Online Teaching Self-Efficacy of Nurse Faculty Teaching in Public, Accredited Nursing Programs in The State of Michigan

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ONLINE TEACHING SELF-EFFICACY OF NURSE FACULTY TEACHING IN PUBLIC, ACCREDITED NURSING PROGRAMS IN THE STATE OF MICHIGAN

by

Kristi Adair Robinia

A Dissertation
Submitted to the
Faculty of The Graduate College
in partial fulfillment of the
requirements for the
Degree of Doctor of Philosophy
Department of Educational Leadership, Research and Technology
Advisor: Andrea Beach, Ph.D.

Western Michigan University
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Kristi Adair Robinia
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CHAPTER 1
INTRODUCTION

Faculties in higher education are increasingly encouraged to adapt traditional courses into online format (McLean, 2005). There are administrative, economic, and societal pressures to minimize external obstacles for the adult learner by using online teaching modalities (Maguire, 2005; Marra, 2004; Parker, 2003). Some faculty have responded by jumping enthusiastically into teaching online while there are many others who seem reluctant to explore this instructional media (Maguire, 2005; McLean, 2005).

Several researchers have explored and identified the motivational factors and incentives required to entice faculty into teaching online as well as the barriers that inhibit participation (Giannoni & Tesone, 2003; Maguire, 2005; McLean, 2005; Parker, 2003). Weigel (2002) points out that online teaching requires a paradigm shift in how instructors organize and deliver course materials. While some faculty remain suspicious of the quality of online courses, others have embraced online media as an outlet to increase students' critical thinking, problem-solving and collaborative skills (Yang & Cornelious, 2006).

Nurse educators are being challenged to adapt to this rapidly changing educational landscape as well as a shifting health care environment (Nugent, Bradshaw, & Kito, 1999). A common concern is the retention of teaching effectiveness in order to provide quality online learning experiences (McLean, 2005). This study sought to add to the discussion by exploring the variables that influence teacher self-efficacy with online teaching.

The Purpose of the Study

The change and growth of technology has enabled higher education to expand distance education programs to a wider market. Understanding the forces driving the
expansion of online teaching and exploring issues affecting its growth lays the foundation that built the purpose of this study.

_Economic and Cultural Forces Driving Online Course Development_

Altback (1999) and McGuinness (1999) both discuss the economic pressures bearing down on universities and holding them financially hostage to government intervention and control. Higher education is now in the throes of a fiscal crisis. Faced with rising costs and decreasing state and federal revenue support, institutions are struggling to find ways to remain available to increasing numbers of college students from increasingly diverse backgrounds (Johnstone, 1999; Katz, 1999). Legislatures across the nation are expecting colleges to explore cost saving instructional delivery methods. Many institutions are using online distance education as one strategy to achieve this goal (Allen & Seaman, 2006; Hillstock, 2005).

Online education has been proposed as a key to create access and provide learner-focused attention to students unable to participate in traditional face-to-face learning (Palloff & Pratt, 2003) and there is a public demand for web-based learning (Duderstadt, 1999). The influx of non-traditional students into the market requires flexible curricula that are sensitive to the needs of the learner with many competing obligations (Manner, 2003). Educators are cognizant of this demand and realize the importance of increasing public support for higher education (Knerr, 1990). Therefore, it is important to examine how higher education has responded to these non-traditional learners.

_The Current State of Online Learning in U.S. Higher Education_

According to the National Center for Education Statistics (NCES) 2000-2001 report, 960 public two-year institutions offered distance education courses with
enrollments of 1,472,000, as compared to 550 public four-year institutions with 945,000 enrollments. The NCES report cited that 90 percent of two-year and 89 percent of four-year public institutions offered distance education courses for the 2000-2001 academic years. These distance education courses were most frequently delivered through the internet or video teleconferencing (Waits & Lewis, 2003).

Allen and Seaman (2003) reported an ongoing growth trend for distance education in their Sloan Survey of Online Learning. They forecasted a growth rate of 24.8% in 2004 up from 19.89% in 2003. This ongoing growth in distance education is attributed to web-based learning and the increasing availability of the internet.

In 2006, Allen and Seaman conducted a fourth annual survey on the state of online learning in U.S. higher education. Once again, they reported that there was no leveling of the growth rate for distance education and an actual growth rate increase of 35%. In addition, they found an increasing number of respondents positively rated online learning experiences. For example, in 2003, 57% of the officers rated online learning outcomes as being the same or superior to face-to-face courses; a trend which rose to 61.9% in 2006.

According to Seaman and Allen (2006) online enrollment continues to grow with 58.4% of academic leaders reporting that online education is crucial in strategic planning for their institutions. Over half of all online students are presently studying at two-year associates colleges as opposed to four-year institutions. However, almost all of the largest institutions (96%) reported offering online courses and two-thirds of the very largest doctoral and research institutions have complete online programs.

The Chief Academic Officers also concur (72.6%) that online courses are important for serving new student bases. Online learning is perceived as an important marketing
strategy for higher educational institutions and institutions plan to continue to grow their online offerings. Accordingly, educators cannot ignore the demand that continues to rise for online education nor the financial gains this promises (Kenney, Hermens, & Clarke, 2004).

Gumport and Chun (1999) make the point that technology has already pervasively permeated society and state, “as new educational providers that rely on technology enter the market, they will reshape the landscape of higher education” (p. 377). University and community college faculty need to be invested in leading any educational transformations in order to retain ownership and governance of the curriculum. This issue affects faculty across all disciplines including nursing educators who have been increasingly pressured to create and teach online course offerings.

The Current State of Nursing in the United States

Nurse educators function within higher education facilities and face the additional burden of a well-publicized national exodus of qualified nurses from the workforce (American Association of Colleges of Nursing, 2000a; Bednash, 2000; Berlin, Bednash, & Alsheimer, 1993; Berlin, Wilsey, & Bednash, 2005). Compounding the problem is the parallel retirement rates of expert nurse faculty which makes it difficult to increase student enrollments (Berlin & Sechrist, 2002; Hinshaw, 2001; Berlin et al., 2005; LaRocco, 2006). This has resulted in many calls for increased funding of nursing programs as well as a microscopic examination of the educational processes needed to produce safe and effective practitioners (American Association of Colleges of Nursing, 2000a, 2000b, 2002, 2005; Gongwer News Service Michigan, 2007).
Nursing schools are responding to the challenge by: (a) Aggressive marketing efforts to reach traditional and non-traditional students, (b) developing attractive accelerated curricula to appeal to second-degree students anxious to become nurses, (c) using computer technology to create more classroom seats and open access to distant learners, and (d) examining and addressing student retention in programs (American Association of Colleges of Nursing, 2000a; 2000b; 2002; 2005). Is it possible that new paradigms for nursing education, such as online programs, can help stem the current nursing shortage?

*Non-traditional nursing students.* Due to the evolving complexity of health care, nursing school is a rigorous and intense endeavor. Many traditional students have difficulty navigating the challenging curriculum (American Association of Colleges of Nursing, 2005; Perry, 2002). Perry (2002) found that age was a strong predictor of successful nursing program completion. Non-traditional adults have often mastered self-direction and due to the maturation process, struggle less with the psycho-social aspect of patient care. In spite of these advantages, adult learners also have many roles and lead multi-tasking lives. Nurse educators need to seriously consider how to minimize external obstacles for the adult learner in nursing school.

One solution being suggested by nursing administrators in higher education is the use of web-based curriculum. Web-based instruction provides access and flexibility for students previously locked out of traditional education due to time and geographical boundaries. In one study of 815 undergraduate students enrolled in online courses it was found that the older students tended to receive higher grades than their younger counterparts (Puzziferro, 2006). While this curriculum strategy has been shown to be
effective with nontraditional students, nurse educators must be willing to embrace these new online teaching methodologies for all types of students in order to widen the availability of on-line programs in their institutions.

*Faculty Resistance to Online Teaching in Higher Education*

Parker (2003) warns that many higher education institutions need to change or face demise. Many feel that part of the solution involves embracing technology in education (Allen & Seamen, 2006). However, it has been noted that many faculty are still resistant to adopting online teaching methodologies (Allen & Seaman, 2006; McLean, 2005). In addition, many senior level faculty are “commonly observed vocal critics of online education” (Giannoni & Tesone, 2003, Para 6). To date there have been no studies specifically reporting online teaching self-efficacy levels as a predictive factor for nurse educators participating in online teaching.

Puzziferro (2006) found that the variables of student success and satisfaction with online courses were related to perceptions of instructor availability and concern. She also found that the students reported higher levels of satisfaction with adjunct instructors. This suggests that online students require faculty committed to their success. Tenured and full-time nursing faculty would benefit from data that helps them realize the need to teach online or accept the risk that administrators might increasingly turn to part-time faculty to teach these courses.

Research has shown that administrators and faculty seem to agree on the barriers to implementing technology and yet disagree on the motivating factors that encourage instructor participation in the medium (Giannoni & Tesone, 2003; Schauer, Rockwell, Fritz & Marx, 2005). Academic administrators and faculty need to further understand the
reasons behind the ongoing resistance in their institutions. An important aspect to consider is the relationship between the task of teaching online, personal online teaching competence, and participation in online teaching. Bandura's (1997) research suggests that beliefs about teaching and teaching competence are unlikely to change unless challenged by motivating and/or coercive evidence. An initial step is to unveil and understand the current teaching efficacy beliefs nurse educators hold about online teaching.

Possible Variables Affecting Participation in Online Teaching

This study sought to understand selected variables that affect nurse faculty confidence in online teaching skills within Albert Bandura's theoretical construct of self-efficacy derived from social learning theory. Research has correlated high levels of self-efficacy with student achievement and faculty participation in novel curriculum (Tschannen-Moran, Hoy, & Hoy, 1998). Revealing factors that contribute to new faculty developing online teaching efficacy or assisting seasoned faculty to reevaluate their current online teaching efficacy beliefs might assist higher education administrators in facilitating more online teaching participation.

The literature confirms that online education is continuing to grow and that administrators see a lack of faculty participation as an inhibitory factor in the process. Previous research has identified motivators and inhibitors for faculty teaching online; however, research has not investigated the relationship between nursing faculty online teaching self-efficacy and participation in online learning. There is also a lack of research on how different academic ranks, educational environments, experience with online teaching, and types of support and training affect nursing faculty participation in
online learning. The purpose of this study was to examine variables that may or may not affect faculty self-efficacy levels and participation in online teaching.

Research Questions

This study will explore the following research questions:

1. How confident do nurse educators feel in preparing, conducting and evaluating online courses? Is there a difference in online teaching efficacy in relation to the variables: (a) age, (b) gender, (c) appointment type, (d) type of institution, (e) specialty area, (f) years of teaching nursing experience, (g) years of teaching lecture experience, and (h) numbers of online teaching experiences?

2. In what ways do experience with online teaching, professional development, and perceived support from faculty colleagues or instructional designers influence nurse faculty members’ reported self-efficacy for online teaching?

Methodology Overview

The research questions were examined through quantitative methods involving a web-based survey sent to nurse educators employed at public accredited certificate, associate, baccalaureate, and graduate nursing programs in the State of Michigan. The variables of interest under study were derived from a review of the literature and include self-efficacy, teacher self-efficacy, and motivational versus inhibitory factors for teaching online. In order to convert the constructs into quantitative variables, the literature was also searched for survey tools.

This study used a cross-sectional design to examine the effects of online teaching self-efficacy on several groups of nurse educators at one point in time (Mertens, 2005). Nurse educators from certificate, associate, baccalaureate, and graduate programs in the
State of Michigan were asked to participate. In addition, the survey was open to adjunct, term, tenure-earning, and tenured nursing faculty.

Significance of the Study

Without appropriate intervention, the State of Michigan will be impacted by the well publicized national nursing shortage. There is a projected shortfall of 18,000 registered nurses in the state by the year 2015 and calls for increased funding for all levels of nursing education (Coalition of Michigan Organizations of Nursing, 2006). According to Jeanette Klemczak, chief nurse executive for the Department of Community Health, “each nurse adds $75,000 to the state’s economy in salary and benefits” (Gongwer News Service Michigan, 2007, para 3). Therefore, solutions that provide opportunities to educate more nurses are necessary for Michigan’s public health well-being and to boost the state economy (Gongwer News Service Michigan, 2007).

Nurse educators from the State of Michigan’s university and college systems have identified several critical reasons for the State’s nursing shortage (Gongwer News Service Michigan, 2007; Michigan Community College Association, 2007). Reasons cited include: (a) the high cost of offering nursing programs, (b) the availability of nurse faculty, (c) the availability of clinical sites, and (d) attrition rates for students failing to graduate (Michigan Community College Association, 2007). Solutions include expanding programs, providing accelerated nursing track options, soliciting hospitals to encourage joint appointments that enable staff nurses to teach part-time, and providing adequate student support to promote persistence and success in programs (Michigan Community College Association, 2007).
Web-based learning provides additional opportunities for non-traditional learners locked out of traditional nursing programs due to career and family time restraints. In addition, online learning creates more clinical space as students are not tethered to a time or place for theoretical instruction. However, there is a lack of data regarding Michigan’s nursing faculties’ perceptions of, and abilities for, online teaching. This study attempted to clarify in part the current picture of online teaching in nursing programs in the state of Michigan.

A study that explores nursing instructor factors that may interfere with the implementation of online programs might also reveal strategies to overcome these problems. As the development of web-based programs in higher education is being driven by strong economical and cultural forces, nursing faculty in Michigan would benefit from research seeking to understand variables associated with online teaching efficacy. As national data indicates that the majority of students taking online courses are doing so at public two-year institutions (Allen & Seaman, 2003; Waits & Lewis, 2003), this study surveyed Michigan nursing faculty at both two-year and four-year public institutions in order to explore the differences, if any, in faculty at these institutions.

Theoretical Framework

The overarching theoretical framework shaping the research questions of this study was derived from Alfred Bandura’s construct of self-efficacy as derived from social learning theory (Bandura, 1977). This section will review of the concepts of self-efficacy and teaching efficacy to provide an initial look of the concepts. More in-depth analysis will occur in the literature review located in chapter two.
Self-efficacy (Bandura, 1977) refers to an individual’s belief or judgment that their performance in a specific situation will lead to a specified outcome. Research indicates that humans avoid activities beyond their perceived level of coping ability (Bandura, 1977). Low levels of self-efficacy correlate to negative thought patterns regarding personal deficiencies and decreased incentive to problem-solve. Conversely, with high levels of perceived self-efficacy, people will persevere and usually obtain desired outcomes (Bandura, 1977; 1982; 1997). Some self-doubt coupled with high self-efficacy will drive an individual to exert greater efforts to overcome obstacles (Bandura, 1982).

The issue of self-efficacy in teaching was been explored in many studies that have demonstrated a positive correlation between teachers’ efficacy and student achievement (Tollerud, 1990; Tschannen-Moran et al., 1998). Self-efficacy in teaching involves having the teacher analyze the teaching task at hand while personally assessing his or her personal teaching competence (Tschannen-Moran et al., 1998). For a nurse educator, personal efficacy relates to competency in nursing specialty areas and his or her perceived ability and confidence in being able to teach nursing skills (Nugent et al., 1999). Levels of teaching self-efficacy directly relate to a teacher’s belief that he or she is able to influence learning outcomes regardless of external student factors (Guskey & Passaro, 1994). This is in essence a belief in professional competency to control and create successful learning environments (Ashton, 1984).

In nursing education, there is a call for faculty with strong clinical backgrounds to teach theory that brings current practice into classroom settings. Nugent et al. (1999) studied 346 new nurse educators and found that they did have a strong sense of teacher self-efficacy. However, the majority of their sample (59.5%) reported having previous
teaching experience in another field, and new nurse educators are often heavily assigned to teach in the clinical areas. Therefore, the impact of teacher efficacy on teaching theoretical nursing courses has not been investigated. In addition, the literature is quiet regarding the perceived self-efficacy levels of nurse educators and its relationship to online teaching. This study sought to determine if nurse educators with high perceived online teaching self-efficacy participate in online teaching. In addition, the study sought to understand the variables that might influence high or low self-efficacy perceptions of online teaching.

Definition of Terms

*Distance education* shall refer to teaching and learning that occurs with a geographical separation between and amongst learners and the instructor (Keegan, 1996).

*Self-efficacy* shall refer to the perceived ability to perform behavior (efficacy expectation) that results in desired outcomes (outcome expectation).

*Teacher efficacy* shall refer to the teacher’s belief in his or her capability to organize and execute courses of action required to successfully accomplish a specific teaching task in a particular context (Tschannen-Moran et al., 1998).

*A teacher’s efficacy belief* shall refer to the teacher’s judgment of his or her capabilities to bring about desired outcomes of student engagement and learning, even among those students who may be difficult or unmotivated (Tschannen-Moran & Hoy, 2001).

*Nurse educator online teaching efficacy beliefs* shall refer to the nurse educator’s belief in his or her capability capabilities to bring about desired outcomes of student
engagement and learning, even among those students who may be difficult or unmotivated in an online teaching environment.

*Nurse educator* will refer to teachers of nursing employed in accredited nursing programs housed in higher education institutions.

*Online course* shall refer to a distant learning course in which course activities occur via the Internet, aided by a course management system (CMS) (Puzziferro, 2006).

*Higher education institution* will refer to any accredited community college, college or university that provides at least a one, two or four year post-secondary educational instruction leading to the conferral of an certificate, diploma, associate, baccalaureate or post-graduate degree.

*Accredited nursing program* will refer to nursing education programs accredited by the National League of Nursing Accrediting Commission (NLN) or the Commission on Collegiate Nursing Education (CCNE). The NLN accredits all types of nursing education programs including masters, baccalaureate, associate degree, and certificate/diploma. The CCNE accredits programs that offer only baccalaureate and graduate level nursing degrees.

*Satisfaction levels* will refer to the amount of agreement that preparatory experiences adequately prepared nurse educators for online teaching.

**Delimitations and Limitations**

This study was confined to public, accredited nursing departments in higher education institutions located in Michigan. Within each department, all nursing faculty with any theoretical teaching assignment teaching during the time of the study were
surveyed. Nurse faculty who teach face-to-face, online, or in combination were invited to participate. This study did not include nurse faculty who only teach in the clinical setting.

Although the entire population of nurse educators in public, accredited nursing departments in Michigan was surveyed, results were affected by return rates. With a poor response rate from two-year programs, the results are limited to Michigan nurse educators working in four-year institutions. Also, although a survey method can reach a larger number of people, survey research is limited due to sampling bias and the validity of self-reported data.

A survey method relies on response rate for an adequate sample size. Without a fairly large number of returns, the power of the analysis will be low. Polit and Beck (2004) report that mailed or web-based questionnaires yield response rates of 50% or lower. This study used a web-based survey and all questionnaires were stored and administered via Zoomerang™ online survey software. According to Zoomerang™, the typical response rate for an online survey is between 20-30%. This study had a response rate of 43% and therefore met the goal of achieving a 30% or higher response rate.

This study was only able to determine relationships between variables and could not identify cause and effect relationships between research variables. In addition, the use of a cross-sectional self-report design is less rigorous than an experimental approach due to the limitation of control over independent variables (Issac & William, 1981). Therefore, results were scrutinized for evidence of ambiguous or arbitrary relationship patterns. Finally, the results derived from this quantitative methodology are more limited in depth than if a qualitative interview process was utilized.
Summary

Higher education is under pressure to facilitate more web-based courses. Nurse educators are being encouraged to adopt online teaching methodologies in order to reach more students. Although many faculty members are working with online approaches, others seem to hesitate or report negative experiences with web-based teaching. This quantitative study explored the variable of perceived online teaching self-efficacy as it relates to participation in online teaching. The results add to the discussion of how to facilitate more nurse faculty participation in online teaching.

The following chapter will present the results of the literature review that framed the design of this study. The concepts of self-efficacy and teaching efficacy are explored. Motivating and inhibiting factors for faculty teaching online are also explored in the literature. The methods for this study derived from the literature review are then presented in Chapter 3.
CHAPTER 2
LITERATURE REVIEW

The purpose of this study was to examine variables that affect faculty self-efficacy levels for online teaching. The research variables are drawn from concepts of self-efficacy theory derived from the theory of social learning. The literature review starts with the concepts of self-efficacy and teaching efficacy. Next, a review of previous research in the area of faculty participation in online teaching is presented. This literature revealed motivational factors affecting faculty participation and common characteristics of teachers who participate in online learning.

Self-Efficacy Theory

In 1977, Bandura published a theoretical framework that postulated that behavioral change can be derived from many different modes of psychological treatments due to a common "cognitive mechanism" (p. 191). Bandura labeled this construct self-efficacy and proposed that measuring the amount and strength of self-efficacy pre-treatment predicts post-treatment results. Bandura stated, "Expectations of personal efficacy determine whether coping behavior will be initiated, how much effort will be expended, and how long it will be sustained in the face of obstacles and aversive experiences" (p. 191).

Since that time, the effects of self-efficacy have been studied in the fields of psychology, education, and nursing (Gibson & Dembo, 1984; Maddux & Stanley, 1986; Nugent et al., 1999; Tschannen-Moran et al., 1998; Thompson, 1992; Tollerud, 1990). This section will review self-efficacy theory by: (a) discussing the construct of self-efficacy, (b) exploring research and studies on self-efficacy as an intervening variable...
influencing teaching skills and participation in learning environments, (c) exploring the issues of conceptual confusion arising from studies on teaching efficacy, and (d) discussing the Tschannen-Moran et al.'s (1998) model, which guided this research.

**The Construct of Self-Efficacy**

Bandura (1977) derives the construct of self-efficacy from the field of cognitive-behavioral psychology. Psychologists in this field believe that human behavior is shaped through cognitive processes that interpret data from observation and outcome consequences. More than a simple process of learning through immediate feedback, the human brain synthesizes sequences and patterns of events over long periods in order to determine and regulate behavioral outcomes. Within this process are internal motivational sources that activate and facilitate persistent behaviors. Individuals forecast future consequences and use goal-setting to create personalized self-evaluative reactions and behavioral responses. Positive and negative appraisals drive internal self-inducements to persist or cease behavioral patterns.

Bandura (1977) conceptualized this psychological process as creating the construct of self-efficacy. He further differentiates the construct into two components: (1) efficacy expectations; and (2) response-outcome expectations. Each component bears individualized scrutiny.

*Two components of self-efficacy.* Efficacy expectations refer to a personal sense of certainty in one's abilities to execute a given behavior to achieve a predetermined outcome. A person's self-perception of efficacy affects the process of thinking, behavioral choices, and feelings. High self-confidence in the ability to succeed makes it more likely that a person will participate, persevere, and perform a behavior that results
in a successful outcome (Bandura, 1977; 1982; 1997). Bandura (1977) notes that behavior is not simplistic nor linked solely to expectations. Indeed, individuals must also have the required capabilities for the task at hand as well as appropriate incentives to follow through with behavior. This concept involves a “triadic reciprocal causation” (pp.5-6) with behavior resulting from the internal factors of cognition, affect, and biology in relationship to the external environment. Primarily, if the conditions of competency and appropriate incentives are met, then perceived self-efficacy is the crucial mediating variable in determining behavior.

Response-outcome expectations refer to a person's prediction that a certain behavior will lead to a particular outcome (Bandura 1977; 1982). Self-efficacy acts as a mediating factor that separates behavior performance from outcome. Bandura differentiates the expectations by stating, “Individuals can believe that a particular course of action will produce certain outcomes, but if they entertain serious doubts about whether they can perform the necessary activities such information does not influence their behavior” (Bandura, 1977, p.193).

In differentiating between efficacy and outcome expectations, Bandura (1977) uses the example of expectancy sources of futility. He points out that individuals might give up trying due to a lack of self-efficacy, or a belief that talents will fall barren on a hostile or unresponsive environment. He states, “To alter efficacy-based futility requires development of competencies and expectations of personal effectiveness. By contrast, to change outcome-based futility necessitates changes in prevailing environment contingencies that restore the instrumental value of the competencies that people already possess” (p. 205).
The importance of high self-efficacy. Bandura (1997) believes that individuals possessing strong self-efficacy while facing negative outcome expectations are more likely to engage in efforts to change their environments. Individuals possessing weak self-efficacy in those same environments will have attitudes of hopelessness and self-devaluation. In the optimal situation of high self-efficacy and positive outcome expectations, the result is productive behavior leading to personal satisfaction. An individual with low self-efficacy facing that same positive outcome expectation will become despondent and fail to act.

Bandura (1977) examines self-efficacy expectations according to magnitude, generality, and strength. In particular, individuals will subscribe to different levels of self-efficacy according to the magnitude of options presented from simple to complex. In addition, some experiences will instill a generalized sense of efficacy which translates to behaviors beyond a prescribed individual behavioral option. Multiple studies have demonstrated that perceived self-efficacy is independently linked to attainments regardless of individual skill level (Bandura, 1997; Tschannen-Moran et al., 1998).

There are also many instances of individuals with sufficient knowledge and skills performing inadequately. Bandura (1997) states, “Perceived self-efficacy is concerned not with the number of skills you have, but with what you believe you can do with what you have under a variety of circumstances” (p. 37). Finally, if the strength of the efficacy expectation is low, individuals will quickly disengage from disconfirming experiences whereas high levels of efficacy correlate with strong perseverance despite discouraging outcome evidence. Bandura (1977) believes there are several different sources for the development of such self-efficacy judgments.
Sources of Self-Efficacy Judgments

According to Bandura (1977; 1982; 1997), judgments of self-efficacy are based on four principal sources of information: (1) Enactive attainments, (2) vicarious attainments, (3) verbal persuasion, and (4) physiological states. Bandura (1977; 1997) cites his own research as well as others’ to support statements that therapeutic interventions can change behavior by using these sources of information to increase self-efficacy levels.

Performance (enactive) attainments. Performance or enactive attainments are created from personal mastery experiences. In experiments involving attempts to eliminate fearful and defensive behavior in individuals with phobias the mastery experience of enactive attainment is the most influential in generating high or low levels of self-efficacy. Different techniques such as participant modeling, performance desensitization, performance exposure and self-instructed performance can be used to elicit these attainments (Bandura, 1977; 1982).

After strong self-efficacy is established, the negative impact of an occasional performance failure is reduced. A strong mastery experience may increase individual efficacy beliefs that then permeate into generalized confidence (Bandura; 1997). Studies have demonstrated a link between high levels of efficacy and sustained levels of coping behavior, health functioning, and maintenance of habit changes (Bandura; 1997; Coletti, Supnick, & Payne, 1985; Devins & Edwards, 1988; Holman & Lorig, 1992).

Vicarious experience. Self-efficacy is also derived from vicariously observing others. Bandura (1977) states that the most beneficial modeling occurs from observing outcomes derived from “effortful coping behavior” (p. 197). He also points out that it is more valuable to observe diverse models in a given behavior rather than one model.
repeating a behavior. However, without direct evidence of personal accomplishment, behavioral gains made through vicarious experience are more vulnerable to regression.

*Verbal persuasion.* Tools used to induce verbal persuasion include suggestion, exhortation, self-instruction, and interpretive treatments (Bandura, 1977). Bandura believes that the power of verbal persuasion in building self-efficacy is dependent on facilitating performance behaviors. Verbally raising self-confidence without providing the context of appropriate conditions to succeed is a recipe for undermining self-efficacy.

*Physiological states.* Interventions to change efficacy through emotional arousal include: (a) Attribution, (b) relaxation, (c) biofeedback, (d) symbolic desensitization, and (e) symbolic exposure (Bandura, 1977). A psychological threat arouses the physiological stress response that triggers fear and apprehension. As a defense mechanism, individuals might avoid behavior that arouses this response. Bandura (1977) explains that social learning theory teaches individuals to re-interpret this arousal as informative or energizing rather than threatening. However, he cites research that found attempts to modify avoidance behavior through cognitive re-evaluation using false physiological feedback were unsuccessful in treating chronic anxiety conditions. He believes that veracity in treatment options coupled with symbolic exposure leading to actual performance activities results in the highest gains of self-efficacy.

Bandura (1977) uses this concept to strengthen the precept of self-efficacy. He states,

Individuals who come to believe that they are less vulnerable than they previously assumed are less prone to generate frightening thoughts in threatening situations. Those whose fears are relatively weak may reduce their self-doubts and debilitating self-arousal to the point where they perform successfully. Performance successes, in turn, strengthen self-efficacy (p. 200).
Banduras’ clinical work demonstrated the power of self-efficacy in predicting behavior. More importantly, the exciting notion that self-efficacy can be positively influenced has encouraged educators to study this construct’s effect in teaching environments.

Teaching Efficacy

Tschannen-Moran et al. (1998) conducted a literature review spanning the years 1974 to 1997. This literature review focused upon the origins and evolution of the construct and measurement of teacher efficacy. The review uncovered mostly quantitative studies of teachers from various K-12 settings (elementary, middle, secondary), in a variety of contexts (urban, suburban, and rural), and in different stages of their careers (pre-service, novice, and in-service). These studies reveal a pattern of significant findings linking teaching efficacy to student achievements. Also uncovered is a sense of confusion behind the definition of teaching efficacy and how to quantify the construct as a study variable. As a result of this extensive review, Tschannen-Moran et al. (1998) developed an integrated model for teaching efficacy which was then used as the conceptual map for creating a measuring tool (Tschannen-Moran & Hoy, 2001).

Historical Perspective

According to Tschannen-Moran et al. (1998), the first published study to explore the concept of teaching efficacy was conducted by the RAND organization in 1976. Rotter’s (1966) social learning theory was used as a theoretical base in creating two item statements that explored whether teachers believed more in the power of internal versus external factors to produce student achievement. These statements were then added to a larger survey exploring results of reading interventions and programs. The two items were: (1) “When it comes right down to it, a teacher really can’t do much because most
of a student’s motivation and performance depends on his or her home environment” and (2) “If I really try hard, I can get through to even the most difficult or unmotivated students” (p. 204).

The RAND researchers totaled a sum score from the two items and labeled the variable “teaching efficacy”. The study revealed a strong correlation between teacher efficacy scores and reading achievement among minority students. In a subsequent study, the variable of teacher efficacy was shown to predict whether or not schools continued federally funded projects after the conclusion of the funding period. These results influenced a series of studies that used the original RAND questions or expanded upon the construct of teaching efficacy with new tools (Tschannen-Moran et al., 1998).

General versus Personal Teaching Efficacy

Tschannen-Moran et al. (1998) found that the belief that teachers and schools have the influence and power to overcome environmental obstacles was eventually labeled general teaching efficacy (GTE). The personal belief in one's own ability to successfully teach even difficult or unmotivated students became popularly known as personal teaching efficacy (PTE). Researchers also began to explore the concept of teaching efficacy as a type of self-efficacy as defined by the work of Bandura (1977). This involved exploring the construct of teaching efficacy through a related but different lens. This lens explored the relationship between cognitive beliefs in self-ability and behavior (Tschannen-Moran et al., 1998).

Research Examining Teaching Efficacy

The next sections will review results of studies completed in K-12 and higher education settings that explore the construct of teaching efficacy. In addition, studies that
explore the concept of computer or technology efficacy and reveal additional considerations for online teaching will be described. Finally, this review will lead into a discussion of currently available measures of efficacy and conclude with ideas debated in the literature surrounding the conceptual difficulties of defining teaching efficacy.

Results of K-12 studies on teaching efficacy. The significance of the construct of teaching efficacy is revealed mainly in studies completed in the K-12 arena. Tschannen-Moran and Hoy (2001) define teacher’s efficacy belief as,” a judgment of his or her capabilities to bring about desired outcomes of student engagement and learning, even among those students who may be difficult or unmotivated” (p. 783). Studies completed in the 1980’s and 90’s have found a relationship between teachers’ perceived efficacy with instructional styles and positive student achievements (Bandura, 1997). For example, Gibson and Dembo (1984) found that teachers with a high sense of instructional efficacy work harder to create mastery experiences for students, spend more time on academic pursuits in the classroom, and work harder to help struggling students.

Tschannen-Moran and Hoy (2001) condense the literature on teacher efficacy to reveal the following positive correlations between high levels of teaching efficacy and teacher characteristics: (a) greater levels of planning and organization (Allinder, 1994); (b) less critical of students, more persistent and flexible when facing problems (Ashton & Webb, 1986); (c) more flexible and willing to explore new pedagogy (Guskey, 1988; Stein & Wang, 1988); (d) less inclined to refer to special education (Soodak & Podell, 1993); (e) exhibit more enthusiasm for teaching (Allinder, 1994; Guskey, 1984); and (f) report greater commitment to teaching (Coladarci, 1992).
Other studies have linked negative characteristics to low teacher efficacy. Melby (1995) reported that teachers with low efficacy had more classroom problems, increased levels of anger and stress, and used a custodian approach to teaching. Woolfolk, Rosoff and Hoy (1990) also found that low levels of efficacy were correlated with a negative custodial approach to teaching and a pessimistic attitude regarding the ability to motivate students. These types of negative characteristics are correlated to poorer student achievement (Bandura, 1997; Tschannen-Moran et al., 1998; Tschannen-Moran & Hoy, 2001).

Ashton and Webb (1986) also demonstrated these concepts in a study that added the general teaching efficacy (GTE) score from the first RAND instrument question to a regression equation including student math scores from a standardized achievement exam. They found that GTE levels significantly correlated with and accounted for 24% of the variance in increased student math scores. In addition, personal teaching efficacy scores (PTE) obtained from the second RAND item were found to explain 46% of the variance in language scores on the same standardized test. Tschannen-Moran et al. (1998) make the point that it is difficult to understand why these separate items (GTE versus PTE) would be correlated to math and language achievement. However, the findings support the conceptual importance of continuing to explore the construct of teacher efficacy in order to create more powerful learning environments (Tschannen-Moran et al., 1998).

Tschannen-Moran et al. (1998) and Tschannen-Moran and Hoy (2001) found in their literature review that there have been difficulties conceptualizing the construct of teaching efficacy and establishing validity and reliability for teaching efficacy
measurement tools. Despite criticisms, it is apparent that high levels of teaching efficacy correlate with positive learning outcomes and willingness to experiment with new instructional modalities including the use of online media (Bandura, 1997; Tschannen-Moran & Hoy, 2001). As Bandura states, “The efficacy issue of interest concerns teachers’ beliefs in their abilities to integrate these pedagogical practices successfully within a broad perspective of education” (p. 241).

Teacher efficacy in higher education. Studies that examine teacher efficacy in higher education have focused mainly on graduate students or novice teachers. A review of these works reveals that teacher efficacy in higher education shares the same general components as teacher efficacy in K-12 settings. This section will review studies concerned with sample groups from higher education environments.

Tollerud (1990) measured the perceived self-efficacy of teaching skills of advanced doctoral students and recent graduates from approved counselor education doctoral programs. Tollerud was interested in exploring whether teacher efficacy increased with exposure to course work or training in teaching skills or teaching experience. Findings indicated significant associations between high levels of self-efficacy and increased post-doctoral teaching, the advanced doctoral students’ goal to teach full-time, and the recent graduates’ role of teaching full time. Interestingly, advanced doctoral students with 1-2 teaching experiences had lowered self-efficacy scores than those with no teaching experiences. Levels of self-efficacy did rise after 3-4 courses taught and 5 or more teaching experiences. These findings correlate with those in the K-12 settings and suggest an initial decline in teaching efficacy upon initiation of student teaching experiences (Tschannen-Moran et al., 1998).
Prieto and Altmaier (1994) adapted the tool that Tollerud developed in order to measure perceived self-efficacy for 150 graduate teaching assistants from a variety of academic departments. They explored the effects of prior training, previous teaching experience and demographic variables on teaching self-efficacy. Findings for their sample supported that exposure to prior training and greater amounts of previous teaching experience correlated to higher levels of self-efficacy. A multiple regression analysis found that previous teaching experience explained a significant amount of variance in self-efficacy levels.

Nugent et al. (1999) also adopted Tollerud’s instrument for a study that measured perceived teacher self-efficacy for new nurse educators. They studied 346 nurse educators with five or fewer years of teaching experience to ascertain the relationship between formal educational courses and teacher self-efficacy in the domains of course preparation, instructor behavior, evaluation and examination, and clinical teaching. Once again, significant positive relationships were found between teaching efficacy and hours of formal education courses as well as years of teaching in nursing education. They also found that new nurse educators scored the highest teaching efficacy scores in the clinical skill domain, which is not surprising as the trend is to train advanced practice nurses in the clinical realm rather than as nurse educators.

These three research studies suggest that relationships between educational preparation, teaching experience, and teaching efficacy observed in K-12 settings are also observed in higher education environments. A general weakness in these studies is the failure to link the concept of teacher efficacy in higher education to a performance outcome in that setting. Despite this, the initial step of identifying components of teacher
efficacy for teaching in higher education is crucial in justifying the reliability and validity of a measuring tool.

Measures of Efficacy

Tollerud (1990) was unable to identify an instrument that measured the self-efficacy graduate students and recent graduates had toward their teaching skills. All existing measures used a one and/or two question approach leading to questionable validity. So, Tollerud developed a tool entitled, “The Self-Efficacy Toward Teaching Inventory (SETI) to measure the construct of self-efficacy toward teaching skills. Tollerud’s SETI tool was designed and developed under a three-step procedure modeled at that time on suggestions and reviews of the literature concerning measures of self-efficacy (Friedlander & Snyder, 1983; Owen & Froman, 1988).

The result was a 35-item measure that used a likert-type scale ranging from 1-4 with the labels “Not confident” to “Completely confident”. Construct validity was established by collecting data from the tool and finding that increased scores of self-efficacy were linked to the amount of actual teaching experience as predicted by the theoretical construct of self-efficacy (Bandura, 1977). Construct validity was further substantiated with the finding that SETI scores also changed within graduate school teaching experiences. SETI scores decreased with 1-2 teaching experiences, and then steadily increased after 3-4 semesters of teaching experience. The final product of the development of the SETI tool was a measure that consisted of items relating to course preparation, instructor behavior, materials, evaluation and examination, and clinical skills training.
In another related study, Prieto and Altmaier (1994) deleted 3 items specific to counselor education from the SETI tool and used 32 identical items from the original tool. They reported an internal consistency for this version as a Cronbach alpha coefficient of .93. Nugent et al. (1999) revised the SETI once again for their study by eliminating three items from the Prieto and Altamier (1994) adaptation and adding nineteen items that included teaching strategies for promoting critical thinking and teaching and evaluating student performance in clinical areas. Internal consistency for their revision was reported at .95 alpha coefficient. Reliability on four reported subscales included the following alpha coefficients: course preparation, .89; instructor behavior, .89; evaluation and examination, .88; and clinical skills, .91.

The results of these three studies in the environment of higher education support the concept that course preparation, instructor behavior, materials, evaluation and examination, and clinical skills training are important components of teacher efficacy for nurse educators in higher education. Examining more current tools reveals that instruments designed for K-12 teachers contain most of the same components of teacher efficacy (Tschannen-Moran et al., 1998). Therefore, finding the most valid and reliable tool to measure teaching efficacy requires a review of the instruments used for teachers in all educational environments.

Tschannen-Moran et al. (1998) and Tschannen-Moran and Hoy (2001) provide a comprehensive review of studies using different measurement tools to explore the construct of teacher efficacy. They categorize studies according to theoretical grounding based on Rotter's (1966) social learning versus studies based on Bandura's social cognitive theory and his construct of self-efficacy (1977).
Social learning studies. These studies developed by the RAND researchers focused on defining teacher efficacy under the auspices of an internal versus external locus of control format (Tschannen-Moran et al., 1998). Teachers are essentially asked in various tool formats whether student learning is in the hands of the teacher (internally controlled) or due to environmental factors (externally controlled). Tschannen-Moran et al. (1998) found the following important correlates to teaching efficacy reported in these studies: (a) student achievement; (b) teachers’ willingness to implement innovations; (c) teacher stress; (d) less negative affect in teaching; and (e) teachers’ willingness to stay in the field.

An anomaly reported in research looking at internal versus external locus of control came from the work of Guskey (1982, 1988) who compared scores from a 30-item tool entitled “Responsibility for Student Achievement” (Guskey, 1981) to the sum of the scores on the two RAND items. Guskey’s tool asked subjects to give a weight to two alternatives per question to ascertain how strongly they felt by percentage points that the listed event was within the control of the teacher. The scores obtained indicated a general measure of how much the teacher assumed responsibility for student behavior and two subscale scores indicated teacher responsibility for student success and for student failure (Guskey, 1981; Tschannen-Moran & Hoy, 2001). Guskey (1981, 1988) reported significant positive correlations between teacher efficacy scores from the RAND items and responsibility for both student success and student failures with intercorrelations ranging from 0.72 to 0.81. However, the subscales for student success and failure were weakly (0.20) or not at all related.
Guskey (1987) concluded that positive and negative performances do not exist on the same unipolar continuum and instead serve as independent variables in influencing perceptions of efficacy. Guskey clarified this by stating that teachers were more confident in their ability to direct positive student outcomes than to intercept negative ones. Overall, the research concluded that higher levels of efficacy correlated with teaching satisfaction and confidence (Guskey, 1984). Tschannen-Moran et al. (1998) and Tschannen-Moran and Hoy (2001) note that Guskey's measure has not been used by any other researcher in a published study.

*Social cognitive theory.* The studies that explored the conceptualization of self-efficacy developed out of Bandura's (1977) distinction of self-efficacy as separate from Rotter's (1966) internal-external locus of control (Gibson & Dembo, 1984; Tschannen-Moran et al., 1998; Tschannen-Moran & Hoy, 2001). Bandura (1997) clarified the distinction by presenting data demonstrating that belief in one's ability to accomplish a task (personal efficacy) is a separate phenomenon from belief in whether a certain act will affect an outcome (locus of control). In addition, this particular data demonstrated that perceived personal efficacy was a stronger predictor of behavior than locus of control (Bandura, 1997).

Rotter's internal-external locus of control focuses on actions and outcomes and overlooks the influence of the agent's (individual) self-confidence in successfully accomplishing the necessary action. Therefore, an individual can believe in the power of internal influence to affect outcome, but still lack the self-confidence necessary to achieve the action personally (Tschannen-Moran et al., 1998). In the early 1980s,
researchers began to address this issue through the development of measuring tools based on Bandura’s (1977) concept of self-efficacy.

Social cognitive studies. Gibson and Dembo (1984) developed an instrument that has subsequently been revised and adopted in several studies (Tschannen-Moran et al., 1998). During the tool’s development, 208 elementary school teachers completed a teacher efficacy scale with 30 items. Factor analysis of their responses yielded two factors representing relatively independent constructs. They labeled these factors personal teaching efficacy (alpha = .78) and teaching efficacy (alpha = .75) and associated the latter factor with the construct of outcome expectancy. Tschannen-Moran et al. (1998) cite eight other studies that have replicated this two factor finding with alphas ranging from .75 to .81 for personal teaching efficacy and from .64 to .77 for teaching efficacy.

Subsequent research with Gibson and Dembo’s (1984) measure has identified inconsistencies in several items loading on both factors and generated debate on whether the labeled factor of general teaching efficacy actually relates to the construct of outcome expectancy. Gibson and Dembo concluded their research by predicting a relationship between high efficacy scores on both factors to teachers who are less critical, more persistent, and provide greater academic focus in the classroom.

Gibson and Dembo’s (1984) findings were supported in subsequent research (Tschannen-Moran et al., 1998). This subsequent research also reported significant positive correlations between student outcomes on standardized tests and teacher efficacy levels (Watson, 1991), students’ sense of efficacy (Anderson et al., 1988), student’s interest in school, and students positively evaluating teachers (Woolfolk, Rosoff, & Hoy, 1990).
Developing a Tool that is Generalizable

The studies adopting Bandura's (1997) self-efficacy concept have struggled to find the appropriate balance between questions addressing specificity of context versus questions attempting to reach generalizable conclusions (Bandura, 1997; Tschannen-Moran et al., 1998; Tschannen-Moran & Hoy, 2001). Self-efficacy is distinct from other theories of human behavior in that it is specific to task (Bandura, 1997). A common example is the person who possesses high self-esteem and self-worth and yet reports feeling inefficacious as a downhill skier (Tschannen-Moran et al., 1998). Conversely, and individual might be efficacious in a skill and lack self-esteem or self-worth especially if their talent is not appreciated or if they are casted in a group not valued by society (Bandura, 1997). For teachers, this issue of specificity relates to varying levels of efficacy in teaching a variety of content areas or different groups of students (Tschannen-Moran et al., 1998).

The need to measure efficacy specific to context has been explored in studies. Riggs and Enochs (1990) pioneered a “Science Teaching Efficacy Belief Instrument” (STEBI) developed from the Gibson and Dembo approach in order to measure the specific area of efficacy in teaching science. The measure yielded two separate and uncorrelated factors that were consequentially labeled personal science teaching efficacy (PSTE) and science teaching outcome expectancy (STOE). Subsequent studies using this tool have correlated high levels of PSTE with teachers who spend more time teaching science and have increased levels of satisfaction teaching science. Preservice science teachers with increased levels of PSTE are more likely to want to teach science and have a greater humanistic orientation towards classroom control (Tschannen-Moran et al.,
The factor of STOE has been related to quality teaching performances with low scores correlating with critical self-ratings, poor attitude characteristics noted by site visitors, and the use of text-based approaches over hands-on cooperative learning activities (Tschannen-Moran et al., 1998).

The work initiated by Riggs and Enochs (1990) yielded data that can be used to possibly improve efficacy in specific teaching contexts and thereby improve teaching effectiveness in those contexts. However, Tschannen-Moran and Hoy (2001) point out that it is unknown whether specific measures have greater predictive and generalizability than more global measures. The challenge seems to lie in developing a measure that adequately portrays teaching efficacy without becoming too narrow in context.

*Conceptual Difficulties*

Tschannen-Moran et al.’s (1998) review of the multiple measures of teaching efficacy revealed a pattern of researchers alternating between long and short forms in an attempt to find the “proper balance between specificity and generality” (p. 219). They concluded their critique by making a case that a valid measure of teacher efficacy needed to assess, “both personal competence and an analysis of task in terms of the resources and constraints in particular teaching contexts. Most existing measures of teacher efficacy do not include both dimensions of efficacy” (p. 795). Tschannen-Moran et al. (1998) offered a new model for teaching efficacy that emerged from discussions of the difficulties defining the construct accurately within Bandura’s (1997) theory of efficacy. The arguments follow and conclude with a review of the model that was used to create a new measuring tool.
As previously mentioned, some researchers divide the construct of teaching efficacy into aspects of personal efficacy and general teaching efficacy (Guskey & Passaro, 1994; Nugent et al., 1999). Guskey and Passaro (1994) identify teaching efficacy as a, “teacher’s outcome expectations about the consequences of teaching in general,” and personal efficacy as, “efficacy expectations regarding an individual’s personal ability to execute particular courses of actions to bring about desired results” (p. 629). The example used is a teacher who believes in the teaching-learning process as a powerful factor in learning, but who feels he or she lacks the requisite abilities to personally affect students. Although other studies support a division of the construct of teaching efficacy into two dimensions, there is considerable debate regarding the meaning of general teaching efficacy (Bandura, 1986, 1997; Tschannen-Moran & Hoy, 2001).

Understanding general teaching efficacy. There is agreement in the literature that the first dimension of teacher efficacy incorporates personal teaching efficacy and involves the feeling of being a competent teacher. Confusion arises in trying to label the second dimension as reflective of general teaching efficacy resulting from external influence (Tschannen-Moran et al., 1998) or outcome expectancy (Gibson & Dembo, 1984; Riggs and Enochs, 1990; Soodak & Podell, 1996). Researchers have rationalized the term outcome expectancy by stating that individuals predict the consequences (outcome expectancy) of their perceived teaching performance abilities based on their beliefs of what teachers in general can accomplish. Bandura (1986, 1997) disagrees and points out that individuals predict outcomes based on their own perceived capabilities and expected level of performance and not on what they perceive others can achieve under
the same circumstances. He states, “general efficacy beliefs do not spawn specific efficacy beliefs” (1997, p. 39).

Defining outcome expectancy. Following Bandura’s (1986, 1997) rationale, the concept that teachers in general can impact learning regardless of external obstacles is not outcome expectancy. Instead, the outcome expectancy refers to teachers anticipating a certain outcome based on their own perceived level of ability (Tschannen-Moran et al., 1998; Tschannen-Moran & Hoy, 2001). Therefore, the construct identified by Nugent et al. (1999) and Guskey and Passaro (1994) as general teaching efficacy would more accurately be labeled external influences. This then reinforces the concepts of internal and external influences which have been labeled assessment of personal competence and analysis of the teaching tasks by Tschannen-Moran et al. (1998).

A Model of Teacher Efficacy

Tschannen-Moran et al. (1998) published a model entitled “The cyclical nature of teacher efficacy” that integrates concepts from both strands of research studies in order to guide future measures of teaching efficacy. This conceptual model framed the development of a measuring tool for this study and is replicated in Figure 1. Permission from the Sage publications to use this figure is found in Appendix B.

Sources of Efficacy Information

The first aspect of the model is a consideration of the sources of information driving the formation of self-efficacy. As reviewed earlier, Bandura (1977, 1986, 1997) identified four sources of self-efficacy information: (1) verbal persuasion, (2) vicarious experience, (3) physiological (emotional) arousal, and (4) mastery experience (performance attainments).
Figure 1. The cyclical nature of teacher efficacy (Tschannen-Moran et al., 1998).

Tschannen-Moran et al. (1998) point out that, “The differential impact of each of these sources depends on cognitive processing-what is attended to, what is remembered, and how the teacher thinks about each of the experiences” (p. 229).

Within this model, mastery experiences have the most powerful influence over the development of self-efficacy beliefs. For the experience of online teaching, this suggests that a positive experience would lead to increased online teaching self-efficacy and a negative experience would decrease online teaching self-efficacy. A failure for a novice online teacher would have significantly more impact on online teaching self-efficacy than for an experienced online teacher. The effect would also be magnified if the failure could not be attributed to lack of personal effort or external events such as technical issues.

Likewise, attending courses, seminars, or workshops on the topic of online teaching
could provide a source of verbal persuasion to boost individual beliefs in the ability to successfully teach online. Faculty members who are assigned or seek talented, experienced, and skilled colleague mentors would be exposed to vicarious experiences allowing them to increase their online teaching efficacy. This assumes that during cognitive processing, the faculty member decides he or she has the same abilities and attributes as the mentor.

_Cognitive Processing_

During cognitive processing, teachers combine judgments of capabilities and deficits in order to derive a sense of self-perception of their own teaching competence. This perception is merged with an analysis of the teaching task at hand which takes into consideration available resources and the constraints of a particular teaching context. Tschannen-Moran et al. (1998) state, “In making judgments of self-efficacy, teachers weigh their self-perceptions of personal teaching competence in light of the assumed requirements of the anticipated teaching task. The standards the teacher holds for what constitutes good teaching will influence how these two factors are weighed” (p. 231).

Tschannen-Moran et al. (1998) point out that there is a collective efficacy that can influence a particular teaching context. This could translate into teachers in an institution feeling stymied from developing online programs by a lack of resources or the belief that it is not a priority. A collective pessimism that online learning is not as valuable as face-to-face learning can make individual staff members feel, “overwhelmed by external constraints and personally inadequate” (p. 231). The context of institutional climate is influenced by leadership attitudes and peer support.
"Analysis of Teaching Task"

Tschannen-Moran et al. (1988) compare the analysis of the teaching task to GTE, which addresses the ability of teachers in general to successfully overcome external obstacles. However, they equate this step more in line with Skinner’s (1996) concept of means-ends relationships with an analysis of a particular teaching task in a specific situation. They state, “The questions asked by the teacher are, What outcomes do I seek, that is, what is success in this teaching task?, and What means or actions will be required to accomplish this particular teaching task-to succeed in this situation?” (p. 232). They point out that this analysis is more important in situations where teachers lack experience or face a novel assignment.

"Assessment of Personal Teaching Competence"

Tschannen-Moran et al.'s (1998) model differentiates personal teaching competence from teacher efficacy. Personal teaching competence in this model is defined as perceptions of current functioning which contribute to a prediction of future teaching capability or teacher efficacy. They argue that most research has associated personal teaching efficacy with self-efficacy which predicts the ability to perform a future action. However, they point out that past measures of personal teaching efficacy have often confused present and future time by asking questions about current competencies or presenting hypothetical situations requiring analysis of future effectiveness. To clarify the constructs, Tschannen-Moran et al. postulate that personal teaching competence is part of, but not the whole of teacher efficacy.

"Teacher Efficacy"

Tschannen-Moran et al. (1998) define teacher efficacy as, “the teacher’s belief in
his or her capability to organize and execute courses of action required to successfully accomplish a specific teaching task in a particular context" (p. 233). A teacher’s efficacy belief, “is a judgment of his or her capabilities to bring about desired outcomes of student engagement and learning, even among those students who may be difficult or unmotivated” (Tschannen-Moran & Hoy, 2001, p. 783).

Teacher efficacy results from the self-perception of teaching competence and beliefs about the task requirements in a particular teaching situation. Through the assessment of internal resources and constraints along with the assessment of external resources and constraints, the teacher forms teacher efficacy for the situation at hand. This definition of teacher efficacy differs from previous research by: (a) summing the construct as occurring through both competence (agent-means) and contingency (means-end) influences, (b) examining the construct for specific teaching tasks rather than as a general measure, and (c) encouraging a focus on positive as well as negative competencies that a teacher brings to a task (Tschannen-Moran et al, 1998).

Teacher efficacy has a strong cyclical nature which is enhanced by mastery experiences encouraging greater effort, persistence, and performance on task. Conversely, low teaching efficacy leads to a sense of futility and lack of task completion that in turn leads to even lower levels of efficacy. Over time, teachers establish a stable level of efficacy which can permeate future performances (Tschannen-Moran et al., 1998). This interesting observation suggests that an initial negative experience can decrease teaching efficacy. Studies of preservice teachers have also documented a decline of teaching efficacy during the student teaching period when students are exposed to the realities and difficulties of the teaching environment (Tschannen-Moran et al., 1998).
Using this model of teacher efficacy could help identify factors that might assist a prudent administrator to encourage faculty to develop higher levels of online teaching efficacy. There is an abundance of studies exploring the concept of efficacy in the K-12 setting. This powerful construct predicts teacher’s performances and ultimately affects learning environments. Exploring the construct for online teaching might identify factors that affect online teaching efficacy.

The Development of the Teachers’ Sense of Efficacy Teaching Scale

Tschannen-Moran et al. (1998) conducted an extensive search of the literature for studies that measured teacher efficacy. Through this review they identified a new model for conceptualizing the construct of teacher efficacy. This work was built upon in 2001 when Tschannen-Moran and Hoy developed a new measure of teacher efficacy based upon the new model. Tschannen-Moran and Hoy have provided access to all the scales evaluated as well as their own at the web site: http://www.coe.ohio-state.edu/ahoy/research-instruments.htm.

Bandura’s measuring tool. Tschannen-Moran and Hoy (2001) developed their measure to, “assess both personal competence and an analysis of the task in terms of resources and constraints in particular teaching contexts” (p. 795). They contend that other measures failed to assess resources or personal teaching challenges. They state, Studies need to test the relative predictive power of assessments of personal competence and of the analysis of the task. Certainly some context is inferred in assessments of personal competence (presumably those the person has had experience with) but a more careful and fine-grained assessment of those factors that both facilitate and impede teaching in a particular teaching context is likely to produce more powerful instruments. (p. 795)

instrument with seven subscales: (1) efficacy to influence decision making, (2) efficacy to influence school resources, (3) instructional efficacy, (4) disciplinary efficacy, (5) efficacy to enlist parental involvement, (6) efficacy to enlist community involvement, and (7) efficacy to create a positive school climate. He measured each item on a 9-point scale anchored with the notations: “nothing, very little, some influence, quite a bit, a great deal.” Each item asks the subject’s opinion using a “how much can you” format. As the instrument was not published, there is no available information on reliability or validity of the measure. However, a review of the concepts behind its construction is important for establishing the validity of any teacher efficacy measure.

Bandura’s (1997) unpublished scale draws on concepts of self-efficacy. He warns researchers not to use vague items that confuse and obscure what is being measured. This is a direct consequence of the belief that a general efficacy belief does not necessarily generate a specific efficacy task belief. Instruments need to be based upon clear definitions of the activity domain of interest and an analysis of the capabilities the task requires as well as the range of situations in which the capabilities might be required. Bandura uses the phrase, “can do” as a judgment of capability as opposed to “will do” which is a statement of intention. He reminds the reader that efficacy beliefs influence intentions but are not intention therefore subjects should be asked to judge their current capabilities rather than their potential capabilities.

Instruments measuring efficacy need to be unipolar as a judgment of complete incapability (0) has no lower gradations (Bandura, 1997). Scales that use only a few gradations fail to differentiate between subjects appropriately and lack sensitivity and reliability. The use of a single judgment format is easier and more convenient and the
scale should measure beliefs in abilities to fulfill different levels of task demands within
the psychological domain under study. One example of these different levels of task
demands is found in the disciplinary self-efficacy domain of Bandura’s 1997 unpublished
measure. Participants are asked “How much can you do to get children to follow
classroom rules?” and also asked, “How much can you do to prevent problem behavior
on the school grounds?” Answers can range from “1”= nothing to “9”= a great deal.

Bandura (1997) warns researchers to use caution not to measure multifaceted
efficacy beliefs as a singular unitary trait or only one segment of perceived efficacy will
be measured. In his scale, Bandura identifies seven domains within the concept of teacher
self-efficacy including: efficacy to influence decision making, efficacy to influence
school resources, instructional self-efficacy, disciplinary self-efficacy, efficacy to enlist
parental involvement, efficacy to enlist community involvement, and efficacy to create a
positive school climate. He agrees with other researchers (Tschannen-Moran et al., 1998)
that factor analysis will help verify the multifaceted structure of efficacy beliefs.

Bandura (1997) states that using an ascending order of presentation in a survey is
the best way to prevent bias in self-efficacy judgment as research has demonstrated that a
descending order seems to produce slightly higher self-efficacy appraisals than ascending
or random order. He also discusses distinguishing three levels of generality in the
assessment. The most specific level would measure perceived self-efficacy for a
particular performance under a specific set of conditions. The intermediate level looks at
perceived self-efficacy for a class of performances within the same activity domain and
the most general or global level measures belief in personal efficacy without specifying
any activities or conditions. The use of the intermediate level will expand the scope of results (Bandura, 1997). Bandura states,

In short, efficacy beliefs are multifaceted and contextual, but the level of generality of the efficacy items within a given domain of functioning varies depending on the degree of situational resemblance and the foreseeability of task demands. Regardless of the level of generality, in no case are the efficacy items dissociated from context and level of task demands. (p. 50)

Tschannen-Moran and Hoy’s measuring tool. Tschannen-Moran and Hoy (2001) started to design a measurement tool by expanding the list of teacher capabilities on Bandura’s scale. Using a seminar format, two researchers and eight graduate students with teaching experience ranging from 5 to 28 years generated 100 items to consider. After pooling the items, a process of nomination, discussion, and revision was used to reach consensus for 52 items. From Bandura’s original scale, 23 items were retained along with the 9-point scale and “how much can you” format. This instrument was originally named the “Ohio State Teacher Efficacy Scale (OSTES)” and consequently examined in three separate studies. The authors indicate on their web site at http://www.coe.ohio-state.edu/ahoy/research-instruments.htm that they now prefer that this scale be known as the Teachers’ Sense of Efficacy Scale (TSES).

Testing the tool. The first study sampled 224 participants including 146 preservice teachers and 78 inservice teachers who were all taking classes at the Ohio State University. Respondents completed the 52 item survey and also rated the importance of each item for effective teaching on a 4-point scale (not at all, somewhat, important, or critical). In the end, every item was rated as important or critical and 32 of the original 52 items (with loadings ranging from 0.62-0.78) were selected for further testing after factor analysis.
A second study sampled a different group of 217 participants including 70 preservice teachers and 147 inservice teachers. Once again, the participants were students recruited from one of three universities. Factor analysis results reduced the scale to 18 items with three factors accounting for 51% of the variance. These factors were labeled, *efficacy for student engagement* (8 items), *efficacy for instructional strategies* (7 items), and *efficacy for classroom management* (3 items). After computing efficacy subscale scores for each factor alpha reliabilities were reported as 0.82 for engagement, 0.81 for instruction, and 0.72 for management.

**Refining the tool.** Tschannen-Moran and Hoy (2001) proceeded to combine the data from the first and second studies and complete a second-order factor analysis. Completing a principal-axis factoring of the three teacher efficacy subscales revealed one strong factor with factor loadings ranging from 0.74 to 0.84. This provided evidence that totaling the 18 items measured the underlying construct of efficacy. Reliability for the 18-item scale was reported at 0.95. Testing the validity of the measure was done by correlation with other existing measures. Participants in Study 2 were asked to also respond to the four other measures. Tschannen-Moran and Hoy discovered that total scores on the OSTES were positively related to both the Rand items (r=0.35 and 0.28, p<0.01) as well as to both the personal teaching efficacy (PTE) factor of the Gibson and Dembo measure (r=0.48, p<0.01) and the general teacher efficacy (GTE) factor (r=.30, p<0.01).

Next, discriminate validity for teacher efficacy was measured by comparing results with a survey testing the presumably negatively related and distinct construct of work alienation. They reported that teacher efficacy was significantly negatively related to
work alienation ($r = -0.31$, $p < 0.01$). Teacher efficacy as measured on the OSTES was also negatively related to the construct of pupil control ideology ($r = -0.25$, $p < 0.01$). The researchers proceeded to run the data only using the responses of in-service teachers and once again they reported similar results.

*Final revision of the tool.* Tschannen-Moran and Hoy (2001) further refined the OSTES measure with a third study. They developed new management items, tested the wording with a group of 17 teachers and 2 teacher educators, and proceeded to sample 410 participants including 103 preservice teachers and 255 in-service teachers. Through factor analysis, the teacher efficacy subscale reliabilities were identified as 0.91 for instruction, 0.90 for management, and 0.87 for engagement. High intercorrelations between the subscales suggested a shorter form might be viable.

Two separate factor analyses were conducted on a 24-item and a 12-item form using the responses of preservice teachers in one and the responses of in-service teachers in the other. Using principal-axis factoring of the three teacher efficacy subscales revealed one factor in the 24-item instrument accounted for 75% of the variance and one factor for the 12-item instrument again emerged accounting for 68% of the variance. Tschannen-Moran and Hoy (2001) conclude that both instruments measure the underlying construct of efficacy and reported the following reliabilities for the long form: TSES total score (mean 7.1, SD .94, alpha .94); *Engagement* (mean 7.3, SD 1.1, alpha .87); *Instruction* (mean 7.3, SD 1.1, alpha .91); *Management* (mean 6.7, SD 1.1, alpha .90). Construct validity was again verified by having the participants in Study 3 respond to two other measures and correlating the results. The strongest correlations were found
in measures with scales that assessed personal teaching efficacy. A replication of the Teachers’ Sense of Efficacy Teaching Scale is included in Appendix A.

This review of the constructs of self-efficacy, teacher efficacy and measures of teacher efficacy has revealed a gap in the literature. There are few identified studies that have attempted to study the construct of teaching efficacy for faculty in higher education and no study was identified that examined teacher efficacy for online teaching. Although there has been some research on faculty computer self-efficacy, the literature is silent regarding actual teaching efficacy for teaching an online course. The next section will review studies that explored other motivating and inhibiting factors for faculty teaching online.

Faculty Participation in Online Courses

This section is concerned with variables that affect faculty participation in online courses. Faculty might list several reasons for avoiding online teaching assignments. One potential barrier is doubt over the efficacy of online teaching pedagogy; therefore the literature was examined for information about online courses and learning success. Next, the literature was examined to identify motivating as well as inhibitory factors for teaching online. Finally, as teaching efficacy is task specific, it is important to explore the skills necessary to successfully teach an online course.

Relating Course Structure with Learning Success

Ostrow and DiMaria-Ghalili (2005) found that students can quickly adapt to online environments and are satisfied with the media. Meyer (2002) reviewed multiple studies that compared quality in distance education and found that in many studies there was no difference in student achievement regardless of course content delivery method. He does
suggest that there is a need to study the difference between lower-division and graduate students and which mix of media is the most powerful for individual groups of students. However, the literature suggests that learning outcomes are equivalent (Meyer, 2002).

There have also been studies exploring faculty subjective opinions on the efficacy of online learning. Kim and Bonk (2006) surveyed 562 members of two associations for online education. Sixty-six percent of the participants were college instructors while the rest were administrators or instructional designers. Sixty-percent of their respondents agreed that the quality of online courses would match the quality of face-to-face instruction by 2006. By 2013, forty-two percent predicted that learning outcomes for online students would be superior to those of traditional students. Although the study did not indicate the reasons for improved outcomes, the authors suggest that the assumption that face-to-face instruction is superior be challenged in the light of what can be accomplished with online instruction.

Quantitative studies of faculty having taught online suggest that most agree that online courses are effective environments for teaching and learning. Ryan, Hodson-Carlton, and Ali (2004) used questions developed and used by Diekelmann, Schuster, and Nosek (1998) to explore the experiences of 18 faculty teaching online graduate classes from eight schools of nursing. All 18 faculty members reported that online teaching resulted in effective teaching and learning environments. From this study, they developed a model for faculty teaching online that was subsequently validated through a national survey of 68 nursing faculty from 28 schools experienced with online teaching (Ali et al. 2005; Ryan et al., 2005). Results from the fourth dimension of the matrix labeled, "consequences of online teaching", indicated that respondents identified positive and
negative aspects for faculty adjusting to online teaching. However, they also agreed that online teaching was effective in creating positive learning results. Johnson (2008) used the Ryan et al. interview questionnaire in a phenomenological research study of 12 faculty members teaching online in a graduate nursing program for a private college. She reported that most of the participants felt that online courses forced students to think and participate at a higher cognitive level and this supported the development of critical thinking.

Another important outcome to consider is student satisfaction with online courses. Many studies have explored the concept of student (customer) satisfaction in web-based learning. Student satisfaction has been linked to course format in an online setting. Ausburn (2004) discusses the need for higher education to embrace “mass customization” and provide courses that address services for a “market of one.” Cameron (2005) found that students preferred online courses to blended (hybrid) courses. Ludwig-Hardman (2003) completed a case study which suggested that frequent instructor contact is essential for student success. Manner (2003) warns that non-traditional students must have a “thoughtful infusion of support for technology” in order to succeed in web-based curriculum.

Although beyond the scope of this study, it seems important to investigate further whether the format of the online course matters in facilitating learning outcomes and student satisfaction with online courses. Garrison and Cleveland-Innes (2005) studied how a variety of online learning experiences facilitated the depth of student learning outcomes. They concluded that structure and instructor leadership is crucial to achieve meaningful student learning outcomes. Strachota (2003) surveyed 849 students in 101
online courses and discovered that students value a well-designed course, but that instructor interaction remains important in particular to female students. Strachota also found that younger students were more satisfied with increased opportunities for learner-technology interaction.

Puzziferro (2006) expected to find that success in an online course was linked to student characteristics. Instead, she found that instructor and course variables were significantly related to student success and satisfaction. Students reporting positive perceived availability of the instructor were more satisfied and had better grades. Higher student satisfaction was also related to clarity of course requirements, perception of ease of course navigation, and favorable perceptions of interaction with other students.

In conclusion, there appears to be several variables associated with increasing learning outcomes and student satisfaction with online courses. These include the components and structure of an online course as well as understanding the role of the teacher in facilitating teacher-student and student-student interactions (Strachota, 2003). This study seeks to understand why some faculty members seem willing to participate in online teaching while others seem reluctant to try. The next section will discuss literature concerned with characteristics of faculty currently participating in online teaching.

Common Characteristics of Faculty Participating in Online Learning Environments

Perry and Edwards (2004) surveyed graduates of master’s programs to determine the characteristics of highly effective online instructors. Findings revealed that successful faculty challenge and affirm learners. They establish a consistent presence in the virtual course and are regarded as role models who are not afraid to acknowledge their own learning needs. It was important for the students to feel affirmed as individuals and they
appreciated instructors who seemed to understand the stressors and flexibility non-traditional learners require to be successful. These are the same characteristics valued in face-to-face learning (Gamson, 2001; Graham, Cagiltay, Lim, Craner, & Duffy, 2001). Perhaps an effective teacher is an effective teacher regardless of the chosen classroom medium.

Apparently, individual characteristics of a student or faculty member are not as important as following principles of good educational practice (Graham et al., 2001) when designing and implementing online courses. Therefore it becomes even more important to understand why so many effective instructors choose not to explore distance learning with technology. According to Yang and Cornelious (2005) an instructor’s attitude, motivation, and commitment to technological learning directly impacts the quality of an online course. Academic administrators would benefit from information that assists faculty to develop a positive perception of online learning.

Motivators for Faculty Participation in Online Teaching

Parker (2003) analyzed over one hundred studies to synthesize common motivators for faculty participation in distance education. Parker found that motivators can be classified as intrinsic, pertaining to internal and individual factors, or extrinsic—meaning that they are imposed externally on the faculty member. Examples of intrinsic motivators include: a drive for self satisfaction, valuing flexible scheduling, and the desire to teach a wider audience. Extrinsic motivators include: administrators offering monetary stipends, obtaining release time to develop and teach courses, smaller classes, and excellent technical support.
Maguire (2005) followed Parker’s work with a literature review, which spanned the years 1993-2003, and identified thirteen studies that focused on the motivating and inhibiting factors for teaching online. Maguire grouped motivators and inhibitors into three groups: (1) intrinsic; (2) extrinsic; and (3) institutional. Maguire’s (2005) literature review findings dovetailed with Parker’s (2003) research by identifying most of the same top motivators. Identified intrinsic factors included intellectual challenge, scheduling flexibility, and self-gratification. This is supported by Giannoni and Tesone (2003) who indicate that senior faculty members value self-actualization activities that are intellectually challenging.

Maguire (2005) identified the extrinsic factors as being external incentives in the form of meeting tenure and promotion requirements and peer recognition. Extrinsic motivators are further categorized according to administratively controlled (institutional) factors which include: (a) valuing technology in teaching by providing recognition and encouragement to participating faculty, (b) providing technical support, and (c) monetary incentives. An important side note was the fact that tenure and promotion decisions are often made by faculty who have never taught online. For faculty concerned with tenure and promotion, this fact might act as an extrinsic inhibitor for participating in online teaching.

The literature supports the concept that intrinsic motivators are stronger forces than external motivators as incentives for faculty to teach online (Giannoni & Tesone, 2003; Maguire, 2005; McLean, 2005; Parker, 2003). Interestingly, extrinsic factors also have intrinsic value. For example, from an administrative perspective, release time might be construed as providing a reduction in faculty tasks, but from the faculty perspective it
could intrinsically provide the opportunity for professional development and scholarly activities such as online course development. Likewise, the extrinsic factor of valuing technical support could be more related to decreasing the intrinsic inhibitor of instructors experiencing technological anxiety (Giannoni & Tesone, 2003).

In Tschannen-Moran et al.'s (1998) model for teacher efficacy, these intrinsic motivators would factor into a teacher's assessment of personal teaching competence. Faculty need to feel confident in their ability to teach an online course that delivers a quality learning environment. Anxiety over technology or using an unfamiliar interface influences the overall level of online teacher efficacy and might ultimately affect willingness to participate in the medium.

*Inhibiting Factors for Faculty Participation in Online Teaching*

Maguire (2005) identified in the literature intrinsic and extrinsic inhibitors that deter faculty from teaching via distance education. Intrinsically, there is a basic resistance to change and fear of technology. In addition it has been documented that faculty have deep seated replacement fears (McLean, 2005). Will proliferation of online courses eliminate the face to face campus? Concerns also encompass confusion about copyright laws and protection of intellectual property rights. Finally, there is a genuine concern that online courses lack standardization to ensure quality control for effective pedagogy.

Extrinsic inhibitors are housed within the institution (Maguire, 2005) and include:
(a) Lack of release time for the time-intensive development of online courses (Carroll-Barefield; Parker, 2003), (b) lack of recognition for online efforts while time spent on traditional research is rewarded, and (c) most importantly, the lack of technical support including appropriate individualized faculty training. All of these inhibiting factors would
be considered in the analysis of teaching task as proposed by Tschannen-Moran et al., 1998. The cost versus benefits of participating in a new endeavor appears to factor into the construct of teacher efficacy.

In conclusion, research has identified both intrinsic and extrinsic motivating as well as inhibiting factors for faculty participation in online teaching activities. The next step involves dissecting the specific motivating or inhibiting factors in more depth (Maguire, 2005). All of these factors are considered in the analysis of teaching task and assessment of personal teaching competence that compose the construct of teaching efficacy identified by Tschannen-Moran et al. (1998). Under the Tschannen-Moran et al. model, teaching efficacy is task specific, which requires defining the necessary competencies to achieve the task. Therefore, the literature was examined for the competencies teachers need to create quality online teaching environments.

**Important Features of a Successful Online Course**

Weigel (2002) believes that the end result of an online course needs to be deep learning. He defines deep learning as, “learning that promotes the development of conditionalized knowledge and metacognition through communities of inquiry” (p. 5). To acquire conditionalized knowledge, students need opportunities to, “apply disciplinary concepts and methodologies to varied contexts and knowledge domains” (p. 6). Metacognition involves intense self-evaluation and reflection to develop critical thinking skills and the ability to transfer knowledge between settings. Weigel uses the term communities of inquiry to acknowledge the importance of a variety of learning settings in any educational endeavor. Teachers have a responsibility to design course work that
encourages students to gain these types of specific skills and explore different learning communities.

The traits of deep learning require the learner to examine the world critically while looking for themes and patterns. The learner brings previous experiences into the equation and is aware of a process of new understandings. The teacher strives to keep the learner actively engaged in the course and understands the need to sacrifice breadth for depth (Weigel, 2002). The process for developing deep learning environments for an online course clearly involves different skills than designing face-to-face interactions. This is supported by qualitative studies of nurse educators reporting the need for a paradigm shift in teaching philosophy when learning to teach online (Johnson, 2008; Ryan et al., 2005).

Weigel suggests that online faculty need to: (a) facilitate an environment wherein giving and getting criticism in a respectful and gracious manner is the norm, (b) feel comfortable with the technical infrastructure in order to successfully build a deep learning course, (c) know how to prioritize course content so that depth is not sacrificed for breadth, (d) understand copyright laws, (e) help student to integrate course material by weaving student contributions into coherent observations while encouraging curiosity, (f) establish virtual teams of students, and (g) provide appropriate embedded evaluations that have both private and public dimensions.

Palloff and Pratt (2003) identify the traits of an effective online learning community as including: (a) active interaction, (b) collaborative learning, (c) socially constructed meaning derived from active agreement or questioning between members, (d) sharing of resources between learners, and (e) support for constructive criticism. They
summarize the elements of an effective online facilitator as being open, honest, responsive, respectful, flexible, empowering, and present. An effective course is accessible, learner focused, relevant, collaborative, small in enrollment size, interactive, and cohesive. The course is also pays attention to appealing to variety of learning styles, being culturally sensitive, and fitting within a general curriculum.

Palloff and Pratt (2003) believe that an effective online instructor must be astute at: (a) promoting student time management, (b) facilitating student responsibility for learning, (c) developing and posing questions that promote critical thinking, (d) managing domineering students, and (e) facilitating both synchronous as well as asynchronous discussions. Many of Palloff and Pratt’s ideas appear to concur with Weigel’s (2002) call for forming online communities with the purpose of promoting deep learning opportunities.

Following the ideas of Palloff and Pratt (2003) and Weigel (2002, 2005), educators teaching online need to be able to design interactive learning environments that keep learners engaged. Although not explicitly defined, the creation of an engaged environment is assumed to revolve around a learner-focus, be rich in critical thinking, encourage student exploration, and involve peer learning. Skills in navigating the technological platform of a course are essential to manage student to student and student to instructor interactions. Instructors also need to be willing to sacrifice content breadth in order to provide room for in-depth exploration and conversation. Whether or not special training or experiences are necessary for teachers to feel efficacious in developing such online learning environments is unknown.
Summary

The literature review examined the construct of self-efficacy as well as teaching self-efficacy. Research was examined on the effectiveness of online learning and the characteristics of faculty who participate in online teaching. The literature was then examined for evidence of motivating and inhibitory factors for teaching online. Finally, an exploration of the skills that promote successful online teaching was presented.

Chapter 3 explains sample selection, research methodology, and instrument selection and revision.
CHAPTER 3

METHODOLOGY

This chapter will explain the methodology used in the construction of the research questions. Next, it explains the manner in which participants were obtained and how they were contacted. Finally, the measuring instrument and the statistical analysis of the research questions are described.

The purpose of this study was to examine variables that affect nurse educator's online teaching efficacy levels and participation in online teaching. The following research questions and research hypotheses were explored:

Research Question 1

How confident do nurse educators feel in preparing, conducting and evaluating online courses? Is there a difference in online teaching efficacy in relation to the variables: (a) age, (b) gender, (c) appointment type, (d) type of institution, (e) specialty area, (f) years of teaching nursing experience, (g) years of teaching lecture experience, and (h) numbers of online teaching experiences?

This research question explored whether the scores of the subscales of the Michigan Nurse Educators Sense of Efficacy for online teaching (MNESEOT) differed by the eight listed independent variables. The MNESEOT is designed to measure nurse educators’ sense of efficacy for online teaching. The subscales of the MNESEOT include efficacy in student engagement, efficacy in instructional strategies, efficacy in classroom management, and efficacy in use of computers. The mean scores from the subscales are totaled for an overall total MNESEOT score.
Current literature does not yield known relationships between online teaching efficacy and preparing, conducting, and evaluating online courses. Literature from the K-12 environment, indicates that teachers with high instructional efficacy will work harder to create mastery experiences (Gibson & Dembo, 1984), be more persistent and flexible (Ashton & Webb, 1986), and be more willing to explore new pedagogy (Bandura, 1997; Guskey, 1988; Stein & Wang, 1988; Tschannen-Moren et al., 1998; Tschannen-Moren & Hoy, 2001). The literature also reveals that levels of teaching efficacy rise after teaching at least 3-4 courses (Tollerud, 1990; Tschannen-Moran et al., 1998). These relationships have not been studied for online teaching in higher education. The following research hypotheses assumed similar relationships would be revealed for online teaching in higher education.

*Hypothesis 1a*

There will be a positive relationship between years of teaching experience and the mean scores on the subscales of the MNESEOT as well as the total score of the MNESEOT.

*Hypothesis 1b*

The variables of age, gender, appointment type, specialty areas, and type of institution will have no effect on MNESEOT total scores.

**Research Question 2**

In what ways do experience with online teaching, professional development, and perceived support from faculty colleagues or instructional designers influence nurse faculty members' reported self-efficacy for online teaching?
This research question explored whether mean scores on the subscales of the MNESEOT differed according to experience with professional development courses dealing with education and/or online education, and support from colleagues and/or instructional designers. The relationship between nurse faculty self-efficacy for online teaching and participation in online teaching has not been explored in the literature. However, research in higher education has revealed positive relationships between educational preparation and teaching experience to overall teaching efficacy (Nugent et al., 1999; Prieto & Altmaier, 1994; Tollerud, 1990). In addition, Tschannen-Moran et al.'s 1998 model for the cyclical nature of teacher efficacy illustrates the role of verbal persuasion (e.g. courses, seminars, workshops) and vicarious experiences (experiences with mentors) in boosting teaching efficacy. The following research hypotheses assumed that these relationships would translate from the face-to-face to the online classroom environment.

Hypothesis 2a

Nurse faculty who have participated in formal education experiences focusing on skills, techniques, problems, and/or preparation for teaching in general will have significantly higher total mean scores on the MNESEOT.

Hypothesis 2b

Nurse faculty who have participated in formal educational experiences focusing on the skills needed for online teaching will have significantly higher total mean scores on the MNESEOT. Furthermore, there will be a positive correlation between MNESEOT scores and reported levels of satisfaction for these formal educational experiences.
Hypothesis 2c

Nurse faculty who report experiences of colleague and/or instructional designer support contacts will have significantly higher total mean scores on the MNESEOT. Furthermore, there will be a positive relationship between MNESEOT scores and reported levels of satisfaction for these colleague and/or instructional designer support contacts.

The levels of satisfaction referred to in hypothesis 2b and hypothesis 2c were defined as nurse faculty agreement levels that particular preparatory experiences prepared them in the skills needed for online teaching.

Research Design

The literature review identified key variables associated with faculty participation in online teaching. In particular the variable of self-efficacy has been previously explored as a predictor of faculty behavior. The purpose of this study was to examine variables that affect faculty online teaching efficacy levels and participation in online teaching. Previous studies have quantified the variable of teaching efficacy. Therefore, a quantitative method was appropriate for examining factors that might influence a specific outcome (Creswell, 2003).

This study collected data through the use of a survey tool. A nurse educator online teaching efficacy score was calculated for each subject based on a modified version of the Teachers’ Sense of Efficacy Scale (Tschannen-Moran & Hoy, 2001) and used as the dependent variable in the study. The dependent variable of nurse educator self-efficacy in the domains of student engagement, instructional strategies, classroom management, and use of computers was examined in relationship to eight independent variables. These
variables included: (1) demographic variables, (2) teaching experience, (3) online teaching experience, (4) formal educational experiences for teaching, (5) formal educational experiences for online teaching, (6) faculty peer support for online teaching, (7) support from fellow faculty or instructional designers, and (8) release time for online course development.

A cross-sectional design was used to examine the effects of perceived self-efficacy on several different groups of nurse educators at one point in time (Mertens, 2005). According to Allen and Seaman (2006), one half of all online students are taking courses in two-year colleges. Therefore, this was the appropriate design to allow a comparison between nurse educators teaching in two-year colleges and nurse educators teaching in four-year institutions as well as to allow comparisons between nurse educators of different ranks, appointment types, and years of experience.

Sample, Population, and Participants

The focus of this study was on nurse educators employed at public accredited higher education institutions within nursing programs in Michigan. All faculty members teaching any nurse theory course including face-to-face, online, or combination courses were asked to complete the survey. Nurse Participants were sought from all appointment types including: (a) adjunct; (b) term; (c) tenure-earning, and (d) tenured faculty. In addition, nurse educators from all levels of programs were asked to participate including: (a) certificate practical nursing programs; (b) diploma nursing programs; (c) baccalaureate nursing programs; and (d) graduate nursing programs. Finally, participants were included regardless of online teaching experience. Mertens (2005) points out that
the construct validity of a measurement tool can be supported by testing a variety of
groups and then examining if they performed differently on a preidentified trait.

*Identifying the Population*

A list of the approved nursing education programs in the State of Michigan was
obtained from the Michigan Board of Nursing at the website address
Public schools were identified and screened for accreditation status. Accreditation is
defined as accreditation by the National League for Nursing Accrediting Commission
(NLN) or the American Association of Colleges of Nursing (CCNE). The NLN accredits
all types of nursing education programs including masters, baccalaureate, associate
degree, and certificate/diploma. The CCNE accredits programs that offer only
baccalaureate and masters level nursing degrees.

Lists of accredited nursing programs were obtained from the National League
for Nursing Accrediting Commission website at http://www.nlnac.org as well as the
fourteen schools in the State of Michigan were identified as being public and NLN
accredited. Ten schools in the State of Michigan were identified as being public and
CCNE accredited.

Through publicly available accredited membership lists, the dean or directors of
each nursing department were identified and their names and email addresses entered into
a database. Prior to contacting any administrators, the survey instrument and full research
protocol was reviewed for compliance with human subjects institutional review board
requirements. A copy of the research approval is attached as Appendix C. In order to
determine the population size and preferred method of contacting nursing faculty, an initial email of introduction was sent to all the deans and/or department heads (Appendix D). Responses from nursing administrators or designees indicated that an estimated population of 157 faculty at NLN accredited schools and 170 faculty at CCNE accredited schools were teaching lecture courses during the sampling time frame (winter-spring 2008). The total of 327 faculty is considered an estimate as five schools responded with a number range as their answer. When applicable, the upper limit of the range was used in the estimated population size.

Responding emails indicated that community college nursing schools preferred that faculty members be contacted through a designated administrator who then disseminated the introduction letter with a web-link through internal list serve addresses. This initial contact procedure was followed for all 24 schools surveyed. Nursing administrators at four-year institutions preferred subsequent contacts through publically available faculty web addresses. The email invitation that was sent to the administrators and then forwarded to nursing faculty is located in Appendix E.

After a two week time period a follow-up email request was sent to the community college administrators to forward to their nursing faculty (Appendix F). This follow-up email was sent directly to the publically available web addresses of nurse educators at four-year institutions (Appendix G). The overall response rate after two email rounds was 45% or 150 participants.

Participants

Demographics of participants were compared to data published by Kovner, Fairchild, and Jacobson (2006) in a nurse educator census report identifying national
demographics by region. The participants in this study were similar to nurse educators in the Midwest in the areas of gender, age, and rank. A higher percentage (40.7%) of doctorally prepared nurses participated in this study compared to the overall percentage (27.8%) of Midwest nurse educators having doctoral degrees.

Instrumentation

A review of the literature did not reveal a measure specifically concerned with online teaching efficacy. Therefore, a survey tool was modified based on Tschannen-Moran and Hoy’s (2001) measure of teacher efficacy. The survey contained questions concerning online teaching in the areas of student engagement, instructional strategies, classroom management, and use of computers. Background questions gathered information on participants’ age, gender, rank, appointment type, years of teaching nursing experience, years of teaching lecture experience, years of online teaching experience, specialty area, and institutional type.

Additional questions gathered information on preparation for teaching, preparation for online teaching, use of a faculty mentor for online teaching, and use of an instructional designer to prepare for online teaching. Participants responding affirmatively to preparational experiences were then asked to rate on a Likert scale from “1= Strongly Disagree to “5= Strongly Agree” the extent to which these experiences helped prepare them for online teaching.

*The Michigan Nurse Educators Sense of Efficacy for Online Teaching (MNESEOT) Instrument*

Permission to modify the Teachers’ Sense of Efficacy Scale (TSES) efficacy tool
for this study was sought and given by Dr. Hoy on October 28, 2007 and is included in Appendix H. The first step in creating an instrument for this study was to modify Tschannen-Moran and Hoy’s (2001) tool to more accurately reflect a higher education environment.

The revision began by eliminating item #22 “How much can you assist families in helping their children do well in school?” This item was rewritten to reflect the external support students give other students, as “How well can you structure an online course that facilitates collaborative learning?” In addition, as all students are expected to perform at minimal specified levels in college courses, item #17 was rewritten from “How much can you do to adjust your lessons to the proper level for individual students” to “How much can you do to adjust your online lessons for different learning styles?”

Secondly, the wording “online” was woven into each item to reflect online teaching. For example original item #1 “How much can you do to get through to the most difficult students?” became “How much can you do online to get through to the most difficult students in an online class”. Another example included changing original item #15 from “How much can you do to calm a student who is disruptive or noisy?” to “How much can you do to control students dominating online discussions?”

Next, concepts regarding effective on-line teaching from Weigel (2002) and Palloff and Pratt (2003) were woven into item language. This is evident in the change of original item #11 from “To what extent can you craft good questions for your students?” to “How well can you craft good questions or assignments online that require students to think critically by relating ideas to previous knowledge and experience?” This language
attempts to elicit respondents’ current perceptions of ability to promote deep learning (Weigel).

In this vein, original item #19 was reconceptualized from “How can you keep a few problem students from ruining an entire lesson?” to “How well can you develop an online course that facilitates student responsibility for online learning” which reflects Palloff and Pratt’s requirement for an effective online course. Both Weigel (2002) and Palloff and Pratt (2003) discuss the need to be learner focused and collaborative which is reflected in the new wording for original item #22. This item was changed from “How well can you implement alternative strategies in your classroom?” to “How well can you structure an online course that facilitates collaborative learning?” The last alteration was to the original item #23, “How well can you implement alternative strategies in your classroom” which became, “How well can you structure an online course that provides good learning experiences for students?”

Finally, eight new items (#25-32) were added to the Teacher’s Sense of Efficacy Scale designed to reflect major concepts derived from Weigel (2002) and Palloff and Pratt (2003). These items were constructed to survey teacher confidence with technology, knowledge of copyright law, and perceptions of ability to teach using collaborative teaching strategies. New items #25-32 included, (a) “To what extent can you use knowledge of copyright law to provide alternative resources for online students?”, (b) “How well can you navigate the technical infrastructure at your institution to successfully create an online course?”, (c) “How well can you navigate the technical infrastructure at your institution to successfully teach in an established online course?”, (d) “To what extent can you use asynchronous discussions to maximize interaction between
students in an online course? *(Asynchronous means not online at the same time)*”, (e) “To what extent can you use synchronous discussions (e.g. same time chat rooms) to maximize interaction between students in an online course?”, (f) “How well can you use computers for word processing, internet searching and e-mail communication?”, (g) “To what extent does your comfort level with computers facilitate participation in online teaching?”, and (h) “How well can you navigate the internet to provide links and resources to students in an online course?”. 

*Development of background questionnaire.* Following completion of the revised Teachers’ Sense of Efficacy scale, participants were asked to answer background questions in order to identify variables that may or may not affect efficacy level ratings. This section included inquiries about gender, age, appointment type, rank, highest degree, years of teaching nursing experience, years of teaching theoretical nursing, specialty area, and whether or not the participant had had seminars or courses in teaching or online teaching. The background section concluded by asking participant opinions on the value of courses, seminars, colleague help, and/or instructional support, and release time in preparing to teach online.

*Pilot Tests of Survey Instruments*

As an initial step to ensure that the surveys are clear and concise, three faculty members experienced with online teaching were asked to review the surveys and provide feedback and suggestions. After these changes were incorporated, a pilot study was conducted with fifteen additional faculty members to determine content and process validity. The pilot study used the web-based survey process to test the time needed to complete the survey and the conversion from the survey software to the statistical software package.
This pilot group consisted of nurse educators with varying levels of experience in online teaching. Comments received from this pilot study were used to refine the survey instruments. None of the data collected in the pilot was used in the final research analysis. This pilot testing was completed in January 2008.

The survey instrument was modified slightly with pilot participant feedback. Participants suggested clarifying some questions by adding examples pertinent to online teaching. Item #1 “How much can you do to get through to the most difficult students?” was deleted due to confusion over what constituted a “difficult student” in an online classroom. A new item #2 was added to read, “How much can you do to get through to disengaged students in an online class? (e.g. passive learners who might lurk online, but fail to actively contribute to their own learning)”. Item #3 which asks “How much can you do to control disruptive behavior in an online environment?” was clarified with the example, “e.g. disrespectful posing or failure to adhere to outline policies for posting.” A copy of the final format of the instrument survey was labeled “The Michigan Nurse Educators Sense of Efficacy for Online Teaching” (MNESEOT) and is located in Appendix I. Resulting reliability and factor analysis for the instrument is described under data analysis.

Data Collection Methods

Data was collected using a web-based survey. This was an appropriate method as internet access is readily available to most teachers in higher education (Watson, 2006). In addition, the public college and university faculties being surveyed likely had access to high-speed Internet; therefore line speed to access a web-based survey should not have
been an issue. A planned web-based survey was designed to loaded quickly and be easily navigated. This in turn reduced time completion with the goal of increasing return rates. Respondents were automatically directed to appropriate survey sections based on their answers. This was intended to minimize participate confusion with the instrument.

Polit and Beck (2004) report that mailed or web-based questionnaires yield response rates of 50% or lower. This study used a web-based survey and all questionnaires were stored and administered via Zoomerang™ online survey software. According to Zoomerang™, the typical response rate for an online survey is between 20-30%. Sue and Ritter (2007), also report that response rates for Web-based surveys are approximately 30% although some studies have boasted up to a 76% response rate. They encourage web researchers to adopt known strategies to increase return rates. Suggestions by Sue and Ritter that were incorporated into the survey included:
(a) paying careful attention to design and color, (b) designing inviting initial contact letters, (c) timing appropriate follow-up contacts, and (d) using incentives which have been shown to increase response rates by 19%. As the total population (N=327) under study was surveyed, the goal was to achieve a 30% or higher response rate or a minimum of 98 subjects. This was achieved with an initial response rate of 45% or 150 participants and subsequent useable response rate of 43% or 140 participants.

Sue and Ritter (2007) point to the multitude of benefits that come from using commercial software with Web-based survey hosts which include ease of use, expansion of distribution options, professional formatting ability and accurate accounting of respondent lists. This study used the commercial software Zoomerang™ to deliver the survey to subjects. This company was chosen due to the recommendation of three different
higher education researchers, its security features, and discounted pricing. The company’s privacy policy assures that all databases are protected by passwords and network firewalls and confirms a commitment to privacy and confidentiality (Zommerang).

Through publicly available accredited membership lists and personal contacts, the dean or directors of each nursing department were identified and their names and email addresses entered into a database for use in distributing the survey and in subsequent follow-up for survey completion. After all names and email addresses were entered into the database, email letters were sent to all directors or deans requesting their participation. The initial introductory email letter is located in Appendix D.

Mertens (2005) reports that three factors increase response rates: (1) Preliminary contacts, (2) personalized contacts, and (3) follow-up contacts with nonrespondents. The initial email letters to the deans were followed with a letter thanking them for their participation and included a link to the web-based survey as well as the request for the participants to complete the survey (Appendix E). After two weeks, a follow-up email with another link to the web-based survey was sent to those directors or deans of community colleges (Appendix F) and directly to faculty of four-year institutions (Appendix G) via published web addresses. Demographic data received on the sample was compared to known demographic data about nurses and nurse educators in the State of Michigan.

Each subject was informed about the nature of the research, that participation was voluntary, and given the option of receiving the study results. Participants were informed that it would take approximately 10-15 minutes to complete the questionnaire. Participants were given the option of receiving a copy of the final results by providing a preferred email or mailing address at the end of the survey. These are kept in a separate locked file
pending distribution of the results after which they will be shredded.

Data Analysis

The two research questions ask for descriptive information related to nurse faculty as well as experiential factors that relate to online teaching efficacy. The SPSS version 15 statistical package was used to analyze the data received. For data submitted via the web, the survey software package converted the data to an excel dataset which was imported into SPSS. The data was visually reviewed to ensure that the conversion was accurate. Data was then double checked and cleaned for errors prior to the statistical analysis.

Univariate descriptive statistics were used to (a) clean and check quality of data (b) examine variability, (c) provide a description of the sample, and (d) to check statistical assumptions. Nominal level data were analyzed through frequencies (e.g. gender). Frequencies, percentages, and non-parametric tests were used to examine ordinal data (e.g. highest degree). Nominal and ordinal level data were summarized by cross tabs comparing tables of percentages in order to determine the characteristics of the sample. Chi-Square was used as appropriate to test the difference in proportions of two independent groups.

Pearson’s skewness coefficient and Fisher’s measure of skewness determined the properties of the data. The data distribution was negatively skewed. Frequencies identified outliers for further examination. These were examined and determined to be authentic data. After identifying the data distribution, appropriate measures of central tendency were completed on interval level data (e.g. likert scale items). Variability was examined by identifying standard deviation, range and interpercentile measures.
Variables from the online teaching efficacy scale were combined into the following groups describing the constructs for online teaching efficacy: (a) student engagement, (b) instructional strategies, (c) classroom management (Tschannen-Moran & Hoy, 2001), and (d) computer skills based on the work of Palloff and Pratt (2003) and Weigel (2002).

Prior to grouping these variables, a confirmatory factor analysis (Cronbach’s alpha) was conducted to determine the appropriateness of combining these variables. A reliability coefficient of .80 was used as a minimum level to determine if the items were one-dimensional within each construct.

Initial examination of reliability revealed Cronbach’s co-efficient alphas for the scales of the MNESEOT were student engagement=.926, classroom management= .929, instructional strategies = .942, and computer skills = .857. The reliability co-efficient for the instrument as a whole= .926. Further analysis of these subscales was completed with factor analysis as described below.

Pearson’s product-moment correlation coefficient was used to determine correlations between interval level variables (e.g. online teaching self-efficacy levels for face-to-face versus online teachers). Analysis of variance (ANOVA) was used to test differences between means (teaching on-line self-efficacy scores) of three or more independent groups (e.g. number of online courses taught). For all tests an alpha of .05 was used. This level of significance is frequently used in the social sciences (Munro, 2005; Polit & Beck, 2004) and indicates that only 5% of the time would the obtained results occur by chance.
Factor Analysis for MNESEOT

The 32 items of the MNESEOT were subjected to principal components analysis using SPSS Version 15. First, the suitability of data for factor analysis was assessed. Inspection of the correlation matrix revealed most coefficients of .3 and above. This correlation matrix is available in Appendix J. Correlations above .3 are recommended for factor analysis (Tabachnick & Fidell, 2001). The Kaiser-Meyer-Olkin (KMO) and Bartlett’s test of sphericity were used to measure sampling adequacy (Pallant, 2005). The KMO value was .954 exceeding the recommended value of .6 and the Bartlett’s test of sphericity reached statistical significance at less than .001, supporting the factorability of the correlation matrix.

Next, Kaiser’s criterion or the eigenvalue rule, inspection of a scree plot, and parallel analysis were used to determine the number of factors explaining the variance in the data set (Pallant, 2005). Typically, factors or components with eigenvalues over 1 are retained (Pallant, 2005). Principal components analysis revealed the presence of four components with eigenvalues over 1, explaining 57.2 percent, 5.3 percent, 3.5 percent, and 3.1 percent of the variance respectively (Table 1).

The scree test plots each of the eigenvalues in order to find a visual point at which there is a change in the data curve. Factors above this point explain the most variance in the data set (Pallant, 2005). An inspection of the scree plot revealed a distinct break after the first component, a more subtle break between the second and third component, and a very small break between the third, fourth, and fifth components (Figure 2).
Table 1

*Factor Analysis-Total Variance Explained. Eigenvalues >1.0*

<table>
<thead>
<tr>
<th>Factor</th>
<th>Initial Eigenvalues</th>
<th>Extraction Sums of Squared Loadings</th>
<th>Rotation Sums of Squared Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>18.292</td>
<td>57.161</td>
<td>57.161</td>
</tr>
<tr>
<td>2</td>
<td>1.687</td>
<td>5.271</td>
<td>62.432</td>
</tr>
<tr>
<td>3</td>
<td>1.132</td>
<td>3.538</td>
<td>65.970</td>
</tr>
<tr>
<td>4</td>
<td>1.002</td>
<td>3.132</td>
<td>69.102</td>
</tr>
</tbody>
</table>

Extraction Method: Principal Component Analysis.

a. When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

Figure 2. Factor analysis scree plot.

Finally, a parallel analysis was completed in order to compare the eigenvalues from the data with those from a randomly generated data set of the same size (Pallant, 2005).
Parallel Analysis showed only one component with eigenvalues exceeding the corresponding criterion values for a randomly generated data matrix of the same size (32 variables x 140 respondents). With the first component explaining the majority of the variance and results of the scree plot, the researcher decided to look further for evidence of two or more components.

Further examination was completed with a Varimax rotation. Criteria of .3 for the correlations and a difference of .2 between components were used to indicate loadings to differentiate components. 17 items loaded strongly on component one. Five items (question numbers 26, 27, 30, 31, 32) related to computer efficacy and loaded strongly on component two. The remaining 10 items correlated with both components with stronger correlations to component one (Table 2).

A Varimax rotation was completed omitting all computer items which revealed strong correlations for only one component. Therefore, factor analysis for this sample in revealed two discrete components within the MNESEOT. Component one incorporates the modified original teaching efficacy scale (#1-24) along with two additional questions (#25 and #29) into one construct labeled, Efficacy for Online Teaching, with factor loadings ranging from .45-.81. Component two consists of questions #26, #27, #28, #30, #31, and #32. Factor loadings for this component labeled, Efficacy for Using a Computer to Teach Online, ranged from .611-.784. Under this composition, Cronbach’s coefficient alpha for Efficacy for Online Teaching is .974 and .863 for Efficacy for Using a Computer to Teach Online.
Table 2

*Pattern/structure for Coefficients*

<table>
<thead>
<tr>
<th>Item</th>
<th>Component 1</th>
<th>Component 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Efficacy for online teaching</td>
<td>Efficacy for Computers</td>
</tr>
<tr>
<td>Engagement3</td>
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</tr>
<tr>
<td>Instruction4</td>
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<tr>
<td>Computer7</td>
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<td>.613</td>
</tr>
<tr>
<td>Computer4</td>
<td>.526</td>
<td>.611</td>
</tr>
</tbody>
</table>
Limitations to Data Analysis

The entire population of Nurse Educators teaching theoretical courses who are employed in public accredited nursing schools in the State of Michigan was solicited. However, sampling bias was most probably an issue due to the number of non-responders. The data was not representative of subjects who chose not to respond or to the general population of nurse educators. Surveys often have low response rates; subjects might misinterpret the questions and/or object to the question format. With a cross-sectional design it is not possible to determine if the experience of nurse educators surveyed in their current roles is the same or different than those they held in the past. Thus, some participants may have brought a much different skill set to the study than others. Attempts were made to minimize limitations and involved efforts to keep a low nonresponse rate with accurate record keeping. Another major limitation is that this survey is correlational and based upon convenience sampling. Therefore, once again, non-measured preexisting differences in the subjects might be responsible for differences in the dependent variable of online efficacy levels.

Summary

To analyze the variable of online teaching self-efficacy, a survey was sent to the directors or deans of accredited nursing programs in the State of Michigan. The survey consisted of a variety of open-ended, closed-ended and Likert-scaled questions. After the initial email contact, directors or deans had the option of forwarding the web survey to faculty or having the researcher contact faculty members individually. SPSS version 15 was the statistical package used for analysis. A factor analysis examined the component
structure of the MNESEOT measuring tool used to assess online teaching efficacy levels.

Further statistical analysis consisted of descriptive and inferential statistics.
CHAPTER 4

RESULTS

This chapter presents findings from the Michigan Nurse Educators Sense of Efficacy for online teaching (MNESEOT) survey posed to nurse educators teaching in public, accredited nursing schools in the State of Michigan during the Winter/Spring 2008 semester. First, general information on survey response rates and demographic data is presented. Second, a section discusses data considerations and reviews the reliability of the measuring items in the survey. Finally, data are presented to answer the research questions and hypotheses.

Demographic Data

A web survey was distributed via email to all nurse educators teaching lecture courses during winter/spring 2008 semester at public, accredited higher education institutions in Michigan. Nurse educators of all ranks, appointment types, years of teaching experience and with any or no online teaching experience were invited to participate. An email request with a link to the survey was sent to directors or deans of 24 nursing schools to forward to approximately 327 nurse educators. Two weeks later, a second email request with a link to the survey was sent to directors or deans of community colleges and directly to nurse faculty of four-year institutions. The overall response rate after two total email attempts was 45% or 150 participants. For nine respondents over 20% of the data was missing and they were subsequently culled from the sample data. Another case was removed for missing 8 items (or 25%) of the first 32 items of the survey. This resulted in a new response rate of 43% (140 participants). At
this response rate, the margin of error at the 95% confidence interval was plus or minus 6.3%.

Descriptives of Participants

The typical survey participant was female (92.9%), 53 years of age ($M=51.24$, $SD=8$), from a 4-year college ($n=117$) and had 12 years of teaching experience ($M=14.36$, $SD=9.96$) of which 9.5 years involved teaching lecture experience ($M=12.5$, $SD=10.56$). As reported in Table 3, this sample is comparable for age and gender with known demographics of nurse educators teaching in the Midwest (Kovner, Fairchild, & Jacobson, 2006).

Table 3

<table>
<thead>
<tr>
<th>Gender</th>
<th>%</th>
<th>(%)</th>
<th>Age</th>
<th>%</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>7.1</td>
<td>(3.1)</td>
<td>&gt;30</td>
<td>0</td>
<td>(2.8)</td>
</tr>
<tr>
<td>Female</td>
<td>92.9</td>
<td>(96.9)</td>
<td>31-45</td>
<td>25</td>
<td>(25.8)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>45-60</td>
<td>62.1</td>
<td>(63.4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>61+</td>
<td>12.9</td>
<td>(8.1)</td>
</tr>
</tbody>
</table>

Note: % = percentage of participants; (%) = percentage according to 2006 survey data of nurse educators from the Midwest region.

Of the respondents, 47.5% had taught an entire course online and 75% indicated that they had taught portions of a course online. Participants were also asked about their appointment type, academic rank, and highest degree. These categories are presented in Table 4.
Table 4

Respondents by Appointment Type, Academic Rank, and Highest Degree

<table>
<thead>
<tr>
<th>Appointment Type</th>
<th>n</th>
<th>Academic Rank</th>
<th>n</th>
<th>Highest Degree</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjunct</td>
<td>15</td>
<td>Instructor</td>
<td>33</td>
<td>Bachelors</td>
<td>5</td>
</tr>
<tr>
<td>Term</td>
<td>26</td>
<td>Assistant</td>
<td>48</td>
<td>Masters</td>
<td>78</td>
</tr>
<tr>
<td>Tenure earning</td>
<td>34</td>
<td>Associate</td>
<td>29</td>
<td>Doctorate</td>
<td>57</td>
</tr>
<tr>
<td>Tenure</td>
<td>45</td>
<td>Professor</td>
<td>18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>11</td>
<td>Other</td>
<td>11</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Kovner et al. (2006) reported 2006 census information in the categories of academic rank, and highest degree according to percent of full-time faculty by region. Data was compared to information known about nurse faculty from the Midwest region. Participants were comparable in all categories with the exception of a 12.9% higher rate of doctorally prepared educators. Data comparing participants to full-time faculty in the Midwest region are presented in Table 5.

Table 5

Comparison of Respondents to Known Survey Data for Academic Rank and Highest Degree

<table>
<thead>
<tr>
<th>Academic Rank</th>
<th>%</th>
<th>(%)</th>
<th>Highest Degree</th>
<th>%</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructor</td>
<td>23.6</td>
<td>(31.8)</td>
<td>Bachelors</td>
<td>3.6</td>
<td>(6.5)</td>
</tr>
<tr>
<td>Assistant</td>
<td>35</td>
<td>(33)</td>
<td>Masters</td>
<td>55.7</td>
<td>(65.6)</td>
</tr>
<tr>
<td>Associate</td>
<td>20.7</td>
<td>(21.7)</td>
<td>Doctorate</td>
<td>40.7</td>
<td>(27.8)</td>
</tr>
<tr>
<td>Professor</td>
<td>12.9</td>
<td>(13.3)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>7.9</td>
<td>(0.2)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: %= percentage of participants; (%)= percentage according to 2006 survey data of nurse educators from the Midwest region.

Description of participants' experience with online teaching. Chi-square tests for independence was used to explore the differences among appointment type, academic rank, and highest degree earned for participation rates for teaching entire courses online.
or portions of courses online. Using a significance level of .05, there were no differences found among appointment types for participation in teaching an entire course online $(X^2(4, N=139) = .656, p = .957)$ or participation in teaching portions of courses online $(X^2(4, N=140) = 6.068, p = .194)$ with one cell having the expected count less than five.

There was also no differences found among professional teaching ranks for participation in teaching an entire course online $(X^2(4, N=139) = 8.349, p = .080)$. A significant difference was found among ranks for participation in teaching portions of courses online $(X^2(4, N=139) = 13.483, p = .009)$ with more assistant professors ($n=41$) teaching portions of courses online followed by associate professors ($n=26$), instructors ($n=22$), professors ($n=11$), and finally others ($n=5$). Following Cohen's definitions (Munro, 2005), effect sizes related to Chi-square are small = 0.1 (10% difference), moderate = 0.3 (30% difference), and large = 0.5 (50% difference). The largest actual percentage differences for ranks in participation in teaching portions of online courses were found between the ranks of assistant (39%) and associate (24.8%) and are therefore all differences should be interpreted as "small effect" size.

There were no significant differences in participation in teaching an entire course online or portions of a course online by highest degree earned. Frequency percentages indicated that of the 47.5% nurse educators who had taught an entire course online, 50% were doctorally prepared and 50% were prepared at the master's level. With 75% of the participants indicating they had taught portions of a course online, 44.8% were doctorally prepared and 52.4% were master's prepared. There were too few nurse educators with baccalaureate degrees to make comparisons with masters and doctorally prepared nurse
educators. Therefore, participants with online teaching experience were almost equally prepared at both the master’s level and the doctoral level.

Data Considerations

There were several issues to resolve with the data prior to any analysis. After deleting cases with more than 20% missing data, there remained 9 cases with some missing items from the first 32 questions of the MNESEOT scale. Excluding cases listwise, descriptives and normality assessment were analyzed for each of the four subscales (efficacy in student engagement, efficacy in instructional strategies, efficacy in classroom management, efficacy in computers) as well as the total scale. Pearson’s Skewness coefficient and Fisher’s Measure of Skewness verified a significant negative skewness with a clustering of scores at the high end of the distribution (Munro, 2005).

With a response rate of 43% of the population, the decision was made not to transform data as according to the central limit theorem the mean of a sample this size reflects the mean of the population (Chase & Brown, 2000). Therefore, transforming the data might result in changing values inappropriately (Mertens, 2005). Norris and Aroian (2004) also studied the costs and benefits of transforming data for the parametric tests Cronbach alpha and the Pearson product-moment correlation. Finding little differences between original and transformed data sets they concluded that transformation is not always prudent when using Cronbach alpha or Pearson product-moment correlations for instruments with skewed item responses. For this study, the risk of making a type II error by not transforming data was assessed as necessary through examination of power using G*Power 3 (Faul, Erdfelder, Lang, & Buchner, 2007) and the calculation of effect sizes.
**Handling Missing Data**

A review of the 9 cases with missing data failed to reveal a random skipping of items with no case missing more than 10% of the question items from the MNESEOT scale. For each case, the subscales with missing data were identified and medians for these subscales were calculated using the items available. These medians were then substituted as applicable for missing data. Descriptives and assessment of normality were assessed with these substitutions with resulting data indicating only minor changes in means, medians, standard deviations, and skewness (see Table 6). Subsequently all analyses were conducted with these substituted medians.

Table 6

*Comparison of 32-item MNESEOT Scale Excluding Missing Data Versus Using Substitute Medians for Missing Data*

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>Median</th>
<th>SD</th>
<th>z-score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Descriptives of data excluding cases listwise (n=131)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Efficacy for engagement</td>
<td>6.25</td>
<td>6.38</td>
<td>1.39</td>
<td>-5.48</td>
</tr>
<tr>
<td>Efficacy for instruction</td>
<td>6.83</td>
<td>6.88</td>
<td>1.39</td>
<td>-6.43</td>
</tr>
<tr>
<td>Efficacy for classroom</td>
<td>6.84</td>
<td>7.0</td>
<td>1.38</td>
<td>-8.3</td>
</tr>
<tr>
<td>Efficacy for computers</td>
<td>6.9</td>
<td>6.88</td>
<td>1.28</td>
<td>-5.02</td>
</tr>
<tr>
<td>Total MNESOT Score</td>
<td>26.83</td>
<td>27.0</td>
<td>5.13</td>
<td>-6.98</td>
</tr>
<tr>
<td>Descriptives of data substituting medians (n=140)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Efficacy for engagement</td>
<td>6.25</td>
<td>6.38</td>
<td>1.37</td>
<td>-5.69</td>
</tr>
<tr>
<td>Efficacy for instruction</td>
<td>6.83</td>
<td>7.0</td>
<td>1.36</td>
<td>-6.69</td>
</tr>
<tr>
<td>Efficacy for classroom</td>
<td>6.84</td>
<td>7.0</td>
<td>1.36</td>
<td>-8.49</td>
</tr>
<tr>
<td>Efficacy for computers</td>
<td>6.9</td>
<td>6.88</td>
<td>1.26</td>
<td>-5.08</td>
</tr>
<tr>
<td>Total MNESOT Score</td>
<td>26.82</td>
<td>27.2</td>
<td>5.0</td>
<td>-7.22</td>
</tr>
</tbody>
</table>

*Factor Analysis Considerations*

For this study, factor analysis subsequently revealed only two subscales within the MNESEOT and descriptives and assessment of normality were assessed again for this new arrangement of data. The first subscale ($M=6.68$, Median= 6.6, $SD=1.3$) incorporated the modified original teaching efficacy scale (#1-24) along with two
additional questions (#25 and #29) into one construct then designated *Efficacy for Online Teaching* (EFOLT).

The second subscale (M= 7.23, Median= 7.25, SD= 1.35) consisted of questions #26, #27, #28, #30, #31, and #32, all related to using computers, and was labeled *Efficacy for Using Computers to Teach Online* (EFCOLT). Means of each subscale were summed to obtain a total and labeled the MNESEOT2 score (M= 13.82, Median= 13.74, SD=2.48). Pearson’s Skewness Coefficient and Fisher’s Measure of Skewness again verified that the distribution was significantly negatively skewed confirming the decision to use substitute medians rather than means (Munro, 2005).

The original MNESEOT subscales had Cronbach’s co-efficient alphas of student engagement=.926, classroom management=.929, instructional strategies = .942, and computer skill = .857. After factor analysis, the reliability co-efficients for collapsing the instrument into two subscales were efficacy for online teaching= .974, and efficacy for using a computer to teach online=.863. The total reliability co-efficient for all 32 items in the instrument was .974. With strong reliability for both subscales, the researcher decided to compare the two different subscale structures as appropriate during data analysis.

*Institutional and Gender Response Rates*

The researcher also needed to examine issues of response rates in the categories of institution and gender. Frequency counts of institutional membership indicate there were 23 participants from community colleges and 117 participants from four year institutions. The total population estimate of \(n=327\) indicated that 44% of the faculty surveyed were from community colleges and 56% were from four year institutions. A Chi-square goodness-of-fit test confirmed that there was a significant difference between the
response rates of the two institutional categories ($\chi^2(1, N=140) = 43.192, p<.001$). Therefore, any examination between these two groups is severely limited by the low response rate of community college nurse educators.

Low frequency counts for males ($n=10$) versus females ($n=130$) also limited data interpretation. A Chi-square goodness of fit test was used to explore the differences of this sample from the population using data from the Michigan Center for Nursing (2007), which reports only 6.2% of licensed registered nurses in the State of Michigan are male. Results indicated that there was no significant difference between the response rate of male versus female participants ($\chi^2(1, N=140) = .214, p=.644$). Thus, the sample is representative of male and female nurse educators in the State of Michigan.

**General Assumptions for all Statistical Tests**

The statistical significance level used for all tests was .05. For all t-tests and ANOVAs, the researcher ran Levene’s test for equality of variances, and equal variances were found and can be assumed unless otherwise noted. A violation of Levene’s test suggests that variance of the dependent variable across the groups under study is not equal and requires a more stringent significance level of .01 (Pallant, 2005). This more stringent level was used in cases were equal variances were not found.

For all t-tests and ANOVAs, effect size was calculated as eta squared and interpreted using Cohen’s indicators as: .01=small effect, .06=moderate effect, .14= large effect (Pallant, 2005; Polit & Beck, 2004). Effect size, also known as the strength of association, assesses the importance of a significant finding by indicating the “relative magnitude of the differences between means” (Pallant, 2005, p. 201). The researcher was most interested in moderate to large effect sizes during data analysis.
Finally, Pearson product-moment correlation tests were used to explore the strength and direction of the relationship between continuous variables. When using Pearson product-moment correlation tests, the size of the value of Pearson correlation \( r \) was interpreted using Cohen’s guidelines for Pearson correlations as small effect as \( r = \pm .10 \) to .29, medium effect as \( r = \pm .30 \) to .49, and large effect as \( r = \pm .50 \) to 1.0 (Pallant, 2005; Polit & Beck, 2004).

Research Questions

Data were analyzed to answer two research questions:

1. How confident do nurse educators feel in preparing, conducting, and evaluating online courses? Is there a difference in online teaching efficacy in relation to the variables: (a) age, (b) gender, (c) appointment type, (d) type of institution, (e) specialty area, (f) years of teaching nursing experience, (g) years of teaching lecture experience, and (h) numbers of online teaching experiences? And

2. In what ways do experience with online teaching, professional development, and perceived support from faculty colleagues or instructional designers influence nurse faculty members’ reported self-efficacy for online teaching?

Research Question 1

Research Question one explores the relationships between the dependent variable of online teaching efficacy as measured by 32 items in the MNESEOT instrument and eight different independent variables. The MNESEOT and a demographic data section were used to collect data. The MNESEOT is a self-report scale measuring the degree to which subjects feel they can execute teaching abilities for online courses across four domains: (1) student engagement (SEOT), (2) classroom management (CMOT), (3)
instructional strategies (ISOT), and (4) computer skills (CSOT). Participants responded to each item using a Likert-scale format ranging from “nothing” (1) to “a great deal” (9). For each participant, mean subscale scores were calculated and added together to obtain a total MNESEOT score. This resulted in a total range of possible subscores from 1-9 and a total possible MNESEOT score from 4-36.

When applicable, results from the four domain structure labeled as the MNESEOT were compared with results from the two domain structure labeled MNESEOT2. Results from factor analysis suggested that the phenomenon of online teaching efficacy for this study condensed into two subscales labeled efficacy for online teaching (EFOLT) and efficacy for using a computer to teach online (EFCOLT). Mean subscale scores were calculated for these two subscales and added to obtain a total MNESEOT2 for each participant. This resulted in a total range of possible subscores from 1-9 and a total possible MNESEOT2 score between 2-18.

Confidence Levels of Nurse Educators for Online Teaching

Research question one asked, “How confident do nurse educators feel in preparing, conducting, and evaluating online courses?” Despite a range of answers that encompassed a few genuine outliers, participants indicated with mean total MNESEOT scores that they could do more than “some” to “quite a bit” (M= 26.82, SD=5.04) when it came to preparing, conducting, and evaluating online courses. This rating level was consistent through all of the subscales. Table 7 presents the subscore means for the four domains of the MNESEOT compared to the subscore means from the two domains from the MNESEOT2.
Table 7

Comparison of Results of 32-item MNESEOT with Original Subscales and MNESEOT2 Modified Subscales

<table>
<thead>
<tr>
<th>Four domains to online teaching efficacy</th>
<th>M</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Engagement</td>
<td>6.25</td>
<td>1.37</td>
<td>1-9</td>
</tr>
<tr>
<td>Classroom Management</td>
<td>6.84</td>
<td>1.36</td>
<td>1-9</td>
</tr>
<tr>
<td>Instructional Strategies</td>
<td>6.83</td>
<td>1.37</td>
<td>1-9</td>
</tr>
<tr>
<td>Computer Skills</td>
<td>6.9</td>
<td>1.26</td>
<td>1-9</td>
</tr>
<tr>
<td>MNESEOT Score</td>
<td>26.82</td>
<td>5.04</td>
<td>5-36</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Two domains to online teaching efficacy</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficacy for online teaching</td>
<td>6.58</td>
<td>1.30</td>
<td>1-9</td>
</tr>
<tr>
<td>Efficacy for using computers</td>
<td>7.23</td>
<td>1.34</td>
<td>1-9</td>
</tr>
<tr>
<td>MNESEOT2 Score</td>
<td>13.82</td>
<td>2.48</td>
<td>2-18</td>
</tr>
</tbody>
</table>

Note: MNESEOT Score=total score from the Michigan Nurse Educators Sense of Efficacy for Online Teaching Scale; MNESEOT2 Score= total score from the Michigan Nurse Educators Sense of Efficacy for Online Teaching Scale as condensed into two subscales; Efficacy for using computers= efficacy for using computers to teach online.

Differences According to Independent Variables

The second part of question one asks, “Is there a difference in online teaching efficacy in relation to the variables: (a) age, (b) gender, (c) appointment type, (d) type of institution, (e) specialty area, (f) years of teaching nursing experience, (g) years of teaching lecture experience, and (h) numbers of online teaching experiences?” In order to answer this question, the mean MNESEOT and MNESEOT2 scores were compared according to each demographic variable. Comparison of scores to gender, appointment type, type of institution, and specialty area are reported first followed by comparisons to overall participation in online teaching, numbers of online teaching experiences, age, years of teaching experience, and years of teaching lecture experience.

Gender and online teaching efficacy scores. An independent-samples t-test was conducted to compare the total MNESEOT scores by gender. There was no significant
difference in scores for males \(M=27.58, SD=4.54\) and females \(M=26.77, SD=5.1; t(138)=.488, p=.626\). Using the MNESEOT2 scores, there was also no significant difference found between males \(M=14.43, SD=2.34\) and females \(M=13.77, SD=2.5; t(138)=.812, p=.418\).

*Appointment type and online teaching efficacy scores.* Participants were asked to identify their appointment types as adjunct, term, tenure earning, tenured, or other. A one-way between-groups analysis of variance was conducted to examine the differences by appointment type for total MNESEOT scores. There was no significant difference in scores for the five appointment groups \(F(4,139)=.282, p=.889\). There was also no significant difference in scores when exploring differences by appointment type for total MNESEOT2 scores \(F(4,139)=.503, p=.733\).

Participants were also asked to identify their rank as instructor, assistant professor, associate professor, professor, or other. One-way between groups analysis of variance testing revealed no significant differences among these ranks on total MNESEOT scores \(F(4,139)=.553, p=.697\) or total MNESEOT2 scores \(F(4,139)=.729, p=.574\).

*Institutional type and online teaching efficacy scores.* An independent-samples t-test was conducted to compare the total MNESEOT scores for community colleges with those of four-year institutions. There was only a small difference in scores for community colleges \(M=24.86, SD=4.0\) and four-year institutions \(M=27.21, SD=5.15; t(138)=-2.062, p=.041\). The magnitude of the differences in the means was small (eta squared=.029). This effect was only slightly larger (eta squared=.04) when comparing MNESEOT2 scores between community colleges \(M=12.64, SD=1.96\) and four-year institutions \(M=14.04, SD=2.52; t(138)=-2.526, p=.013\). Although there was a significant
difference between the two institutional types, the effect size was small and results are not generalizable due to a lack of community college participants (Munro, 2005).

Specialty areas. Participants were asked to identify their specialty area and given the option to select all that applied. The initial categories included maternal/newborn, pediatrics, adult medical/surgical, mental health, community health, nursing administration, nursing research, nursing informatics, and other-please specify. There were 54 respondents with two or more specialty areas and several typed in other categories such as geriatrics, pharmacology, and nurse practitioner. To simplify analysis, the categories were condensed into five subgroups labeled maternal-child (MatChild), adult medical/surgical (Medsurg), mental/community (MenCom), administration/research (AdminRes), and other. These categories were created on the basis of specialty areas having content in common or being more theoretically based than clinically based. Table 8 presents the number of faculty who identified themselves for particular specialty areas and the breakdown of percentages of educators within their specific specialty categories who have taught an entire course online. The third column of Table 8 identifies numbers of participants by specialty area as percentages within the entire group of nurse educators who have taught an entire course online. For example, of the nurse educators describing their specialty as medical-surgical nursing (MedSur), 46% had taught one entire online course. In addition, nurse educators specializing in medical-surgical nursing composed the largest number of participants (43.9%) within the sample who had taught an entire course online. From Table 8, it is apparent that by specialty area, a diverse group of nurse educators have participated in teaching at least one entire course online.
Table 8

Affirmative Participation for Teaching an Entire Course Online According to Identified Specialty Area

<table>
<thead>
<tr>
<th>Specialty Area</th>
<th>n</th>
<th>%withinSP</th>
<th>%withinentiregroup</th>
</tr>
</thead>
<tbody>
<tr>
<td>MatChild</td>
<td>40</td>
<td>42.5%</td>
<td>25.8%</td>
</tr>
<tr>
<td>MedSurg</td>
<td>64</td>
<td>46%</td>
<td>43.9%</td>
</tr>
<tr>
<td>Men/Com</td>
<td>44</td>
<td>51.2%</td>
<td>33.3%</td>
</tr>
<tr>
<td>Admin/Res</td>
<td>33</td>
<td>63.6%</td>
<td>31.8%</td>
</tr>
<tr>
<td>Other</td>
<td>42</td>
<td>59.5%</td>
<td>37.9%</td>
</tr>
</tbody>
</table>

Note: MatChild=maternal-child; MedSur=adult medical-surgical nursing; Men/Com= Mental Health and Community Nursing; Admin/Res= Administration and Research; Other= All other specialties
%withinSP=percentage within specific specialty area who have taught an entire course online
%withinentiregroup=percentage within the group of nurse educators who have taught an entire course online

The researcher was unable to correlate nurse educator specialty areas to total MNESEOT scores as the specialty area category was not mutually exclusive and 54 nurse educators identified themselves as belonging to two or three different areas.

Experience teaching an entire course online and online teaching efficacy scores.

An independent-samples t-test was conducted to compare the total MNESEOT and MNESEOT2 scores between groups of nurse educators who indicated they had or had not taught an entire online class. Nurse educators who had taught an entire online class had significantly higher MNESEOT scores ($M=28.62$, $SD=3.65$) than nurse educators who had never taught an entire online class [$M=25.22$, $SD=5.6$; $t(137)=4.185$, $p<.001$]. Nurse educators who had taught on entire online class also had significantly higher MNESEOT2 ($M=14.84$, $SD=1.77$) than nurse educators who had never taught an entire online class [$M=12.89$, $SD=2.69$; $t(137)=4.994$, $p<.001$]. The size of the effects were medium for the MNESEOT ($\eta^2=0.113$) and large for the MNESEOT2 ($\eta^2=0.15$).
Experience teaching portions of courses online and online teaching efficacy scores.

Independent-samples t-tests were also used to compare the total MNESEOT and MNESEOT2 scores between groups of nurse educators who indicated they had or had not taught portions of a course online. Levene’s test for equality of variances indicated significance for both scales and data from equal variances were not assumed is reported. Nurse educators who had taught portions of a course online had significantly higher MNESEOT scores ($M=27.65, SD=4.03$) than nurse educators who had never taught portions of a course online [$M=24.34, SD=6.78$; $t(138)=2.729$, $p=.009$] although the effect size was only approaching medium ($\eta^2=.05$). MNESEOT2 scores indicated that nurse educators who had taught portions of a course online scored significantly higher ($M=14.29, SD=1.99$) than nurse educators who had never taught portions of a course online [$M=12.40, SD=3.23$; $t(138)=3.263$, $p=.002$] with a medium effect size ($\eta^2=.07$).

Differences in the MNESEOT and MNESEOT2 total scores with participation in teaching entire online courses or portions of courses online were explored further by examining correlations between numbers of entire courses taught online and numbers of portions of courses taught online with MNESEOT/MNESEOT2 total scores.

Number of courses taught. The possible correlations between MNESEOT and MNESEOT2 total scores and the variable of numbers of online teaching experiences as measured by number of entire courses taught online or number of portions of courses taught online was explored using Pearson product-moment coefficient. A medium positive correlation was found between the variable of total MNESEOT scores and number of entire online courses taught ($r=.309$, $n=139$, $p<.001$). This was also found
using the total MNESEOT2 scores ($r=0.322$, $n=139$, $p<0.001$). This correlation suggests that as faculty increase the number of entire online courses they teach, their self-efficacy for online teaching increases. There was a small positive correlation between total MNESEOT scores and the variable of number of courses taught partially online ($r=0.222$, $n=129$, $p=0.006$). This correlation was only slightly larger using the MNESEOT2 scale ($r=0.261$, $n=129$, $p=0.001$).

*Age, teaching experience, numbers of online courses.* The possible correlations between MNESEOT and MNESEOT2 total scores and the variables of age, years of teaching nursing experience, and years of teaching lecture experience, were also explored using Pearson product-moment coefficient.

As would be expected, age was largely positively correlated with years of teaching nursing ($r=0.611$, $n=139$, $p<0.001$) and teaching lecture courses ($r=0.587$, $n=139$, $p<0.001$). Age was not significantly correlated with teaching entire ($r=0.09$, $n=137$, $p=0.297$) or portions of courses online ($r=0.099$, $n=128$, $p=0.268$). Years of teaching nursing had a small correlation with teaching entire courses online ($r=0.201$, $n=138$, $p=0.018$) but had no correlation with teaching portions of courses online ($r=0.113$, $n=129$, $p=0.202$). There were no significant correlations between age and MNESEOT/MNESEOT2 scores or years of teaching nursing and years of teaching lecture and MNESEOT/MNESEOT2 scores. Data are illustrated in Table 9.

Further analysis of Research Question #1 occurred with the testing of Hypotheses 1a and 1b.
Table 9

Pearson Correlational Matrix Between Demographic Variables and MNESEOT/MNESEOT2 Total Scores

<table>
<thead>
<tr>
<th>Measures</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.Age</td>
<td></td>
<td>.611**</td>
<td>.587**</td>
<td>.90</td>
<td>.099</td>
<td>.011</td>
<td>-.014</td>
</tr>
<tr>
<td>2.Yrsteach</td>
<td></td>
<td></td>
<td>.952**</td>
<td>.201*</td>
<td>.113</td>
<td>.099</td>
<td>.090</td>
</tr>
<tr>
<td>3.Yrstealec</td>
<td></td>
<td></td>
<td></td>
<td>.219**</td>
<td>.133</td>
<td>.106</td>
<td>.114</td>
</tr>
<tr>
<td>4.entireon</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.449**</td>
<td>.309**</td>
<td>.322**</td>
</tr>
<tr>
<td>5.portionon</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.222*</td>
<td>.261**</td>
</tr>
<tr>
<td>6.MNESEOT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.974**</td>
</tr>
<tr>
<td>7.MNESEOT2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Yrsteach=years teaching nursing; Yrstealec=years teaching lecture; entireon=how many entire courses taught online; portionon=how many portions of courses taught online; MNESEOT= The Michigan Nurse Educators Sense of Efficacy for Online Teaching Scale; MNESEOT2= The Michigan Nurse Educators Sense of Efficacy for Online Teaching Scale divided by two factors

Hypothesis 1a. There will be a positive relationship between years of teaching experience and the mean scores on the subscales of the MNESEOT/MNESEOT2 as well as the total score of the MNESEOT/MNESEOT2. The researcher differentiated between years of general teaching experience and teaching experience defined as number of online teaching experiences. Therefore, the differences between years of teaching nursing experience, years of lecture experience, number of entire courses taught online, number of portions of courses taught online and the subscales of the MNESEOT as well as the MNESEOT2 were explored further using Pearson product-moment coefficient and choosing a one-tailed test of significance.

The number of entire courses taught online was positively correlated at a medium strength with scores on the MNESEOT subscales of student engagement (r=.302, p<.001) and computer skills (r=.306, p<.001) as well as to total MNESEOT scores (r=.309, p<.001). Smaller sized correlations were noted between scores on the MNESEOT subscales of classroom management (r=2.88, p<.001) and instructional strategies (r=.269,
The number of portions of online courses taught was positively correlated to all of the subscales of the MNESEOT (see Table 10) with correlation strength ranging from small to approaching medium. The number of portions of online courses taught had a small positive correlation to total MNESEOT scores \((r=.222, p=.006)\).

Table 10

*Pearson Correlational Matrix Between Teaching Experiences and MNESEOT Subscales*

<table>
<thead>
<tr>
<th>Measures</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Yrstealec</td>
<td>.219**</td>
<td>.133</td>
<td>.082</td>
<td>.088</td>
<td>.102</td>
<td>.131</td>
<td></td>
</tr>
<tr>
<td>2. Entireon</td>
<td>.449**</td>
<td>.302**</td>
<td>.288**</td>
<td>.269**</td>
<td>.306**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Portionon</td>
<td>.179*</td>
<td>.164*</td>
<td>.219**</td>
<td>.279**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. SEOT</td>
<td></td>
<td>.900**</td>
<td>.902**</td>
<td>.743**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. CMOT</td>
<td></td>
<td></td>
<td>.912**</td>
<td>.793**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. ISOT</td>
<td></td>
<td></td>
<td></td>
<td>.807**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. CSOT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Yrstelec=years teaching lecture; Entireon=number of entire courses taught online; Portionon=number of portions of courses taught online; SEOT=student engagement; CMOT=classroom management; ISOT=instructional strategies; CSOT=computer skills.

Significance 1-tailed *\(p<.05\). **\(p<.01\).

Similar correlations were noted for MNESEOT2 scores with medium positive correlations between number of entire courses taught online and both scores on the efficacy for online teaching subscale \((r=.295, n=140, p<.001)\), and scores on the efficacy for using computers to teach online subscale \((r=.306, n=140, p<.001)\). Small to medium positive correlations were found between number of portions of online courses taught and scores on the efficacy for online teaching subscale \((r=.195, n=140, p<.05)\) as well as scores on the efficacy for using computers to teach online subscale \((r=.292, n=140, p<.001)\). There was a medium positive correlation between number of entire online courses taught and total MNESEOT2 scores \((r=.322, p<.001)\) and a small positive
correlation between portions of online courses taught and total MNESEOT2 scores ($r=.261, p<.001$).

There were no significant correlations found between either years of teaching nursing or years of teaching lecture experience and any of the MNESEOT subscales or MNESEOT2 subscales. There was a small positive correlation found between years of teaching lecture and number of entire courses taught online ($r=.219, n=140, p=.005$).

In summary, analysis of the data shows a significantly positive correlation between number of entire online courses taught and the mean scores on the subscales of the MNESEOT and MNESEOT2 as well as total scores of the MNESEOT/MNESEOT2. There is also a significantly positive correlation between the number of portions of courses taught online and the mean scores on the subscales of the MNESEOT/MNESEOT2 and total scores of the MNESEOT/MNESEOT2. There was no significant correlation between years of teaching nursing and years of teaching lecture and the mean scores on the subscales of the MNESEOT/MNESEOT2 as well as the total score of the MNESEOT/MNESEOT2.

Therefore, hypothesis 1a is accepted for the context of online teaching only and is rejected for general teaching experience. The researcher decided to explore the differences between the number of entire online courses taught and the total scores on the MNESEOT/MNESEOT2 to further determine if a particular number of courses were significantly related to online teaching self-efficacy.

Comparisons of Number of Online Teaching Experiences with Total MNESEOT/MNESEOT2 scores. A one-way between-groups analysis of variance was conducted to explore the differences among number of entire online courses taught to
total MNESEOT and total MNESEOT2 scores. Participants were divided into three groups according to their teaching experiences (Group one: no teaching an entire course online experience; Group two: one to two experiences teaching an entire course online; Group three: three or more experiences teaching an entire course online). There was a statistically significant difference at the $p<.001$ level in MNESEOT scores for the three groups [$F(2, 137)=13.26, p<.001$]. The effect size was large at .164.

Post-hoc comparisons using the Tukey HSD test indicated that the mean score for nurse educators who had never taught an entire course online was not significantly different from nurse educators who had taught one to two entire online courses. However, there was a significant difference between nurse educators who had never taught an entire course online and nurse educators who had taught three or more courses online ($p<.001$). There was also a significant difference between nurse educators who had taught one to two entire courses online and nurse educators who had taught three or more entire courses online ($p=.020$). A comparison of frequencies and means of all three groups is located in Table 11.

### Table 11

*Anova Comparison of Teaching Entire Courses Online Between Three Groups (N=138)*

<table>
<thead>
<tr>
<th>Number of Entire Courses Taught</th>
<th>$n$</th>
<th>$M$</th>
<th>$SD$</th>
<th>$F$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never taught entire course online</td>
<td>73</td>
<td>25.22</td>
<td>5.61</td>
<td>13.262</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Taught 1-2 courses online</td>
<td>34</td>
<td>27.2</td>
<td>3.91</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taught 3 or more courses online</td>
<td>31</td>
<td>30.35</td>
<td>2.39</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A second one-way between-groups analysis of variance was conducted to explore the differences between numbers of entire online courses taught to total MNESEOT2
scores. This time, homogeneity of variances assumption was violated with a significance level of \( p=.022 \). The more robust Welch Robust test revealed a significant difference between the groups (Welch’s \( F_{27.712} = 79.667, p = .001 \)). Group one (\( M=12.89, SD=2.69 \)) differed significantly from group two (\( M=14.18, SD=1.90, p=.018 \)) and group three (\( M=15.66, SD=1.18, p=.001 \)). In addition group two differed significantly from group three (\( p=.025 \)).

In summary, although there is a rise in online teaching self-efficacy scores after teaching one to two courses entirely online, results from these tests point to the possibility that online self-efficacy scores rise significantly after the third online teaching experience.

_Hypothesis 1b. The variables of age, gender, appointment type, specialty areas, and type of institution will have no effect on MNESEOT/MNESEOT2 total scores._

Hypothesis 1b presented the null hypothesis and anticipated no differences in the total scores of the MNESEOT/MNESEOT2 within the demographic variables of age, sex, appointment type, specialty areas and type of institutions.

_Age and gender._ Pearson product-moment coefficient demonstrated no significant correlation between age and total scores of the MNESEOT (\( r=.011, n=139, p=.893 \)) or total scores of the MNESEOT2 (\( r=-.014, n=139, p=.868 \)). As previously reported, there were also no significant differences between gender and MNESEOT/MNESEOT2 total scores.

_Specialty areas._ As also previously mentioned, the researcher was unable to correlate nurse educator specialty areas to total MNESEOT scores.
Appointment and institutional types. No significant differences were found between appointment types or institutions and MNESEOT or MNESEOT2 scores. Unfortunately, the small number of community college educators made analysis of the differences between type of institution and total MNESEOT/MNESEOT2 scores impossible. As reported under demographics, a chi-square goodness of fit confirmed a significant response rate difference between community college nurse educators and educators from four-year institutions. Possible reasons for this difference are discussed in chapter five.

In conclusion, the null is accepted for hypothesis 1b in the areas of age, gender, and appointment type. No conclusions can be drawn for specialty areas or institutional types due to the nature of the data collected.

Research Question 2

Research question number two explores the preparatory experiences of nurse educators for teaching courses online. The question states, “In what ways do experience with online teaching, professional development, and perceived support from faculty colleagues or instructional designers influence nurse faculty members’ reported self-efficacy for online teaching?” Descriptive statistics of participants’ responses are presented, followed by an exploration of the research question through hypotheses testing.

Descriptives of preparatory experiences. Participants were asked eight questions regarding possible preparatory experiences for online teaching. Seven of the preparatory experiences included: having a teaching degree, taking a course on teaching, taking a seminar on teaching, taking a course on online teaching, taking a seminar on online
teaching, meeting with a peer mentor on a regular basis during an online teaching experience, and meeting with an instructional support expert during an online teaching experience. Affirmative responses were automatically directed to additional questions asking the participants to rate their agreement that the experience prepared them in the skills needed for online teaching. A Likert-type scale was used with ratings of 1=strongly disagree; 2=slightly disagree; 3= neutral; 4= agree; and 5= strongly agree. Finally all participants were asked if they had ever been given release time to develop an online course and asked to rate on the same Likert-type scale their agreement that release time is necessary for online course development.

The majority of participants had taken either a course (52.9%) or seminar (60.7%) focusing on the skills, techniques, problems, and/or preparation for teaching. Many had also taken courses (42.9%) or seminars (59%) that focused on the skills, techniques, problems, and/or preparation for online teaching. Slightly over half of the participants (52.5%) had met with instructional support experts during an online teaching experience and only 33.8% had experiences using a peer mentor during an online teaching experience. Only 18% of participants had ever been given release time to develop an online course. Table 12 presents frequencies and percentages of reported preparatory experiences for teaching and online teaching.

Participants who had taught online indicated that the most valuable preparatory experience was meeting with an instructional support expert ($M=4.06, SD=.803$) followed by taking a course in online teaching ($M=3.8, SD=1.047$). All participants were asked to rate their agreement on the need for release time to develop online courses. An independent-samples t-test was conducted to compare the agreement scores for
Table 12

*Preparatory Experiences for Teaching and Online Teaching (N=140)*

<table>
<thead>
<tr>
<th>Type of Experience</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree in teaching</td>
<td>31 (22.1%)</td>
<td>109 (77.9%)</td>
</tr>
<tr>
<td>Course in Teaching</td>
<td>74 (52.9%)</td>
<td>35 (25%)</td>
</tr>
<tr>
<td>Seminars in Teaching</td>
<td>85 (60.7%)</td>
<td>24 (17.1%)</td>
</tr>
<tr>
<td>Course in Online Teaching</td>
<td>60 (42.9%)</td>
<td>80 (57.2%)</td>
</tr>
<tr>
<td>Seminars in Online Teaching</td>
<td>82 (59%)</td>
<td>56 (40.3%)</td>
</tr>
<tr>
<td>Meetings with Mentor</td>
<td>47 (33.8%)</td>
<td>92 (66.2%)</td>
</tr>
<tr>
<td>Meetings with Expert</td>
<td>73 (52.5%)</td>
<td>66 (47.5%)</td>
</tr>
<tr>
<td>Release Time</td>
<td>25 (18%)</td>
<td>114 (82%)</td>
</tr>
</tbody>
</table>

*Note: (%) = Valid percentage rates*

participants who had been given release time to develop a course and participants who had never been given release time to develop a course. There was no significant difference in agreement scores for having been given release time ($M=4.6$, $SD=.764$) and having never been given release time [$M=4.38$, $SD=.771$; $t(138)=1.29$, $p=.199$]. Therefore both groups appear to agree that release time is needed to develop online courses.

Agreement levels regarding the adequacy of preparatory experiences are found in Table 13.

Table 13

*Agreement Levels Regarding the Adequacy of Preparatory Experiences*

<table>
<thead>
<tr>
<th>Preparatory Experience</th>
<th>$N$</th>
<th>Range</th>
<th>$M$</th>
<th>$SD$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online Courses</td>
<td>59</td>
<td>1-5</td>
<td>3.8</td>
<td>1.047</td>
</tr>
<tr>
<td>Online Seminars</td>
<td>82</td>
<td>1-5</td>
<td>3.71</td>
<td>.896</td>
</tr>
<tr>
<td>Mentors</td>
<td>45</td>
<td>2-5</td>
<td>3.78</td>
<td>.735</td>
</tr>
<tr>
<td>Experts</td>
<td>72</td>
<td>2-5</td>
<td>4.06</td>
<td>.803</td>
</tr>
<tr>
<td>Release Time Needed</td>
<td>138</td>
<td>2-5</td>
<td>4.42</td>
<td>.772</td>
</tr>
</tbody>
</table>

*Note: Results based on Likert-type scale with ratings from 1=strongly disagree to 5= strongly agree. Mentors= formal meetings with a faculty person (mentor or peer support person); Experts= formal meetings with an instructional support expert.*
Hypothesis 2a. Nurse faculty who have participated in formal educational experiences focusing on skills, techniques, problems, and/or preparation for teaching in general will have significantly higher total mean scores on the MNESEOT/MNESEOT2. There were no significant differences between total scores of the MNESEOT and MNESEOT2 compared to the variables of having an educational degree and taking seminars in teaching. This is presented in Table 14, “Formal Educational Experiences for Teaching and Online Teaching Efficacy Scores (MNESEOT/MNESEOT2)” which presents MNESEOT data in the upper half and MNESEOT2 data in the lower half of table. Using one-tailed significance, nurse educators who had not taken courses in teaching \( (M=25.58, SD=4.743) \) had significantly lower scores than nurse educators who had taken courses in teaching \( [M=27.41, SD=4.9; t(107)=1.849; p=.0335] \). However, the magnitude of the differences in the means was very small (eta squared=.031). Therefore, research hypothesis 2a is rejected.

Hypothesis 2b. Nurse faculty who have participated in formal educational experiences focusing on the skills needed for online teaching will have significantly higher total mean scores on the MNESEOT/MNESEOT2. Furthermore, there will be a positive correlation between MNESEOT/MNESEOT2 scores and reported levels of satisfaction for these formal educational experiences.

Based on the data in Table 15, nurse educators who had taken courses or seminars on online teaching had significantly higher MNESEOT and MNESEOT2 scores. The magnitude of the differences in the means for taking courses was moderate to large (MNESEOT eta squared=.13; MNESEOT2 eta squared=.14). The magnitude in the
differences in the means for taking seminars was slightly smaller, but still moderate (MNESEOT \text{ eta squared}=.06; MNESEOT2 \text{ eta squared}=.07).

Table 14

Formal Educational Experiences for Teaching and Online Teaching Efficacy Scores (MNESEOT/MNESEOT2)

<table>
<thead>
<tr>
<th>Variables</th>
<th>( M )</th>
<th>( SD )</th>
<th>( t )</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experienced (Not)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education degree</td>
<td>( 26.83_a )</td>
<td>( 5.629 (4.743) )</td>
<td>.009</td>
<td>.993</td>
</tr>
<tr>
<td>Courses in teaching</td>
<td>( 27.41_c )</td>
<td>( 4.882 (4.743) )</td>
<td>1.849</td>
<td>.067†</td>
</tr>
<tr>
<td>Seminars in teaching</td>
<td>( 26.91_e )</td>
<td>( 5.142 (3.959) )</td>
<td>.374</td>
<td>.70</td>
</tr>
<tr>
<td>MNESEOT2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experienced/(Not)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education degree</td>
<td>( 13.83_a )</td>
<td>( 2.42 (2.51) )</td>
<td>.041</td>
<td>.967</td>
</tr>
<tr>
<td>Courses in teaching</td>
<td>( 14.08_a )</td>
<td>( 2.52 (2.43) )</td>
<td>1.634</td>
<td>.105</td>
</tr>
<tr>
<td>Seminars in teaching</td>
<td>( 13.84_a )</td>
<td>( 2.63 (2.07) )</td>
<td>.166</td>
<td>.869</td>
</tr>
</tbody>
</table>

Note: \( M \)= mean; \( SD \)=standard deviation; MNESEOT= Michigan Nurse Educators Sense of Online Teaching Efficacy Scale; MNESEOT2= Michigan Nurse Educators Sense of Online Teaching Efficacy Scale with new subscales; Experienced= Data from participants who responded affirmatively that they had the experience; (Not)= Data from participants who responded “no” to having had the experience.

Table reports Significance (2-tailed).
Significance (1-tailed) \( ^{†}p<.05 \).

Levels of satisfaction for this study were measured according to participants’ agreement that the preparatory experience prepared them in the skills needed for online teaching. As reported in Table 16, correlations between satisfaction with preparatory courses for online teaching and preparatory seminars for online teaching were positive and significant. The direction of the two correlates was positive in which the higher the satisfaction with courses and seminars, the higher the overall MNESEOT/MNESEOT2 scores. The strength of the two correlates was highest for seminars using the MNESEOT
Table 15

Formal Educational Experiences for Online Teaching and Online Teaching Efficacy Scores (MNESEOT/MNESEOT2)

<table>
<thead>
<tr>
<th>Variables</th>
<th>M</th>
<th>SD</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>MNESEOT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experienced (Not)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Courses online teaching</td>
<td>28.98</td>
<td>3.418</td>
<td>4.596</td>
<td>.000**</td>
</tr>
<tr>
<td>Seminars online teaching</td>
<td>27.89</td>
<td>4.033</td>
<td>3.098</td>
<td>.002**</td>
</tr>
<tr>
<td>MNESEOT2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experienced (Not)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Courses online teaching</td>
<td>14.87</td>
<td>1.74</td>
<td>4.645</td>
<td>.000**</td>
</tr>
<tr>
<td>Seminars online teaching</td>
<td>14.35</td>
<td>2.09</td>
<td>3.151</td>
<td>.002**</td>
</tr>
</tbody>
</table>

Note: M= mean; SD= standard deviation; MNESEOT= Michigan Nurse Educators Sense of Online Teaching Efficacy Scale; MNESEOT2= Michigan Nurse Educators Sense of Online Teaching Efficacy Scale with new subscales; Experienced= Data from participants who responded affirmatively that they had the experience; (Not)= Data from participants who responded “no” to having had the experience.

Table reports Significance (2-tailed) *p<.05. **p<.01.

scale ($r=.469, p<0.01$) and highest for courses using the MNESEOT2 scale ($r=.459, p<0.01$).

Table 16

Pearson Correlational Matrix Between MNESEOT/MNESEOT2 Scores and Satisfaction with Preparatory Courses and/or Seminars for Online Teaching

<table>
<thead>
<tr>
<th>Measures</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. MNESEOT&lt;sub&gt;a&lt;/sub&gt;</td>
<td>.974**</td>
<td>.425**</td>
<td>.469**</td>
<td></td>
</tr>
<tr>
<td>2. MNESEOT2&lt;sub&gt;a&lt;/sub&gt;</td>
<td></td>
<td>.459**</td>
<td>.457**</td>
<td></td>
</tr>
<tr>
<td>3. Courses&lt;sub&gt;b&lt;/sub&gt;</td>
<td></td>
<td></td>
<td>.705**</td>
<td></td>
</tr>
<tr>
<td>4. Seminars&lt;sub&gt;c&lt;/sub&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: MNESEOT= Michigan Nurse Educators Sense of Online Teaching Efficacy Scale; MNESEOT2= Michigan Nurse Educators Sense of Online Teaching Efficacy Scale with new subscales; Courses=agreement levels that courses prepared nurse educators for online teaching; Seminars=agreement levels that seminars prepared nurse educators for online teaching.

*n=140. **n=59. 'n=82.

Significance 1-tailed *p<.05. **p<.01.
The results support the acceptance of the research hypothesis 2b. The data confirmed that participation in formal courses or seminars specific to online teaching related to increased self-efficacy scores for online teaching. The data also confirms that increased satisfaction levels, as measured by agreement that the courses or seminars provided the necessary skills needed for online teaching, are correlated to increased self-efficacy scores for online teaching.

_Hypothesis 2c. Nurse faculty who report experiences of colleague and/or instructional designer support contacts will have significantly higher total mean scores on the MNESEOT/MNESEOT2. Furthermore, there will be a positive relationship between MNESEOT/MNESEOT2 scores and reported levels of satisfaction for these colleague and/or instructional designer support contacts._

As reported in Table 17, nurse educators who experienced peer mentoring or instructional support did have significantly higher MNESEOT/MNESEOT2 scores than nurse educators who had not experienced such support. The strength of the magnitude in the differences of the means for instructional expert support (MNESEOT eta squared=0.17; MNESEOT2 eta squared=0.19) was larger than the moderate to large effect in the differences of the means for peer mentor support (MNESEOT eta squared=.09; MNESEOT2 eta squared=0.16).

Higher levels of satisfaction with peer mentored support and/or instructional expert support did significantly correlate with MNESEOT/MNESEOT2 total scores (see Table 18). The direction of the two correlates was positive in which the higher the satisfaction with peer mentored support and/or instructional support, the higher the overall MNESEOT/MNESEOT2 scores. The strength of the two correlates was highest at a
Table 17

**Formal Experiences with Faculty Peer Mentors and/or Experts in Instructional Design and Online Teaching Efficacy Scores (MNESEOT/MNESEOT2)**

<table>
<thead>
<tr>
<th>Variables</th>
<th>M</th>
<th>SD</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>MNESEOT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experienced (Not)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peer mentor</td>
<td>29.03</td>
<td>25.68</td>
<td>3.46</td>
<td>3.870</td>
</tr>
<tr>
<td>Expert</td>
<td>28.82</td>
<td>24.59</td>
<td>3.72</td>
<td>5.389</td>
</tr>
<tr>
<td>MNESEOT2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experienced (Not)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peer mentor</td>
<td>15.04</td>
<td>13.18</td>
<td>1.69</td>
<td>4.441</td>
</tr>
<tr>
<td>Expert</td>
<td>14.85</td>
<td>12.66</td>
<td>1.87</td>
<td>5.763</td>
</tr>
</tbody>
</table>

**Note:** M= mean; SD= standard deviation; MNESEOT= Michigan Nurse Educators Sense of Online Teaching Efficacy Scale; MNESEOT2= Michigan Nurse Educators Sense of Online Teaching Efficacy Scale with new subscales; Experienced= Data from participants who responded affirmatively that they had the experience; (Not)= Data from participants who responded “no” to having had the experience. Peer mentor= meetings with faculty peer or support mentor; Expert= meetings with instructional design expert.

Table 18

**Pearson Correlational Matrix Between MNESEOT/MNESEOT2 Scores and Satisfaction with Peer Support Meetings and/or Instructional Expert Support Meetings**

<table>
<thead>
<tr>
<th>Measures</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. MNESEOT\textsuperscript{a}</td>
<td></td>
<td>.974**</td>
<td>.309*</td>
<td>.315**</td>
</tr>
<tr>
<td>2. MNESEOT2\textsuperscript{a}</td>
<td>.283*</td>
<td></td>
<td>.342**</td>
<td></td>
</tr>
<tr>
<td>3. Mentors\textsuperscript{b}</td>
<td></td>
<td></td>
<td>.326*</td>
<td></td>
</tr>
<tr>
<td>4. Experts\textsuperscript{c}</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:** MNESEOT= Michigan Nurse Educators Sense of Online Teaching Efficacy Scale; MNESEOT2= Michigan Nurse Educators Sense of Online Teaching Efficacy Scale with new subscales; mentors=agreement levels that peer mentors prepared nurse educators for online teaching; experts=agreement levels that experts prepared nurse educators for online teaching.

The results support the acceptance of hypothesis 2c confirming that preparatory experiences involving instructional designer support and/or peer mentoring relate to
increased self-efficacy scores for online teaching. Furthermore, increased levels of satisfaction, as measured by agreement that contact with an instructional designer or peer mentor did provide the necessary skills for online teaching, are positively correlated to higher self-efficacy scores for online teaching.

Subjective Comments

Although beyond the scope of this study to explore qualitative data, respondents were given the opportunity to type in any comments related to their experiences or perceptions of teaching nursing courses online. A summary of these comments is located in Appendix J.

Summary

This study revealed that nurse educators in Michigan have “some” to “quite a bit” of self-efficacy for online teaching. The sample was an experienced group of nurse educators with a mean of 14.35 years of teaching experience. Most of these educators (75%) have been teaching portions of courses online with almost half (47.1%) having taught at least one course fully online. The use of the MNESEOT instrument with four components intended to measure self-efficacy for online teaching proved reliable for this group, however similar results from the MNESEOT2 instrument suggests that a two factor component is also appropriate for studying online teaching in a higher education environment.

There is an apparent lack of differences among self-efficacy levels for online teaching and the variables of age, sex, and appointment type. There was also no significant correlation between years of teaching experience and years of teaching lecture
experience to self-efficacy for online teaching scores. This result dovetailed a lack of
differences between preparation for teaching in general and MNESEOT scores.

In both research questions, significant differences indicated that there is a positive
relationship between the number of online teaching experiences and increased self-
efficacy levels for online teaching. Findings suggest that online teaching self-efficacy
scores rise after one to two teaching experiences and significantly rise after three teaching
experiences. Finally, levels of self-efficacy for online teaching did increase with
participation in courses or seminars in online teaching as well as positive preparatory
experiences with instructional experts and peer mentors. These results will be discussed
in the next chapter.
CHAPTER 5
DISCUSSION

This study used the Michigan Nurse Educators Sense of Efficacy for Online Teaching (MNESEOT) scale to examine Michigan Nurse Educators’ self-efficacy for online teaching. This study also explored factors of preparatory experiences in facilitating online teaching efficacy levels. This concluding chapter discusses results in relation to prior research and offers implications for current practice. Limitations of the study are addressed and suggested areas for future research are recommended.

Faculty Demographics and Response Rates

Demographics for this sample were compared with data published from a 2006 nurse educator faculty census survey completed by Kovner et al. (2006). Participants in this study of Michigan nurse educators were comparable in gender, age, and rank to nurse educators in the Midwest. Proportionally, a higher percentage of doctorally prepared nurse educators (40.7%) participated in this study than the 27.8% of full-time faculty identified in the Midwest as having a doctorate. A significantly lower percentage of community nurse educators participated than nurse educators from four-year institutions. In addition, although a 43% response rate is considered good for web survey research, the sample size of 140 yielded an 89% confidence interval around the data. Therefore, generalizing findings beyond Michigan nurse faculty teaching in four-year institutions should be attempted with caution.

The MNESEOT Instrument

As there was no scale available to report the perceived confidence in online teaching skills, an established scale the “Teachers’ Sense of Efficacy Scale” was
modified for this study to reflect a higher education environment and effective online teaching practices. The internal consistency of the instrument was established with a resulting reliability co-efficient of .926. The co-efficients of the four subscales ranged from .857 to .942. Subsequent principle components analysis revealed that one factor in the 32-item instrument accounted for 57.2% of the variance. Two components were revealed as distinct and labeled efficacy for online teaching (co-efficient=.974) and efficacy for using a computer to teach online (co-efficient=.863). High intercorrelations between ten items suggest that a shorter form might be viable for further research.

For the purposes of this study, research questions were answered using both the original four subscales (MNESEOT) and the two subscales (MNESEOT2) revealed during principle components analysis. Overall, there was little difference noted between the two measuring instruments although the use of the MNESEOT2 revealed slightly stronger effect sizes for some tests. This finding suggests a shorter version of the MNESEOT using two subscales rather than four subscales might be appropriate for measuring online teaching efficacy.

Face validity for the instrument was sought from three educators experienced with online teaching as well as 15 nurse educators with a variety of online teaching experience during pilot testing. Construct validity was also supported when results of this survey often concurred with previous research findings reviewed in the literature. This is discussed under confidence levels for online teaching and preparatory experiences for online teaching.

Confidence Levels for Online Teaching

Research Question 1 asked how confident nurse educators were in preparing,
conducting, and evaluating online courses. Participants in this study reported relatively strong levels of self-efficacy for online teaching. Overall, they reported being able to do “some” to “quite a bit” in preparing, conducting, and evaluating online courses. As online teaching is a relatively new phenomenon, these levels might seem surprising. As a comparison, Nugent et al. (1999) studied new nurse educators who reported a strong sense of teacher self-efficacy for face-to-face teaching. This might point to the possibility that the general training process for becoming a nurse, with an emphasis on patient teaching and learning, facilitates a strong base of self-efficacy regardless of the medium. Bandura (1977) points out that some mastery experiences can instill a generalized sense of efficacy that can translate beyond a particular behavioral option. Along similar lines, this group reported experience in a diverse variety of specialty areas with many educators reporting specialization in several categories. This might suggest that nurse educators have a baseline sense of efficacy for participating in new experiences.

Research Question 1 also asked if there was a difference in online teaching efficacy in relation to eight different variables that included: (1) age, (2) gender, (3) appointment type, (4) type of institution, (5) specialty area, (6) years of teaching nursing experience, (7) years of teaching lecture experience, and (8) numbers of online teaching experiences. Within this question, hypothesis 1a predicted a positive relationship between years of teaching experience and the mean scores of the subscales of the MNESEOT/MNESEOT2 as well as the total score of the MNESEOT/MNESEOT2. This hypothesis was rejected for general teaching experiences, but accepted for teaching experiences specific to online teaching. Hypothesis 1b predicted that the variables of age, gender, appointment type, specialty areas, and type of institution would have no effect on MNESEOT/MNESEOT2
scores. This hypothesis was accepted for the variables of age, gender, and appointment type. A discussion of the hypotheses testing follows.

Discussion of Results of Hypothesis 1a

Although participants in this sample were seasoned nurse educators with an average of 14 years of general teaching experience, there was no correlation between this experience and online teaching efficacy. This might seem to contradict literature reporting previous teaching experiences as explaining a significant amount of variance in teaching efficacy levels (Nugent et al., 1999; Prieto & Altmaier, 1994). However, this study did find a medium to large significant effect between teaching an entire online course and online teaching efficacy levels. So this dichotomy might be a reflection of the unique andragogy of online teaching as compared to face-to-face teaching (Johnson, 2008; Palloff & Pratt, 2003; Weigel, 2002) and the concept that self-efficacy is usually task specific (Bandura, 1977). This might also be reflected in the fact that the strongest correlations were between MNESEOT scores and the subscales of student engagement and computer skills. Online teaching does require different skills to create student engagement and a certain comfort level with computer skills.

Interestingly, in this study, 47% of participants reported that they had taught at least one entire online course and 75% reporting experience teaching portions of courses online. Although there was a medium strength correlation between teaching an entire online course and online teaching efficacy levels, experience teaching portions of a course revealed only a small correlation. With the majority of participants reporting "some" to "quite a bit" of online teaching efficacy, it might be surprising that more did not have experience teaching an entire online course. Once again, it would be interesting
to explore whether or not the basic training involved in becoming a nurse somehow raises
general self-efficacy levels which in turn increases online teaching efficacy levels.

However, Bandura (1977) also points out that although efficacy beliefs influence
intentional behaviors, they are not intentions. So, even though nurse educators seem to
have “some” to “quite a bit” of online teaching efficacy, this does not mean they will
participate in teaching an entire online course. A reexamination of “The cyclical nature of
teacher efficacy” as presented in Figure 1 (Tschannen-Moran et al., 1998) reinforces that
teacher efficacy is a product not only of a sense of personal teaching competence, but
also of the analysis of the teaching task at hand. During the analysis of the teaching task,
nurse educators must also explore the cost versus benefit of taking on the assignment of
teaching an entire online course.

In trying to understand the weaker correlation between teaching portions of a
course online and online teaching efficacy levels, it is important to point out that a
limitation of this study was the failure to adequately define what constituted teaching a
portion of an online course. Due to this, it is possible that educators who simply use web-
based environments to post materials or provide communication boards might identify
themselves as having taught a portion of a course online. As these types of activities
might not provide the level of mastery experience required to significantly raise online
teaching efficacy levels; this might explain the weaker correlation between teaching
portions of a course online and online teaching efficacy levels.

This study revealed a significant correlation between number of online teaching
experiences and self-efficacy for online teaching. Tschannen-Moran et al. (1998) point
out that mastery is the most powerful influence over self-efficacy. Tollerud (1990) and
Tschannen-Moran et al. (1998) report that there is an initial decline in teaching efficacy levels with new experiences followed by a significant rise in teaching efficacy levels after three teaching experiences. Results from this study replicated this for an online environment with a significant rise in online teaching efficacy levels after teaching three entire online courses. However, there was no initial decline with online teaching efficacy levels, which rose, albeit non-significantly, between the first and second entire online teaching course experience.

A possibility for the lack of score decline might be that experienced teachers are not as susceptible to reality shock and are more resilient against potential difficulties in new teaching situations. However, the lack of correlation between years of teaching nursing and lecture courses to online teaching efficacy scores seems to belie that rationale. Certainly, another possibility is that for online teaching, completing the first online teaching course experience is an essential hurdle for establishing online teaching efficacy. Thereafter, online teaching efficacy levels might peak and level out after the third online teaching experience. Findings from this study suggest that administrators interested in increasing the online teaching efficacy of their faculty need to encourage and support online teaching efforts especially through the third online teaching course experience.

Discussion of Results of Hypothesis 1b

Exploration of the variables of gender, age, appointment type, and rank failed to yield any significant impact differences with online teaching efficacy levels. Although expected, this result is interesting in confirming that gender and age do not seem to affect perceived abilities for online teaching. This also appears to connect with Kim and Bonks'
(2006) report that a greater number of women appear to be teaching online in contrast to earlier in the millennium when male full professors seemed to dominate online teaching.

The inability to answer hypothesis 1b for the variable of specialty area is another limitation in this study. Nurse educators with a wide-variety of specialty areas report teaching online courses. However, this study could not compare nurse educators by specialty areas to levels of online teaching efficacy. In addition, this study was unable to compare nurse educators by institutional type.

A poor response rate from community college nurse educators prevented the comparison of two groups of nurse educators. According to Seaman and Allen (2006), one-half of all online students are taking courses at two-year colleges. In this study, nurse educators from community colleges had lower online teaching efficacy scores than nurse educators from four-year institutions. However, the effect size was small and severely limited by the number of participating community college nurse educators. This lack of participation may have resulted from a difference in contact procedures.

Community college administrators required that follow-up surveys be forwarded through their offices whereas four-year institutions requested follow-up surveys be mailed directly to faculty members. Other possible reasons for poor response rates might be found in the composition and focus of faculty working for community colleges. Schools of Nursing in these environments have fewer lead faculties and depend on adjunct faculty to teach in the clinical setting. Often these adjunct faculty work for other agencies and might not be involved in the daily operations of the School. Finally, associate nursing programs focus on developing psychomotor skills which may preclude as much involvement in online teaching as their counterparts in other departments.
Continuing research is needed to understand the role of online teaching for nursing in different institutional settings.

Preparatory Experiences for Online Teaching

Research Question 2 was concerned with understanding the ways experience with online teaching, professional development, and perceived support from faculty colleagues or instructional designers influenced nurse faculty members' reported self-efficacy for online teaching. The results of this study indicated that the majority of participants had some preparation for teaching in general in the form of course work or seminars. In addition 59% had attended at least one seminar related to online teaching. Within the 47% of participants who had taught at least one entire course online, 52.5% had met with instructional experts and 33.8% had access to mentor or peer support meetings. Only 18% were given release time to develop an online course.

Discussion of Results of Hypothesis 2a

The first hypothesis for research question one postulated that nurse faculty reporting preparatory experiences focusing on skills, techniques, problems, and/or preparation for teaching in general would have significantly higher online teaching efficacy scores. Resulting data rejected this hypothesis for general teaching experience. There was only a small difference in means for general teaching preparatory experiences and online efficacy scores. This seems to replicate the aforementioned finding that general teaching experience did not correlate with online teaching efficacy.

Discussion of Results of Hypotheses 2b and 2c

The second hypothesis that nurse faculty reporting preparatory experiences focusing on skills, techniques, problems, and/or preparation specifically for online
teaching would have significantly higher online teaching efficacy scores was accepted. There were moderate to large effects for taking courses and seminars specific to online teaching with a positive correlation between levels of satisfaction to online teaching efficacy scores. The third hypothesis that nurse faculty reporting preparatory experiences using instructional designer support and/or colleague support would have significantly higher online teaching efficacy scores was also accepted. Large affect sizes were noted in the differences between instructional expert support and mentor/peer support with online teaching efficacy scores. Once again, there was a positive correlation between levels of satisfaction for instructional expert support and mentor/peer support to online teaching efficacy scores.

These results can be interpreted within the framework of Tschannen-Moran et al.'s (1998) cyclical nature of teacher efficacy (Figure 1). This model demonstrates how sources of efficacy information affect cognitive processing which in turn impacts assessment of personal teaching competence. An assessment of personal teaching competence is combined with an analysis of the teaching task at hand to create teacher efficacy. Teacher efficacy levels affect performance which in turn loops outcome feedback into new sources of efficacy information.

In this study, sources of efficacy included verbal persuasion in the form of course or seminar attendance, possible vicarious experiences in the form of working with a mentor or peer, and mastery experiences by participating in an online teaching experience with the help of an instructional design expert. Results demonstrate that all these sources contributed to positive efficacy for online teaching. The significance of the impact of perceived level of satisfaction with the preparatory experiences might be explained in the
step of cognitive processing that occurs during an assessment of personal teaching competence. A preparatory experience most likely helps nurse educators judge their capabilities and deficits for online teaching. A positive preparatory experience provides nurse educators with the necessary skills to overcome perceived deficits. Conversely, a negative experience would emphasize deficits and lower levels of efficacy for online teaching.

**Important External Factors**

As previously noted, assessment of personal teaching competence is only half of the teacher efficacy equation. Nurse educators also need to analyze the teaching task in terms of the external environment (Tschannen-Moran et al., 1998). Bandura (1977) pointed out that self-efficacy results not only from a judgment of capability, but also from appropriate incentives. Previous studies on online teaching reinforce the need for appropriate external support to facilitate online teaching (Maguire, 2005; Johnson, 2008; Kim & Bonk, 2006). This study revealed that the minority of nurse educators who received release time for developing online courses agreed with the rest of the participants that release time is needed to develop online courses. As this study suggests that many nurse educators already have a sense of personal online teaching competence, a significant barrier to online course participation may lie in external factors during the analysis of a teaching task for outcomes (Tschannen-Moran et al., 1998). Nurse administrators interested in growing online courses in their programs need to seriously consider offering release time as well as access to preparatory experiences.

**Limitations**

Limitations to this study include respondent bias, lack of generalizability, and the
weaknesses inherent to a descriptive study design. Four important limitations include:

1. Respondent bias due to personal preference or comfort-level with a web-based survey is an important limitation in this study. Respondents familiar with online web surveys could have been more motivated than nonrespondents as a result of the incentive (drawing for $50.00 gift certificate).

2. As the MNESEOT is a self-report instrument, data is vulnerable to over-rater or under-rater bias.

3. All participants were from Michigan accredited, public universities and results can not be generalized to Michigan private schools or universities or nursing schools outside of the State of Michigan which may differ in unexpected ways. In addition, low response rates from community colleges limits generalizability to those settings.

4. This study was only able to describe correlational relationships between variables and did not identify cause and effect relationships between research variables. A cross-sectional self-report design is less rigorous than an experimental approach due to the limitation of control over independent variables.

Future Research

As an exploratory study, this research plays a part in laying the groundwork for more experimental designs. The first recommendation for future research is the use of the MNESEOT in additional studies to provide new information about the psychometric properties of the scale. For example, construct validity could be explored by comparing new nurse educators with experienced online nurse educators. Repeating this study with a larger sample of different nurse educators is also recommended. A longitudinal study comparing online teaching efficacy levels with online teaching participation rates would
also be beneficial. With the ongoing evolution of online teaching methods, a test of content validity through interrater agreement indexes is recommended to ensure all appropriate sample items for the construct of online teaching are being measured.

The use of the MNESEOT instrument could be helpful in identifying nurse educators needing additional support in transitioning to online teaching. Individuals with low self-efficacy have more difficulty overcoming obstacles (Bandura, 1977). Encountering a negative first time online teaching experience could potentially impact any future involvement in online teaching. A study comparing nurse educators with low baseline online teaching efficacy to nurse educators with high levels of online teaching efficacy and perseverance in online teaching might reveal data to support nurse administrators in allocating more resources to online teaching preparatory experiences.

Another area for further study is the exploration of the concept of collective efficacy in nursing schools. Understanding the role of institutional climate might reveal relationships between levels of individual online teaching efficacy and collective efficacy to participation rates in online teaching within a school. Nurse educators with high online teaching efficacy may choose not to participate in online teaching for intrinsic reasons. Some subjective comments elicited in this study reflect a personal preference for face-to-face interaction or a belief that learning outcomes are not as beneficial as face-to-face learning (Appendix I). These beliefs might permeate an entire department. Nurse administrators hoping to grow online courses within their programs might benefit from understanding whether teaching efficacy is more related to analysis of teaching task (extrinsic factors) or assessment of personal teaching competence (intrinsic factors) in their schools.
Finally, there is a lack of research exploring the relationship of online teaching efficacy with outcomes. An experimental design that administers the instrument pre-test followed by an intervention or experience and post-test might help instructional experts to design more satisfactory preparatory experiences. In addition, exploring whether or not high levels of perceived online teaching efficacy create more effective teachers in an online environment could be measured through outcomes such as grades and student satisfaction levels.

Kim and Bonk (2006) reported that online educators often continue to focus on content-driven curriculum rather than basing courses on collaborative efforts and building distributed intelligence. Although the link between teaching efficacy and effective teaching practices has been established in the K-12 setting (Tschannen-Moran et al., 1998), there is a lack of information regarding the relationship between online teaching efficacy and effective online teaching practices. Exploration of the different course formats that teachers with differing levels of online teaching efficacy adapt with subsequent measured outcomes could yield data to improve online teaching environments.

Conclusions

This study highlighted the relatively strong online teaching efficacy beliefs of nurse educators in Michigan. Nurse educators with high efficacy beliefs value instructional expert support, peer/mentor support, and preparatory courses and seminars for online teaching. Nurse administrators interested in growing online offerings in their schools need to plan and establish external support systems that incorporate access to instructional experts, peer/mentors, and preparatory educational opportunities. This type
of support is particularly important for nurse faculty through their third online teaching experience. Finally, nurse administrators offering release time for online course development might find an increase in faculty participation and satisfaction with online teaching.
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Appendix A

Teachers' Sense of Efficacy Teaching Scale
Teachers' Sense of Efficacy Teaching Scale (Tschannen-Moran and Hoy; 2001)

Directions: This questionnaire is designed to help us gain a better understanding of the kinds of things that create difficulties for teachers in their school activities. Please indicate your opinion about each of the statements below. Your answers are confidential.

**Educator Beliefs**

**How much can you do?**

<table>
<thead>
<tr>
<th>Nothing</th>
<th>Very little</th>
<th>Some Influence</th>
<th>Quit a Bit</th>
<th>A Great Deal</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
</tbody>
</table>

1. How much can you do to get through to the most difficult students?
2. How much can you do to help your students think critically?
3. How much can you do to control disruptive behavior in the classroom?
4. How much can you do to motivate students who show low interest in school work?
5. To what extent can you make your expectations clear about student behavior?
6. How much can you do to get students to believe that they can do well in school work?
7. How well can you respond to difficult questions from your students?
8. How well can you establish routines to keep activities running smoothly?
9. How much can you do to help your student’s value learning?
10. How much can you gauge student comprehension of what you have taught?
11. To what extent can you craft good questions for your students?
12. How much can you do to foster student creativity?
13. How much can you do to get children to follow classroom rules?
14. How much can you do to improve the understanding of a student who is failing?
15. How much can you do to calm a student who is disruptive or noisy?
16. How well can you establish a classroom management system with each group of students?
17. How much can you do to adjust your lessons to the proper level for individual students?
18. How much can you use a variety of assessment strategies
19. How well can you keep a few problem students from ruining an entire lesson?

20. To what extent can you provide an alternative explanation or example when students are confused?

21. How well can you respond to defiant students?

22. How much can you assist families in helping their children do well in school?

23. How well can you implement alternative strategies in your classroom?

24. How well can you provide appropriate challenges for very capable students?

**Directions for Scoring the Teachers’ Sense of Efficacy Scale**

**Developers:** Megan Tschannen-Moran, College of William and Mary
Anita Woolfolk Hoy, the Ohio State University.

**Factor Analysis**
It is important to conduct a factor analysis to determine how your participants respond to the questions. We have consistently found three moderately correlated factors: Efficacy in Student Engagement, Efficacy in Instructional Practices, and Efficacy in Classroom Management, but at times the make up of the scales varies slightly.

**Subscale Scores**
To determine the Efficacy in Student Engagement, Efficacy in Instructional Practices, and Efficacy in Classroom Management subscale scores, we compute unweighted means of the items that load on each factor. Generally these groupings are:

**Long Form**
- **Efficacy in Student Engagement:** Items 1, 2, 4, 6, 9, 12, 14, 22
- **Efficacy in Instructional Strategies:** Items 7, 10, 11, 17, 18, 20, 23, 24
- **Efficacy in Classroom Management:** Items 3, 5, 8, 13, 15, 16, 19, 21
Appendix B

Permission to Replicate Model
Dear Ms. Robinia,

Thank you for your request. Please consider this written permission to use the material detailed below in your dissertation. Proper attribution to the original source should be included. This permission does not include any 3rd party material found within our work. Please contact us for any future usage or publication (excluding ProQuest/UMI) of your dissertation.

Best,

Adele

----Original Message-----
From: Kristi Robinia [mailto:krobinia@nmu.edu]
Sent: Thursday, May 22, 2008 8:28 AM
To: permissions (US)
Subject: Use of Figure for Dissertation

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I am completing a doctoral dissertation at Western Michigan University entitled, "The Effect of Online Teaching Self-Efficacy on Nurse Faculty Teaching in Public, Accredited Nursing Programs in the State of Michigan".

I would like your permission to reprint in my dissertation a replication of the FIGURE 2 entitled, "The cyclical nature of teacher efficacy" from the following:


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Appendix C

Human Subjects Institutional Review Approval
Date: February 4, 2008

To: Andrea Beach, Principal Investigator
Kristi Robinia, Student Investigator for dissertation

From: Amy Naugle, Ph.D., Chair

Re: HSIRB Project Number: 08-01-30

This letter will serve as confirmation that your research project entitled “The Effect of Online Teaching Self-Efficacy on Nurse Faculty Teaching in Public, Accredited Nursing Programs in the State of Michigan” has been approved under the exempt category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note that you may only conduct this research exactly in the form it was approved. You must seek specific board approval for any changes in this project. You must also seek reapproval if the project extends beyond the termination date noted below. In addition if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: February 4, 2009
Appendix D

Initial Email of Introduction to Deans and/or Department Heads
Subject Line: Doctoral Student Request
Dear ___Appropriate Dean or Director of Nursing____________:

I am a nurse educator at Northern Michigan University completing doctoral studies at Western Michigan University. I plan to launch a web-based survey study this semester designed to examine variables that affect MI nurse faculty self-efficacy levels for online teaching and participation or lack of participation in online teaching. My population of interest consists of nurse educators teaching lecture courses at public, accredited Michigan Schools of Nursing during the current semester. I have discovered that MI nursing schools have different policies and procedures for processing requests to survey their faculty. I am writing to ask if you or a designee would be willing to answer two main questions.

Question #1: How many nurse educators do you have teaching lecture courses during this semester? (All types of lecture, all appointment types, and all levels of nursing from undergraduate through graduate).

Rationale: I am trying to determine the “N” of the population under study in order to determine adequate response rates.

Question #2: What is your policy for distributing electronic survey’s to faculty member email addresses?

Rationale: Many schools have told me to send the final survey with a generic introduction and criteria for participation to a designated administrator. With that information would be specific contact information for the Primary Investigator. The administrator would then forward the web link to faculty who can self select their participation based on their willingness and their meeting the criteria. The individual faculty member can choose whether or not to contact me regarding their participation. The web survey would be anonymous unless the subject elects for confidentiality. (So that I may send them results). Other schools might request that I contact their faculty individually through published web site email addresses. I am trying to determine the best way to recruit subjects for this study.

I sincerely appreciate your patience with this novice researcher and will be happy to answer any questions or provide any additional information you may need to consider this request.
Appendix E

Email Invitation to Administrators to Forward to Nursing Faculty
Dear Nurse Educator:

My name is Kristi Robinia, Associate Professor at Northern Michigan University and doctoral student at Western Michigan University. I am writing to invite you to take part in a dissertation study to learn more about the possible relationships between Michigan nurse educator self-efficacy beliefs, work experiences, formal training and participation in online teaching. I have asked Nursing administrators in accredited, public schools of nursing in Michigan to forward this invitation to any faculty member teaching a lecture course during winter/spring 2008. This study seeks perspectives from nurse faculty with little or no experience with online teaching as well as nurse faculty experienced with online teaching.

Recognizing that your time is valuable, if you choose to participate, you will be eligible for a drawing for one of six gifts valued at $50.00. There are 6 gifts available and 6 winners possible. If you are interested in the drawing or in receiving a copy of the summarized results, there will be an opportunity to submit your name and email address indicating your interest. If you do not feel comfortable supplying your name and email in this manner but would still like to be entered in the drawing and/or in a copy of the results, you may leave these fields blank and email me directly at krobinia@nmu.edu. You may also elect to participate and remain completely anonymous by not supplying an email address.

If you agree to be in this study, you will be asked to complete a web-based survey that should take you approximately 10-15 minutes to complete. All of your replies are confidential and you may choose to exit the survey at any point. Thank you in advance for your assistance. If you have any questions, concerns, or wish to report a research-related problem, please contact me at 906-227-3007 or at krobinia@nmu.edu. You may also contact my dissertation chair, Dr. Andrea Beach at 906-269-387-1725 or andrea.beach@wmich.edu. To begin the survey, please click on this survey link:

Sincerely,

Kristi Robinia RNC, MSN
Appendix F

Follow-up Email Request to Community College Administrators
Dear Nurse Educator:

My name is Kristi Robinia, Associate Professor at Northern Michigan University and doctoral student at Western Michigan University. I wrote you two weeks ago with an invitation to take part in a dissertation study to learn more about the possible relationships between Michigan nurse educator self-efficacy beliefs, work experiences, formal training, and participation in online teaching. Thank you for your time and consideration if you have already responded to the invitation. In the event that you might have missed the initial email or perhaps were too busy at the time to respond, I have asked your nursing administrator to send this second invitation. This study seeks perspectives from nurse faculty who are currently teaching this semester and your input is important and valued.

Realizing that your time is at a premium, and if you choose to participate, you will be eligible for a drawing for one of six gifts valued at $50.00. There are 6 gifts available and 6 winners possible. If you are interested in the drawing or in receiving a copy of the summarized results, there will be an opportunity to submit your name and email address indicating your interest. If you do not feel comfortable supplying your name and email in this manner but would still like to be entered in the drawing and/or in a copy of the results, you may leave these fields blank and email me directly at krobinia@nmu.edu. You may also elect to participate and remain completely anonymous by not supplying an email address. If you agree to be in this study, you will be asked to complete a web-based survey that should take you approximately 10-15 minutes to complete. All of your replies are confidential and you may choose to exit the survey at any point.

Thank you in advance for your assistance. If you have any questions, concerns, or wish to report a research-related problem, please contact me at 906-227-3007 or at krobinia@nmu.edu. You may also contact my dissertation chair, Dr. Andrea Beach at 906-269-387-1725 or andrea.beach@wmich.edu.

To begin the survey, please click on this survey link:

Sincerely,

Kristi Robinia RNC, MSN
Appendix G

Follow-up Email Request to Nurse Educators at 4-year Institutions
Dear Nurse Educator:

My name is Kristi Robinia, Associate Professor at Northern Michigan University and doctoral student at Western Michigan University. I wrote you two weeks ago with an invitation to take part in a dissertation study to learn more about the possible relationships between Michigan nurse educator self-efficacy beliefs, work experiences, formal training, and participation in online teaching. Thank you for your time and consideration if you have already responded to the invitation. This second invitation is being sent in the event that you might have missed the initial email or perhaps were too busy at the time to respond. This study seeks perspectives from nurse faculty who are currently teaching this semester and your input is important and valued.

Realizing that your time is at a premium, and if you choose to participate, you will be eligible for a drawing for one of six gifts valued at $50.00. There are 6 gifts available and 6 winners possible. If you are interested in the drawing or in receiving a copy of the summarized results, there will be an opportunity to submit your name and email address indicating your interest. If you do not feel comfortable supplying your name and email in this manner but would still like to be entered in the drawing and/or in a copy of the results, you may leave these fields blank and email me directly at krobinia@nmu.edu. You may also elect to participate and remain completely anonymous by not supplying an email address. If you agree to be in this study, you will be asked to complete a web-based survey that should take you approximately 10-15 minutes to complete. All of your replies are confidential and you may choose to exit the survey at any point.

Thank you in advance for your assistance. If you have any questions, concerns, or wish to report a research-related problem, please contact me at 906-227-3007 or at krobinia@nmu.edu. You may also contact my dissertation chair, Dr. Andrea Beach at 906-269-387-1725 or andrea.beach@wmich.edu.

To begin the survey, please click on this survey link:

Sincerely,

Kristi Robinia RNC, MSN
Appendix H

Permission to Modify the Teachers' Sense of Efficacy Scale (TSES)
From: Anita Hoy [anitahoy@mac.com]
Sent: Sunday, October 28, 2007 8:41 PM
To: krobinia@nmu.edu
Subject: Re: PhD student request

You are welcome to modify the instrument for your use. You will need to check the factor structure and reliabilities of your adapted measure, but I assume that will be part of your study.

Best wishes. Please let me know what you find.

Anita

Anita Woolfolk Hoy, Professor
Educational Psychology & Philosophy
School of Educational Policy and Leadership
The Ohio State University
Columbus, OH 43210

phone: 614-488-5064
fax: 614-292-7900
e-mail anitahoy@mac.com

http://www.coe.ohio-state.edu/ahoy

On Oct 26, 2007, at 12:12 PM, Kristi Robinia wrote:

Dear Dr. Hoy:

I am writing for permission to modify the "Teachers' Sense of Efficacy Scale" for my dissertation study. I have worked at Northern Michigan University for over twelve years as a nurse educator and am finally completing my PhD in Educational Leadership from Western Michigan University. The proposal title for my dissertation study is, "The Effect of Online Teaching Self-Efficacy on Nurse Faculty Teaching in Public, Accredited Nursing Programs in the State of Michigan". After completing a thorough literature review, I am convinced that your scale can be appropriately modified for use in this research.

The modifications would include slight alteration in language for applicability to higher education environments and the specific context of online teaching. I also propose to add eight new items that seek to understand efficacy with computer usage. These questions are based on the theoretical work of Palloff & Pratt and Weigel and reflect published consensus on the purpose and characteristics of quality online teaching. The modified instrument would be piloted tested with three experienced faculty who teach online and then with a pilot test of nurse educators before distribution to nurse educators in the State of Michigan.
I realize that the Tschannen-Moran & Hoy (2001) article indicates that the instrument has no copyright restrictions for use in scholarly research, however I felt the proposed modifications required notification and opportunity for critical comment or opinion. The dissertation will fully credit your work and appropriately cite the original and modified "Teachers' Sense of Efficacy Scale". I would also be happy to send you and/or Dr. Tschannen-Moran the research results if you are interested. Thank you for your time and consideration,

Sincerely,

Kristi Robinia MSN, RNC
Program Coordinator, Practical Nursing
http://www.nmu.edu/nursing/
906-227-2484
krobinia@nmu.edu
Appendix I

The Michigan Nurse Educators Sense of Efficacy for Online Teaching Survey (MNESEOT)
Michigan Nurse Educators Sense of Efficacy for Online Teaching Survey
Western Michigan University, Department of Teaching, Learning, and Leadership
Principle Investigator: Dr. Andrea Beach
Student Investigator: Kristi Robinia
Title: The Effect of Online Teaching Self-Efficacy on Nurse Faculty Teaching in Public, Accredited Nursing Programs in the State of Michigan

Thank you for taking the time to participate in this survey. The purpose of this survey is to gain a better understanding of the current self-perceptions nurse educators hold regarding their abilities to successfully teach in online environments. Perceptions are sought from Michigan nurse educators with little or no online teaching experience as well as educators having some or extensive online teaching experience.

Once you click "Start Survey" below, you will be taken to the first page of the Questionnaire. The survey is composed of 51-58 question items depending on your responses and should take 10-15 minutes to complete. Your participation is voluntary and participants have the right to have the confidentiality of their responses protected. Your decision to participate or not participate in the study will have no impact on your relationship with your or any institution in any way. If you choose to participate, you may remain anonymous or have your identity remain confidential. Although I will be taking precautions, it is important to note that electronic communication may not be 100% secure. Your submission of responses by hitting the “submit” buttons in the survey indicates your consent to participate in this study.

For those of you interested in placing your name into a drawing for one of six $50.00 gift certificates and/or those of you interested in receiving a copy of the summarized results of this study, there will be an opportunity to submit your name and email address at the end of the survey. If you feel uncomfortable supplying your name and email in this survey, you can also email me directly at krobinia@nmu.edu to participate in the drawing and/or receive a summarized copy of the results. Your name and email address will be extracted from the data and kept in a separate confidential electronic file. After the drawing for gift certificates and distribution of summarized results, this confidential electronic file will be deleted. If you are not interested in the drawing or in the summarized results, you may also participate anonymously by not supplying your email address.

If you have questions or concerns you can contact the researcher, Kristi Robinia, at 906-226-3007 or at krobinia@nmu.edu. You may also contact the dissertation Chair, Dr. Andrea Beach at 269-387-1725 or andrea.beach@wmich.edu, the Human Subjects Institutional Review Board at Western Michigan University (269-387-8293) or the Vice President for Research at Western Michigan University (269-387-8298) if questions or problems arise during the course of the study. The Human Subjects Institutional Review Board has approved this consent document for use of one year. This was approved on February 4, 2008. Do not participate in the study after February 4, 2009.
Michigan Nurse Educators Sense of Efficacy for Online Teaching Scale

Revised from: Teachers’ Sense of Efficacy Teaching Scale (Tschannen-Moran and Hoy; 2001)

Directions: You are invited to participate in this study because the institution at which you are employed has you on record as teaching a theoretical course this winter/spring 2008 semester. You meet the parameters of the sample set for this study if you are indeed teaching a face-to-face and/or an online theory course. This questionnaire is designed to help us gain a better understanding of the current self-perceptions nurse educators hold regarding their abilities to successfully teach in online environments. Perceptions are sought from educators with little or no online teaching experience and educators having some or extensive online teaching experience. Please indicate your opinion about each of the statements below. Your answers are confidential.

Questions 1-32 are concerned with understanding how nurse educators judge their current capabilities for teaching online nursing lecture courses. Even if you have little or no experience with online teaching, please try to answer each question. A helpful prefix to each answer is, “I can do….”

1. How much can you do to help your students think critically in an online class?

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<tr>
<th>Nothing</th>
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2. How much can you do to get through to disengaged students in an online class? (e.g. passive learners who might lurk online, but fail to actively contribute to their own learning.)

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3. How much can you do to control disruptive behavior (e.g. disrespectful posting or failure to adhere to outline policies for posting) in an online environment?

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4. How much can you do to motivate students who show low interest in online work?

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</table>
5. To what extent can you make your expectations clear about student behavior in an online class?


6. How much can you do to get students to believe that they can do well in an online class?


7. How well can you respond to difficult questions from online students?


8. How well can you establish routines (e.g. facilitate or moderate student participation) in coursework to keep online activities running smoothly?


9. How much can you do to help online students’ value learning?


10. How much can you gauge student comprehension of what you have taught in an online course?


11. How well can you craft questions or assignments that require students to think by relating ideas to previous knowledge and experience?

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12. How much can you do to foster individual student creativity in an online course?

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13. How much can you do to get students to follow the established rules for assignments and deadlines during an online class?

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14. How much can you do to improve the understanding of a student who is failing in an online class?

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15. How much can you do to control students dominating online discussions?

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16. How well can you establish an online course (e.g. convey expectations; standards; course rules) with each group of students?

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17. How much can you do to adjust your online lessons for different learning styles?

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18. How much can you do to use a variety of assessment strategies for an online course?

Nothing Very Little Some Quite a Bit A Great Deal
1 2 3 4 5 6 7 8 9

19. How well can you develop an online course that facilitates student responsibility for online learning?

Nothing Very Little Some Quite a Bit A Great Deal
1 2 3 4 5 6 7 8 9

20. To what extent can you provide an alternative explanation or example when students in an online class seem to be confused?

Nothing Very Little Some Quite a Bit A Great Deal
1 2 3 4 5 6 7 8 9

21. How well can you respond to defiant students in an online setting?

Nothing Very Little Some Quite a Bit A Great Deal
1 2 3 4 5 6 7 8 9

22. How well can you structure an online course that facilitates collaborative learning?

Nothing Very Little Some Quite a Bit A Great Deal
1 2 3 4 5 6 7 8 9

23. How well can you structure an online course that provides good learning experiences for students?

Nothing Very Little Some Quite a Bit A Great Deal
1 2 3 4 5 6 7 8 9
24. How well can you provide appropriate challenges for very capable students in an online environment?

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25. To what extent can you use knowledge of copyright law to provide resources for online students?

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26. How well can you navigate the technical infrastructure at your institution to successfully create an online course?

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27. How well can you navigate the technical infrastructure at your institution to successfully teach an established online course?

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28. To what extent can you use asynchronous discussions to maximize interactions between students in an online course? (Asynchronous means not online at the same time)

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29. To what extent can you use synchronous discussions (e.g. same time chat rooms) to maximize interaction between students in an online course?

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30. How well can you use computers for word processing, internet searching and e-mail communication?

Nothing   Very Little   Some   Quite a Bit   A Great Deal
1 2 3 4 5 6 7 8 9

31. To what extent does your comfort level with computers facilitate participation in online teaching?

Nothing   Very Little   Some   Quite a Bit   A Great Deal
1 2 3 4 5 6 7 8 9

32. How well can you navigate the internet to provide links and resources to students in an online course?

Nothing   Very Little   Some   Quite a Bit   A Great Deal
1 2 3 4 5 6 7 8 9

Hang in there- you have completed over 50% of the survey! Thank you for your participation! The next section will ask for background information from participants. All information collected is confidential. You will be given an opportunity to provide a contact email if you wish to be included in a drawing for one of six $50.00 gift certificates and/or you wish for a copy of the summarized results from this survey.

**Background Information Section**

33. What type of institution do you work for?

   Community College

   4-year College or University

34. Please indicate your gender:

   Male

   Female

35. What was your age on your last birthday?

   _______
36. Please identify your current academic appointment type:
   - Adjunct
   - Term
   - Tenure earning
   - Tenure
   - Other

37. Please indicate your current academic rank:
   - Instructor
   - Assistant Professor
   - Associate Professor
   - Professor
   - Other

38. Please identify the highest degree that you hold:
   - Bachelor’s
   - Master’s
   - Doctorate

(Respondents with doctorates go to 39. All others skip to 40.)

39. Please indicate type of doctorate and year obtained.
   - Ph.D in Nursing
   - Ph.D.
   - Ed.D
   - ND
   - Other
   - Year obtained

40. How many years of experience do you have teaching nursing courses (clinical and/or lecture)?

41. How many years of experience do you have teaching lecture courses?
42. What is your specialty area? (Please check all that apply):
   Maternal/Newborn _________
   Pediatric ___________
   Adult/Medical Surgical _____
   Mental Health ___________
   Community Health __________
   Nursing Administration __________
   Nursing Research ___________
   Nursing Informatics __________
   Other ________________

43. Have you ever taught an entire course online?
   Yes ___
   No ___

   If yes, approximately how many courses?

44. Have you ever taught portions of a course online?
   Yes ___
   No ___

45. Do you have a degree in education?
   Yes ___
   No ___

   (Participants answering “yes” skip to question 48; all others proceed to question 46)

46. Have you ever taken a course that focused on skills, techniques, problems, and/or preparation for teaching?
   Yes ___
   No ___

   If yes, approximately how many courses? __________
47. Have you ever taken a seminar in teaching that focused on skills, techniques, problems and/or preparation for teaching?

Yes __
No __

If yes, approximately how many seminars? _______

48. Have you ever had a course that focused on skills, techniques, problems and/or preparations for online teaching?

Yes __
No __

If yes, how many courses? _______

(Participants answering “yes” directed to question 49; all others go to question 50)

49. To what extent do you agree that courses adequately prepare you in the skills needed for online teaching?

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Slightly Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
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</table>

50. Have you ever taken a seminar in teaching that focused on skills, techniques, problems, and/or preparation for online teaching?

Yes __
No __

If yes, how many seminars? _______

(Participants answering “yes” directed to question 51; all others go to question 52)

51. To what extent do you agree that seminars adequately prepare you in the skills needed for online teaching?

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Slightly Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
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52. Have you ever met formally on a regular basis with a faculty person (e.g. mentor or peer support person) during an online teaching experience to discuss the skills, techniques, problems, and/or preparation for online teaching?

Yes __
No __

If yes, approximately how many formal meetings? ______

( Participants answering "yes" directed to question 53, all others go to question 54)

53. To what extent do you agree that formal meetings with a faculty person adequately prepare you in the skills needed for online teaching?

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54. Have you ever met formally with an instructional support expert during an online teaching experience to discuss the skills, techniques, problems, and/or preparation for online teaching?

Yes __
No __

If yes, approximately how many formal meetings? ______

( Participants answering "yes" directed to question 55; all others go to question 56)

55. To what extent do you agree that instructional support meetings adequately prepare you in the skills needed for online teaching?

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56. Have you ever been given release time for developing an online course?

Yes __
No __

If yes, approximately how many clock hours per course? ______
57. To what extent do you agree that release time is necessary for developing an online course?

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58. Please feel free to type in any other comments related to your experiences or perceptions of teaching nursing courses online.

59. Please type in a contact email address if you wish to be placed in a drawing for one of six $50.00 gift certificates.

60. Please type in a contact email address if you wish to have a copy of the summarized results from this survey.

Thank you for your participation in this survey!

**Directions for Scoring the Educators' Sense of Online Teaching Efficacy Scale (Questions 1-32)**

**Scoring:** Responses vary along a nine-point scale defined by the categories “Nothing”, “Very little”, “Some Influence”, “Quite A Bit”, and “A Great Deal.” (1 through 9 respectively). The higher the cumulative score on the scale, the greater sense of efficacy for that aspect of online teaching. Calculating the means of the subscales and add these means to find an overall online teaching efficacy score between 4 through 36. Higher scores indicate greater overall teachers’ sense of efficacy for online teaching.

**Subscale Scores:** To determine the Efficacy in Online Student Engagement, Efficacy in Online Instructional Practices, Efficacy in Online Classroom Management, and Efficacy in Use of Computers subscale scores:

**Efficacy in Student Engagement:**

Add Score from Items:  $1 + 2 + 4 + 6 + 9 + 12 + 14 + 22 = $

Total Score divided by 8 to get mean score

**Efficacy in Instructional Strategies:**

Add Score from Items:  $7 + 10 + 11 + 17 + 18 + 20 + 23 + 24 = $

Total Score divided by 8 to get mean score
**Efficacy in Classroom Management:**

Add Score from Items: 3 + 5 + 8 + 13 + 15 + 16 + 19 + 21 = 
Total Score divided by 8 to get mean score

**Efficacy in Use of Computers:**

Add Score from Items: 25 + 26 + 27 + 28 + 29 + 30 + 31 + 32 =  
Total Score divided by 8 to get mean score
Appendix J

Correlation Matrix
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Appendix K

Summary of Qualitative Comments
Prepping for a course is just as significant whether face-to-face versus on-line. I do not get release time for face-to-face prep I do not feel like there should be release time for on-line prep.

I received my masters through an online program and believe it is a great way to teach especially if you have dedicated students who are accountable for their own learning.

You cannot be effective as faculty with developing and/or executing on-line coursework without the appropriate infrastructure and support from your institutional administrators.

It is far more time consuming than I expected. I spend more time on each individual student each week because of the need to communicate with each individual student.

I am VERY interested in developing on-line courses and am hoping to take an 'online' class for this during this summer break.

Online courses are very time consuming compared to F2F courses. However, you learn through trial & error, and experiences of other faculty to develop time saving strategies. Also, Technical difficulties can prove to be very challenging. Main problem I face is exam security breaches.

I feel that teaching online nursing course requires one to adjust but that highly effective learning can occur. On-line teaching requires a different set of skills and assessment.

Major issue: Research/outcomes measures that compare student outcomes with online vs on campus or face-to-face delivery vs mixed mode delivery. More research demonstrating outcomes is needed. Some liberal arts faculty are very skeptical about the outcomes of online courses. Also the Provost sends not-so-latent messages that online offerings are valued less than face-to-face courses.

Online instructions augment classroom learning. A blended course - online and face-to-face, definitely work well and perhaps meet the needs of adult learners and various types of learning styles. A full online course, however, in my opinion, should not be promoted. Yes, there is evidence out there supporting its effectiveness and students' outcomes, but the socialization aspect of learning is not there (based on my experience).

Online course development is much more time consuming than are regular face-to-face courses. Further, once the course is developed the amount of time spent on email etc...to communicate is huge. Further, if you want the content to be conveyed in a learner focused mode it is necessary to rethink how you assess learning and learning activities. It is also important the University infrastructure be such that distance/online learning is
properly supported. One of the biggest drawbacks has been the poor university technology infrastructure.

Developing one's first online course requires time and mentorship.
This is my first on-line course. I am making changes as it goes on. By the end of the semester, I hope to have a better perception of this mode of teaching.

I have not taught an entire course online. I have, however, used WebCT to post assignments, do assessments and have "discussions" (with learning groups posting responses) to a variety of case studies focused on further explication of classroom content and development of critical thinking skills. I have found this to be an extremely useful tool, not only for student learning but also it has assisted me tremendously in determining who the students are who may not have understood the content from class. It also allows the students to learn from each other in a non-threatening environment and one that they are all very comfortable with.

I believe that online courses can be used successfully with self-directed learners. I also feel that self directed learners tend to be found at the graduate level. I don't think online courses are a good idea for undergraduate students because they are not self directed yet and they need individual coaching and direction.

Online or not online, there is not enough attention given to preparing PhD grads for the teaching courses part of the job! (Unless I guess you were in an 'education' program!)

Faculty accustomed to traditional teaching methods require more support than faculty who have experience with online teaching as students themselves.

I don't feel they are as effective as hybrid or face to face classes. I have taken some as a student that were very poor.

I am better able to assess the critical reflections of all students in an online class because I hear from all of them...not just the one or two outspoken students as in an face-to-face classroom discussion. It also allows time for reflection rather than forcing immediate responses as in f2f classes.

Administrative support is absolutely key. The time required to develop AND teach online is MORE than that for a "live" classroom course.

Need specific skills and knowledge base quite different than those used in face to face environments.

Technical support for faculty is just as crucial as it is for students.

I don't like on line courses and hope that I never have to do one. I find them to
be useless. My students have taken them know nothing of the subject material they were supposed to have learned. It sounds like Correspondence school to me.

Online courses are labor and time intensive. There should be a cap on the number of students in an online class. Taking an online course yourself is one way an instructor can see if this format is one they can see themselves teaching in.

I resent the huge push to make classes on-line even when there is little or no advantage. It feels as if it is financially generated rather than excellence generated. Change for change sake. Although I have seen multiple on-line classes, many appear to be "watered down" versions of lecture classes since academically challenging classes are so difficult to construct. I am still having difficulty understanding the usefulness of clinical on-line classes. These are being heavily promoted by nursing organizations (and where I work) without an attempt to scientifically validate

I would like to see more of it available however, the college needs to provide instructional design specialists and have IT to troubleshoot 24 hrs ATC so that students from all countries and time zones may participate.

Need someone else to bounce ideas and thoughts around with. Help in knowing what will work and not work. How much time on-line design takes.

Very limited experience with it. I recently taught in a team taught course that combined on-line with an optional in-class component. So really, my experience is quite limited.

I absolutely love teaching online but it does take considerably more time than teaching in face to face classes. Discussion in online classes is much more in depth than in courses that are face to face. Shy students feel confident in participating, superficial students get "outed", and no student can hide in a corner and fail to participate. In order to succeed in an online course, students have to be active learners. If I were a student again, I would take all the online courses that were available in my area of interest. When I retire, I plan to continue teaching online courses on a part time basis.

I did receive approximately $4500 from a grant that I was able to use for my time during the summer to prepare for a nearly totally online course. This was very valuable to me.

NEED ALOT MORE HELP TO LEARN HOW TO TEACH IN THIS FASHION

I taught at a university where all the nursing courses were on line, and the students had some very good experiences and said they learned a lot.

Have been teaching online for the past 8 years. I believe there is greater learning online because all students participate.
Generally positive ... the students like it if they have access to me regularly.

I was the first at my institution to even attempt to offer a course completely online. I have used computers since the early 1980s when most nurses were afraid to even turn them on.

It takes time to develop any course...online vs traditional.

I believe the hardest part is learning how to navigate whatever e-learning system they use (WebCT, Blackboard, Moodle). Especially when they update the system, but don't inform the faculty of changes.

I believe that online courses dilute the collegial experience necessary for a profession such as nursing. Moreover, it adds to the perception that nurses are less professional and intelligent than physicians and other professionals who would never have online course work in a legitimate educational experience. The students I have in graduate classes who have done RN to BSN online degrees are much less skilled in critical thinking, group process, writing, and producing graduate level work. I am strongly opposed to 100% online learning just to assure convenience for students.

It is certainly no less time consuming to teach an online course. However, it does provide a certain amount of freedom. I teach an online course while I also teach a study abroad offering in London. Computers allow this vital link.

I believe one needs to structure in course expectations from the beginning of the course & communicate those expectations clearly & repetitively through the first weeks of the course.

I would like to try teaching an online course. I think it would be a challenge.

There are many things you can do to involve your students and facilitate their learning. Inevitably the students need to want to learn and participate whether it is ion-line or in the class room.

The online teaching experience can be very fulfilling, with the right student mix. However, not all students are ideal candidates for the online classroom and their confused performance has a definite impact on the rest of the group.

Need to make sure people on teaching online for the right reasons, see too many courses being taught this way due to faculty shortage and travel.

Feel very positive about possibilities!

Technology does not always work the way it is set-up or intended and creates unforseen barriers and problems. These contribute to additional time required of an instructor. Also, students often do not read course requirements and fail to adhere to
them. They e-mail questions and expect instantaneous responses. This places an unfair burden on the instructor.

I am paid to develop online course

I am interested in furthering my knowledge and skills in online teaching as this appears to be the current trend in education.

I think one of the best ways to help faculty with online teaching is to get together with other faculty members and discuss experiences sharing what worked and didn't work.

Online courses take a lot of time and effort to develop and manage.

Requires significant training and education of faculty to do it well. Does not work well with courses that focus on clinical management—that's done better face to face.

Having never taught or taken an online course prior to my current position, I would very much have appreciated the help of an expert in online pedagogical design.

Ours is a RN2BSN program online—it works!

Wish more faculty in schools of nursing (at least mine) really embraced them. Also of great concern in schools of nursing is cheating (much easier in online formats without a secure testing center)

There is value in online courses. The difficulty is determining which classes can have an online component and setting it up.

I have taught online courses for 4 years, and believe that a fully online course is not an ideal method for teaching nursing courses. We are starting to "hybridize" our online courses, and faculty and students are much happier. The more I teach online, the less I like it. I do not find it fulfilling on a professional level, and I miss the face-to-face contact and discussions that occur in the classroom and seminar settings.

Online courses can be used to ease the need to travel and schedule face-to-face classes - but are not a replacement for the classroom. I find that I rely on students' nonverbals, moods, and ways of expressing to facilitate the learning process. My relationship with students is stronger in face-to-face classes.

I like teaching online because it gives me another option to reach students. Students can do some great thinking and participating. My experience is that the experience of asynch. discussion improves critical thinking.