. A second comparison group
\( n = 46 \) was taught through lecture and large group case study. A third comparison group
\( n = 22 \) was a post-test only group that studied obstetrics and was taught through lecture and
occasional use of case study that used large non-cooperative learning groups. No significant
differences were obtained.

A MANCOVA test determined teaching-learning method had no effect on students’ self-
perception of problem-solving or decision-making scores. ANOVA with post-hoc Scheffe
showed no statistically significant differences between the three teaching-learning method
groups for self-perception of problem solving or decision making. A one-way ANOVA showed
students’ with previous cooperative learning experience had a better self-perception of problem-
solving skills than those without cooperative learning experience. A one-way ANOVA showed
no significant difference between students who had experience with cooperative learning and
their self-perception of decision-making skills and those without experience and self-perception
of decision-making skills. Students who had experience with case study had better self-
perception of problem-solving skills and decision-making skills than those without case study
experience. The author recommended continued research of different teaching-learning methods
that utilize constructivist approaches.

Hoke and Robbins (2005) found that cooperative learning strategies utilized in a medical
surgical course increased the average clinical grade by more than two points compared to the
previous clinical average when taught with the lecture method. In contrast, the average didactic
course grade decreased by more than three points compared to the previous course average when
taught with the lecture method. Instructors used active cooperative learning strategies to team
teach a medical surgical course offered as part of the LPN spin-off in an ADN program. There
were 23 students enrolled in the course, including both returning and progressing students. One
active learning strategy involved small group work. Students rotated between stations and added
to each other’s comments. A summary was presented to the class when students returned to their
original stations. Case studies were used for some content areas and students again worked in small groups and presented solutions to the class. Faculty used role play to present some content. Students also participated in a small group formal presentation.

Student evaluations included a test-retest format, a take-home quiz, and a group quiz. The average didactic course grade was 83.04 and the average clinical grade was 87.03. The previous average course grade was 86.7 and the average clinical grade was 84.19, when taught with the lecture method. There was no difference found between progressing and returning students’ clinical grades. Overall, students enjoyed the course as it was taught. Studies that fully explore these findings, as well as teaching methods that maximize students’ clinical competencies, are also warranted.

Gumbs (2001) examined the relationship between cooperative learning strategies and student learning in a first year combined theory and clinical course in an associate degree nursing program. Participants were able to transfer theoretical learning to the clinical setting by developing individualized teaching plans based on identified patient knowledge deficits. Participation in the study was voluntary. The average age of the participants was 23 years. The mean grade point average was 2.78 on a 4-point scale and ranged from 2.40-3.20. Content related to diabetes mellitus was used for the cooperative experiment.

Twenty first-semester students participated in the cooperative learning group strategy. Students were allowed to choose their own group members and group size was limited to five per group. All 65 second-semester students were taught the content with traditional lecture and visual aids. Pretests were given before the content was taught. The content was taught over six lecture periods. Students participating in the cooperative learning groups were assigned readings and received a worksheet, pre-test, and post-test. Each group member was assigned a subtopic
and was responsible for teaching the other group members the information in a 45-minute session.

Students in the lecture group received the same worksheet, pre-test, and post-test. Students were allowed 45 minutes to individually complete their worksheets at the conclusion of the lecture. Both tests were teacher made based on Bloom’s Taxonomy levels and the NCLEX-RN test plan. The Cronbach alpha reliability coefficient for the pretest was 0.90 and 0.88 for the posttest.

Elberson, Vance, Stephenson, and Corbett (2001) found cooperative learning to be an effective teaching strategy for a pathophysiology course. Students were assigned to groups of three to five members and required to research a topic of their choice of which they had limited knowledge. The topic and learner objectives were approved by the instructor. Group members developed their projects and displayed them at an instructional fair at the School of Nursing. Students used various creative and innovative strategies to present their topics. Students completed self-evaluations regarding their perceptions of the effectiveness of the project. Overall the feedback was positive. Students identified collaboration, cooperation, participation, creativity, and increased motivation, knowledge, and understanding as strengths of the project. Time constraints, travel, and unequal participation of group members were identified as negative aspects of the project.

Team-based learning. Clark et al. (2008) evaluated whether team-based learning improved students’ in-class engagement and whether students valued group learning as compared to experiences students would have had with a traditional lecture format. Students reported more classroom engagement and active participation with the team-based learning
approach than students in the lecture-based course but there was no significant change in the students’ attitudes concerning the value of teams. The study used two research designs to address the two research questions. The first used a group comparison to evaluate team-based learning pedagogy versus a traditional lecture format on students’ perceptions of their individual class engagement. The second design used a pre-test and post-test to assess the change in the students’ attitudes about the value of teams after their exposure to team-based learning.

The researchers used team-based learning to teach four out of eight class modules. An 8-item, Likert-type Classroom Engagement Survey and a 9-item, Likert-type Value of Teams survey were used. Participants in the study were 70 junior BSN students. Students who participated in the team-based learning modules reported more classroom engagement than students who were in the lecture-based course. There was no significant change in the students’ attitudes concerning the value of teams. Students also reported more active preparation for team-based learning classes. The authors recommended further study to explore the effects of team-based learning pedagogy to prepare students to work in a multi-team and complex environment.

In contrast, Feingold, Cobb, Givens, Arnold, Joslin, and Keller (2008) reported that students valued the team learning process and working as a team. In addition, team learning was an effective tool to facilitate learning and help develop critical thinking and clinical decision making. The authors explored students’ perceptions regarding team learning and what direction the engagement took. Forty-eight first-semester BSN students were assigned to teams comprised of four to five students per group. Six team-learning sessions were substituted for six of the lecture sessions. A verbal description of the process and goals of team learning was provided to the students during the course orientation as well as a handout describing team learning procedures and a list of required readings for team learning sessions.
Students began each session with a multiple choice quiz, first individually then as a group. Each group then discussed a group application problem and provided solutions with rationales. A faculty member led a discussion afterward to help focus learning while allowing them to defend their answer. Ten students volunteered to be interviewed regarding their perceptions of team learning. Faculty did not participate in data collection or analysis to ensure confidentiality. Almost all or all of the students were engaged in the instructional activities the majority of the time. Students valued the team learning process and working as a team. Team learning was an effective tool to facilitate learning and help develop critical thinking and clinical decision making. Additional research was recommended to further validate the effectiveness of this interactive teaching strategy in preparing nurses to work in a complex health care environment.

Classroom Response Systems (CRS) and Gaming

Classroom Response Systems (CRS). The CRS (also known as audience response systems or “clickers”) promotes active learning and allows students the opportunity to respond to and receive immediate feedback from instructor-posed questions (Moredich & Moore, 2007). Classroom response systems transform the learning environment from a teacher-directed approach to one of interaction and increased awareness of metacognition (DeBourgh, 2008). Clickers are an innovative way to make large classes more manageable and interactive (Skiba, 2006). Advantages of the CRS include increased attentiveness to lectures, promotion of learning from peers and the sharing of clinical experiences, creation of a safe environment for student participation, immediate feedback, and reinforcement of adult learning (DeBourgh; Moredich&
Disadvantages include the initial cost of the technology, unfamiliarity, technical errors, and the possibility of cheating (DeBourgh; Filer, 2010).

Moredich and Moore (2007) used a classroom response system (CRS) to promote interactive learning in the classroom. Students responded favorably and reported active engagement when the classroom response system was incorporated into lectures of a physical assessment course. The authors promoted the use of classroom response systems (CRS) as a means of increasing attention, attentiveness, and interactive learning in the classroom. Students responded favorably to the use of the CRS in a Foundations of Physical Assessment course and believed that the CRS helped them stay actively involved in class. Learning is enhanced when classroom instruction is more exciting and interactive. Incorporating the CRS into lectures will actively engage students. Quiz questions should be thought provoking and timed appropriately. When students are performing poorly on CRS quizzes, faculty can revise the pace and/or content of the course accordingly. The authors recommended that faculty attend seminars on how to use a CRS.

Findings were similar when DeBourgh (2008) surveyed students enrolled in an advanced nursing therapeutics course for their perceptions of using clickers in the classroom. Of the 92 enrolled students, 65 completed the anonymous online survey. Students were asked to rate their satisfaction with the general aspects of using the clickers and to rate their perceived effectiveness of clickers to facilitate understanding of complex concepts and development of advanced reasoning skills. The majority of the students recommended continued use of the clickers. Most students felt the clickers were very useful for testing prerequisite knowledge and comprehension of assigned textbook readings. The majority felt that the technology was useful for confirming understanding of concepts from class discussions and assigned readings. Most students felt
clickers were useful for correcting misconceptions from readings and class discussions and thought that the immediate feedback of their decision making concerning case studies used in class was very helpful. Many students thought that clickers helped them score higher on quizzes and exams and more than half felt that they were encouraged to come to class better prepared when clickers were being utilized.

Likewise, Russell, McWilliams, Chasen, and Farley (2011) confirmed that the use of clickers in the classroom engaged students, was beneficial for making content more understandable and relevant, facilitated discussion, and helped prepare students for exams. The authors used clickers in a first-semester second-degree nursing course to promote understanding and retention of content, increase student engagement, and facilitate the development of reasoning and decision-making skills. The course included both didactic and clinical practice each week. Clicker questions were developed to progress in difficulty to stimulate deeper critical thinking. Questions were displayed on a PowerPoint slide and students were allowed 30 to 60 seconds to select their answer. Discussion was generated before the answer tabulations were displayed. Course points were allotted for participation rather than for correct answers.

Students were asked to complete a short survey at the end of the semester to solicit their perceptions of clicker use in the classroom. Most of the students responded to the Likert-type scale survey. The majority of the students agreed that class was more engaging and clickers helped them to pay attention in class. Most agreed that clickers were beneficial for facilitating understanding of content and thought they were helpful in preparing for course exams. Just over half thought that the clickers helped to prepare them for the NCLEX. The majority of students thought that clicker questions helped to sharpen their critical thinking skills and made them think more deeply about their original answers during the discussion sessions. Criticism of clicker use
included too lengthy class discussion of wrong answers, unclear or ambiguous questions, and not enough time to think about the question before responding.

Smith and Rosenkoetter (2009) sought validation from students that the use of clickers in the nursing classroom was beneficial. In addition, the authors were interested in how the technology could benefit faculty. Clickers were used to document attendance and assign participation and performance points on quizzes in a junior-level ethics course. Faculty developed a Likert-type scale survey to elicit feedback regarding the students’ perceived effectiveness of using clickers in the classroom. Just over half of the students completed the survey. Most of the students supported the use of clickers and desired use of the clickers in other nursing courses. Many felt they had received immediate feedback and preferred the quizzes in place of a midterm exam. Problems identified with clicker use included difficulty with clicker registration, dead batteries, nonregistered responses, and not bringing clickers to class. However, due to the overall favorable student response, faculty planned to continue to incorporate clickers as an interactive teaching and testing strategy.

Likewise, Filer (2010) assessed the impact of clickers on student engagement and learning in the nursing classroom and received overall favorable responses. Clickers were found to augment lecture while fostering engagement and active learning in a safe learning environment. Ninety baccalaureate students enrolled in a second-semester medical-surgical nursing course were assigned to one of four groups, based on their course section enrollment. Two of the sections met the first half of the semester and the other two sections met the second half of the semester. Students could choose not to participate in the research collection but were expected to attend lecture sessions. All four groups received the same assigned readings for the two chosen content topics and the content was presented in a similar manner. A lecture format
with slides was used for instruction. Multiple choice questions were used to assess the students’ ability to apply didactic content to identified clinical situations. Students in the control groups responded verbally, while students in the study group responded using clickers.

At the conclusion of each topic, both groups completed the same 5-question multiple choice written quiz. Both groups were asked to complete a Likert-type scale questionnaire rating their attitudes and perceptions of the class. In addition, the students who used the clickers were also asked to rate their attitudes for use of the clickers in class. A total of 174 quizzes were completed. Each clicker group’s scores were compared against its respective control group’s scores. Independent sample t tests were used to ascertain differences in scores between the subgroups. There was no significant improvement for test scores due to the use of clickers. Chi-square analysis was used to compare the perception and attitude responses of the study and control groups. Students who used clickers reported more motivation to answer questions correctly, were more comfortable answering questions, and participated in class more because questions were asked than students in the control group. However, there was no significant difference found in the lecture quality or students’ perception of their learning between the groups. Most of the students who used the clickers thought they were easy to use and expressed a desire to continue use of clickers in future classes.

A study by Stein, Challman, and Brueckner (2006) validated students’ perceived benefits of using clickers in the classroom. The study involved freshmen students in an undergraduate nursing anatomy and physiology course for the fall and spring semesters. In the fall course, 155 students were enrolled, and 128 were enrolled in the spring course. Four examinations were given in each course and a content review was conducted before each exam. One review used the traditional lecture style overview and the other three reviews utilized clicker questions. Each
clicker pretest utilized 25 multiple choice and true/false questions constructed in a Jeopardy!®-style format. The degree of difficulty increased as more points were earned. Students played in teams rather than individually, due to class size. The correct answer was projected after tabulated results were shown for each question, and the rationale for each correct answer, as well as reasons why other choices were incorrect, was given. Students were asked to evaluate the course using a Likert-type survey at the completion of the course. Seventy-six of the students completed the survey. Ninety-two percent thought that the clicker reviews were more beneficial than the traditional reviews. Ninety-four percent thought that the clickers had a positive effect on exam scores, although comparison of scores did not reveal any difference when compared with traditional reviews. Nonetheless, students tended to answer more questions correctly on exams that were missed in reviews. Eighty-nine percent thought that discussion of wrong answer choices was beneficial for learning. Faculty also thought that the clickers were beneficial for motivating and engaging students and for identifying problem areas. This technology has proven to be an effective innovative instructional tool in the nursing classroom.

Gaming. Similarly, gaming has been purported to be an effective instructional tool in the nursing classroom. Games can be used to promote engaged, active learning and critical thinking while teaching nursing content (Cowen & Tesh, 2002; Glendon & Ulrich, 2005; Metcalfe & Yankou, 2003; Royse & Newton, 2007). Gaming is an innovative teaching strategy that can be used as an adjunct to traditional teaching strategies to facilitate knowledge retention (Cowen & Tesh; Royse & Newton) and promote problem-based learning (Royse & Newton).

Metcalf and Yankou (2003) developed a game for a nursing ethics course that previously had been taught through lecture and case studies. The ethics game provided opportunities for
students to examine personal values regarding ethical issues involving patient care. One week prior to the game, theoretical concepts of ethics were presented to the class of 28 students in a lecture/seminar format. Instructors created 14 ethical dilemmas based on hypothesized or actual cases. The dilemmas either required an action or no action, or required one of two distinctly different actions.

Students were divided into pairs and the dilemma was read aloud. A coin toss decided which student would be allowed to choose which side of the dilemma they would argue. The student’s partner had to argue the other position, regardless of their personal feelings or values. The arguments were presented to the entire class based on an ethical decision-making model derived by the instructors. Students voted for the one who made the strongest argument. The student with the most overall points won the game and a prize was awarded.

The game was initially used during a summer semester where students met for 2 hours, two nights a week. When used during a regular semester, 70 students were divided into groups of 20 to 28 and played the game in separate rooms. Difficulties of using the game included large class size and limited time between learning course content and playing the game. Benefits of using the game strategy included increased confidence in making ethical decisions, clarification of values, and considering others’ points of view.

Cowen and Tesh (2002) conducted a quasi-experimental study to determine whether gaming and lecture were more effective in increasing students’ knowledge of pediatric cardiovascular dysfunction content than lecture alone. Eighty-five junior nursing students completed the study. Students enrolled in the first rotation of the fall semester and the second rotation of the spring semester comprised the comparison group with a total of 43. Students enrolled in the second rotation of the fall semester and the first rotation of the spring semester
comprised the treatment group with a total of 42. The game was developed and pilot tested prior to the study. The pre-test and post-test were also pilot tested prior to the study. The pre-test and post-test had 11 multiple choice and 4 matching questions. Both tests evaluated the same concepts but the questions were different. The game consisted of 50 questions divided into five categories related to cardiac dysfunction. Students were randomly divided into groups. The group receiving the highest score was recognized but no prize was awarded. Grades were not affected by the scores on the pre-test or post-test.

The pre-test was administered 1 week before the class on cardiac dysfunction. Content was taught to the comparison group using lecture, overhead transparencies, and class discussion. The treatment group was taught using these same strategies in addition to playing the game during the last 30 minutes of class. All students completed the post-test the day following the class.

There was no significant difference between the two groups’ pre-test scores. The pre-test mean was 7.7 for the comparison group and 7.8 for the treatment group. Both groups’ post-test scores were higher. The comparison group’s score was 12.8 and the treatment group’s score was 14.14. Students in the treatment group’s score increased by 6.31 points whereas the comparison group’s score increased by 5.19 points. ANCOVA was used to test for statistical significance between the two groups’ post-test scores. Scores for the treatment group were significantly higher than the comparison group.

Similarly, Lever (2005) found a significant difference between pre-test and post-test scores when students participated in a board game used to teach nursing research concepts and process. The instructor developed a board game to promote active learning, peer collaboration, repetition, and questioning. Fifty questions were generated from course objectives, the course
textbook, and other research-related materials. The game was played with 4 to 6 students per game board and students were required to go through the entire 50 questions at least twice during the class session. Three groups of students (total 83) participated in the learning activity. Thirty-five students completed a pre-test and post-test composed of similar questions used in the board game. The pre-test mean score was 67.2% and the post-test mean score was 83.5%. A paired t test showed a significant difference between the pre-test and post-test scores. The author recommended continuing with a pre-test and post-test to evaluate the effectiveness of the teaching tool as well as comparison of test scores for students who did participate and those who did not participate in the learning activity.

In addition, Royse and Newton (2007) reported that gaming promotes active learning, encourages critical thinking, generates enthusiasm for learning, enhances knowledge retention, promotes problem-based learning, and motivates students to become engaged in their learning when used as an adjunct to traditional forms of teaching. The authors conducted a literature review related to the use of gaming in nursing education. Only a few empirical studies were reported. Games were found to be effective in improving learning outcomes. Used as an adjunct to traditional forms of teaching, gaming promotes active learning, encourages critical thinking, generates enthusiasm for learning, enhances knowledge retention, promotes problem-based learning, and motivates students to become engaged in their learning. Gaming can also be used to replicate real-life situations. It is up to the instructor to ensure that teaching strategies will facilitate the achievement of course objectives and best suit the needs of the curriculum.
Simulation and Role Play

Simulation. Simulation attempts to replicate real-life situations as closely as possible through equipment and the environment (Medley & Horne, 2005). Simulation provides opportunities for critical thinking and prioritizing patient care (Partin, Payne, & Slemmons, 2011; Thompson & Bonnel, 2008), promotes knowledge retention (Horan, 2009; Partin et al.; Thompson & Bonnel), bridges the theory and clinical gap (Thompson & Bonnel), provides opportunities to practice problem solving (Hawkins, Todd, & Manz, 2008), promotes teamwork (Medley & Horne; Partin et al.), and accommodates learning preferences of all students (Comer, 2005). Simulation provides opportunities for students to hone clinical skills in a safe, controlled, and nonthreatening environment (Hawkins et al.; Henneman & Cunningham, 2005; Horan; Partin et al.; Thompson & Bonnel). By incorporating simulation in learning experiences, students will be better prepared for patient care (Horan; Medley & Horne; Partin et al.). Whereas most simulation experiences have been incorporated into the clinical component, a few studies were located that addressed the use of simulation in the nursing classroom.

Doran and Mulhall (2007) incorporated high-fidelity simulation into the nursing curriculum to augment a didactic presentation in a community health course. Students were able to synthesize the knowledge they had been taught and intervened appropriately in the simulation experience. Students thought the approach was effective for learning, and working as a team was a positive experience.

Community health students were given a didactic presentation on smallpox and anthrax exposures. A week later they participated in high-fidelity simulation with a client in an acute care setting who had been exposed to either smallpox or anthrax. The students worked in groups of four and were a primary nurse, infection control nurse, assistant nurse, or nurse manager.
Students were able to synthesize the content they had been taught and intervened appropriately. All students thought the approach was effective for learning and thought the simulation exercise was realistic and increased most students’ confidence for providing future care to actual patients with exposure. They also thought working as a team was a positive experience. Simulation helps bring a sense of realism to the content and increases students’ confidence to care for actual clients by helping them prepare for the unexpected and should be incorporated as a teaching strategy.

Similarly, Kalmakis et al. (2010) broadcast content specific simulations to two didactic nursing courses to emphasize concepts being taught and bridge the gap between theory and clinical practice. The two courses were pharmacology in nursing and principles of nursing care. For each simulation, three to five student volunteers enacted the roles of primary RN, supporting RN, family member, and patient’s voice. Observers in the classroom were given a form with questions to generate critical thinking and an NCLEX-RN type question related to the content of the day.

The principles of nursing care course began with a simulation to stimulate class discussion. Discussion included pertinent assessments, possible nursing diagnoses, and pertinent nursing interventions. The pharmacology course began with a lecture and was followed by a simulation exercise related to the content for that particular day. Students were able to observe the care of the patient and the response of the patient to nursing interventions. Discussion following the simulation exercise helped to reinforce the content that had been taught. Students evaluated the experiences by responding to four statements and an open-ended question. Students were found to be actively engaged and enthusiastic about learning.
Partin et al. (2011) used high-fidelity simulation to teach obstetrical concepts to second-year associate degree nursing students. Sixty students participated in the study over two semesters. Students participated in two or three simulation experiences during the clinical rotations each semester. The simulations were conducted by an assistant professor of nursing and a certified women’s health nurse practitioner. Participation in the simulation experiences was required as part of clinical but was not graded. A discussion followed each simulation experience. Many of the students voluntarily audio taped their responses to the simulation experience. Student responses were very favorable toward the simulation learning experiences. They reported increased confidence in their ability to provide patient care, enhanced ability to think critically, and better preparation for clinical practice. Dissatisfaction was expressed when the group size was more than six members due to difficulty observing and participating in the experience.

Horan (2009) used mini-scenarios as a means to augment lecture when presenting difficult concepts to a class of 57 in an associate degree program. Content was presented via a case study or PowerPoint presentation. Afterwards, four students were selected to participate in a 15-20 minute mini-scenario in a simulation room while the remaining students observed via live video feed in the classroom. Students in the classroom were provided with a worksheet that asked them to identify the problem in the scenario and defining characteristics that supported the problem, and to discuss two interventions that were performed well, as well as two that were omitted or could have been implemented earlier. The scenario was followed by a discussion. The majority of students expressed enhanced confidence, thought that the simulation helped them understand the concepts, felt more capable to care for patients, thought the scenarios facilitated critical thinking and decision making, and felt the environment was non-threatening.
Not only does simulation reinforce theoretical learning in the classroom, it also promotes safe clinical practice. Thompson and Bonnel (2008) incorporated simulation in a pharmacology course in an attempt to promote safe medication administration. Students perceived the simulation exercise as facilitating learning in a safe environment. The authors developed a simulation scenario based on narcotic agonist and antagonist content. Seventy-two students were enrolled in the pharmacology course as well as their first clinical course. Students completed a pre-test on the content using a multiple choice exam prior to the simulation. Students were divided into groups of six and assigned roles of nurses, family members, and observers for the experience. Students worked on a self-taught learning module, when not participating in the simulation.

Expected behaviors included interacting with family members and other healthcare professionals, obtaining an order for pain medication, administering the pain medication, and notifying the physician of a change in condition related to medication administration. Each simulation lasted between 20 and 30 minutes. The debriefing sessions reflected on students’ performance and application of knowledge, as well as their perceptions of the benefits of the experience. The sessions lasted between 40 and 50 minutes. Students also completed a multiple choice post-test. The average post-test score was significantly higher than the average pre-test score. Points were given for participation in the simulation experience, as it was intended to be a teaching tool rather than a formal evaluation.

Likewise, Henneman and Cunningham (2005) had similar intentions and results in a senior-level acute/critical care elective course. The authors designed three simulation experiences with specific objectives but no evaluative component. Their primary focus was on efficient, effective, and safe patient care. During the 15-week semester, five students
participated in the video-taped simulation exercises, which were approximately 3 weeks apart. Students were provided with the objectives and pertinent patient information before each exercise. Debriefing sessions were held after each scenario and provided opportunities for students to reflect on their performance as well as what feelings were evoked during the experience. In addition, students evaluated the experiences with a Likert-type scale and open-ended questions. Overall, students were satisfied with the learning experiences, but were especially satisfied with the final simulation.

**Role play.** Role playing can augment lecture or it can be used in place of it to present theory content. Role playing engages the student (Lee & Lamp, 2003; Lowenstein, 2011), facilitates the retention of material (Comer, 2005; Lee & Lamp), facilitates the process of making judgments and decisions (Lowenstein), and can be used in most settings (Lee & Lamp; Lowenstein).

Comer (2005) purported that role play scenarios can be an effective substitute for and a supplement to simulation technology. The author used role play as a supplement to a two-phase simulation scenario. The author employed a non-graded, two phase simulation scenario in an associate degree nursing critical care course. Typically there are approximately 30 students per semester in the course. Students were selected by a random draw of names and once they participated in a scenario, their names were removed. Two students acted as nurses during the simulation and those students selected two others who acted as ancillary personnel to perform delegated tasks. The other students in the class served as a resource and could offer suggestions to the four when asked or when the instructor prompted them. Participants were expected to identify a clinical condition and determine appropriate interventions during the first phase. The
second phase involved deterioration in the client’s condition and students were expected to simulate the appropriate care for the situation. A student assumed the role of the client and was given a script to follow. Participants were allowed to ask for the information they needed to progress through the scenario. The scenarios lasted no longer than 20 minutes. A debriefing after each simulation emphasized key points and reinforced students’ critical thinking and clinical judgment. Before simulation role play, at least 10 of the 30 students failed the first exam. The failure rate dropped to 5 out of 30 when the simulations were introduced into the course. The majority of the class responded favorably to the scenarios on an informal questionnaire and in general thought that the simulations reinforced lecture content.

Lee and Lamp (2003) utilized role play and humor to promote learning of concepts in a maternal-child nursing course related to pregnancy, labor, and birth. One faculty member posing as a distressed pregnant woman at term entered the classroom and introduced herself as a former student that had not paid attention in class and was in need of information. The lecturing instructor assured the visitor that the students would provide the information she needed. The visitor asked the students questions related to the labor and birthing process, as well as the nurse’s role, and students provided the answers. The next week the instructors exchanged roles and the visitor became a breastfeeding new mother who was also caring for a toddler. Questions were directed to the students concerning breastfeeding, nutrition, and the postpartum period. Feedback from the students on this approach was positive. They felt it provided a helpful summary and review of course content and appreciated the use of humor.
Argument Mapping, Concept Mapping, and Case Study

*Argument mapping.* Argument mapping is a teaching-learning strategy that can be used in the classroom or online to develop reasoning and judgment (Billings & Kowalski, 2008). Educators can use argument maps as either a teaching strategy or as an evaluation tool. Students can work as individuals or in small groups. When students share their work, further discussion can be generated about the problem and possible solutions. Benefits of argument mapping include the ability to work collaboratively, the promotion of advanced thinking, improved clinical decision-making skills, and improved writing skills. The tool requires little preparation time on the instructor’s part and requires few resources but is an effective strategy that yields significant learning outcomes (Billings & Kowalski).

*Concept mapping.* Concept mapping, also referred to as mind mapping or care mapping, can be described as a visual illustration of a particular situation or set of circumstances (Kostovich et al., 2007). Concept mapping has proven to be an effective instructional tool for nursing education in supporting metacognition (Taylor & Wros, 2007). Enhanced learning and critical thinking occurs as a result of this problem-solving process (Vacek, 2009). Concept maps can be introduced in lecture to promote meaningful learning (Clayton, 2006). The teaching tool can be used as a group or individual activity to promote learning and development of critical thinking (King & Shell, 2002).

All, Huycke, and Fisher (2003) used concept maps with case studies to evaluate critical thinking and acquisition of new knowledge. The authors used concept maps to simulate situations with case studies involving acute pain, chronic pain, and end-of-life care issues. Participants were upper division undergraduate and graduate nursing students who were enrolled
at a health science campus. Undergraduate students received a 2-hour lecture concerning acute and chronic pain. Examples of concept maps were given and an article regarding concept maps was assigned. Maps were returned after grading, with feedback, but students were not given the opportunity to revise the maps. Graduate students were assigned several readings and websites were identified. Students presented their maps in a seminar. Feedback was given from faculty and peers and students were given the opportunity to revise or to turn in their map without revision, as a final assignment. All of the students were given several modules and a case study involving end-of-life issues on which to base their maps. The authors recommended further research to evaluate concept mapping as a tool to evaluate critical thinking, studies to measure the effectiveness of assessing current knowledge and acquisition of new knowledge with concept mapping, and assessing critical thinking with concept mapping. The following article further validated the effectiveness of concept mapping to facilitate conceptual learning.

Akinsanya and Williams (2004) used concept mapping in a foundations course and in a management course. Concept mapping was deemed an effective tool for facilitating learning at the conceptual level and for generating links between theory and practice. The authors used a concept mapping poster presentation as a module assessment in a foundation program of inquiry-based learning. Students collected information from a literature search for one selected concept of interest to them. They then prepared a poster presentation with peer group discussion following. Students self-assessed their presentation. Constructive feedback was given by the faculty members. Additionally, students worked in groups to develop a concept map in a management course to facilitate understanding of issues related to management. Student evaluations were favorable for this teaching method. Concept mapping is an effective tool for
facilitating learning at the conceptual level and is recommended for incorporation in nursing courses to generate links between theory and practice.

Wheeler and Collins (2003) utilized a quasi-experimental study to examine the effects of concept mapping on baccalaureate students’ development of critical thinking skills in an introductory junior-level nursing course. Seventy-six students were randomly assigned into one of four courses—adult health, pediatric, maternity, or psychiatric nursing—and a corresponding clinical rotation for the first 7.5 weeks of the fall semester and then reassigned to one of the other three courses for the remaining 7.5 weeks. Students in the adult health course and one section of the pediatric course developed a concept map as part of their preparation for the clinical experience. Students in the other courses utilized traditional care plans as their clinical preparation. Form A of the California Critical Thinking Skills Test (CCTST) was used as a pre-test and Form B was used for the post-test. Pre-test scores did not differ significantly between the two groups. Post-test scores differed significantly from the pre-test scores for the experimental group on the overall CCTST, but no significant difference was found for the control group. There was a significant mean difference on the analysis subscale for the experimental group and a significant mean difference for both groups on the evaluation subscale. There was a non-significant but small negative mean difference for the experimental group on the inference subscale, with a significantly greater negative mean difference for the control group. However, the subscales of deductive and inductive reasoning showed no significant difference between pre-tests and post-tests for either of the groups. The mean overall score for the pre-test was 17.10 and increased to 17.79 on the post-test. The experimental group’s score ranked below the sample as a whole on the pretest, but ranked above the control group on the post-test. Percentile rankings increased 5% for the experimental and 2% for the control group on
the inductive reasoning subscale. Whereas the experimental group increased 8% on the deductive reasoning subscale, the control group did not change. Although no statistically significant difference was found between the groups, faculty noted that students who had been in the adult health course had better problem-solving skills in subsequent clinical rotations than students who had not.

Case study. Case studies are an effective teaching method for facilitating students’ development of clinical judgment and critical thinking (Delpier, 2006; Maag & Fonteyn, 2005; Sandstrom, 2006; Tomey, 2003) and problem-solving skills (Maag & Fonteyn; Tomey). Delpier recommended using case studies to teach nursing students how to think like nurses. Case studies can be an effective method for facilitating students’ development of clinical judgment without risk to the patient. Students assume an active role in the learning process and emphasis is on integration of concepts rather than rote memorization. Case studies simulate the actual clinical experience with realistic details and events. Additionally, the use of the narrative may improve retention of concepts. Disadvantages of using case studies include the increased time required for development and utilization of the case study, a perceived loss of control of the classroom, inadequate student preparation, resistance to change, reluctance to participate, and lack of focus. Cases should be developed with clear objectives in mind. A story that replicates real-life situations is essential for capturing students’ attention and varies in complexity depending upon the disease process or condition and teaching objectives. Key questions provide students with opportunities for assessing, analyzing, planning, interventions, and evaluation as well as guide classroom discussion. The author recommended having another faculty member review the case study to help identify discrepancies or errors. Additionally, seeking input from the students for
further revisions is encouraged. Increased interaction with the instructor and other students is an added benefit. The following article supports the effectiveness of case studies in developing critical thinking.

Sandstrom (2006) used case studies to teach students about the complexities of chronic illnesses. Case studies were developed to teach students about the complexities of living with chronic illnesses, specifically diabetes mellitus. Three case studies were presented and built from simple to complex. The case studies were authentic, realistically complex, and sequenced to support students’ needs at different stages of their learning. Opportunities were available in the clinical area to assess the progression of learning. Students’ critical thinking ability increased as a result of analyzing client situations through case studies. The course objectives and desired client outcomes should be used to determine the type of case study that will best facilitate student learning.

DeMarco et al. (2002) replicated a qualitative study previously conducted with physical therapy students. The researchers used a qualitative exploratory design to evaluate the experiences of senior nursing students in a leadership and management course after the 10-week course ended. The students participated in a 2-hour weekly didactic class as well as a 1-hour weekly case-based small group learning experience. Students came together and shared their findings at the end of the term. Students were required to submit a formal report based on their findings that comprised 30% of their total course grade. Five percent of their total grade came from peer evaluations of each individual’s contribution to the group effort. A convenience sample of seven students (20% of the class) was interviewed using semistructured interview questions. Responses were audio taped and then transcribed.
Six distinct themes emerged from the study: motivation, real-world, learning, knowledge
development, emerging from within, and group dynamic issues. Both intrinsic and extrinsic
reasons motivated students to complete the cases. The case-based instructional approach was
preferred over didactic learning and allowed students to apply theory to practice. Additionally,
students were able to experience simulated realistic dilemmas in a safe environment. Students
identified critical thinking, problem solving, prioritization, working with others, and appreciation
of the nurse manager role as real-world skills. Case studies stimulated self-reflection and deeper
learning as well as helped students value the benefits of working as team members.

Summary

The most frequently used active learning strategies identified in nursing education are (a)
case studies, (b) concept mapping, (c) games, (d) problem-based learning, (e) experiential
learning, (f) class response systems, (g) simulation, (h) role play, (i) argument mapping, (j)
cooperative learning, and (k) team learning. Some of these same strategies have also been
successfully utilized in other professional disciplines, such as engineering and medicine.
However, most studies identified for this research were only of an anecdotal nature, with few
studies focused on associate degree nursing. Further study is needed on the use of active
learning strategies in the classroom, particularly the associate degree nursing classroom. Clearly,
the use of active learning strategies has been demonstrated to facilitate the acquisition of
knowledge and development of critical thinking in a variety of disciplines. Obviously there are
barriers as well as benefits when these strategies are employed. Additional research should
explore what other strategies can be utilized to facilitate the acquisition of new knowledge and
development of critical thinking skills, as well as seek to identify other benefits and barriers
associated with use of these instructional strategies, especially in the associate degree nurse classroom. Faculty should continue to examine how nursing content is taught and evaluate whether teacher-learning methods are effective in helping students meet expected course outcomes and preparing them to work in a complex health care environment.

Results of a global study to explore the types of innovative pedagogies used in nursing education worldwide indicate that the conventional teacher-centered approach remains the most prevalent pedagogical style (Brown, Kirkpatrick, Greer, Matthias, & Swanson, 2009). Whereas 90% of the respondents reported using instruments to evaluate the effectiveness of their teaching, the respondents did not identify the method used to evaluate specific teaching strategies or approaches (Brown et al.). Little agreement was found as to which strategies were most helpful in facilitating student learning, indicating that multiple strategies are used to meet learner needs relative to the educational setting (Brown et al.). Case-based, lecture, and client/patient care strategies were reported to be the most helpful in facilitating student learning for those who used a predominantly conventional pedagogy (Brown et al.). Case-based, evidence-based, inquiry-based, and client/patient care strategies were found to be the most helpful for those who used predominantly inquiry pedagogy (Brown et al.). Those utilizing a blended pedagogical approach found case-based and evidence-based strategies most helpful for student learning (Brown et al.).

The authors called for research to study the application and evaluation of teaching methods across various levels of nursing education in multiple settings to help refine the validity of findings, as well as additional research to benchmark innovative teaching methods against more traditional approaches. This researcher sought to do so while pursuing this study with community college associate degree nurse educators in a southern state by examining how they were utilizing instructional strategies in specific nursing education courses to enhance learning
and the development of critical thinking skills as well as identify benefits and barriers when using these particular instructional methods. Findings from the review of literature further justified the researcher’s judgment for choosing a descriptive approach.
CHAPTER 3
RESEARCH METHODOLOGY

Introduction

Limited research exists that addresses instructional methods used in nursing education, particularly associate degree nursing education. As noted, most studies identified have been anecdotal. Ongoing pedagogical research identifying effective, innovative, and interactive instructional methodologies is needed in an endeavor to develop the science of nursing education and enhance or improve nursing practice. The purpose of this descriptive study was to examine which teaching methods community college associate degree nurse faculty members in a southern state were utilizing to enhance student learning and develop critical thinking in fundamentals and/or medical-surgical nursing courses. This chapter provides an overview of survey research and describes the research methodology, including the research design, research questions, population and sample, instrument, data collection procedure, and data analysis procedures used to conduct this research study.

Design

A descriptive survey design was used for this study. Data collection for descriptive research is obtained through methods such as surveys or interviews and subjects are selected that represent the population at large (Fain, 2009). The survey method has become an acceptable means for conducting research (Schonlau, Fricker, & Elliott, 2002). While all types of research have the potential to contribute to effective interventions, descriptive research is focused on
information about participants (Whittemore & Grey, 2002). Exploratory and descriptive nursing research is an effective means to explore and understand phenomena (Whittemore & Grey). Survey research is used to collect and quantify data and can be a very valuable method of scientific inquiry in certain instances (Babbie, 1990). A cross-sectional survey collects data from a particular sample at one point in time in order to describe a larger population at the time of data collection (Babbie). The survey format lends itself to the collection of various variables that can be quantified and processed (Babbie). According to Patten (2007), surveys provide a description of the attitudes, beliefs, and behaviors of a particular populace. When conducting nursing research, survey designs are the accepted method for obtaining information about the prevalence, distribution, and interrelationships of variables within a population, as well as for collecting demographic information and behavioral patterns (Webb, 2011).

Survey research is preferable when data cannot be obtained in other ways and produces statistical results regarding a target population (Fowler, 2009). The survey method is preferred when there is a potential for a large number of participants (DeVaus, 2002). Surveys are a means used to make descriptive claims about a population (Babbie, 1990). The researcher is concerned with what the distribution of certain traits or characteristics are, not with why the distribution exists (Babbie). The distribution of traits measured from a purposeful sample may infer an equivalent description from the larger populace (Babbie). Certain behaviors and situations can only be ascertained by asking a sample of people about themselves (Babbie; Fowler). Anonymous, objective questionnaires can easily be administered to large numbers of participants in a short timeframe (Bernhardt, 2004; Patten, 2007; Schonlau et al., 2002). Use of the Internet encourages altruism and is less expensive than other methods (Baron & Siepmann,
Other advantages include allowing participants to respond to the survey at their leisure and the ability to retrieve information for analysis immediately. Some disadvantages of the survey method have been noted. Sample size can be restricted if participants are not motivated to respond to the survey. In addition, errors may be generated from submission of incomplete surveys. Because participants may have valid reasons for not providing answers to survey items, they were given the option to avoid responding to the questionnaire items. The advantages of delivering the survey online outweighed the disadvantages for this particular study.

The information sought for this research study could not likely be obtained as efficiently and effectively through other means. The researcher believed the survey questionnaire would provide sufficient data for the study and allow the opportunity to collect data from all community college nurse educators who teach fundamentals and medical-surgical nursing courses and were employed in associate degree education in a particular southern state at the time of the study. Demographic data were collected in order to provide information on the types of individuals who comprised the study sample (Keough & Tanabe, 2011; Patten, 2007). This information enables readers to make informed judgments regarding the extent to which the results apply to their own setting (Keough & Tanabe; Patten). Descriptive statistics were used to summarize demographic data. Descriptive statistics are used to describe characteristics about the sample and address research questions for studies that are primarily of a descriptive nature (Polit & Beck, 2008). Findings for each of the six research questions were answered with descriptive statistics. The Statistical Package for the Social Sciences (SPSS, 19th ed.) was used to compute descriptive statistics.
Participants

The target population for this study was a purposive sample of all community college nurse educators in a southern state who taught fundamentals or medical-surgical nursing courses in associate degree nursing programs at the time of the study. When a larger number of people are surveyed, the more likely the sample is representative of the general population (Coolidge, 2006). Most often, the sample size is determined by the population to whom we want to generalize (Coolidge). A purposive sample provided the experts needed for this study, although it did not provide an objective method for assessing the typicalness of the selected subjects (Polit & Beck, 2008). However, it was anticipated that there would be diversity among the group of nurse educators, as would be among any group of educators, in regard to age, race, experience, education, and background.

Internet surveys of particular closed populations tend to result in higher response rates (Schonlau et al., 2002). The process is facilitated by having access to the respondents’ e-mail addresses (Schonlau et al.). Currently, there are 15 community college associate degree nursing programs in this southern state and approximately 250 associate degree nurse educators employed full-time in these programs. It was anticipated that at least three fourths of these educators would teach in a fundamentals or medical-surgical nursing course and would provide an adequate sample size for the research study. When descriptive statistics are used, practically any sample size is considered sufficient (Israel, 1992). The more homogenous a population is, the smaller the required sample will be (Lind, Marchal, & Wathen, 2011). Of the 15 programs available, consent was obtained from 8 nursing administrators to survey program faculty members. There are 170 total full-time faculty members in the 8 programs that participated in the study. Of those 170, approximately 145 teach fundamentals and/or medical-surgical nursing.
courses. The total number of respondents to the survey was 78. The completed number of
surveys was 75.

Materials

Data were collected from instructors via a researcher-developed online survey through
Qualtrics (see Appendix I), which took approximately 15 minutes to complete. The average
completion time for the survey was 11 minutes. The average time for completion of the initial
pilot study among baccalaureate instructors was 18 minutes. The average completion time for
the revised second pilot study among associate degree instructors was only 8 minutes thus
validating that 15 minutes was a sufficient time allotment for completion of the revised survey.
Demographic data included (a) age, (b) gender, (c) race, (d) level of instruction (first year versus
second year students or both), (e) number of years teaching experience, (f) highest degree
obtained, and (g) certification as a nurse educator. Focused questions examined (a) if
community college associate degree nurse educators were using active learning strategies in the
classroom; (b) what type of instruction educators had received for using active learning
strategies; (c) reasons for not using active learning strategies in the classroom; (d) what strategies
were employed by educators to teach nursing theory content to enhance student learning and
develop critical thinking; (e) how educators determined when to employ active learning
strategies; (f) what barriers have been encountered when using active learning strategies; and (g)
what the perceived benefits were for using active learning strategies. Faculty members were
then asked to identify how frequently each method was employed each semester for teaching
nursing content in fundamentals and medical-surgical nursing courses, and to rate their perceived
effectiveness of each method for enhancing student learning and developing critical thinking by
using a 5-point Likert-type scale. For this study, the researcher differentiated each teaching method by experience and dialogue based on Fink’s Active Learning Model. Fourteen of the teaching strategies were categorized by the researcher as experience by “doing” (case study, concept map, cooperative learning, group work, PBL, role play, team learning, question and answer pairs, games, debate, discussion, clicker questions, flash cards, and puzzle) and the remaining six were categorized by the researcher as experience by “observing” (lecture, PowerPoint presentation, simulation, video, vignette, and scenario). Teaching strategies were categorized as experience by “doing” if students were engaged in active learning when stimulation and application of higher-level cognitive processes and critical thinking were likely to occur. Teaching strategies were categorized as experience by “observing” if students were engaged in passive learning when little or no stimulation and application of higher-level cognitive processes and critical thinking were likely to occur. Ten of the teaching strategies were categorized by the researcher as dialogue with “self” (clicker questions, flash cards, puzzle, concept map, lecture, PowerPoint presentation, role play, scenario, video, and vignette) and the other 10 were categorized by the researcher as dialogue with “others” (debate, discussion, games, question and answer pairs, simulation, case study, cooperative learning, group work, PBL, and team learning). Teaching strategies were categorized as dialogue with “self” if students were thinking and reasoning independently during the learning process. Teaching strategies were categorized as dialogue with “others” if students were exchanging ideas with others during the learning process.

The survey instrument was reviewed by the dissertation chair and committee members for approval. In addition, the survey instrument was reviewed by a panel of educational experts to establish face validity (Keough & Tanabe, 2011). In an effort to determine clarity,
understanding of the items, and adequate time allotment, the researcher-developed tool was
initially piloted among a small group of baccalaureate nurse educators who were similar to the
target group (Bernhardt, 2004; Keough & Tanabe). Based upon feedback from the experts and
pilot group, revisions were made to the instrument. A second pilot was then administered to a
group of ADN educators at a four-year institution. The final instrument was administered online
through Qualtrics.

Procedures

A list of all community college associate degree nurse programs and their respective
program dean or director, with e-mail addresses, was obtained from the chair of the Mississippi
Council of Associate Degree Nursing programs. Permission to conduct the study was received
from members of the Mississippi Council of Associate Degree Nursing programs. After
obtaining approval from The University of Alabama Institutional Review Board (IRB), a copy of
the survey consent form, a copy of the survey, and a program consent form (see Appendix C)
was mailed to each program dean or director asking them to approve the request for the research
study at their respective institutions and to return the signed program consent forms in a self-
addressed, stamped envelope by the requested due date. Permission was obtained from one
institution’s nursing administrator after the researcher obtained approval from the junior college
review board. The researcher also obtained IRB approval from her home institution to conduct
the study, even though the home institution’s program did not participate due to its university
setting. A reminder e-mail was sent to each program dean or director 3 days after mailing the
consent forms. Consent was received from 8 of the 15 program administrators. After obtaining
consent from the nursing program administrator, an e-mail was sent to each program dean or
director to be forwarded to each faculty member that the survey was forthcoming and to invite participation, in an effort to enhance response rates (Edwards et al. 2009; Schonlau et al., 2002). Two days afterward, the online survey link was then forwarded by the program dean or director, per their request, to each faculty member via their password protected campus email account (see Appendix E). The e-mail did not contain the survey, but rather a link to the Web page containing the survey. The Web page was accessible only through this link. The Qualtrics software does not link the participants’ responses to their e-mail addresses. The researcher was not able to identify any of the participants and did not know which faculty members did or did not complete the survey. The responses remained completely anonymous. The information gathered from the questionnaire was password protected and only the researcher had the password. No names or other possible identifying information were used in the study and all data were reported as group data.

The consent form was embedded in the online survey (see Appendix H). This helped to protect the privacy of the participants. The participants were not able to complete the survey without acknowledging consent. The consent to participate was a forced choice response item and participants had to answer “yes” to participation before being allowed to proceed. The participants were allowed 4 weeks to complete the survey. During the initial 3-week data collection period, weekly e-mails were sent to faculty members as reminders to please complete the survey if they had not done so, as well as to thank those who had. Because of low response to the survey, the data collection period was extended for an additional week. Colleagues of the researcher also sent personal e-mails during the third week to instructors at each of the eight programs to encourage their participation in the study. At the end of 4 weeks, the survey was closed and no further access was allowed except to the researcher. Data were downloaded to a
flash drive as an excel file and were analyzed utilizing SPSS (19th ed.) with the assistance of a university statistician. No foreseeable risks to the participants could be identified. Every effort to ensure anonymity and confidentiality in regard to the data collected was taken. No individuals were identified and all data were reported as group data. Any data that were downloaded from the survey on a flash drive will be kept in the researcher’s office in a locked drawer for a period of 3 years. After 3 years, the data will be deleted from the flash drive. The completed surveys were only seen by the researcher. After the researcher completed her dissertation, the survey was deleted from Qualtrics.

Results

Once the data were collected, a descriptive statistical analysis of the survey data was conducted utilizing the 19th edition of the Statistical Package for the Social Sciences (SPSS) statistical tool. Analysis was based on the type of data in question. A description of sample characteristics was provided in the research report. The mean age of the participants with standard deviation and range was reported in years. The mean number of years as an educator with standard deviation and range was also reported. Frequencies and percentages were reported for race, gender, level of instruction (first year versus second year or both), highest degree held, and certification as a nurse educator. This information was reported in table format.

Findings for Research Question 1, “What teaching strategies are community college associate degree nurse educators who teach fundamentals and medical-surgical nursing courses using in the classroom to enhance student learning and develop critical thinking?,” were reported as descriptive statistics, frequencies, and percentages. The frequency of each strategy used, as well as the percentage of nurse educators using each strategy was computed. Survey item 12,
“Based upon your best estimation, please tell me how frequently you use the following methods each semester to teach content in fundamentals or medical-surgical nursing courses,” elicited information to answer Research Question 1. The frequency of each method used, as well as the number and percentage of nurse educators using the method, was reported in table format.

Findings for Research Question 2, “What barriers are encountered when utilizing ALS in the nursing classroom?,” were reported as descriptive statistics, frequencies and percentages. The frequency of each barrier identified, as well as the percentage of nurse educators identifying the barrier, was computed. Survey item 14, “What barriers have you encountered when using ALS to teach nursing content?,” elicited information to answer Research Question 2. This information was reported in table format.

Findings for Research Question 3, “What are the perceived benefits of utilizing ALS in the classroom?,” were reported as descriptive statistics, frequencies and percentages. The frequency of each benefit identified, as well as the percentage of nurse educators identifying the benefit, was computed. Survey item 15, “What are your perceived benefits for using ALS to teach nursing content?,” elicited information to answer Research Question 3. This information was reported in table format.

Findings for Research Question 4, “Is there a difference in the frequency of utilization of teaching strategies that involve experience by “doing” and experience by “observing”?”, were reported as frequencies and percentages. Learning experiences categorized by the researcher as “doing,” for this study, were identified as case study, concept map, cooperative learning, group work, PBL, role play, team learning, question and answer pairs, games, debate, discussion, clicker questions, flash cards, and puzzle. Learning experiences categorized by the researcher as “observing,” for this study, were identified as lecture, PowerPoint presentation, simulation,
video, vignette, and scenario. Survey item 12, “Based on your best estimation, please indicate in the first column the number of times (frequency) each semester you use the following methods in the classroom to teach fundamentals or medical-surgical content” elicited information to answer Research Question 4. Analyses of descriptive statistics were reported in table format.

Findings for Research Question 5, “Is there a difference in the frequency of utilization of teaching strategies that involve dialogue with “self” and dialogue with “others”?” were reported as frequencies and percentages. Learning experiences categorized by the researcher as dialogue with “self,” for this study, were identified as clicker questions, flash cards, puzzle, concept map, lecture, PowerPoint presentation, role play, scenario, video, and vignette. Learning experiences categorized by the researcher as dialogue with “others,” for this study, were identified as debate, discussion, games, question and answer pairs, simulation, case study, cooperative learning, group work, PBL, and team learning. Survey item 12, “Based on your best estimation, please indicate in the first column the number of times (frequency) each semester you use the following methods in the classroom to teach fundamentals or medical-surgical content” elicited information to answer Research Question 5. Analyses of descriptive statistics were reported in table format.

Findings for Research Question 6, “What is the perceived effectiveness of teaching strategies used by associate degree nurse educators in the classroom to enhance student learning and develop critical thinking?” were reported as descriptive statistics. Survey item 12, “In the second column, please rate how effective you think each method is for enhancing learning and development of critical thinking using the following scale: 1 = not effective; 2 = somewhat effective; 3 = neutral/no opinion; 4 = effective; and 5 = very effective,” elicited information to answer Research Question 6. The effectiveness rating for each teaching strategy, as well as the
mean with standard deviation, was computed. Analyses of descriptive statistics were reported in table format.

Summary

The incorporation of active learning strategies into the nursing classroom will facilitate meaningful and lifelong learning, as well as foster the development of critical thinking and essential clinical judgment skills. Nurse educators must determine what the best practices are to improve the quality of learning and involve students as active participants in their educational endeavors. These practices can be established and validated by continued research. This author responded to this initiative by seeking to determine what those best practices encompass through this research study. It was anticipated that findings could be utilized throughout nursing education classrooms in an endeavor to meet the needs of diverse adult learners in preparing them to become competent health care practitioners.

The study findings are presented in chapter 4. The findings were aligned with the research questions to analyze the study data. Chapter 5 concludes the study and discusses implications for practice and future research. The findings add to the body of knowledge in nursing education. The findings also describe faculty members’ perceptions of how ALS enhance student learning and development of critical thinking. In addition, results from the study provide insight into incorporating ALS with traditional teaching methods in the nursing classroom.
CHAPTER 4

RESULTS

The purpose of this study was to examine which teaching strategies were employed by community college associate degree nurse educators in a southern state to teach fundamentals and/or medical-surgical nursing courses. The study used a descriptive survey design to ascertain which methods were used and how frequently each method was used, as well as identify the perceived effectiveness of teaching strategies used to enhance student learning and promote critical thinking, what barriers were encountered when using ALS in the nursing classroom, what the perceived benefits were of using ALS in the nursing classroom, and how nurse educators determined when to use ALS in the nursing classroom. Data were collected from April to May 2012. Data analysis was performed using the Statistical Package for the Social Sciences (SPSS) version 19.0. Data analysis was summarized using descriptive statistics. The results of the study are presented in this chapter. The sample is described in the first section using descriptive statistical analyses. Demographic data follows the sample and is presented using descriptive statistical analyses as well. Findings for each of the study’s research questions are presented using descriptive statistics in subsequent sections.

Sample

Of the 15 community college programs in a southern state invited to participate, 8 nursing administrators consented to their faculty members taking part in the survey. There are
170 ADN educators employed full time in these 8 programs. Approximately 145 of these educators teach fundamentals and/or medical-surgical nursing courses. Approximately half of the educators (78) responded to the survey. Of these 78 respondents, 75 completed the survey. Findings from survey item 10, “Do you currently use ALS to teach content in fundamentals or medical-surgical nursing courses?”, revealed that 77.6% of the participants utilized ALS in the classroom and 22.4% did not (N = 76). Table 1 presents the descriptive statistics.

Table 1

<table>
<thead>
<tr>
<th>Use ALS</th>
<th>Frequency</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Yes</td>
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</tr>
<tr>
<td>No</td>
<td>17</td>
<td>22.4</td>
</tr>
<tr>
<td>Total</td>
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</table>

N = 76

Responses to survey item 11, “If you do not use ALS, please give your reasons for NOT doing so,” revealed that some of the same reasons for not using ALS in the classroom were the same as identified barriers encountered when using ALS in the nursing classroom. The most common reason for not using ALS was lack of student participation (29.4%). The next most common reason for not using ALS was unfamiliarity (23.5%). Other reasons cited for not using ALS included negative student evaluations (17.6%) and student dislike (11.8%). See Table 2 for a complete listing.
Table 2

Reasons for Not Using ALS in the Nursing Classroom

<table>
<thead>
<tr>
<th>Reason for not using ALS</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Just learning about them</td>
<td>1</td>
<td>5.9</td>
</tr>
<tr>
<td>Not used in the program</td>
<td>1</td>
<td>5.9</td>
</tr>
<tr>
<td>Have not incorporated</td>
<td>1</td>
<td>5.9</td>
</tr>
<tr>
<td>Student dislike</td>
<td>2</td>
<td>11.8</td>
</tr>
<tr>
<td>Negative student evaluations</td>
<td>3</td>
<td>17.6</td>
</tr>
<tr>
<td>Not familiar with</td>
<td>4</td>
<td>23.5</td>
</tr>
<tr>
<td>Lack of student participation</td>
<td>5</td>
<td>29.4</td>
</tr>
<tr>
<td>Total</td>
<td>17</td>
<td>100.0</td>
</tr>
</tbody>
</table>

N = 17

Demographic Data

The average age of the educators who participated in the survey was 48.4 years, \( SD = 10.5 \) years (see Table 3), with a range of 29 to 65 years (see Table 4). The majority of nurse educators nationwide (63%) are in the 46 to 60 year range (NLN, 2009a). Of the 75 participants who completed the survey, the majority was female (97.3%). Most nurse faculty members in the U.S. (95%) are female (NLN, 2009b). Refer to Table 5 for descriptive statistics. The majority of nurse educators participating in the survey were White (see Table 6). Nationwide, 87% of nurse educators are White (NLN, 2009c). Most participants (42.1%) instructed both first- and second-year students (see Table 7). The average years of teaching experience was 8.8 years, \( SD = 6.3 \) years (see Table 8), with a range of 1 to 33 years (refer to Table 9). More than 75% of nurse educators held a master’s degree (see Table 10). Most full-time nurse educators in the U.S. (67%) hold a master’s degree as their highest earned credential and only 25% have earned a doctorate degree (NLN, 2009d). Only 10% of the participants were certified nurse educators (see Table 11).
Table 3

**Age of ADN Faculty Members**

<table>
<thead>
<tr>
<th>Age</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>76</td>
<td>29.0</td>
<td>65.0</td>
<td>48.4211</td>
<td>10.50494</td>
</tr>
</tbody>
</table>

N = 76

Table 4

**Age Range of ADN Faculty Members**

<table>
<thead>
<tr>
<th>Age range in years</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-30</td>
<td>3</td>
<td>3.9</td>
</tr>
<tr>
<td>31-40</td>
<td>11</td>
<td>14.5</td>
</tr>
<tr>
<td>41-50</td>
<td>23</td>
<td>30.3</td>
</tr>
<tr>
<td>51-60</td>
<td>32</td>
<td>42.1</td>
</tr>
<tr>
<td>61-70</td>
<td>7</td>
<td>9.2</td>
</tr>
<tr>
<td>Total</td>
<td>76</td>
<td>100.0</td>
</tr>
</tbody>
</table>

N = 76

Table 5

**Gender of ADN Faculty Members**

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>2</td>
<td>2.7</td>
</tr>
<tr>
<td>Female</td>
<td>73</td>
<td>97.3</td>
</tr>
<tr>
<td>Total</td>
<td>75</td>
<td>100.0</td>
</tr>
</tbody>
</table>

N = 75

Table 6

**Race of ADN Faculty Members**

<table>
<thead>
<tr>
<th>Race</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>12</td>
<td>16.0</td>
</tr>
<tr>
<td>White</td>
<td>63</td>
<td>84.0</td>
</tr>
<tr>
<td>Total</td>
<td>75</td>
<td>100.0</td>
</tr>
</tbody>
</table>

N = 75
Table 7

*Level of Instruction of ADN Faculty Members*

<table>
<thead>
<tr>
<th>Level of instruction</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st year</td>
<td>29</td>
<td>38.2</td>
</tr>
<tr>
<td>2nd year</td>
<td>15</td>
<td>19.7</td>
</tr>
<tr>
<td>Both</td>
<td>32</td>
<td>42.1</td>
</tr>
<tr>
<td>Total</td>
<td>76</td>
<td>100.0</td>
</tr>
</tbody>
</table>

* N = 76

Table 8

*Teaching Experience of ADN Faculty Members*

<table>
<thead>
<tr>
<th>Years of experience</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>76</td>
<td>1</td>
<td>33</td>
<td>8.8421</td>
<td>6.33888</td>
</tr>
</tbody>
</table>

* N = 76

Table 9

*Teaching Experience Range of ADN Faculty Members*

<table>
<thead>
<tr>
<th>Years of experience</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5</td>
<td>25</td>
<td>32.5</td>
</tr>
<tr>
<td>6-10</td>
<td>31</td>
<td>40.3</td>
</tr>
<tr>
<td>11-15</td>
<td>10</td>
<td>12.9</td>
</tr>
<tr>
<td>16-20</td>
<td>7</td>
<td>9.1</td>
</tr>
<tr>
<td>21-25</td>
<td>2</td>
<td>2.6</td>
</tr>
<tr>
<td>26-30</td>
<td>1</td>
<td>1.3</td>
</tr>
<tr>
<td>31-35</td>
<td>1</td>
<td>1.3</td>
</tr>
<tr>
<td>Total</td>
<td>77</td>
<td>100.0</td>
</tr>
</tbody>
</table>

* N = 77
Table 10

Highest Degree Earned of ADN Faculty Members

<table>
<thead>
<tr>
<th>Degree</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master’s</td>
<td>59</td>
<td>78.7</td>
</tr>
<tr>
<td>Post-master’s</td>
<td>6</td>
<td>8.0</td>
</tr>
<tr>
<td>Doctorate</td>
<td>10</td>
<td>13.3</td>
</tr>
<tr>
<td>Total</td>
<td>75</td>
<td>100.0</td>
</tr>
</tbody>
</table>

N = 75

Table 11

Certification as Nurse Educator Status of ADN Faculty Members

<table>
<thead>
<tr>
<th>Certification</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>8</td>
<td>10.5</td>
</tr>
<tr>
<td>No</td>
<td>68</td>
<td>89.5</td>
</tr>
<tr>
<td>Total</td>
<td>76</td>
<td>100.0</td>
</tr>
</tbody>
</table>

N = 76

Research Question 1. What teaching strategies are community college associate degree nurse educators who teach fundamentals and medical-surgical nursing courses using in the classroom to enhance student learning and develop critical thinking?

Survey item 12, “Based on your best estimation, please indicate in the first column the number of times (frequency) each semester you use the following methods in the classroom to teach fundamentals or medical-surgical content” elicited information to answer Research Question 1 (see Table 12). Twenty commonly used teaching strategies were included in the questionnaire. These strategies were case study, clicker questions, concept map, co-operative learning, debate, discussion, flash cards, games, group work, lecture, PowerPoint, PBL, puzzle, question and answer, role play, scenario, simulation, team learning, video, and vignette. While no one strategy was used by all nurse educators, all strategies identified in the survey were being
utilized. Of the 20 identified teaching strategies, the strategies used most frequently were lecture, PowerPoint, discussion, case study, group work, and cooperative learning. The strategies used the least were vignette, flash cards, puzzle, debate, games, and role play. Reasons for not using active learning strategies and other identified barriers are reported in the next section.

Table 12

Teaching Strategies Utilized by ADN Faculty Members

<table>
<thead>
<tr>
<th>Method</th>
<th># of educators using</th>
<th>Frequency per semester</th>
<th>Percentage of educators using</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case study</td>
<td>64</td>
<td>309</td>
<td>85.3</td>
</tr>
<tr>
<td>Clicker questions</td>
<td>26</td>
<td>151</td>
<td>34.7</td>
</tr>
<tr>
<td>Concept map</td>
<td>39</td>
<td>147</td>
<td>52.0</td>
</tr>
<tr>
<td>Co-op learning</td>
<td>42</td>
<td>275</td>
<td>56.0</td>
</tr>
<tr>
<td>Debate</td>
<td>17</td>
<td>58</td>
<td>22.7</td>
</tr>
<tr>
<td>Discussion</td>
<td>58</td>
<td>508</td>
<td>77.3</td>
</tr>
<tr>
<td>Flash cards</td>
<td>7</td>
<td>32</td>
<td>9.3</td>
</tr>
<tr>
<td>Games</td>
<td>39</td>
<td>104</td>
<td>52.0</td>
</tr>
<tr>
<td>Group work</td>
<td>53</td>
<td>332</td>
<td>70.7</td>
</tr>
<tr>
<td>Lecture</td>
<td>61</td>
<td>616</td>
<td>81.3</td>
</tr>
<tr>
<td>PowerPoint</td>
<td>63</td>
<td>529</td>
<td>84.0</td>
</tr>
<tr>
<td>PBL</td>
<td>37</td>
<td>283</td>
<td>49.3</td>
</tr>
<tr>
<td>Puzzle</td>
<td>10</td>
<td>23</td>
<td>13.3</td>
</tr>
<tr>
<td>Q&amp;A</td>
<td>32</td>
<td>156</td>
<td>42.7</td>
</tr>
<tr>
<td>Role play</td>
<td>35</td>
<td>112</td>
<td>46.7</td>
</tr>
<tr>
<td>Scenario</td>
<td>51</td>
<td>263</td>
<td>68.0</td>
</tr>
<tr>
<td>Simulation</td>
<td>49</td>
<td>186</td>
<td>65.3</td>
</tr>
<tr>
<td>Team learning</td>
<td>31</td>
<td>160</td>
<td>41.3</td>
</tr>
<tr>
<td>Video</td>
<td>48</td>
<td>176</td>
<td>64.0</td>
</tr>
<tr>
<td>Vignette</td>
<td>13</td>
<td>43</td>
<td>17.3</td>
</tr>
</tbody>
</table>

N = 75

Research Question 2. What barriers are encountered when utilizing ALS in the nursing classroom?
Survey item 14, “What barriers have you encountered when using ALS to teach nursing content?,” elicited information to answer Research Question 2. By far, the most frequently identified barrier to using ALS in the nursing classroom was time constraints, both in preparation and implementation. Of the 66 educators who identified barriers, 24 of them (36.4%) identified time constraints as an issue. Issues with students were common findings. Lack of student preparation was the next most common barrier identified by eight educators (12.1%) and lack of student participation was acknowledged by seven (10.6%) participants. Additional issues with students included students’ preference for lecture (9.1%), student dislike (9.1%), and student resistance (7.6%). Other barriers were class size (9.1%), technical difficulties (4.5%), inadequate resources (3%), and lack of training (3%). However, six of the educators (9.1%) had encountered no barriers when utilizing ALS in the classroom. See Table 13 for the complete listing of barriers.
Table 13

Barriers to Using ALS in the Nursing Classroom

<table>
<thead>
<tr>
<th>Barrier</th>
<th>Frequency identified</th>
<th>Percentage of educators identifying</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time constraints</td>
<td>24</td>
<td>36.4</td>
</tr>
<tr>
<td>Group dynamics</td>
<td>2</td>
<td>3.0</td>
</tr>
<tr>
<td>Computer software not up to date</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>Lack of training for new equipment</td>
<td>2</td>
<td>3.0</td>
</tr>
<tr>
<td>Student dislike</td>
<td>6</td>
<td>9.1</td>
</tr>
<tr>
<td>Keeping focus on content being taught</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>Lack of student prep</td>
<td>8</td>
<td>12.1</td>
</tr>
<tr>
<td>Inadequate resources</td>
<td>2</td>
<td>3.0</td>
</tr>
<tr>
<td>None</td>
<td>6</td>
<td>9.1</td>
</tr>
<tr>
<td>Different learning styles</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>Lack of student participation</td>
<td>7</td>
<td>10.6</td>
</tr>
<tr>
<td>Class size</td>
<td>6</td>
<td>9.1</td>
</tr>
<tr>
<td>Technical difficulty</td>
<td>3</td>
<td>4.5</td>
</tr>
<tr>
<td>Cost</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>Students prefer lecture</td>
<td>6</td>
<td>9.1</td>
</tr>
<tr>
<td>Students prefer passive learning</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>Students not taking responsibility for learning</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>Resistance to change</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>Student resistance</td>
<td>5</td>
<td>7.6</td>
</tr>
<tr>
<td>Students not comfortable</td>
<td>2</td>
<td>3.0</td>
</tr>
<tr>
<td>Student expectations</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>Other faculty</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>Classroom space</td>
<td>2</td>
<td>3.0</td>
</tr>
<tr>
<td>Learning how to incorporate</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>Keeping students on track</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>Quiet students not as involved</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>Student buy-in</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>Amount of content</td>
<td>2</td>
<td>3.0</td>
</tr>
</tbody>
</table>

Additionally, survey item 13, “How do you determine when to use ALS to teach nursing content,” revealed similar findings as with “reasons for not using” and “barriers encountered when using ALS in the nursing classroom.” Overwhelmingly, the most frequent determinant of using ALS in the nursing classroom was subject matter/content to be covered (48.4%). The next
most common consideration was time availability (12.5%), and 10.9% of the educators routinely used ALS for every class regardless of the content and time availability. Consideration of learning styles and when the content or topic was perceived as difficult or controversial was identified by 7.8% of the participants. Refer to Table 14 to see a complete listing of determinants for using ALS in the nursing classroom.

Table 14

*Determinants for Using ALS in the Nursing Classroom*

<table>
<thead>
<tr>
<th>Determinant</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Based on course objectives</td>
<td>3</td>
<td>4.7</td>
</tr>
<tr>
<td>Based on learning styles</td>
<td>5</td>
<td>7.8</td>
</tr>
<tr>
<td>Required to use</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>Subject matter/content to be covered</td>
<td>31</td>
<td>48.4</td>
</tr>
<tr>
<td>Always use with lecture</td>
<td>3</td>
<td>4.7</td>
</tr>
<tr>
<td>Time availability</td>
<td>8</td>
<td>12.5</td>
</tr>
<tr>
<td>Based on past experience</td>
<td>2</td>
<td>3.1</td>
</tr>
<tr>
<td>Students having trouble grasping content</td>
<td>4</td>
<td>6.3</td>
</tr>
<tr>
<td>Curriculum decision</td>
<td>2</td>
<td>3.1</td>
</tr>
<tr>
<td>Difficult or controversial topic</td>
<td>5</td>
<td>7.8</td>
</tr>
<tr>
<td>Use in every class</td>
<td>7</td>
<td>10.9</td>
</tr>
<tr>
<td>After student evaluations</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>To enhance learning</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>Mood of the class</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>Student dynamics</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>Pre-assessment of students’ understanding of content</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>Prep for class assignment</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>Decided by director</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>When students not prepared for class</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>Feedback from students</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>To maintain interest</td>
<td>3</td>
<td>4.7</td>
</tr>
</tbody>
</table>

*N = 64*

Survey item 9, “What type of preparation have you had with using ALS,” found that the majority of nurse educators (87.5%) had at least one type of preparation for using ALS, but
12.5% had no preparation for using ALS. Preparation included workshops (61.25%), academic courses (13.75%), and peer instruction (8.75%). Additional preparation identified by some of the nurse educators included staff development, experimental, and internet search (3.75%). See Table 15 for descriptive statistics for preparation for using ALS.

Table 15

<table>
<thead>
<tr>
<th>Preparation</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>10</td>
<td>12.50</td>
</tr>
<tr>
<td>Academic course</td>
<td>11</td>
<td>13.75</td>
</tr>
<tr>
<td>Peer instruction</td>
<td>7</td>
<td>8.75</td>
</tr>
<tr>
<td>Workshop</td>
<td>49</td>
<td>61.25</td>
</tr>
<tr>
<td>Other: Staff development, Experimental, Internet search</td>
<td>3</td>
<td>3.75</td>
</tr>
<tr>
<td>Total</td>
<td>80</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Research Question 3. What are the perceived benefits of utilizing ALS in the nursing classroom?

Survey item 15, “What are your perceived benefits for using ALS to teach nursing content,” elicited information to answer Research Question 3. The vast majority of the benefits that were identified for using ALS in the nursing classroom identified benefits for the students. Although the participants identified a variety of perceived benefits, one third (33%) of the educators who responded to this item identified better retention and understanding of course content/material as the most common perceived benefits for using ALS in the classroom. Additionally, the other most frequently identified perceived benefits acknowledged by the educators focused on student outcomes. Eighteen percent of the participants thought that ALS enhances or promotes student learning. Using ALS was identified as facilitating the application
of content by 16.4% of the educators. Several of the participants (14.8%) felt that using ALS to teach nursing content puts the responsibility or ownership of learning on the student. Another 9.8% thought that using ALS keeps the students involved and 6.6% felt that ALS facilitates critical thinking. Interestingly, one educator (1.6%) was able to cover more course material in less time using ALS. See Table 16 for the comprehensive listing of perceived benefits for using ALS to teach nursing content.

Table 16

Perceived Benefits for Using ALS in the Nursing Classroom

<table>
<thead>
<tr>
<th>Perceived benefit</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better retention/understanding of content/material</td>
<td>20</td>
<td>33.0</td>
</tr>
<tr>
<td>Best received by students, especially technology</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>Responsibility/ownership of learning</td>
<td>9</td>
<td>14.8</td>
</tr>
<tr>
<td>Helps students see &amp; feel content</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>Keeps or regains attention</td>
<td>2</td>
<td>3.3</td>
</tr>
<tr>
<td>Fun</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>Appeals to different learning styles</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>Students more focused</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>Interact with large class more on personal level</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>Enhances/promotes learning</td>
<td>11</td>
<td>18.0</td>
</tr>
<tr>
<td>Students enjoy</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>Self-assessment</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>Increased skills in co-op &amp; collaborative learning</td>
<td>2</td>
<td>3.3</td>
</tr>
<tr>
<td>Fosters critical thinking</td>
<td>4</td>
<td>6.6</td>
</tr>
<tr>
<td>Construction of knowledge</td>
<td>2</td>
<td>3.3</td>
</tr>
<tr>
<td>Class more involved in learning</td>
<td>2</td>
<td>3.3</td>
</tr>
<tr>
<td>Application of concepts</td>
<td>10</td>
<td>16.4</td>
</tr>
<tr>
<td>Keeps students involved</td>
<td>6</td>
<td>9.8</td>
</tr>
<tr>
<td>Engages learner</td>
<td>3</td>
<td>4.9</td>
</tr>
<tr>
<td>Encourages student to be prepared for class</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>Opportunity to participate in decision making</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>Cover more material in less time</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>Ongoing formative evaluation of student progress</td>
<td>1</td>
<td>1.6</td>
</tr>
</tbody>
</table>

N = 61
Research Question 4. Is there a difference in the frequency of utilization of teaching strategies that involve experience by “doing” and experience by “observing”? 

Survey item 12, “Based on your best estimation, please indicate in the first column the number of times (frequency) each semester you use the following methods in the classroom to teach fundamentals or medical-surgical content,” elicited information to answer Research Question 4. The researcher categorized each teaching strategy as either a “doing” or an “observing” experience for this study based on Fink’s Model of Active Learning. “Doing” experiences involved learning through active student engagement. Teaching strategies categorized by the researcher as “doing” for this study were case study, clicker questions, concept map, co-operative learning, debate, discussion, flash cards, games, group work, PBL, puzzle, question and answer pairs, role play, and team learning. According to Fink (2003), students should be involved with both types of experiences, but more emphasis should be placed on “doing” to better benefit the learner.

Overall, teaching strategies that involved experience by “doing” were utilized more frequently than those that involved experience by “observing.” The total number of times used among the instructors per semester for “doing” experiences was 2,521. Discussion, group work, and case study were the predominant teaching strategies used. Discussion was used most frequently with 77% of the instructors using this strategy for a total semester usage of 508. Group work was the second most frequently used teaching strategy that involved experience by “doing.” Group work was used by 71% of the nurse educators for a total per semester usage of 332. The third most frequently used strategy that involved experience by “doing” was case study. Case study was used by 85% of the nurse educators for a total number of 309 times per semester. Puzzle was the least frequently used strategy that involved experience by “doing.”
Only 13% of the educators used puzzles, for a total per semester usage of 23 times. See Table 17 for the complete frequency and percentage of usage of teaching strategies that involve experience by “doing.”

Table 17

*Frequency of Utilization of Teaching Strategies that Involve Experience by “Doing”*

<table>
<thead>
<tr>
<th>Teaching strategy</th>
<th># of educators using</th>
<th>% of educators using</th>
<th>Total frequency per semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case study</td>
<td>64</td>
<td>85.3</td>
<td>309</td>
</tr>
<tr>
<td>Clicker questions</td>
<td>26</td>
<td>34.7</td>
<td>151</td>
</tr>
<tr>
<td>Concept map</td>
<td>39</td>
<td>52.0</td>
<td>147</td>
</tr>
<tr>
<td>Co-op learning</td>
<td>42</td>
<td>56.0</td>
<td>275</td>
</tr>
<tr>
<td>Debate</td>
<td>17</td>
<td>22.7</td>
<td>58</td>
</tr>
<tr>
<td>Discussion</td>
<td>58</td>
<td>77.3</td>
<td>508</td>
</tr>
<tr>
<td>Flash cards</td>
<td>7</td>
<td>9.3</td>
<td>32</td>
</tr>
<tr>
<td>Games</td>
<td>39</td>
<td>52.0</td>
<td>104</td>
</tr>
<tr>
<td>Group work</td>
<td>53</td>
<td>70.7</td>
<td>332</td>
</tr>
<tr>
<td>PBL</td>
<td>37</td>
<td>49.3</td>
<td>283</td>
</tr>
<tr>
<td>Puzzle</td>
<td>10</td>
<td>13.3</td>
<td>23</td>
</tr>
<tr>
<td>Q&amp;A</td>
<td>32</td>
<td>42.7</td>
<td>156</td>
</tr>
<tr>
<td>Role play</td>
<td>35</td>
<td>46.7</td>
<td>112</td>
</tr>
<tr>
<td>Team learning</td>
<td>31</td>
<td>41.3</td>
<td>16</td>
</tr>
</tbody>
</table>

\(N = 75\)

“Observing” experiences involved passive learning. Teaching strategies categorized by the researcher as “observing” for this study were lecture, PowerPoint, scenario, simulation, video, and vignette. The total number of times used among the instructors per semester for “observing” experiences was 1,727. Lecture and PowerPoint were the predominant teaching strategies used. Lecture was used most frequently, with 81% of the instructors using this strategy for a total semester usage of 616. PowerPoint was the second most frequently used teaching strategy that involved experience by “observing.” PowerPoint was used by 84% of the nurse educators for a total per semester usage of 529. The third most frequently used strategy
that involved experience by “observing” was scenario. Scenario was used by 68% of the nurse educators for a total number of 263 times per semester. Vignette was the least frequently used strategy that involved experience by “observing.” Only 17% of the educators used vignette for a total per semester usage of 43 times. See Table 18 for the complete frequency and percentage of usage of teaching strategies that involve experience by “observing.”

Table 18

*Frequency of Utilization of Teaching Strategies that Involve Experience by “Observing”*

<table>
<thead>
<tr>
<th>Teaching strategy</th>
<th># of educators using</th>
<th>% of educators using</th>
<th>Total frequency per semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture</td>
<td>61</td>
<td>81.3</td>
<td>616</td>
</tr>
<tr>
<td>PPP</td>
<td>63</td>
<td>84.0</td>
<td>529</td>
</tr>
<tr>
<td>Scenario</td>
<td>51</td>
<td>68.0</td>
<td>263</td>
</tr>
<tr>
<td>Simulation</td>
<td>49</td>
<td>65.3</td>
<td>186</td>
</tr>
<tr>
<td>Video</td>
<td>48</td>
<td>64.0</td>
<td>176</td>
</tr>
<tr>
<td>Vignette</td>
<td>13</td>
<td>17.3</td>
<td>43</td>
</tr>
</tbody>
</table>

*N = 75*

*Research Question 5.* Is there a difference in the frequency of utilization of teaching strategies that involve dialogue with “self” and dialogue with “others?”

Survey item 12, “Based on your best estimation, please indicate in the first column the number of times (frequency) each semester you use the following methods in the classroom to teach fundamentals or medical-surgical content,” elicited information to answer Research Question 5. The researcher categorized each teaching strategy as either dialogue with “self” or dialogue with “others” based on Fink’s Model of Active Learning. Fink recommended both types of dialogue for learning to occur but believed interaction with others is more beneficial. Overall, teaching strategies that involved dialogue with “others” were utilized more frequently than those that involved dialogue with “self.” Dialogue with “self” utilizes independent thinking
and reasoning. Teaching strategies categorized by the researcher as dialogue with “self” for this study were clicker questions, concept map, flash cards, lecture, PowerPoint, puzzle, role play, scenario, video, and vignette.

The total number of times used among the instructors per semester for dialogue with “self” strategies was 2,005. Lecture and PowerPoint were the predominant teaching strategies used. Lecture was used most frequently, with 81% of the instructors using this strategy for a total semester usage of 616. PowerPoint was the second most frequently used teaching strategy that involved learning by dialogue with “self.” PowerPoint was used by 84% of the nurse educators for a total per semester usage of 529. The third most frequently used strategy that involved learning by dialogue with “self” was scenario. Scenario was used by 68% of the nurse educators for a total number of 263 times per semester. Puzzle was the least frequently used strategy that involved learning by dialogue with “self.” Only 17% of the educators used puzzle for a total per semester usage of 23 times. Flash cards were used by the least number of educators (7) but were used more often (total 32) than puzzles (total 23). See Table 19 for the complete frequency and percentage of usage of teaching strategies that involve experience by dialogue with “self.”
Table 19

*Frequency of Utilization of Teaching Strategies that Involve Dialogue with “Self”*

<table>
<thead>
<tr>
<th>Teaching strategy</th>
<th># of educators using</th>
<th>% of educators using</th>
<th>Total frequency per semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clicker questions</td>
<td>26</td>
<td>34.7</td>
<td>151</td>
</tr>
<tr>
<td>Concept map</td>
<td>39</td>
<td>52.0</td>
<td>147</td>
</tr>
<tr>
<td>Flash cards</td>
<td>7</td>
<td>9.3</td>
<td>32</td>
</tr>
<tr>
<td>Lecture</td>
<td>61</td>
<td>81.3</td>
<td>616</td>
</tr>
<tr>
<td>PPP</td>
<td>63</td>
<td>84.0</td>
<td>529</td>
</tr>
<tr>
<td>Puzzle</td>
<td>10</td>
<td>13.3</td>
<td>23</td>
</tr>
<tr>
<td>Role play</td>
<td>35</td>
<td>46.7</td>
<td>112</td>
</tr>
<tr>
<td>Scenario</td>
<td>51</td>
<td>68.0</td>
<td>263</td>
</tr>
<tr>
<td>Video</td>
<td>48</td>
<td>64.0</td>
<td>176</td>
</tr>
<tr>
<td>Vignette</td>
<td>13</td>
<td>17.3</td>
<td>43</td>
</tr>
</tbody>
</table>

*N = 75*

Dialogue with others utilizes dependent thinking and reasoning. Teaching strategies categorized by the researcher as dialogue with “others” for this study were case study, cooperative learning, debate, discussion, games, group work, PBL, question and answer pairs, simulation, and team learning. The total number of times used among the instructors per semester for dialogue with “others” strategies was 2,243. Discussion, group work, and case study were the predominant teaching strategies used. Discussion was used most frequently, with 77% of the instructors using this strategy for a total semester usage of 508. Group work was the second most frequently used teaching strategy that involved learning by dialogue with “others.” Group work was used by 71% of the nurse educators for a total per semester usage of 332. The third most frequently used strategy that involved learning by dialogue with “others” was case study. Case study was used by 85% of the nurse educators for a total number of 309 times per semester. Debate was the least frequently used strategy that involved learning by dialogue with “others.” Only 23% of the educators used debate for a total per semester usage of 58 times. See
Table 20 for the complete frequency and percentage of usage of teaching strategies that involve experience by dialogue with “others.”

Table 20

Frequency of Utilization of Teaching Strategies that Involve Dialogue with “Others”

<table>
<thead>
<tr>
<th>Teaching strategy</th>
<th># of educators using</th>
<th>% of educators using</th>
<th>Total frequency per semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case study</td>
<td>64</td>
<td>85.3</td>
<td>309</td>
</tr>
<tr>
<td>Co-op learning</td>
<td>42</td>
<td>56.0</td>
<td>275</td>
</tr>
<tr>
<td>Debate</td>
<td>17</td>
<td>22.7</td>
<td>58</td>
</tr>
<tr>
<td>Discussion</td>
<td>58</td>
<td>77.3</td>
<td>508</td>
</tr>
<tr>
<td>Games</td>
<td>39</td>
<td>52.0</td>
<td>104</td>
</tr>
<tr>
<td>Group work</td>
<td>53</td>
<td>70.7</td>
<td>332</td>
</tr>
<tr>
<td>PBL</td>
<td>37</td>
<td>49.3</td>
<td>283</td>
</tr>
<tr>
<td>Q&amp;A</td>
<td>32</td>
<td>42.7</td>
<td>156</td>
</tr>
<tr>
<td>Simulation</td>
<td>49</td>
<td>65.3</td>
<td>186</td>
</tr>
<tr>
<td>Team learning</td>
<td>31</td>
<td>41.3</td>
<td>160</td>
</tr>
</tbody>
</table>

N = 75

Research question 6. What is the perceived effectiveness of teaching strategies used by associate degree nurse educators in the classroom to enhance student learning and develop critical thinking?

Survey item 12, “In the second column, please rate how effective you think each method is for enhancing learning and development of critical thinking using the following scale: 1 = Not Effective, 2 = Somewhat Effective, 3 = Neutral/No Opinion, 4 = Effective, 5 = Very Effective,” elicited information to answer Research Question 6. Simulation was perceived to be the most effective teaching strategy used by nurse educators to enhance learning and develop critical thinking, with a mean score of 4.23, SD = 0.95. The second most perceived effective teaching strategy was discussion, with a mean score of 4.15, SD = 0.89. The third most perceived effective teaching strategy was scenario, which had a mean value of 4.05, SD = 0.87. The least
perceived effective teaching strategy for enhancing learning and developing critical thinking was puzzle, which had a mean value of 2.91, $SD = 0.88$. See Table 21 for the comprehensive listing of mean perceived effectiveness with standard deviation for teaching strategies utilized by ADN educators in the classroom.

Table 21

*Perceived Effectiveness of Teaching Strategies Utilized by ADN Educators*

<table>
<thead>
<tr>
<th>Teaching strategy</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Total responses</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case study</td>
<td>0</td>
<td>14</td>
<td>2</td>
<td>39</td>
<td>19</td>
<td>74</td>
<td>3.85</td>
<td>1.02</td>
</tr>
<tr>
<td>Clicker questions</td>
<td>0</td>
<td>2</td>
<td>19</td>
<td>23</td>
<td>11</td>
<td>55</td>
<td>3.78</td>
<td>0.81</td>
</tr>
<tr>
<td>Concept map</td>
<td>1</td>
<td>11</td>
<td>15</td>
<td>23</td>
<td>12</td>
<td>62</td>
<td>3.55</td>
<td>1.05</td>
</tr>
<tr>
<td>Co-op learning</td>
<td>6</td>
<td>12</td>
<td>23</td>
<td>14</td>
<td></td>
<td>58</td>
<td>3.67</td>
<td>1.11</td>
</tr>
<tr>
<td>Debate</td>
<td>1</td>
<td>6</td>
<td>23</td>
<td>12</td>
<td>3</td>
<td>45</td>
<td>3.22</td>
<td>0.85</td>
</tr>
<tr>
<td>Discussion</td>
<td>2</td>
<td>1</td>
<td>7</td>
<td>33</td>
<td>25</td>
<td>68</td>
<td>4.15</td>
<td>0.89</td>
</tr>
<tr>
<td>Flash cards</td>
<td>2</td>
<td>1</td>
<td>25</td>
<td>10</td>
<td>2</td>
<td>40</td>
<td>3.23</td>
<td>0.80</td>
</tr>
<tr>
<td>Games</td>
<td>0</td>
<td>5</td>
<td>12</td>
<td>26</td>
<td>13</td>
<td>56</td>
<td>3.84</td>
<td>0.89</td>
</tr>
<tr>
<td>Group work</td>
<td>2</td>
<td>11</td>
<td>5</td>
<td>30</td>
<td>14</td>
<td>62</td>
<td>3.69</td>
<td>1.11</td>
</tr>
<tr>
<td>Lecture</td>
<td>1</td>
<td>8</td>
<td>13</td>
<td>35</td>
<td>15</td>
<td>72</td>
<td>3.76</td>
<td>0.96</td>
</tr>
<tr>
<td>PPP</td>
<td>1</td>
<td>7</td>
<td>14</td>
<td>41</td>
<td>11</td>
<td>74</td>
<td>3.73</td>
<td>0.88</td>
</tr>
<tr>
<td>PBL</td>
<td>1</td>
<td>6</td>
<td>15</td>
<td>23</td>
<td>11</td>
<td>56</td>
<td>3.66</td>
<td>0.98</td>
</tr>
<tr>
<td>Puzzle</td>
<td>4</td>
<td>5</td>
<td>28</td>
<td>5</td>
<td>2</td>
<td>44</td>
<td>2.91</td>
<td>0.88</td>
</tr>
<tr>
<td>Q&amp;A</td>
<td>0</td>
<td>5</td>
<td>23</td>
<td>2</td>
<td>5</td>
<td>53</td>
<td>3.47</td>
<td>0.80</td>
</tr>
<tr>
<td>Role play</td>
<td>2</td>
<td>1</td>
<td>18</td>
<td>27</td>
<td>11</td>
<td>59</td>
<td>3.75</td>
<td>0.90</td>
</tr>
<tr>
<td>Scenario</td>
<td>0</td>
<td>6</td>
<td>4</td>
<td>34</td>
<td>19</td>
<td>63</td>
<td>4.05</td>
<td>0.87</td>
</tr>
<tr>
<td>Simulation</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>24</td>
<td>29</td>
<td>62</td>
<td>4.23</td>
<td>0.94</td>
</tr>
<tr>
<td>Team learning</td>
<td>3</td>
<td>3</td>
<td>18</td>
<td>20</td>
<td>9</td>
<td>53</td>
<td>3.55</td>
<td>1.03</td>
</tr>
<tr>
<td>Video</td>
<td>0</td>
<td>10</td>
<td>14</td>
<td>28</td>
<td>10</td>
<td>62</td>
<td>3.61</td>
<td>0.95</td>
</tr>
<tr>
<td>Vignette</td>
<td>1</td>
<td>3</td>
<td>23</td>
<td>13</td>
<td>1</td>
<td>41</td>
<td>3.24</td>
<td>0.73</td>
</tr>
</tbody>
</table>

$N = 75$

*Note. 1 = Ineffective; 2 = Effective; 3 = Neutral; 4 = Very Effective; 5 = Most Effective*

Additionally, survey item 16 asked the participants to identify the top two most effective ALS they used based on feedback from student course evaluations and to give reasons why they thought the strategies were more effective than other ALS. Oddly, the most frequently identified ALS were case study, simulation, clickers, and discussion (see Table 22 for a complete listing).
All four strategies involve experience by “doing” as recommended by Fink. With the exception of clickers, dialogue is with “others.” Although these strategies were deemed by the students to be most effective for learning, these strategies were not among the most frequently used by nurse educators in this study, with the exception of discussion. However, of the most effective strategies recognized by the students, case study was the most frequently used. A variety of reasons were given, but the most frequently cited reasons from the faculty for being most effective were promotion of active learning and critical thinking. Other reasons included enhancement and reinforcement of learning, promotion of teamwork, facilitation of problem solving, interaction with peers, incorporation of all learning styles, and preparation for exams.
### Table 22

**Top Two ALS Used by ADN Faculty Members Based on Student Course Evaluations**

<table>
<thead>
<tr>
<th>Teaching strategy</th>
<th># Using</th>
<th>Percentage</th>
<th>Reasons effective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case study</td>
<td>21</td>
<td>36.2</td>
<td>Helps apply learned material; promotes active learning; helps plan care; fosters critical thinking; requires application of knowledge; promotes application of concepts; helps direct focus for learning; requires individual participation; prepare for class better; adds realism; helps prepare for exams; helps brainstorm to problem solve; require critical thinking and interaction with peers; forces critical thinking; forces student to use critical thinking skills</td>
</tr>
<tr>
<td>Simulation</td>
<td>14</td>
<td>24.1</td>
<td>Engages motor skills to apply theory content; increases skills and test scores; requires application of knowledge; students enjoy and learn from hands-on activities; allows students to practice application of critical thinking behaviors; learning is reinforced; incorporates all learning styles; enhances learning in non-threatening, supportive environment</td>
</tr>
<tr>
<td>Clickers</td>
<td>10</td>
<td>17.2</td>
<td>Real time assessment of students’ learning; more interactive; foster discussion; facilitate discussion; use without embarrassment; instant feedback; identify strengths and weaknesses; promote test-taking strategies</td>
</tr>
<tr>
<td>Discussion</td>
<td>9</td>
<td>15.5</td>
<td>Helps bridge content from theory to application; true-life situations facilitate learning; allows students to choose to participate; helps to problem-solve; encourages critical thinking and understanding</td>
</tr>
<tr>
<td>Role play</td>
<td>8</td>
<td>13.8</td>
<td>Critical thinking; self reflection; provides insight; fun; reinforces concepts; helps visual learner; active learning</td>
</tr>
<tr>
<td>Games</td>
<td>8</td>
<td>13.8</td>
<td>Fun and promote learning; interactive; keeps students’ attention; fun; review material; creates culture of competition</td>
</tr>
<tr>
<td>Question &amp; answer pairs</td>
<td>7</td>
<td>12.1</td>
<td>Encourages critical thinking and team work; less intimidated when working together; assess understanding of material; clear up misconceptions</td>
</tr>
<tr>
<td>Concept maps</td>
<td>6</td>
<td>10.3</td>
<td>Able to map disease process; requires thinking; promotes critical thinking; helps to make connections</td>
</tr>
<tr>
<td>Scenario</td>
<td>5</td>
<td>8.6</td>
<td>Requires thinking; fosters critical thinking; opportunity to see how medical condition will affect all parts involved</td>
</tr>
<tr>
<td>Group work</td>
<td>4</td>
<td>6.9</td>
<td>Learn from each other; helps process information; requires students to be prepared</td>
</tr>
<tr>
<td>Video</td>
<td>3</td>
<td>5.2</td>
<td>Prompt discussion; generate discussion and debate</td>
</tr>
<tr>
<td>Think-pair-share</td>
<td>2</td>
<td>3.4</td>
<td>Force student to use critical thinking skills</td>
</tr>
<tr>
<td>Cooperative learning</td>
<td>2</td>
<td>3.4</td>
<td>Enhances sharing of ideas to gain better understanding; learn from each other</td>
</tr>
</tbody>
</table>

*N = 58*
Summary

A variety of teaching strategies were being employed by community college associate degree nurse educators in a particular southern state to enhance learning and develop critical thinking. Although these methods included experience by both “doing” and “observing” and dialogue with “self” and “others,” the strategies employed most often do not engage the student in active learning. As noted in the literature, passive strategies such as lecture and PowerPoint presentations are the most frequently used teaching strategies in the nursing classroom. Fink’s (1999) model purported that learning occurs with experience by “doing” and “observing” and dialogue with “self” and “others,” but experience by “doing” and dialogue with “others” actively engage the student and foster significant learning.

The majority of faculty members used some type of ALS in the classroom. Most acknowledged some type of preparation for using ALS, with workshop being the most common. Various benefits were identified by the majority of participants. The most common benefits were denoted as being beneficial for the students. Many of the educators felt that using ALS enhanced learning and facilitated better retention and understanding of course content. Reasons for not using ALS were similar to barriers that were encountered when using ALS. The issue of time constraints was the prevalent barrier encountered when using ALS in the nursing classroom. Lack of student preparation and participation were also frequently mentioned. The major reason cited for not using ALS in the nursing classroom was lack of student participation. Various factors determined when ALS were used in the classroom, but subject matter or content was cited by almost half of the participants. Time availability was the next most common factor. Interestingly, a small number of participants used ALS in every class and did not encounter any barriers when using ALS in the nursing classroom.
This chapter presented the results of this research study. The next chapter elaborates on the discussion and conclusions from the study findings.
CHAPTER 5
DISCUSSION

The previous chapter presented the results from this research study. This chapter includes a discussion of those research findings, implications for nursing education, limitations of the study, and makes recommendations for future nursing research. The purpose of this research study was to determine which instructional strategies community college associate degree nurse educators in a particular southern state were using to enhance student learning and develop critical thinking in fundamentals and medical-surgical nursing courses. The researcher attempted to answer six research questions. These questions were: (1) What teaching strategies are community college associate degree nurse educators who teach fundamentals and medical-surgical nursing courses using in the classroom to enhance student learning and develop critical thinking? (2) What barriers are encountered when utilizing ALS in the nursing classroom? (3) What are the perceived benefits of utilizing ALS in the nursing classroom? (4) Is there a difference in the frequency of utilization of teaching strategies that involve experience by “doing” and experience by “observing”? (5) Is there a difference in the frequency of utilization of teaching strategies that involve dialogue with “self” and dialogue with “others”? (6) What is the perceived effectiveness of teaching strategies used by associate degree nurse educators in the classroom to enhance student learning and develop critical thinking?
Findings

This study used a descriptive survey design to examine which teaching strategies community college associate degree nurse educators in a southern state were using to enhance student learning and develop critical thinking in fundamentals and medical-surgical nursing courses. An online survey was administered via Qualtrics, over the course of 4 weeks. There are 15 community college associate degree nursing programs in this particular southern state. Permission was obtained from eight of the program administrators to conduct the survey. There were 78 respondents to the survey with a total of 75 completed surveys. More than three fourths of the participants incorporated ALS in the nursing classroom. Although this is a large percentage, it is not all as would be expected. Associate degree nursing programs are accredited by the National League for Nursing Accrediting Commission (NLNAC). The NLNAC mandates the incorporation of active learning in nursing curricula. Fink’s (1999) model of active learning purported that learning comes by experience and dialogue. Experience can be through “doing” or “observing” and dialogue can be with “self” or “others.” Learning is more significant when experience is through “doing” and dialogue is with “others.” Active learning strategies can augment traditional teaching strategies, in order to enhance student learning and development of critical thinking. Limited research exists that examines instructional strategies in nursing education, especially associate degree nursing education. A main focus of this study was to examine what teaching strategies were being used by associate degree nurse educators to enhance learning and develop critical thinking. The researcher also determined particular barriers and benefits encountered by nurse educators when using ALS in the nursing classroom, as well as the perceived effectiveness of teaching strategies used by ADN educators. Findings
from this study are consistent with previous results reported in the literature. The following sections discuss findings for each of the six research questions.

**Research Question 1**

What teaching strategies are community college associate degree nurse educators who teach fundamentals and medical-surgical nursing courses using in the classroom to enhance student learning and develop critical thinking? Associate degree nurse educators were using a variety of instructional strategies in the classroom to enhance student learning and develop critical thinking, although lecture continues to be most prevalent method utilized as cited in the literature (DeMarco, Hayward, & Lynch, 2002; Schaefer & Zygmont, 2003; Young & Diekelmann, 2002). More than three fourths of the educators (77.6%) utilized ALS in the classroom. The most common reason for not using ALS was due to lack of student participation. Perhaps this is due to students’ preference for passive learning as noted previously (Al-Modhefer & Roe, 2009; DiPiro, 2009; Sand-Jecklin, 2007). The next most common reason for not using ALS was lack of familiarity with the teaching methods. Negative student evaluations and dislike of the strategies by the students were also cited as reasons for not using the methods in the nursing classroom. These findings are consistent with those reported in the literature (Delpier, 2006; Elberson, et al, 2001; Papastrat & Wallace, 2003).

Although no one strategy was used by all of the participants, all strategies identified in the research study were being utilized in the nursing classroom. Lecture was by far the most frequently used teaching strategy, with PowerPoint and discussion being the next most frequently used methods. Lecture and PowerPoint do not engage the student as an active participant in the learning process. The learning experience with these two strategies is by
“observing” and dialogue is with “self.” On the other hand, discussion does involve the student as an active learner as the learning experience is by “doing” and dialogue is with “self.” Other frequently used strategies categorized as experience by “doing” and dialogue with “self” were case study, group work, and cooperative learning. When asked to rate the effectiveness of each teaching strategy for enhancing learning and development of critical thinking, nurse educators rated simulation, discussion, scenario, case study, games, and clicker questions as most effective for doing so. Interestingly, discussion and case study were the only strategies identified among the most commonly used methods.

Sandstrom (2006) reported that students demonstrated increased critical thinking in the clinical setting when case study was used to teach nursing content. DeMarco (2002) also noted increased critical thinking and learning when case study was utilized in the classroom. Interestingly, the method was preferred by the students over traditional lecture. Engineering students perceived case study to be an effective tool for learning (Bennett, 2009; Mbarika et al., 2003) and promoting higher-order skills (Bennett, 2009). On the other hand, Copp (2002) reported lower test scores with cooperative learning groups, although students’ attitudes were favorable toward large group discussion. Similarly, Hoke and Robbins (2005) reported lower didactic scores but students were more engaged in the learning process with cooperative learning activities. Baumberger-Henry (2005) found no significant differences in test scores between traditional and cooperative learning strategies. However, Gumbs (2001) noted that students were able to transfer information to the clinical setting after participation in small group activities. Participants in this research study cited benefits such as promotion of critical thinking skills, problem solving, and active learning associated with the use of case study.
Metcalf and Yankou (2003) reported increased confidence in decision making by students when gaming was used but noted difficulty with using the strategy due to large class size and time limitations. Both Cowen and Tesh (2002) and Lever (2005) noted significant differences in test scores when gaming was used to reinforce content. Games have also been used as an effective method for enhancing learning in engineering (Bennett, 2009). Nurse educators in this particular study identified the promotion of interactive, fun learning when games were used as an instructional tool.

Typically, students have supported the use of clickers in the classroom (Smith & Rosenkoetter, 2009). One disadvantage to using clickers in the classroom is time limitations (Russell, et al, 2011). DeBourgh (2008) reported higher exam scores, although Filer (2010) and Stein, et al, (2006) found no differences in test scores after using clickers in the classroom. Van Dijk et al. (2001) demonstrated better performance on post-test scores when clickers were used as an instructional strategy in an engineering course. Russell, et al, (2011) noted development of critical thinking when clickers were used in the classroom. Participants in this research study identified promotion of test-taking strategies and facilitation of discussion as benefits of positive outcomes of using clickers in the classroom.

Doran and Mulhall (2007), Horan (2009), and Partin, et al (2011) all noted increased confidence and development of critical thinking when simulation was used to augment lecture. Both Henneman and Cunningham (2005) and Kalmakis, et al (2010) found students to be supportive of the teaching strategy. Likewise, engineering students perceived simulation to be an effective learning tool, as well as facilitate the development of judgment skills (Zhu et al., 2011). Enhanced learning and promotion of problem-solving skills have also been validated (Chen & Levinson, 2006; Zhu et al., 2011). Thompson and Bonnel (2008) reported significant
differences in test scores when simulation was used in the nursing classroom. Nurse educators in this particular study noted reinforcement and enhancement of learning, increased skills and test scores, and application of critical thinking behaviors as results of using simulation.

Clicker questions involve experience by “doing” and dialogue with “self.” Simulation involves experience by “observing” and dialogue with “others.” Discussion, scenario, case study, and games involve experience by “doing” and dialogue with “others.” Perhaps two of the reasons for not using these strategies more often in the nursing classroom include time constraints and lack of resources. Time is a consideration for both planning and implementation of many instructional strategies. Unfortunately, time is limited in the nursing classroom and educators must make the most of the time that is available for instruction. Many times this means making a choice out of convenience and necessity rather than actively engaging the learner. Strategies such as case study, scenario, and simulation involve much time in preparation and implementation, especially simulation. Although technology can be used to actively engage the learner, institutional and program resources are often limited. The use of high fidelity simulation incurs significant cost for the institution for both start up and maintenance. This unfortunately prohibits the acquisition of this technology for some institutions, especially those that are smaller and in rural geographical locations where resources are more likely to be inadequate.

Research Question 2

What barriers are encountered when utilizing ALS in the nursing classroom? Barriers identified in this study were similar to those identified in the literature. Overwhelmingly, the most frequently identified barrier to utilizing ALS in the nursing classroom was time constraints,
including both preparation and implementation, as noted in previous studies (Choi, 2003; Delpier, 2006; Elberson et al., 2001; Papastrat & Wallace, 2003; Russell et al., 2011; Vreven & McFadden, 2007). More than one third of the participants acknowledged that time limitations was an issue when using ALS to teach nursing content. As with reasons cited for not using ALS, issues with students were frequently cited as barriers encountered when using ALS in the nursing classroom. Many of these same issues and barriers were identified in the literature. These issues included lack of student preparation, lack of participation (Delpier; Elberson et al.), preference for lecture, dislike (Papastrat & Wallace), and resistance to use. Other barriers identified were class size (Papastrat & Wallace; Partin et al., 2011), technical difficulties (Choi, 2003; DeBourgh, 2008; Smith & Rosenkoetter, 2009), lack of available resources (DeBourgh), and lack of training. Remarkably, six of the educators had encountered no barriers when using ALS in the nursing classroom. Steinemann (2003) noted a small number of engineering students that preferred more guidance from the instructor. de Camargo Ribeiro and Mizukami (2005) reported decreased motivation and participation and perceived inadequate coverage of content when utilizing a PBL approach in an engineering course.

Participants acknowledged a variety of factors that determined when ALS were used in the nursing classroom. By far, the most frequent determinant was subject matter or content to be covered. The next most common factor was time availability, although 10% of the educators routinely used ALS regardless. A small number of the participants considered learning styles of the students and some used ALS based on course objectives. The majority of nurse educators had received some type of preparation for using ALS in the classroom. This preparation included workshops, academic courses, and peer instruction. A small number of educators had learned about ALS through staff development, experimentation, and by searching the Internet.
Research Question 3

What are your perceived benefits of utilizing ALS in the nursing classroom? Benefits identified by the participants in this study were also similar to those previously identified in the literature. Although a variety of benefits were acknowledged, most identified how the use of ALS benefited the students. As noted in previous studies, better understanding (Cavanaugh, 2011; Krajcik & Blumenfeld, 2006) and retention of course material (Comer, 2005; Cowen & Tesh, 2002; Elberson et al., 2001; Horan, 2009; Lee & Lamp, 2003; Partin et al., 2011; Royse & Newton, 2007; Steinemann, 2003; Thompson & Bonnel, 2008; Yazedjian & Kolkhorst, 2007) were the most common perceived benefits of using ALS. Similarly, the next most common perceived benefit was enhancement or promotion of student learning (Akinsanya & Williams, 2004; Bennett, 2009; Chen & Levinson, 2006; Choi, 2003; Coyle-Rogers & Putman, 2006; Feingold et al., 2008; Haidet et al., 2002; King & Shell, 2002; Latessa & Mouw, 2005; Mbarika et al., 2003; Moredich & Moore, 2007; Quinn & Albana, 2008; Reznek et al., 2003; Schackow et al., 2004; Van Dijk et al., 2001; Vo & Morris, 2006; Yazedjian & Kolkhorst, 2007; Zhu et al., 2011). Another perceived benefit was making the connection between abstract and real-world application (Akinsanya & Williams; Lisko & O’dell, 2010; Yazedjian & Kolkhorst). A small number of participants thought that using ALS facilitated the development of critical thinking, as noted in previous findings (All et al., 2003; Billings & Kowalski, 2008; Choi, 2003; Cowen & Tesh, 2002; Delpier, 2006; DeMarco et al., 2002; Feingold et al.; Glendon & Ulrich, 2005; King & Shell; Krajcik & Blumenfeld, 2006; Lisko & O’dell; Maag & Fonteyn, 2005; Mbarika et al., 2003; Mau, 2009; Metcalfe & Yankou, 2003; Partin et al.; Royse & Newton; Russell et al., 2011; Sandstrom, 2006; Thompson & Bonnel, 2008; Tomey, 2003; Vacek, 2009; Vo & Morris, 2006; Wheeler & Collins, 2003; Zhu et al., 2011). Additional identified perceived benefits included
accommodation of a variety of learning styles (Chen & Levinson, 2006; Comer, 2005; Phillips, 2005; Zhu et al., 2011), participation in decision making (Chen & Levinson, 2006; de Camargo Ribeiro & Mizukami, 2005; Feingold et al.; Lisko & O’dell; Lowenstein, 2011; Steinemann, 2003; Zhu et al., 2011), and a means of assessment (Chen & Levinson, 2006; Grimley, 2011; Huxam, 2005; Knight & Wood, 2005; Mau, 2009; McCarthy & Anderson, 2000; Stein et al., 2006).

Research Question 4

Is there a difference in the frequency of use of teaching strategies that involve experience by “doing” and experience by “observing?” Overall, instructors were using teaching strategies that involved experience by “doing” more total times per semester than strategies that involved experience by “observing.” Fink (2003) purported that experience by “doing” will promote more significant learning. Case study, clicker questions, concept maps, co-operative learning, debate, discussion, flash cards, games, group work, PBL, puzzle, question and answer pairs, role play, and team learning were instructional methods that involved experience by “doing” for the purposes of this study. These strategies promote learning through active engagement of the learner. Lecture, PowerPoint, scenario, simulation, video, and vignette were instructional methods that involved experience by “observing” for the purposes of this study. These strategies involve passive learning.

Previous nursing and engineering studies have validated both the worth of teaching strategies that involve experience by “doing” and experience by “observing.” Mbarika et al. (2003) noted facilitation of learning and higher-order skills when case study was used as an instructional strategy in the engineering classroom. Sandstrom (2006) validated the facilitation
of learning and enhanced critical thinking ability when case study was used in a nursing course. Likewise, DeMarco et al. (2002) also noted the facilitation of learning and knowledge acquisition with case study. Students also perceived case study as an effective teaching method to augment traditional lecture when used in an engineering course (Bennett, 2009). Educators responding to this study identified facilitation of critical thinking and problem solving, promotion of active learning, and preparation for exams as reasons for using case study as an instructional strategy.

Clickers have been used with success in the classroom. Van Dijk et al. (2001) and DeBourgh (2008) demonstrated improved performance on test scores. Clicker questions have also been used to promote interactive, engaged learning (Filer, 2010; Moredich & Moore, 2007; Russell, 2011; Stein et al., 2006), facilitate development of reasoning and decision-making skills, and prepare for exams (Russell, 2011). Disadvantages cited were time constraints, unclear or ambiguous questions (Russell, 2011), and problems with clicker registration (Smith & Rosenkoetter, 2009). Educators responding to this survey identified facilitation of discussion, promotion of test-taking strategies, interactive learning, and immediate assessment of students’ learning as positive outcomes of using clicker questions as a teaching strategy.

Concept mapping has been shown to be an effective teaching strategy. Concept maps facilitate knowledge acquisition (All et al., 2003), conceptual learning (Akinsanya & Williams, 2004), and the development of critical thinking and problem-solving skills (All et al., 2003; Wheeler & Collins, 2003). Participants in this study identified promotion of critical thinking and making connections as rationale for using concept mapping as an instructional strategy.

Justification for using co-operative learning as a teaching method included improved grades (Hoke & Robbins, 2005), increased knowledge and understanding (Elberson et al., 2001),
transfer of learning (Gumbs, 2001), engagement of the student (Copp, 2002), and improved problem-solving and decision-making skills (Baumberger-Henry, 2005). Disadvantages included time constraints and unequal participation of group members (Elberson et al., 2001). Associate degree nurse educators in this study cited learning from each other and sharing of ideas to gain a better understanding of course content as reasons for using co-operative learning strategies.

PBL is an instructional tool that emphasizes learning by doing. Studies have shown that it promotes learning (Beers, 2005; Choi, 2003; Quinn & Albana, 2008; Steinemann, 2003), facilitates the development of problem solving and critical thinking skills (Choi, 2003; de Camargo Ribeiro & Mizukami, 2005; Papastrat & Wallace, 2003; Steinemann, 2003), and promotes collaboration and learning from others (Papastrat & Wallace, 2003; Steinemann, 2003). Disadvantages of this strategy include time requirements (Choi, 2003; Papastrat & Wallace, 2003), group size and dislike (Papastrat & Wallace, 2003), and technological barriers (Choi, 2003).

Gaming has been used as an effective instructional tool in the classroom. Advantages for using this strategy include improved test scores (Cowen & Tesh, 2002; Lever, 2005); facilitation of decision making (Metcalf & Yankou, 2003); and promotion of active, engaged learning and development of critical thinking (Royse & Newton, 2007). Disadvantages cited were class size and time restrictions (Metcalf & Yankou, 2003). Associate degree nurse educators participating in this study cited using games as a fun, interactive way to promote learning and review course content.

Role play requires students to synthesize information and use higher-order thinking skills. Comer (2005) documented improved performance on exams and improved critical thinking and
clinical judgment skills. Lee and Lamp (2003) found role play to be a useful means of reviewing course content and improving understanding. Participants in this study reported that role play was fun, promoted active learning, reinforced concepts, and facilitated critical thinking.

Team learning has been shown to engage students (Clark et al., 2008) as well as facilitate learning and development of critical thinking and decision-making skills (Feingold, 2008). Advantages of using group work as an instructional strategy identified by the participants in this study were learning from each other, facilitation of processing of information, and helping to prepare for class.

Simulation allows students to analyze complex situations in a non-threatening environment. Studies have demonstrated that simulation facilitates the development of critical thinking (Partin et al., 2011; Horan, 2009), facilitates development of problem-solving skills (Chen & Levinson, 2006; Zhu et al., 2011), facilitates understanding of concepts (Horan, 2009), and enhances learning (Chen & Levinson, 2006; Doran & Mulhall, 2007; Reznek et al., 2003; Thompson & Bonnell, 2008; Zhu et al., 2011). A major disadvantage to using simulation in the classroom is large class size (Partin et al., 2011). Nurse educators participating in this study identified application of critical thinking behaviors, increased test scores, reinforcement of learning, and incorporation of all learning styles as reasons to use simulation in the classroom.

Although the total number of times used per semester was more for learning experiences by “doing,” the majority of instructors were using traditional strategies that involved experience by “observing” rather than nontraditional strategies that engage the learner in active learning. Important learner outcomes associated with nontraditional strategies that involved experience by “doing” were development of critical thinking and problem-solving skills, enhancement of learning, improved academic performance, and learning from others. It is most likely that time
limitations play a key factor in not utilizing nontraditional strategies more often. Other
deterrents may include inadequate resources, lack of student buy-in, inadequate training, and
cost.

Research Question 5

Is there a difference in the frequency of use of teaching strategies that involve dialogue
with “self” and dialogue with “others?” Overall, instructors were using teaching strategies that
involved learning by dialogue with “others” more total times per semester than strategies that
involved learning by dialogue with “self.” Fink (2003) purported that dialogue with “others”
will promote more significant learning. Case study, co-operative learning, debate, discussion,
games, group work, PBL, question and answer pairs, simulation, and team learning were
instructional methods that involved dialogue with “others” for the purposes of this study. These
strategies promote learning through dependent interaction when stimulation and application of
critical thinking are likely to occur. Clicker questions, concept maps, flash cards, lecture,
PowerPoint, puzzle, role play, scenario, video, and vignette were instructional methods that
involved dialogue with “self” for the purposes of this study. These strategies involve
independent learning and reasoning.

As noted earlier, case study has been used to facilitate learning (Bennett, 2009; DeMarco
et al., 2002; Mbarika et al., 2003; Sandstrom, 2006) and higher-order skills (Mbarika et al., 2003;
Sandstrom, 2006). Benefits of using games include improved test scores (Cowen & Tesh, 2002;
Lever, 2005); facilitation of decision making (Metcalf & Yankou, 2003); and promotion of
active, engaged learning and development of critical thinking (Royse & Newton, 2007).
Simulation facilitates development of critical thinking (Partin et al., 2011; Horan, 2009),
facilitates development of problem-solving skills (Chen & Levinson, 2006; Zhu et al., 2011), facilitates understanding of concepts (Horan, 2009), and enhances learning (Chen & Levinson, 2006; Doran & Mulhall, 2007; Reznek et al., 2003; Thompson & Bonnell, 2008; Zhu et al., 2011).

Clicker questions have improved performance on test scores (DeBourgh, 2008; Van Dijk et al., 2001), promoted interactive, engaged learning (Filer, 2010; Moredich & Moore, 2007; Russell, 2011; Stein et al., 2006), and facilitated development of reasoning and decision-making skills and preparation for exams (Russell, 2011). Concept maps facilitate knowledge acquisition (All et al., 2003), conceptual learning (Akinsanya & Williams, 2004), and the development of critical thinking and problem-solving skills (All et al., 2003; Wheeler & Collins, 2003). Role play has improved performance on exams, improved critical thinking and clinical judgment skills (Comer, 2005), and improved understanding of course content (Lee & Lamp, 2003).

Engineering and nursing studies have validated both the value of teaching strategies that involve learning through dialogue with “self” and dialogue with “others.” However, more instructors were using traditional strategies that involved learning by dialogue with “self” rather than nontraditional strategies that promote critical thinking skills through dialogue with “others.” As noted previously, it is most probable that time constraints is the key factor for use or nonuse of these instructional strategies. Other factors include lack of resources, cost, lack of familiarity, and student nonparticipation. It is possible that instructors do not want to use valuable classroom time with these strategies because they can easily be done on the students’ own time.
Research Question 6

What is the perceived effectiveness of teaching strategies used by associate degree nurse educators in the classroom to enhance student learning and develop critical thinking? Instructors reported their perceptions of how effective each of the teaching strategies was based on a 5-point Likert-type scale. Simulation, discussion, scenario, case study, and games were rated to be the most effective for enhancing learning and developing critical thinking. Simulation and scenario involve experience by “doing.” Discussion, case study, and games involve experience by “observing.” Simulation, discussion, case study, and games involve dialogue with “others.” Scenario involves dialogue with “self.” Benefits of using simulation in the classroom were noted to be facilitation of development of critical thinking (Horan, 2009; Partin et al., 2011), facilitation of development of problem-solving skills (Chen & Levinson, 2006; Zhu et al., 2011), facilitation of understanding of concepts (Horan, 2009), and enhancement of learning (Chen & Levinson, 2006; Doran & Mulhall, 2007; Reznek et al., 2003; Thompson & Bonnell, 2008; Zhu et al., 2011).

Case study has been used to facilitate learning (Bennett, 2009; DeMarco et al., 2002; Mbarika et al., 2003; Sandstrom, 2006) and higher-order skills (Mbarika et al., 2003; Sandstrom, 2006). Benefits of using games include improved test scores (Cowen & Tesh, 2002; Lever, 2005), facilitation of decision making (Metcalf & Yankou, 2003), and promotion of active, engaged learning and development of critical thinking (Royse & Newton, 2007).

Puzzle, flash cards, and vignette were perceived to be the least effective strategies for enhancing learning and developing critical thinking. Puzzle and flash cards involve experience by “doing.” Vignette involves experience by “observing.” All three strategies involve dialogue with “self.”
The researcher also asked the participants to identify the top two most effective ALS they used based on student feedback from course evaluations, as well as give reasons why the strategies were perceived by the instructors to be more effective than others. The most frequently identified ALS were case study, simulation, clickers, and discussion. All four of these strategies involve experience by “doing” and, with the exception of clickers, dialogue is with “others.” Even though these strategies were deemed most effective by the students, discussion was the only strategy used frequently by the nurse educators. Of the many reasons given from the faculty members for being the most effective strategies, promotion of active learning and critical thinking were cited the most frequently. With this in mind, it is difficult to defend the routine use of other less effective strategies. Simulation and clickers both involve the use of technology. Perhaps cost is a major factor in their lack of use, in addition to time constraints and unfamiliarity, especially with simulation.

Limitations

Several factors limited the generalization of the results of this study. First, the participants were from one southern state. The addition of other states in other geographical regions would add more diversity among the educators. Second, the study sample was comparatively small. Even though a large sample size is preferred, frequently quantitative studies are comprised of samples of less than 200, many times fewer than 100 (Polit & Beck, 2008). Third, the population was a sample of convenience. It is possible that the participants were not typical of other nurse educators within the southern United States or perhaps even nationwide. Lastly, the study sample was limited to community college nurse educators and may not accurately represent all associate degree nurse educators. Substantial differences may exist
among associate degree nurse educators who teach in community colleges and those who teach in a university setting.

Implications for Nursing Education

The findings from this study may contribute to the developing body of nursing science regarding best practices in undergraduate nursing education. The researcher determined what instructional strategies were being used in the nursing classroom to enhance learning and develop critical thinking, what the perceived benefits were for using ALS in the classroom, what barriers were encountered when using ALS in the classroom, how frequently teaching strategies were being used, and what the perceived effectiveness was for each teaching strategy. Fink’s (1999) Model of Active Learning provided the framework to guide the research study and development of the survey instrument. Fink’s (1999) model suggested that all learning involves experience by either “doing” or “observing” and dialogue with “self” or “others.” Fink (2003) purported that in order for significant learning to occur, the student should be involved with more experiences by “doing” and dialogue with “others.” Results from this study revealed that educators were using all types of experience and dialogue in the nursing classroom, but experience by “observing” and dialogue with “self” were used more frequently by the majority of educators than experience by “doing” and dialogue with “others.”

Several implications for nursing education have been noted from this study. First of all, nurse educators must make a concerted effort to routinely intersperse “doing” experiences and dialogue with “others” with traditional instructional methods. Second, time availability was noted to be a significant factor in the choice of instructional strategy. Instructors should be challenged to find creative ways to focus more on nursing concepts rather than on coverage of
nursing content. Instructors typically decide what learning they want to promote in the course. Promotion of conceptual learning supports learning of essential, rather than relatively insignificant, information. Students are guided in critical thinking if higher-level questioning and discussion strategies are employed when the focus is on conceptual learning. If only essential information is provided, time constraints should be less substantial in the classroom. Third, unfamiliarity and lack of training were obstacles to using ALS. Faculty development workshops should routinely be conducted to train faculty members in the use of ALS, including high fidelity simulation and computer software. Nursing program administrators should provide flexibility in faculty members’ work commitments and allocation of funding to enable them to attend outside training sessions and workshops. Fourth, lack of resources, especially technology, was a problem for some nursing programs. Nurse educators should be encouraged to pursue grant writing in an attempt to secure funds or partnering with clinical agencies to secure funds or equipment such as high fidelity simulators. Nursing program administrators should make a commitment to support the use of technology and other innovative teaching strategies in the classroom. Program budgets should include the incorporation of technology as a resource for the classroom. The formation of strategic community partnerships should be pursued as an avenue to secure funding for technology and high fidelity simulation labs. Lastly, nurse educators were reluctant to use ALS based on student nonparticipation or dislike. Nurse educators must realize the significance of engaging the student as an active participant in the learning process and determine to use ALS on a routine basis. Instructors should seek constructive feedback on strategies used and make changes accordingly by employing those strategies that are most beneficial to the students. The IOM has mandated that nurses must be prepared to provide high quality patient care. It is essential that nursing students develop higher order thinking skills in
order to provide safe and effective patient care. The NLNAC has recognized critical thinking as a necessary competency of nursing graduates and mandates the incorporation of innovative teaching strategies as a means to enhance learning and develop critical thinking. Nursing programs must support the faculty members as they embrace the use of interactive instructional strategies.

Recommendations

Recommendations for future research are presented based on the findings and discussion from this study.

1. Future studies should include nurse educators from additional community college programs to determine whether the findings would be similar. Resources can vary from one institution to another and can impact what teaching strategies are utilized. Program size can also determine what strategies are utilized and who uses them. Differences can exist between nursing programs whose curriculum is mandated and those programs whose curriculum is developed by the faculty.

2. Future studies should include nurse educators from additional states and geographic areas to determine whether there are significant demographic differences. Educational background, gender, age, and experience can vary significantly between different geographical areas. Although the majority of nurse educators nationwide are female, more males could possibly be represented from other geographical areas.

3. A comparison study between community college associate degree nursing programs and university associate degree nursing programs should be done to determine whether there are significant differences in the use of instructional strategies. Emphasis on instructional
techniques can vary based upon program and personal teaching philosophies. Additionally, resources can vary substantially depending upon the institutional setting and location.

4. A follow-up qualitative study should be conducted with a small number of nurse educators to determine how they overcome barriers encountered when using ALS. Similar barriers were identified between this study and previous ones. Results from such a study would help to inform other nurse educators with planning and implementation when trying to surmount these obstacles.

5. A follow-up study should be undertaken to determine how nurse educators evaluate learning and development of critical thinking after using ALS to teach nursing content. Evaluation is an integral and essential component of the teaching and learning process that is used to help determine what students are learning, and subsequently inform educators on how to improve instruction. Instructional strategies used in the nursing classroom should facilitate learning and development of critical thinking. Documentation of how these outcomes are measured will contribute to best practices in nurse education.

6. A study should be conducted to compare students’ perceptions of selected teaching strategies. Instructors typically decide upon the mode of delivery for course content. Constructive feedback should be sought from the learner to help determine which strategies are more beneficial to learning.

7. A comparison study should be conducted to evaluate student performance based on selected teaching strategies. The most effective teaching strategies should be utilized to ensure the best outcomes for the learner. Comparison studies would validate which instructional strategies are more beneficial for promoting learning and developing critical thinking in nursing students.
Final Thoughts

The future nurse must be equipped to function in a highly complex and ever-changing healthcare environment. He or she will be expected to be able to routinely problem solve and demonstrate critical thinking to direct quality patient care that is safe, efficient, and cost-effective. Nurse educators play a pivotal role in preparing nurse graduates who will be adequately prepared to meet the challenges that they will regularly face in the work place. Students should routinely be provided with opportunities to practice critical thinking and problem-solving skills. In order for students to develop problem-solving and clinical judgment skills that will lead to improved patient outcomes, instructors must consistently use interactive teaching methods that will stimulate critical thinking. If we, as nurse educators, value our students and the reputation of our nursing programs, we must be committed to improve the quality of our instruction by using teaching methods that will ensure the best outcomes for our students. Nursing program administrators must support nursing faculty members as they embrace new instructional strategies and provide necessary resources to accommodate utilization of these strategies.

As noted by Fink (2003), instructional strategies that actively engage the student in experience by “doing” and dialogue with “others” will promote significant learning. Numerous strategies have been identified that will engage the learner as an active participant. These strategies can be used to augment traditional instructional methods. Instructors must determine when to use ALS and what type of strategy to use based on many factors. Nonetheless, the most important factor to consider is how to ensure the best outcomes for the learner. Thus, it is imperative that nurse educators use their resources and time wisely in the nursing classroom.
REFERENCES


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APPENDIX A

A MODEL OF ACTIVE LEARNING
A Model of Active Learning
Fink, L. Dee

Retrieved from http://www2.honolulu.hawaii.edu/facdev/guidebk/teachtip/active.htm
Dear Program Dean/Director:

My name is Karen Nabors. I am interested in conducting a research study of community college associate degree nurse educators’ choice of instructional strategies to teach fundamentals and medical-surgical nursing courses. The research study will involve completion of an online survey via Qualtrics that will take approximately 15 minutes to complete. I am requesting your permission to invite your faculty members’ participation in this research study.

This study has been approved by the University of Alabama Institutional Review Board. There are no foreseeable risks to the faculty members taking part in the survey. All of the information obtained will be kept confidential and all responses will remain anonymous. There are no direct benefits from taking part in the study but it is anticipated that results from the study may provide assistance to nurse educators for planning instructional strategies to enhance student learning and development of critical thinking.

Thank you very much for your consideration in this matter. I have enclosed a program consent form and a SASE for your convenience.

Sincerely,

Karen Nabors, RN, MSN
Doctoral Candidate
The University of Alabama

Enclosures
APPENDIX C

PROGRAM CONSENT
Dear Program Dean/Director:

My name is Karen Nabors. I am an assistant professor in the associate degree nursing program at Mississippi University for Women. I am currently enrolled in a doctoral program at the University of Alabama in Tuscaloosa. I am interested in conducting a survey related to Mississippi community college associate degree nurse educators’ choice of instructional strategies to teach content in fundamentals and medical-surgical nursing courses to enhance student learning and development of critical thinking. I would like to ask permission from you at this time to conduct the survey with the associate degree nursing educators at your institution.

Enclosed you will find a letter explaining the purpose of the study, a consent of participation form to be read by the participants before taking part in the study, and a copy of the survey tool to be completed by the participants online via Qualtrics. The survey should take about 15 minutes to complete. There are no foreseeable risks to the educators taking part in the study. I would appreciate very much permission to survey your faculty members.

Thank you very much for your consideration. Please sign below to grant permission for use of your institution in conducting the survey. Please keep a copy for yourself and return the signed permission form to me. I have enclosed a self-addressed stamped envelope for your convenience in returning the form. I do ask that you return the permission form by April 18. Feel free to call me at (662) 329-7316 (office), (205) 662-3574 (home), or (205) 712-3900 (cell) or e-mail me at knabors@nsgslp.muw.edu if you have any questions.

Sincerely,

Karen Nabors, RN, MSN

Enclosures

I do hereby give consent to survey this institution’s associate degree nursing faculty members.

Signed________________________________
Institution________________________________
Date____________________________________
APPENDIX D

DEANS/DIRECTORS EMAIL REMINDER
Dear Dean/Director:

By now you should have received a consent form asking permission to invite your faculty members’ participation in my research study entitled: “Active Learning Strategies in Classroom Teaching: Practices of Associate Degree Nurse Educators in a Southern State.” This is a friendly reminder to ask you to please return the consent form via the SASE to me by April 18 to grant permission.

Thank you again for your consideration.

Sincerely,

Karen Nabors, RN, MSN
APPENDIX E

REQUEST FOR FACULTY EMAIL ADDRESSES
Dear Dean/Director:

Thank you very much for granting permission to invite your faculty members’ participation in my research study. I am now asking that you please forward each faculty member’s e-mail address to me at knabors@nsgslp.muw.edu so that I can solicit their participation in the study and forward the link to the online survey. Or if you prefer, I can send the corresponding information and survey link to you to forward to each faculty member. Please let me know which option you prefer.

Thank you again for your assistance.

Sincerely,

Karen Nabors, RN, MSN
Dear Faculty Member,

My name is Karen Nabors. I am an assistant professor in the associate degree nursing program at Mississippi University for Women in Columbus and a doctoral student at the University of Alabama in Tuscaloosa. I am conducting a research study on community college associate degree nurse educators’ choice of instructional strategies in the classroom. The research study will involve completion of an online survey via Qualtrics that will take approximately 15 minutes to complete.

If you teach fundamentals and/or medical-surgical nursing courses, you are invited to participate in the research study. There are no direct benefits to you from taking part in the study, but findings from the study may provide assistance to nurse educators for planning instructional strategies to enhance student learning and development of critical thinking. There are no foreseeable risks to you for participating in the study. All of the information obtained from the study will be treated as confidential and your identity and responses will remain anonymous.

More information about the study will be forthcoming soon via your e-mail. Thank you for your consideration of this research study.

Sincerely,

Karen Nabors, RN, MSN
APPENDIX G

WEB SURVEY LETTER TO FACULTY MEMBERS
Dear Nurse Educator,

If you teach fundamentals or medical-surgical nursing courses, you are being asked to take part in a research study. The study is called “Active Learning Strategies in Classroom Teaching: Practices of Associate Degree Nurse Educators in a Southern State.” The study is being conducted by principal investigator Karen Nabors, a doctoral student in the College of Education at the University of Alabama. The purpose of this descriptive study is to examine which teaching methods community college associate degree nurse faculty members in a southern state are utilizing to enhance learning and development of critical thinking in fundamentals and/or medical-surgical nursing courses.

Taking part in this study involves completing a Web survey that will take about 15 minutes. This survey includes information pertaining to age, gender, race/ethnicity, level of instruction (1st year vs. 2nd year students), years of teaching experience, highest degree earned, and nurse educator certification. The other questions focus on the instructional strategies that you use to enhance learning and development of critical thinking in fundamentals and medical-surgical nursing courses.

This survey is completely anonymous and confidential. You will not be asked to give your name or any other information that might identify you. In addition, the link to this survey contains no identifying information connected with your email address. The researcher is the only person that will have access to the password-protected research data. Only summarized data from all participants will be presented.

You will not be paid for your participation in this study. There are no direct benefits to you from being in this study. However, the results from the study may provide assistance to nurse educators for planning instructional strategies to enhance student learning and development of critical thinking.

There are no perceived identifiable risks associated with taking part in the study. You may skip any question you do not wish to answer or you may stop the study at any time before you submit the survey.

If you have any questions about the study, you may contact the researcher, Karen Nabors, at 662-329-7316 (work) 205-662-3574 (home), 205-712-3900 (cell) or you may contact my dissertation chair person, Dr. Linda Dunn, at 205-348-1032. If you have any questions about your rights as a research participant, you may contact Ms. Tanta Myles, the University of Alabama Research Compliance Officer, at 205-348-8461, or toll-free at 1-877-820-3066.

YOUR PARTICIPATION IS COMPLETELY VOLUNTARY. You are free not to participate or stop participating at any time before you submit your survey.

If you understand the above statements and voluntarily consent to be in this study, click on the link below or you may follow the next option and copy/paste the URL into your browser.
Follow this link to the Survey:

http://bamaesprmc.us2.qualtrics.com/SE/?SID=SV_4O5hc5qJGakmvSk

Or copy and paste the URL into your internet browser.

Thank you so much for your consideration!

Sincerely,

Karen Nabors, RN, MSN
UA Doctoral Student
APPENDIX H

INFORMED CONSENT
Q1

You are invited to participate in a descriptive research study investigating the teaching practices of community college associate degree nurse educators who teach fundamentals and/or medical-surgical nursing courses.

Title of Study: “Active Learning Strategies in Classroom Teaching: Practices of Associate Degree Nurse Educators in a Southern State”

Principal Investigator: Karen Nabors, RN, MSN
   Doctoral candidate

Supervising Professor: Dr. Linda Dunn, Capstone College of Nursing

Name of Organization: The University of Alabama
   College of Education
   College of Nursing
   Tuscaloosa, Alabama

Purpose of the research
Few studies have addressed the use of active learning strategies in the nursing classroom and even fewer have addressed associate degree nursing education. The purpose of this descriptive study is to examine which teaching methods community college associate degree nurse faculty members in a southern state are utilizing to enhance learning and development of critical thinking in fundamentals and/or medical-surgical nursing courses. This study will provide further research and information regarding best practices in undergraduate nursing education.

Type of Research Intervention
The research study will involve the completion of an online survey.

Selection of Participants
You are being asked to participate in this study because you are an associate degree nurse educator who teaches fundamentals and/or medical-surgical nursing courses in a community college setting. This invitation is being sent to approximately 150 nurse educators in your state.

Right to Refuse or Withdraw
Your participation in this research study is voluntary. It is your free choice. You may decline to participate without any consequences, or if you change your mind, you may withdraw from the study at any time before you submit the survey. There are no penalties or consequences of any kind if you decide you do not want to participate.

The University of Alabama Institutional Review Board (IRB) is the committee that protects the rights of people in research studies. The IRB may review study records to be sure that people in research studies are being treated fairly and that the study is being carried out as planned.
However, because you are not being asked for your name or any other identifying information, the study records will be anonymous to the committee.

Procedures
You will be asked to complete an online survey through Qualtrics. The survey should take approximately 15 minutes to complete. You may skip any question you do not feel comfortable answering. The surveys are completely anonymous.

Cost
The only cost to you from this study is your time.

Compensation
There is no payment associated with participation in this study.

Risks
There are no perceived identifiable risks associated with the study.

Benefits
There are no direct benefits to you. However, your participation is likely to help us learn more about instructional strategies that enhance learning and development of critical thinking in nursing courses.

Privacy
You have received an email invitation to participate in the study through your password protected campus email account. If you decide to participate in the study, you can complete the questionnaire when you are alone and no one else can see how you are answering questions. The Web link for this study has no information that connects back to your email address. Therefore, no one (not even the researcher) will know which faculty members completed the survey. Because of this protection, reminder emails will be sent to all faculty members who received an invitation to participate in the study. If a faculty member has already completed the survey or wishes to decline participation, he or she will be instructed to ignore the email reminder. You may skip any question on the survey that you do not feel comfortable answering. The surveys are completely anonymous. No individuals will be identified.

Confidentiality
You will not be asked for your name or any other information that might identify you. The information gathered from the survey will be password protected and only the researcher will have the password. All data will only be reported as group data. All information will be kept confidential. The completed surveys will only be seen by the researcher and possibly the dissertation chair person and research committee. After the researcher completes her dissertation, the survey will be deleted from Qualtrics. Any data that is downloaded to a flash drive for statistical analysis will be kept in a locked drawer in the researcher’s office. The data will be erased from the flash drive after a period of three years.

Who to Contact
If you have any questions about this study or would like to be notified of the findings, you may contact me at 662-329-7316 (office), 205-662-3574 (home), 205-712-3900 (cell) or at knabors@bama.ua.edu or knabors@nsgslp.muw.edu. You may also contact my dissertation chairperson, Dr. Linda Dunn, at ldunn@bama.ua.edu or call 205-348-1032 if you have any questions.

If you have any questions or concerns about your rights as a person in a research study, contact Ms. Tanta Myles, Research Compliance Officer of the University, at the Office for Research Compliance (ORC) at 205-348-8461 or toll-free at 1-877-820-3066.

You may also ask questions, make suggestions, or file complaints and concerns through the IRB Outreach website at http://osp.ua.edu/site/PRCO_Welcome.html or email the Research Compliance office at participantoutreach@bama.ua.edu. After you complete the questionnaire, you are encouraged to complete the survey for research participants available at the IRB Outreach website.

In order to participate, you must consent to the survey.

Completion of the attached survey implies your consent to take part in this research study.

I consent to participation in this survey. (You can print out a copy of this consent form for your own records)

☐ Yes
APPENDIX I

SURVEY QUESTIONNAIRE
Q2
☐
What is your age?

Q3
☐
What is your gender?
☐ Male
☐ Female

Q4
☐
What is your race?
☐ American Indian
☐ Alaskan Native
☐ Asian
☐ Black
☐ Hispanic/Latino
☐ Pacific Islander
☐ White

Q5
☐
What is your level of instruction?
☐ First year students
☐ Second year students
☐ Both

Q6
☐
How many years of teaching experience do you have?


Q7
☐ What is your highest degree earned?
☐ Master's
☐ Post-Master's
☐ Doctorate

Q8
☐ Are you a certified nurse educator?
☐ Yes
☐ No

Q9
☐ What type of preparation have you had with using active learning strategies (ALS)?
☐ None
☐ Academic Course
☐ Peer instruction
☐ Workshop
☐ Other, please specify: 

Q10
☐ Do you currently use ALS to teach content in fundamentals or medical-surgical nursing courses?
☐ Yes
☐ No

Q11
☐ If you do NOT use ALS, please give your reasons for NOT doing so.

Q12

Based on your best estimation, please indicate in the first column the number of times (frequency) each semester you use the following methods in the classroom to teach fundamentals or medical-surgical content.

In the second column, please rate how effective you think each method is for enhancing learning and development of critical thinking using the following scale:

1 = Not Effective
2 = Somewhat Effective
3 = Neutral/No Opinion
4 = Effective
5 = Very Effective

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Q13

How do you determine when to use ALS to teach nursing content?

Q14

What barriers have you encountered when using ALS to teach nursing content?

Q15

What are your perceived benefits for using ALS to teach nursing content?

Q16

Based on your student course evaluations, please list the top two (2) most effective ALS you use and give reasons why you think they are more effective than other ALS.
APPENDIX J

FACULTY E-MAIL REMINDER/THANK YOU
Dear Faculty Member,

This e-mail is being sent as a friendly reminder to ask that if you teach fundamentals and/or medical-surgical nursing courses, please consider participating in the Qualtrics online survey regarding instructional strategies utilized in the classroom. If you wish to participate, please follow the link below to the survey. If you have already done so, thank you for your participation and please disregard this e-mail. If you decline to participate in the study, please disregard this e-mail as well.

Sincerely,

Karen Nabors, RN, MSN

http://bamaesprmc.us2.qualtrics.com/SE/?SID=SV_4O5hc5qJGakmvSk
APPENDIX K

APPROVAL LETTER FROM MISSISSIPPI DEANS AND DIRECTORS
January 10, 2012

Mrs. Karen Nabors  
EdD, Candidate  
University of Alabama

Dear Mrs. Nabors,

The Deans and Directors of the Mississippi Council of Associate Degree Programs are delighted that you have asked us to participate in your research concerning active learning strategies in the classroom. As nurse educators we are constantly looking for strategies to develop critical thinking and enhance student learning.

We look forward to working with you and ask that you consider presenting your findings at our annual meeting in June, if you have completed your work. I have attached a roster of members, with e-mail addresses, of the council which includes Deans/Directors of Mississippi Community Colleges for your convenience.

If I can be of further assistance to you, please let me know.

Sincerely,

MS Council of Associate Degree Programs  
1100 College Street, MUW 910  
Columbus, MS 39701-5800
APPENDIX L

IRB APPROVAL LETTER
March 23, 2012

Karen Nabors  
College of Education  
Box 870302

Re: IRB #: EX-12-CM-016, "Active Learning Strategies in Classroom Teaching: Practices of Associate Degree Nurse Educators in a Southern State"

Dear Ms. Nabors:

The University of Alabama Institutional Review Board has granted approval for your proposed research.

Your application has been given exempt approval according to 45 CFR part 46.101(b)(2) as outlined below:

(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:
(i) The information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

This approval expires on 3/22/13. If the study continues beyond that date, you must complete the appropriate portion of the IRB Renewal Application. If you modify the application, please complete the Modification of an Approved Protocol form. Changes in this study cannot be initiated without IRB approval, except when necessary to eliminate apparent immediate hazards to participants. When the study closes, please complete the Request for Study Closure form.

Should you need to submit any further correspondence regarding this application, please include the assigned IRB application number.

Good luck with your research.

Sincerely,

[Signature]

Director & Research Compliance Officer  
Office of Research Compliance  
The University of Alabama