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The relationship between faculty's pedagogical content knowledge and students' knowledge about diversity in online courses

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THE RELATIONSHIP BETWEEN FACULTY'S PEDAGOGICAL CONTENT KNOWLEDGE AND STUDENTS' KNOWLEDGE ABOUT DIVERSITY IN ONLINE COURSES

by

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DEDICATION

I dedicate this dissertation to my parents, Drs. Virinder and Sumita Chaudhery, whose unswerving dream to see me earn this degree, from the time they carried me as a toddler in their arms through blizzards and blazing heat to meet their doctoral dissertation deadlines to finally cheering them on stage as they graduated with their PhDs, has empowered me to see this day. I also dedicate this dissertation to all those who helped me bring this to fruition.

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Varali, whose coming made this year truly auspicious. I would also like to thank my dear friends who have been my staunch supporters throughout this time. Next, I truly wish my grandparents and granduncle were alive to see this day. They saw me undertake this venture and always gave me their blessings to succeed, wishing to celebrate this day. I know they would have been happy to share this day, but I know they are by my side in spirit. Most of all, I would like to thank my parents who did everything in their power to support me, take care of me, and alleviate as many of my responsibilities as possible by unquestioningly carrying my burdens on their shoulders so that I could work on my doctoral dissertation. Their belief in me inspires me to aspire.

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Chapter 1: Introduction

In the past two decades, higher education in the United States has witnessed an explosive growth in online learning (Bishop, Giles & Bryant, 2005; Kemp, 2006; McQuiggan, 2007; Murdock & Williams, 2011; O'Malley & McCraw, 1999). In order to keep up with the demands of a diverse student population, colleges have created online courses to provide education asynchronously to anyone in the world (Bishop, et al, 2005; O'Malley & McCraw, 1999). This, in turn, has made online learning a powerful influence on the direction of education (Bruner, 2007; Connick, 1997; Kemp, 2006).

Since online learning involves a diverse student population, the concern for meeting students' needs deserves careful attention. Adult learners bring life experiences and a variety of learning needs that serve as the basis for their goals and insights and add value to the learning process (Chickering, 1977; Knowles, 1998; Lave & Wenger, 1991). In order to find learning meaningful, therefore, online curriculum and instruction needs to show a clear relationship between the content of the subject matter, the active application of that information, and its uses in diverse, real-world contexts (Merriam, Caffarella, & Baumgartner, 2007). If the end goal is to produce independent, self-directed thinkers and decision-makers through students who are now from all over the world, then the curriculum and instruction needs to be an agent of reform and development in the student (Giroux, 2006).

In order to accomplish this reform, faculty need to not only be knowledgeable about diverse learning needs but also be skilled in teaching a diverse population about diversity for the diverse community and workforce. Thus, faculty need to possess the instructional skills to translate the subject matter in practical ways that stimulate exploration, reflection, and interpretation to make the uses of the subject meaningful (Bruner, 1966; Chickering, 1977).

Teaching is more than just conveying content matter to the student. It involves touching the motivational, and personal domains in students through teaching. How the instructor communicates and adapts the curriculum to the students' needs is a complex and demanding activity (Shulman, 2004b).

Thus, online curriculum and instruction needs to be flexible in design for instructors to provide an environment for praxis to learn the subject matter in a way that transforms students' knowledge about the subject through reflection, creativity, and activity (Freire, 1974). Within the online curriculum, then, faculty needs to involve social interaction based on culture and community in life as it occurs in real-world contexts and correlate that with instruction of the subject matter to help students broaden their understanding of diversity and skills in the subject matter (Lave & Wenger, 1991).

To establish the foundation for this study, this chapter is divided into two sections: First, it will examine the background of this study, involving the current trends in a) the Interstate New Teacher Assessment and Support Consortium (INTASC) standards, b) online curriculum and instruction, c) the adult learner, and d) diversity education. Second, this chapter will address the researcher's study itself.

Background

This section introduces a holistic view of the educational contexts as a background for the conceptualization of this study. First, the INTASC standards are introduced as these represent the framework for the independent variable in the proposed study. Next, online curriculum and instruction is discussed as this serves as the premise for the moderating variable in this study. Then, the adult learner is examined, as these learners are the dependent variable for the study. Finally, diversity education is explored as this serves as the theme for the entire study. Each of

these sections discussed below examine the current trends and its application to the proposed study, which are ultimately funneled to the examination of the variables themselves in Chapter 2. At the end of each section, the gaps and the problems in the research are explicitly identified.

Current Trends in INTASC. The Interstate New Teacher Assessment and Support Consortium (INTASC) standards contain teaching principles that define pedagogical content knowledge based on knowledge and skills (INTASC, 1992). These standards identify qualities in curriculum and instruction that represent the tenets of constructivism and social constructivism while addressing diverse learning needs. However, four trends appear in the most recent research on INTASC standards.

First, Shulman (1986, 1987, 2004a, 2004b) coined the term pedagogical content knowledge as a means to dissect and thereby understand a teacher's knowledge and skills to teach. Pedagogical content knowledge represents a critical component to examining both the subject matter knowledge and pedagogical knowledge, which should be balanced and blended in the teaching process. Each possesses their own set of theories, methodologies, and skills in using both dimensions of knowledge, but both are intertwined (Shulman, 1987; Grossman, 1990; Grossman, Wilson, and Shulman, 1989; Major and Palmer, 2006). The breakdown of pedagogical content knowledge enables a close examination of teacher's knowledge and skills, which the INTASC seeks to evaluate. However, limited research exists in examining pedagogical content knowledge under the framework of the INTASC standards in higher education. Therefore, this researcher will address this gap upon to examine faculty's knowledge and skills to teach diversity within the curriculum of their subject matter.

Second, empirical research involving the INTASC standards revolves primarily around teacher education and student candidates who are preparing to teach in K-12 environments

(Beyerbach & Nassoiy, 2004; Delandshere & Arens, 2001; Goubeaud & Yan, 2004; Ingersoll & Kinman, 2002; Rinaldo, Denig, Sheeran, Cramer-Benjamin, Vermette, Foote, & Smith, 2009). The premise of this research is that an instructor should have the knowledge, skills, and values to teach according to the standards established. However, the research is limited because the focus is only on new teachers who must demonstrate the standards for evaluation and certification purposes. Researchers do not appear to apply similar standards to other college programs outside of teacher education or include faculty across disciplines that teach in higher education. Therefore, this investigator will address the gap in two ways: 1) to apply these standards from K-12 now to higher education, and 2) from Teacher Education faculty now to college faculty across multiple departments.

Third, empirical research on pedagogical content knowledge is growing and has generally focused primarily on the subject matter knowledge dimension and its influence on student achievement based on faculty's determination of student outcomes in different academic majors in high school (Brewer & Goldhaber, 2000; Rowan, Chiang & Miller, 1997; Monk, 1994). Qualitative research tends to examine how pedagogical content knowledge is relevant to teaching standards in higher education (Rowan, Schilling, Ball & Miller, 2001; Major & Palmer, 2006, 2009; Trigwell, Prosser, Martin & Ramsden, 2005). Such research has found that faculty indeed draws from both content matter and pedagogical knowledge that contribute to a transformative teaching experience. This serves as a stepping-stone to recognizing the relevance of examining pedagogical content knowledge. Quantitative research needs to grow to include pedagogical content knowledge and its influence on teaching diversity in higher education, especially in the online environment. This investigator will examine this relationship to address this gap in research.

Fourth, because of the changing demographics of classrooms, faculty are expected to not only draw from their own knowledge of diversity but develop it further to meet diverse learning needs to help all students learn, which is the very mission of the National Council for Accreditation of Teacher Education (NCATE) (Beyerbach & Nassoiy, 2004; Thornton, 2006). Thus, to help students learn about diversity, the curriculum needs to foster the development of knowledge of, skills in working with, and value for diversity. Scholars building upon this trend have asserted that faculty needs to teach diversity with the same set of standards to align curriculum and instruction (Adams, 1992; Banks, 2004; Daunic, Correa & Reyes-Blanes, 2004; Rothstein-Fisch & Trumbull, 2008; Thornton, 2006). To address this gap, this researcher will incorporate the INTASC standards as a framework to examine faculty's ability to teach diversity in a higher education, online setting (INTASC, 1992).

However, to the best of this researcher's knowledge, a gap in the research exists because there are limited studies that examine the pedagogical content knowledge to teach diversity according to any set of standards, such as INTASC, in higher education. Therefore, this proposed study will address the gap by examining the relationship between curriculum design and faculty's knowledge to teach diversity.

Current Trends in Online Curriculum and Instruction. Online curriculum and instruction has rapidly developed as higher education has added online learning programs to serve a wider student population (Bruner, 2007; Frey, Paul & Yankelov, 2003; Kemp, 2006). As a result, the needs and requirements for online curriculum and instruction have evolved. Four trends appear in the development of online curriculum and instruction in higher education.

First, many scholars assert that online curriculum and instruction needs to be centered on the learner, using knowledge and community to build upon the learning to make it meaningful

and applicable to real-world, global contexts (Berge, 1998; Boubsil, Carabajal & Vidal, 2011; Chickering & Gamson, 1987; Graham, Cagiltay, Lim, Craner & Duffy, 2001; Hobbs, 2002; Nuriddin, 2011; Parrish, 2011; Shea, Li, & Pickett, 2006; Schneckenberg, 2010). Implementing a learner-centered and community-centered approach as building blocks to learning stems from Dewey's (1963, 1997/1910) conceptual framework of constructivism and Vygotsky's (1978) conceptual framework of social constructivism. This researcher will therefore address this gap by including criteria that specifically focuses on learner-centered and community-centered curriculum and instruction as well as Dewey's perspective of constructivism and Vygotsky's perspective of social constructivism.

Second, consideration of faculty perspectives on online curriculum and instruction has appeared in empirical studies to show that similar conceptual frameworks are indeed important. But these studies also indicate that diversity in the classroom and curriculum design creates challenges in teaching the subject matter for which faculty feel untrained (DeGagne & Walters, 2009; Dolan, 2011; Ingersoll & Kinman, 2002; Kim & Bonk, 2004; Koenig, 2010; McGee, 2004; McKnight, 2004). To examine this problem further, this researcher will therefore examine the relationship between online curriculum design and instruction to determine the areas in which faculty believe their knowledge or skills are weak or successful in teaching students about diversity

Third, when instructional designers are responsible for the online curriculum design, it further increases the challenges for faculty to provide effective instruction. Studies indicate these designers' lack of understanding and training in incorporating diversity education or meeting diverse needs of learners while they impose their instructional models onto faculty and students creates a gap between online curriculum and instruction (Bolliger & Wasilik, 2009; Campbell,

Schwier & Kenny, 2009; DeGagne & Walters, 2009; Dooley, Lindner, Telg, Irani, Moore & Lundy, 2007; Larson & Lockee, 2009; McGee, 2004; Rogers, et al, 2007; Sims, 2009; Willis, 2009). This researcher will therefore examine this problem to determine whether such curriculum design impacts faculty's ability to teach diversity and meet students' diverse learning needs.

Furthermore, the concept of a prescribed curriculum, where courses come pre-designed by instructional designers is relatively new but limited in study. To this researcher's knowledge, there is limited research that studies the relationship between prescribed online curriculum design and faculty's pedagogical content knowledge to teach students about diversity, which this researcher intends to examine in her study. However, scholarly research examining the implementation of faculty's pedagogical content knowledge and teaching with technology has been limited to K-12 education, not higher education (Archembault & Crippin, 2009; Ferdig, 2006; Koehler, Mishra & Yahya, 2005; Mishra & Koehler, 2005, 2006 2007, 2009). In this regard, scholars confirm that faculty may show difficulty in embracing the rapidly advancing technologies and the skills needed to utilize them in order to implement their pedagogical content knowledge because such skills add a third subset of knowledge, technological knowledge, required to successfully teach (Archembault & Crippin, 2009; Koehler, et al, 2005; Mishra & Koehler, 2006). Nevertheless, this exposes a lack of research in examining faculty's pedagogical content knowledge within the online curriculum design of their course in higher education. Therefore, this researcher will examine this problem between faculty's ability to implement their pedagogical content knowledge within the online medium in her study.

Current Trends in Adult Learning. Curriculum and instruction in higher education has evolved to address students' learning needs as the student population has grown and diversified

(Brookfield, 1986; Giroux, 2006). Not only does the student population represent more mature adults but various cultural backgrounds that influence their learning needs. In this light, two trends in adult learning impact curriculum and instruction.

First, according to Knowles (1998), who is a central figure in the development of adult learning theory, suggested that adult learners have certain learning needs that involve building upon their current understanding of the subject, incorporate their life experiences, relate to their social and cultural learning, and provide independent lifelong learning. These learning needs should be included in curriculum and instruction as they enable students to value learning as a lifelong process. To address this problem, this researcher will therefore examine such needs in curriculum and instruction.

Second, numerous scholars have added to this theory, asserting that adult learners need a clear association between what they are learning and how they can and will use it in order to maintain motivation and find meaning in their learning (Allen & Seaman, 2010; Brookfield, 1986; Conti, 2004; Dixon & Dixon, 2010; Galbraith, 2004). Curriculum and instruction, therefore, needs to make the learning meaningful to adult students and address the variety of learning needs of adult learners (Merriam, Caffarella, & Baumgartner, 2007; Merrill, 1992). To address this problem, this researcher will therefore examine whether the online curriculum and instruction addresses such learning needs.

To the best of this researcher's knowledge, there is no research that investigates the relationship between a definitive set of national standards in curriculum and instruction and these specific adult learning needs in higher education. This study proposes to examine this relationship to address this gap. However, in order to identify specific elements in curriculum and instruction, standards are needed to help provide a framework.

Current Trends in Diversity Education. The foundation of diversity education springs from Banks' (2004) theory that diversity education requires more research and implementation than a quick reform in curriculum that includes an occasional chapter about ethnic groups, women, or other diverse groups. With this in mind, four major trends appear in the integration of diversity education.

First, diversity education is a term that is used in conjunction with many other terms in research, such as diversity, cultural competence, and multicultural education interchangeably to convey overlapping constructs (Banks, 2004; Daunic, et al, 2004; Gay, 1988; NCATE, 2001; Rogers, et al, 2007). The purpose, however, remains the same through such literature: to reach diverse learners with relevant, meaningful curriculum that empowers students with diversity education in preparation for civic responsibility and global citizenship (Baltes, 2010; Cohen & Davidovich, 2011; Gay, 1988). In this light, NCATE (2001) offers a workable definition of diversity that is applicable to this study (See Operational Definitions, p. 14).

Second, empirical research primarily has focused on supporting the belief, from both faculty and students' perspectives, that students are better served with diversity education (Banks, 2004; Garcia, et al, 2005; Gudeman, 2001; Rogers, et al, 2007; Terenzini, Cabrera, Colbeck, Bjorklund, & Parente, 2001; Wang, 2006). Faculty seems to agree that the need for pedagogical content knowledge to teach and manage diversity is of critical importance to make curriculum meaningful and relevant to their lives (Bangert, 2006; Daunic, et al, 2004; Garcia, et al, 2005; Griffin & Jackson, 2011; Gudeman, 2001; Shea, Li & Pickett, 2006). This researcher will therefore add to the minimal but growing body of knowledge about faculty's perspectives on their knowledge and skills to teach diversity in an online environment.

Third, research shows that faculty needs more thorough training in teaching and managing diversity (Adams, 1992; Baltes, 2010; Banks, 2004; Rothstein-Fisch & Trumbull, 2008). However, these studies only reveal the importance and need for being able to teach and learn about diversity. This researcher's study will extend the research further to address this gap by examining specific standards in curriculum and instruction that support the teaching of diversity and will identify potential gaps in faculty knowledge or skills to meet this need.

Fourth, as a result, scholars, building upon Banks' (2004) theory, have asserted the need for trained faculty to integrate diversity education across disciplines (Bangert, 2006; Conrad, 2004; Dominguez & Ridley, 2001; Gaytan & McEwen, 2007; Hobbs, 2002; Kim & Bonk, 2004; Lewis & Abdul-Hamid, 2006; McKnight, 2004; Shea, Li & Pickett, 2006). A few studies show the results of such integration, especially within the online medium, which will be discussed in the next chapter (Gudeman, 2001; Rogers, et al, 2007; Wang, 2006). This researcher will address this gap by examining whether faculty incorporate the teaching of diversity across disciplines in courses offered online.

To date, this researcher has found limited empirical-refereed research that examines the gaps in faculty's ability to teach diversity that specifically applies or upholds the INTASC standards as a framework or, more specifically, that examines pedagogical content knowledge in the online environment, which this researcher intends to study. Therefore, the present study will address this gap by adding to the field of curriculum and instruction and diversity education by examining the relationships between faculty's knowledge and skills to teach diversity, online curriculum design and instruction, and students' learning about diversity.

The Proposed Study

This section includes: (1) a problem statement, (2) the significance and need for the proposed study, (3) the purpose of the study, (4) research questions, (5) research hypotheses, (6) null hypotheses, (7) definitions of terms, and (8) assumptions.

Problem Statement. The ways in which students' learning needs are met depend not only on the design of curriculum and the standards of instruction but also on the faculty's knowledge and skills to impart such education online in higher education. Therefore, the problem is that currently there is no systematic examination on whether faculty's pedagogical content knowledge and the online curriculum design within a definitive set of national standards enable students to learn about diversity.

Significance and Need for the Proposed Study. Because of the significant growth in online courses (Bruner, 2007; Frey, Paul & Yankelov, 2003; Kemp, 2006), there is a tremendous demand to teach about diversity so as to prepare students for a global workforce (Bishop, et al., 2005; Gudeman, 2001; Kemp, 2006; McQuiggan, 2007; O'Malley & McCraw, 1999; Rogers, et al., 2007; Wang, 2006). This demand requires college faculty to possess the knowledge and skills to teach diversity online within their subject. This relationship is useful to explore in order to understand both faculties' needs to teach diversity and the online curriculum design to help them accomplish this goal. This study will therefore examine the relationship between faculty's pedagogical content knowledge and the design of online curriculum to teach students about diversity in a higher education environment.

There are three main reasons to conduct this study. First, despite the growth in the adult student population and their subsequent diverse backgrounds (Banks, 2004; Daunic, et al, 2004; Kim & Bonk, 2004), the research on successful curriculum design and instructional practices that

meet a common set of students' learning needs in the online environment remain limited. Identifying the common student learning needs to begin creating a framework for necessary standards of practice in curriculum and instruction would offer a springboard for further research.

Second, more information is needed to ascertain necessary components in curriculum and instruction that succeeds in teaching diversity to students. The research examining systematic instructional standards and curriculum design within the online modality to teach diversity is limited. Such research would help determine how to better prepare faculty for teaching in the online environment and address a diverse student population's learning needs in higher education.

Third, more research is needed to examine relevant and meaningful learning about diversity in the online environment. Research indicates that the importance of diversity is apparent (Banks, 2004; Daunic, et al, 2004; Gudeman, 2001; Kim & Bonk, 2004; Terenzini, et al, 2001). However, the specific ways in which diversity is taught beyond a chapter or a reading assignment within the subject matter that would help students prepare for a diverse community and workforce need to be identified. Aligning curriculum and instructional standards with diversity would shed light on whether faculty is able to teach diversity in a consistent manner. Thus, by asking faculty to identify where in the online curriculum and instruction they face challenges to teaching diversity, would help determine necessary areas of alignment.

Purpose of the study. The purpose of this study is to examine the relationship between faculty's pedagogical content knowledge and the design of online curriculum to teach students about diversity in a higher education environment.

Research Questions.

1) Does the content of the online curriculum design impact students' learning about diversity?

2) Does the faculty's knowledge and skills about teaching diversity add to the students' gaining knowledge about diversity through the online course content?

3) Does the scope of the online curriculum moderate the effect of faculty's knowledge and skills about teaching diversity on students' learning about diversity?

Research Hypotheses.

H1. Online course content (scores on the Subscale 2a) will predict students' learning about diversity (scores on Scale 3) on a 4-point rating scale developed on the INTASC standards.

H2. Faculty's knowledge and skills (scores on Scale 1), in addition to online course content (scores on Scale 2a), will account for an increased amount of variance over students' learning about diversity (scores on Scale 3) on a 4-point rating scale developed on the INTASC standards.

H3. The relationship between faculty's knowledge and skills (scores on Scale 1) and students' learning about diversity (scores on Scale 3) will be moderated by the scope of online curriculum design (scores on Subscale 2b) on a 4-point rating scale developed on the INTASC standards.

Null Hypotheses.

H01. Scores on the Subscale 2a (Online Curriculum Content Design) will not significantly predict scores on Scale 3 (Students' learning about diversity) on a 4-point rating scale developed on the INTASC standards.

H02. Scores on Scale 1 (Faculty's Knowledge and Skills), in addition to Scale 2a (Content of Online Curriculum Design) will not account for an increased amount of variance over the scores on Scale 3 (Students Learning About Diversity) on a 4-point rating scale developed on the INTASC standards.

H03. The relationship between the scores on Scale 1 (Faculty Knowledge and Skills) and the scores on Scale 3 (Students Learning about Diversity) will not be moderated by the scores on Subscale 2b (Scope of Online Curriculum Design) on a 4-point rating scale developed on the INTASC standards.

Definition of Terms.

The criteria for the selection of defining these terms here was based on the fact that they were used in the research questions, hypotheses, and the measure designed by this investigator. The terms are placed in three categories: Part 1: terms that are verbatim from *NCATE Handbook* (2001); Part 2: terms that are originally from *NCATE* have been adopted to refer to higher education have been italicized; and Part 3: terms that are defined by this investigator.

Part 1:

Cultural Background: Consists of the context of one's life experience as shaped by membership in groups based on ethnicity, race, socioeconomic status, gender, exceptionalities, language, religion, sexual orientation, and geographical area. (NCATE, 2001)

Curriculum: Consists of course content, activities, and assessments necessary to prepare students in a specific subject area. (NCATE, 2001)

Distance Learning: Consists of a formal educational process in which the major portion of the instruction occurs when the learner and the instructor are not in the same place at the same time. (NCATE, 2001)

Diversity: Consists of ethnic, racial, gender, language, socioeconomic, and religious groups including exceptionalities in United States. (NCATE, 2001)

Higher Education Faculty: Consists of full-time or part-time employees of an institution of higher education. (NCATE, 2001)

Part-time Faculty: Consists of employees of a higher education institution who have less than a

>full-time assignment in the professional education unit. Some part-time faculty are full-
>
>time employees of the college or university with a portion of their assignments in the
>
>professional education unit. Other part-time faculty are not full-time employees of the
>
>institution and are commonly considered adjunct faculty. (NCATE, 2001)

Pedagogical Content Knowledge: Consists of the interaction of the subject matter and effective

>teaching strategies ("skills") to help students learn the subject matter. It requires a
>
>thorough understanding of the content ("knowledge") to teach it in multiple ways
>
>("skills"), drawing on the cultural backgrounds and prior knowledge and experiences of
>
>students. (NCATE, 2001)

Professional Development: Consists of opportunities for professional education faculty to

>develop new knowledge and skills through in-service education, conference
>
>attendance, sabbatical leave, summer leave, intra- and inter-institutional visitations,
>
>fellowships, specialized workshops and training, and work in P–12 schools, etc. (NCATE,
>
>2001)

Scholarship: Consists of the professional education faculty demonstrate scholarly work related to

>teaching, learning, and their fields of specialization. They are actively
>
>engaged in inquiry that ranges from knowledge generation to exploration and questioning
>
>of the field to evaluating the effectiveness of a teaching approach. (NCATE, 2001)

Skills: Consists of the ability to use content, professional, and pedagogical knowledge effectively

>and readily in diverse teaching settings that tries to increase students' learning.

Standards: Consists of written expectations for meeting a specified level of performance.

>(NCATE, 2001)

Part 2:

Online Course Content: Consists of the subject matter that faculty teaches *for an online course in their discipline for higher education*. (NCATE, 2001)

Knowledge: *Consists of the general concepts, theories, and research about effective teaching, regardless of content areas.* (This definition is adapted from *NCATE's* definition of Pedagogical Knowledge). (NCATE, 2001)

Part 3:

Online curriculum and instruction: Consists of course content, activities, written assignments and assessments necessary to prepare students in a specific subject area and offered through a web-based modality in which a learning management system is used. This may be pre-designed by instructional designers or created by the faculty.

Online course scope: Consists of the flexibility and forum for faculty to incorporate online instructional strategies and pedagogical content knowledge within the design of the online course, such as the discussion board.

Online education: Consists of the web-based modality in which a learning management system is used to provide courses for educational programs and degrees around the world.

Online instructional strategies: Consists of pedagogical skills, strategies, and practices that provide knowledge and guidance in the subject matter through the online modality.

Students: Consists of ethnic, racial, gender, language, socioeconomic, and religious individuals including exceptionalities in United States and around the world who are studying in higher education.

Student learning: Consists of "cognitive learning" and "socio-emotional learning" that students gain through the instructor's pedagogical content knowledge provided in the course.

Written assignments: Consists of any assigned essay, research report or project, or assessment

from 500 words or more.

Assumptions. This study assumes that:

1. Faculty integrally value diversity education
2. Faculty respect and address diversity within their student body
3. Faculty's perspective is that students are better served with diversity education
4. The online course content is static and the online course scope is dynamic, thereby justifying the exploration of both as separate predictor variables.

Chapter 2: The Review of Literature

This chapter consists of two sections. The first section discusses the conceptual frameworks, which are the underpinnings of this study. The second section includes empirical research that examines the variables in this study's hypotheses. Both sections will attempt to support the relationship between this study's molar variables: faculty's pedagogical content knowledge, online curriculum and instruction, and students' learning.

Conceptual Frameworks

The section below discusses the conceptual frameworks of Shulman (1986, 1987, 2004), Dewey (1963, 1977), Vygotsky (1978, 1986), Gagne (1977, 1985) and Banks (2001a, 2001b, 2004), which are the underpinnings of the variables, hypotheses and measure for this study: 1) faculty's pedagogical content knowledge, the predictor variable (Scale 1); 2) the online curriculum design, the predictor/potential moderating variable (Scale 2); and 3) students' learning about diversity, the outcome variable (Scale 3). The alignment between the conceptual framework and these variables has been identified in parentheses below; however, for a detailed understanding of the variables, please refer to the three scales that comprise the measure for this study (See Appendix B-D). This section is broken into two parts: 1) an overview of the conceptual framework as it relates to the three molar variables, and 2) the application of the conceptual framework to the three molar variables.

Shulman's Pedagogical Content Knowledge Framework.

Overview. Shulman (1986, 1987) postulated that both subject matter knowledge and pedagogical knowledge are two intertwined components of teacher knowledge. These qualities

are embedded within the empirical studies that will be examined shortly (Major and Palmer, 2006, 2009; Parke & Oliver, 2008; Rowan, et al, 2001).

Shulman (2004a) contended that it is necessary to balance and blend the content of teaching with the elements of the teaching process. But in order to do so, content knowledge should be broken down into three categories: subject matter content knowledge, pedagogical content knowledge, and curricular knowledge. However, pedagogical content knowledge reflects a more application-oriented approach to teaching the subject matter, which this researcher will examine.

Pedagogical content knowledge (PCK) involves knowledge of teaching the subject matter (Grossman, et al, 1989; Shulman, 1986, 1987, 2004a, 2004b). The focus is on understanding the teachable aspects of the content: the most useful topics, representations of those ideas, illustrations, explanations, and so forth; the best ways of representing and formulating the subject that make it comprehensible to students (Shulman, 1987). This is where research on teaching and on learning coincides most closely.

PCK represents the blending of content and pedagogy that reveals how particular topics, problems, or issues are organized, represented, and adapted to the diverse interests and abilities of student learning (Shulman, 2004a). In this light, pedagogical reasoning is necessary in order to put into action the teaching of content; this reasoning involves a process of comprehension, transformation, instruction, evaluation, and reflection, qualities, which appear in the INTASC standards that is inherent in this researcher's independent variable.

Shulman (2004a) further defines pedagogical reasoning in the following ways: 1) Comprehension of the ideas to be taught, the end goals to be accomplished, and student literacy and inquiry skills through the subject. 2) Transformation of these ideas into a process of

interpretation and new meaning through instruction that is adapted to students' abilities, making the learning relevant. 3) Instruction, therefore, needs to incorporate a repertoire of various teaching strategies that integrate cooperative learning, reciprocal teaching, Socratic dialogue, discovery learning, project methods, and learning outside the classroom setting. This, in turn, should translate into observable performance of the students through a variety of student and classroom management and evaluation. 4) Adaptation of the instructional material to fit the students' diverse learning needs and backgrounds to help them explore and discover prior and new conceptions, expectations, and understanding of the material. 5) Evaluation of students' learning, their understanding and misunderstanding of the content, along with formal testing, feedback, and grades. 6) Reflection of instruction to reconstruct, re-capture, and reenact valuable events, emotions, discovery and learning processes, and accomplishments in students.

Application. The characteristics of Shulman's framework and scholars, who have expanded on his framework, are applicable to the variables used in this study, which are noted in parentheses. Curriculum and instruction needs to have the capacity for change, reflection, and evaluation so that instruction can evolve and transform to improve students' comprehension and to understand the learning difficulties that the content poses for students (Berry, Loughran, & Van Driel, 2008; Cochran, DeRuiter, & King, 1993; Hashweh, 2005; Van Driel, Ver Loop & de Vos, 1998) (Scale 1 and 2: 8, 9, 11, 13). In the online medium, technological knowledge adds to this collaborative relationship, which faculty must utilize in order to convey their pedagogical content knowledge (Archembault & Crippin, 2009; Ferdig, 2006; Koehler, Mishra & Yahya, 2005; Mishra & Koehler, 2005, 2006, 2007, 2009).

Students' learning is addressed by examining both the content and instruction for weaknesses in comprehension, development in the learning discovery process, and diverse

learning needs (Shulman, 2004a) (Scale 3: 1, 4, 9, 11). In this way, students influence the way faculty's pedagogical content knowledge evolves (Hashweh, 2005; Parke & Oliver, 2008) (Scales 1 and 2: 11, 13). Thus, pedagogical content knowledge stresses the interdependence between curriculum, instruction, and student learning. The reflection of this teaching process guides faculty's action (Cochran, et al, 1993; Major and Palmer, 2006; Parke & Oliver, 2008).

Dewey's Progressive-Constructivist Framework.

Overview. Dewey's (1963, 1997) framework, which builds on the constructivist approach that focuses on progressing students' learning beyond the classroom. A few of the qualities in this framework are embedded within several empirical studies that will be examined shortly (Gudeman, 2001; Hurtado, 2001; Malkin & Stake, 2004; Moore, Wallace, Schack, Thomas, Lewis, Wilson, Miller, & D'Antoni, 2010; Moriarty, 2007).

The progressive-constructivist framework consists of the following three principles: 1) reflective thought, 2) continuity of experience, and 3) social learning. All of these principles focus primarily on curriculum and instruction that needs to build intellect and practical skills through experience to enable students to construct new ideas independently (Dewey, 1963, 1977). Thus, curriculum and instruction needs to stimulate inquiry, reflection, and interpretation in students to help them build upon their learning independently. Both need to develop students' ability to construct new ideas and solve problems in and outside the classroom.

Application. The characteristics of Dewey's framework and scholars, who have expanded on his framework, are applicable to the items in the measure used in this study, which are noted in parentheses. Curriculum needs to provide opportunities for social interaction that will make the learning reflective, adaptive, and meaningful to students. In this way curriculum can meet multiple learning styles and performances (Bruner, 1966; Chickering, 1977; Dewey, 1963)

(Scales 1 and 2: 9, 10, 11, 12). Instruction needs to consist of the ability to encourage, link, and inquire about diverse perspectives and students' life experiences that can be related to the subject matter meaningfully (Anderson & Dron, 2011; Bednar, Cunningham, Duffy, & Perry, 1992; Bruner, 1966; Chickering, 1977; Dewey, 1963; Duffy & Kirkley, 2004; Kolb, 1984; Lebow, 1993; Swan & Shea, 2005) (Scales 1 and 2: 2, 4, 5, 13).

Students' learning is developed from the synthesis of their current knowledge, experience, and skills with their new learning of the subject matter to manage new experiences outside the classroom (Bednar, et al, 1992; Chickering, 1977; Dewey, 1963, 1997; Kolb, 1984; Lebow, 1993) (Scale 3: 1, 4). Students, therefore, need the opportunity to reflect, interact, share, and develop new ideas and skills through various independent and social activities to apply these newfound abilities in real-world contexts (Anderson & Dron, 2011; Bednar, et al, 1992; Chickering, 1977; Dewey, 1963, 1997; Duffy & Kirkley, 2004; Garrison, 2003; Kolb, 1984; Lebow, 1993; Swan & Shea, 2005) (Scale 3: 5, 8).

Vygotsky's Social-Constructivist Framework.

Overview. Vygotsky's (1978, 1986, 1997) concept of sociocultural learning intertwines with the constructivist approach about curriculum and instruction to meet students' cognitive and socio-emotional learning needs. A few of the qualities in this framework are embedded within several empirical studies that will be examined shortly (Gudeman, 2001; Hurtado, 2001; Lee, 2007; Malkin & Stake, 2004; Moll, 1990; Nieto & Booth, 2010; Velde, Wittman & Bamberg, 2003; Yang, Yeh & Wong, 2011).

The basic assumption in Vygotsky's (1978, 1986, 1997) framework is that culture affects a student's intellectual abilities. Both the cultural background and cultural experiences in society influences the student's development of higher cognitive skills. Thus, curriculum and instruction

needs to integrate and be sensitive to cultural diversity in order to meet students' learning needs (Bordrova, 2007; Dillenbourg, Baker, Blaye, & O'Malley, 1996; Lave & Wenger, 1991; Palincsar, 1998; Yang, Yeh, & Wong, 2011).

Application. The characteristics of Vygotsky's framework and scholars, who have expanded on his theory, are applicable to the items in the measure used in this study, which are noted in parentheses. To apply the Vygotskian approach, the curriculum needs to contain ways to connect personal and social knowledge with the concepts of the subject matter to make the subject meaningful and useful as students develop new skills in its usage (Anderson & Dron, 2011; Bordrova, 2007; Dillenbourg, et al., 1996; Kolb, 1984; Lave & Wenger, 1991; Palincsar, 1998) (Scales 1 and 2: 2, 6). Pedagogical content knowledge needs to consist of creating a culturally-sensitive, interactive, community-based learning environment where students can shape their learning based on their diverse social and personal knowledge to make the subject matter meaningful (Grabinger, 2004; Kolb, 1994; Mahn, 1999; Moll, 1990; Salomon & Perkins, 1998; Steiner & Mahn, 1996; Yang, Yeh, and Wong, 2011) (Scales 1 and 2: 4, 6, 7).

Students' learning develops if they have the opportunity to share their personal and social experiences with the subject matter to demonstrate the uses of the subject in meaningful and practical ways (Anderson & Dron, 2011; Bordrova, 2007; Dillenbourg, et al., 1996; Lave & Wenger, 1991; Palincsar, 1998) (Scale 3: 4, 5, 6). Students subsequently need to practice the knowledge gained and demonstrate application of the subject matter in socially interactive contexts embedded in culture and community (Grabinger, 2004; Kolb, 1984; Mahn, 1999; Moll, 1990; Salomon & Perkins, 1998; Steiner & Mahn, 1996; Yang, et al., 2011) (Scale 3: 9).

Gagne's Instructional Design Framework.

Overview. Gagne's (1977, 1985) theory of online instructional design builds on Dewey's and Vygotsky's theories to create a framework for online curriculum and instruction. A few of the qualities in this framework are embedded within several empirical studies that will be examined shortly **(**Hall, 2006; Hurtado, 2001; Malkin & Stake, 2004; Sciame-Giesecke, 2009; Yang, et al., 2011; Young, 2003).

According to Gagne (1977, 1985), the concept of instructional design consists of online curriculum and instruction, which needs to develop students' talents, skills, and motivation to communicate in their diverse social environment. Online curriculum and instruction needs to be designed to enable learners to proceed from their current level of understanding the subject matter to a higher level of learning and mastery (Barber, 2011; Campbell, Schweir & Kenny, 2009; Dixon & Dixon, 2010; Lockee, Burton, & Potter, 2010; Sims, 2009). Thus, prior learning' is also preparatory to learning and may need to be incorporated in the capability being newly learned.

Application. The characteristics of Gagne's framework by scholars who have expanded on his theory are applicable to the items in the measure used in this study, which is referred to in parentheses. According to Chickering and Gamson (1987), online instruction in higher education needs to maintain consistent interaction between the learners, between the learner and the instructor, and between the learner and the content through activities, discussions, and collaborative work. Online curriculum needs to contain learning opportunities to integrate experience with real-world activities that enable students to achieve the learning outcomes of the course and to make the learning meaningful (Allen & Seaman, 2010; Barber, 2011; Gazi & Aksal, 2011; Griffin & Jackson, 2011; Moller, 1998; Presters & Moller, 2001; Reigeluth, 1999;

Snyder, 2009; Yanchar, South, Williams, Allen & Wilson, 2010) (Scales 1 and 2: 5, 6, 8). Thus, online pedagogical content knowledge needs to consist of collaboration, sharing of ideas and experiences, reflection, and interaction to motivate and engage students (Bielaczyc & Collins, 1999; Connick, 1997; Cyrs, 1997; Johnson & Aragon, 2002; Jonassen, 1998; Jonassen, 1999; Lowes, 2011; Mayer, 1999; Moller, 1998; Nuriddin, 2011; Presters & Moller, 2001; Reigeluth, 1999; Snyder, 2009) (Scales 1 and 2: 1, 9, 10, 12).

Students' learning needs to progress their knowledge and skills towards the achievement of the identified learning outcomes (Allen & Seaman, 2010; Lowes, 2011; Moller, 1998; Nuriddin, 2011; Reigeluth, 1999; Yanchar, et al., 2010) (Scale 3: 8). Students' prior learning prepares their cognitive development by enabling them to build upon new concepts and skills (Aronson & Briggs, 1983; Barber, 2011; Cyrs, 1997; Gagne, Briggs & Wager, 1992; Gagne, Wager, Golas, Keller, 2005; Pietry, Mouton, & Reigeluth, 1987; Reigeluth, 1983; Smith & Ragan, 2000) (Scale 3: 2, 4, 6).

Bank's Multicultural-Diversity Framework.

Overview. Bank's (2001a, 2001b, 2004) conceptual framework about multicultural education expands on Dewey's and Vygotsky's frameworks to address students' diverse learning needs and encompasses the examination of diversity in particular. A few of these qualities in this framework are embedded within several empirical studies that will be examined shortly (Garcia, Hoelscher, & Farmer, 2005; Gudeman, 2001; Hurtado, 2001; Lee, 2007; Nieto & Booth, 2010; Velde, et al., 2003).

Out of five dimensions in Bank's (2004) framework, two are of particular interest: 1) content integration and 2) the knowledge construction process. Content integration involves using information from a variety of cultures and groups to illustrate key concepts in the subject

matter that needs to be integrated within the curriculum. The knowledge construction process involves teachers helping students to first understand how knowledge is created and subsequently how it can be influenced by the diversity represented in and outside the classroom. Thus, curriculum and instruction needs to consist of this construction of cultural knowledge to create diverse learning experiences through social, reflective and interactive processes.

Given Banks' contribution to the development of multicultural education, the term itself represents an overarching educational reform that addresses the diversity of students. It serves to assure that students from all diverse groups receive an education that is equal to all to ensure the same opportunities of success and social mobility as everyone (Cushner, McClelland, and Safford, 2009). With the growth of diversity, both the student population and students' learning needs have become varied and influenced by prior knowledge, background, and societal involvement (Gurin, Dey, Hurtado, & Gurin, 2002; Nieto, 1999; Rothstein-Fisch & Trumbull, 2008; Sheets, 2005; Ravitch, 2005). Similarly, faculty members have also become diverse and bring to teaching additional diverse perspectives and teaching styles (Baltes, 2010; Cohen & Davidovich, 2011; Roberts & Smith, 2002).

Diversity, therefore, is a critical component in the classroom that affects the ways in which teaching addresses, embraces, and changes to meet students' learning needs. Diversity also involves change within oneself, both for the student and the instructor. It impacts one's own perceptions, attitudes, and skills to affect change in the larger dimensions of society (Cohen & Davidovich, 2011; Roberts & Smith, 2002). Thus, all these environments: self, classroom, educational institution, and society, are connected, influencing each other daily (Cushner, et al, 2009), which faculty, especially in an online classroom environment, need to be cognizant of. It is this awareness that is being examined in this study.

Application. The characteristics of Bank's framework by scholars, who have expanded on his theory and focused more specifically on diversity, have examined how the curriculum content of diversity is conveyed to students and how knowledge about diversity is constructed in students. These are applicable to the items in the measure used in this study, which is referred to in parentheses. Curriculum needs to contain learning opportunities that improve the appreciation for and understanding of cultural diversity (Scales 1 and 2: 10). A learning community with inclusive and interactive activities needs to enable students to first share and then eventually learn diverse perspectives, thus constructing new understandings about diversity (Cushner, et al, 2009; Gurin, et al, 2002; Nieto, 1999; Roberts & Smith, 2002; Rothstein-Fisch & Trumbull, 2008; Sheets, 2005; Ravitch, 2005) (Scales 1 and 2: 5, 6, 7, 8).

Instruction needs to consist of constructing knowledge and building skills to work and communicate with diverse people (Scales 1 and 2: 3, 6, 10). It needs to be adapted to understand the diverse backgrounds, experiences, and knowledge of their students (Scales 1 and 2: 8, 13). In addition, instruction needs to consist of encouraging the ability to question and interpret diverse perspectives to engage and motivate students (Baltes, 2010; Cushner, McClellland, & Safford, 2003; Nieto, 1999; Rothstein-Fisch & Trumbull, 2008; Sheets, 2005; Timpson, 2003) (Scales 1 and 2: 1, 9).

For students, prior diverse learning experiences and cultural background can be used to develop interpersonal skills and connect with the instruction and curriculum (Scale 3: 2, 3, 5). Thus, reflection, experience, and a variety of diverse learning opportunities are critical to helping students engage, learn, and participate in diverse environments (Scale 3: 8, 11). Students learn to foster diverse interpersonal connections, resulting in effective social relationships in real-world

contexts (Cote, et al., 2005; Gurin, et al., 2002; Cushner, et al., 2003; Nieto, 1999; Ravitch, 2005) (Scale 3: 8, 9).

Empirical Framework

This section provides a review of the empirical research that examines the variables in the research hypotheses. The review is divided into two parts that examine the relationship between: 1) the independent molar variable "faculty's pedagogical content knowledge" and the dependent molar variable "student learning," and 2) the potential moderating molar variable " online curriculum and instruction" and the dependent molar variable "student learning." This review of research literature is further subdivided into two sections: first being the summary, followed by the critique. The rationale of providing the critique after the summary was for the following reasons: a number of studies discussing different variables have common criticisms; therefore, it was more effective to present the critique of all the applicable studies simultaneously in a meaningful way. The reader can readily understand the limitations and strengths of the studies. Thus, the critique component of this review of literature systematically addresses the limitations, followed by the strengths of the studies, which this researcher attempts to replicate. A final summation is provided at the end that synthesizes the key concepts about the variables, which lead to the justification of the hypotheses.

Faculty's Pedagogical Content Knowledge and Student Learning. Faculty's pedagogical content knowledge refers to "knowledge" about teaching diversity and "skills" in teaching diversity (molecular variables) (See Operational Definitions, Ch. 1, pp. 15-16). Student learning refers to "cognitive learning" and "socio-emotional learning" (molecular variables). These variables as examined in the empirical studies are applicable to the items in the measure used in this study, as noted in parentheses.

The studies are examined in the following order: 1) knowledge of teaching diversity; 2) skills in teaching diversity; and 3) how both knowledge and skills in teaching diversity combined relate to students' cognitive and socio-emotional learning.

Summary of studies. First, Garcia, Hoelscher, and Farmer (2005) examined faculty across a variety of institutions that showed limited local knowledge in handling diversity issues, leaving them unprepared for challenging, diverse interpersonal situations (Scale 1: 3). Second, this faculty also lacked the skills to teach diversity. Such skills included the inability to accommodate students' diverse needs in learning, to be comfortable managing differing perspectives, and to be able to create a safe and effective learning community (Scale 2: 7, 11). Third, this resulted in negatively influencing students' cognitive ability to learn (Scale 3: 4, 5). Socio-emotionally, students were hesitant to share perspectives for fear of confrontations and subsequent miscommunication and lacked motivation to learn because their needs remained unmet (Scale 3: 6, 8, 9).

Moore, et al. (2010), Parke and Oliver (2008), Rowan, et al (2001), Major and Palmer (2006) and Moriarty (2007) examined faculty's knowledge and skills in teaching methodologies. First, Moore, et al. (2010) and Moriarty (2007) both found that knowledge about diversity was critical to enhancing the learning outcome (Scale 1: 3, 8). Parke and Oliver (2008) and Rowan, et al. (2001) found that knowledge about the subject matter was conceptualized through teaching itself, which involved a variety of instructional methods that were adapted and evolved to capture students' learning needs. Major and Palmer (2006, 2009) found that previous knowledge about the content and teaching it served as the stepping stone towards transformation of instructional methodologies used to address students' learning. Second, the studies found that this knowledge translated into teaching skills that consisted of

integrating inquiry learning, interaction and discussion between students, and recognition of students' learning styles to increase diversity awareness in students (Scale 1: 7, 10, 11). Moore, et al. (2010), Rowan, et al. (2001), Major and Palmer (2006, 2009), and Parke and Oliver (2008) further examined faculty's use of reflective teaching skills that examined and developed experimentation of instruction for diverse learning needs. This enhanced their pedagogical skills to help students explore diverse social relationships (Scale 1: 8, 13).

Third, the pedagogical content knowledge in Moriarty's (2007) and Moore, et al. (2010) studies resulted in students' cognitive learning needs being met, which consisted of: 1) the recognition about themselves as cultural beings, 2) the intersection of their culture with others, and 2) increased awareness about diverse individuals (Scale 3: 5, 6). Parke and Oliver (2008) and Major and Palmer (2009) found that students' cognitive learning needs were met through instructor's 1) transformation and adaptation of instructional methods, 2) evaluation of students' work, and 3) reflection of students' goals and skills achieved that influenced future content and instruction. Socio-emotionally, students developed an increased sensitivity and ability to create positive interactions and acceptance of differences that help build professional, personal, and social relationships as well as the ability to question, reflect, and interpret ideas creatively and critically to construct new meaning and understanding of the content (Scale 3: 8, 9).

Six studies examined only one set of pedagogical content knowledge extensively, either knowledge or skills in teaching about diversity. First, Lee (2007), Nieto and Booth (2010), and Velde, et al. (2003) discovered that faculty's strong belief and preparation in teaching about involved demonstrating knowledge about diverse cultures and their students' backgrounds within one institution and specific disciplines (Scale 1: 3, 5, 13). Second, Gudeman (2001), Hurtado (2001), Malkin and Stake (2004), and Yang, et al. (2011) broadly examined faculty

who utilized specific skills in teaching diversity that influenced students' learning about diversity. Skills demonstrating this knowledge included building, sharing, and reflecting on activities and experiences with ethnic communities through the content (Scale 1: 6, 7). These skills enabled faculty to engage students in interactive activities that developed cultural competence, such as identifying prior understandings about diversity, building communicative abilities, and responding to diverse contexts (Scale 1: 10, 12).

Third, the result of such pedagogical content knowledge influenced students' learning about diversity. Hurtado (2001), Velde, et al. (2003), Lee (2007) and Gudeman (2001) found that students' cognitive development involved more interaction with and understanding of fellow classmates as well as themselves and improved their ability to handle social situations (Scale 3: 5, 6). Malkin and Stake (2004), Nieto and Booth (2010), and Yang et al. (2011) found students cognitively demonstrated a higher level of intercultural sensitivity from faculty members who had knowledge of their cultures. Socio-emotionally, these students believed that faculty members who learned more about their diverse backgrounds and needs helped them feel comfortable in the American culture (Scale 3: 8, 10, 13).

Critique of studies. All of the above studies mentioned the importance of knowledge and skills in managing sensitive diversity issues and diverse learning needs of students. However, there are three limitations among some of the cited studies. First, all of the studies identified teaching skills, but none of the skills had conceptual underpinnings of Dewey, Vygotsky or Banks, which is what this investigator focuses on.

Second, four of the studies did not specify the exact disciplines of the participants (Garcia, et al., 2005; Gudeman, 2001; Hurtado, 2001; Moore, et al., 2010; Yang, et al, 2011). Discipline-specific faculty instruction can impact specific programmatic actions, characteristics,

and needs of individual campuses, their faculty, and their students. This is a weakness because we do not know the effect the discipline may have on the independent and dependent variables. This study will specify the disciplines of the participants, thereby identifying the specific gaps in pedagogical content knowledge to teach diversity.

Third, few studies did not report any evidence of faculty's knowledge about diversity to skillfully address students' diverse needs (Garcia, et al., 2005; Gudeman, 2001; Hurtado, 2001; Yang, et al., 2011). This is a weakness because not only were the identified skills limited, but also there is no further perspective on the kind of knowledge faculty brings to the classroom. This proposed study would examine the knowledge and skills about teaching diversity that faculty bring to the classroom.

The above studies, however, have two notable strengths that this proposed study intends to replicate. First, all studies except Malkin and Stake (2004) focused on students' learning from the faculty's perspective in managing diversity in their instruction. This proposed study will gather similar data on students' learning based on faculty's perspective.

Second, seven of the studies have theoretical underpinnings of Shulman's Pedagogical Content Knowledge framework, Dewey's Progressive-Constructivist framework, Vygotsky's social constructivist-socio-historical framework and Banks' multicultural framework. Parke and Oliver (2008), Major and Palmer (2006, 2009), and Rowan, et al. (2008) based their entire study on Shulman (1986, 1987, 1991) to express the complexity knowledge and skills needed for instruction to meet students' learning needs. Yang, et al., (2011) and Nieto and Booth (2010) referred to Vygotsky (1978) to express the constructivist and social learning environments to address students' diverse learning needs. Hurtado (2001) has underpinnings of Vygotsky and Dewey as developed by Chickering and Reisser (1991) who argued that the instructional skills

of trust and collaborative work between the student and the instructor were needed to develop students' cognitive and socio-emotional learning. Moore, et al. (2010) refers to Gay (2000) who argues in favor of including cultural sensitivities in pedagogical content knowledge to help students reflect upon cultural perspectives and develop diversity awareness. This indirectly supports Banks' multicultural framework. This proposed study has aligned to the Dewey's, Vygotsky's, and Bank's major theoretical frameworks to show the relevancy of all the standards in the measure.

Online Curriculum and Instruction and Student Learning. The "Online curriculum and instruction" section potential moderating molar variable refers to "online curriculum design" and "online instructional strategies" (molecular variables) (See operational definitions, Ch. 1, pp. 15-16). Their influence on the dependent molar and molecular variables will be examined. Groupings of the studies will be examined in the following order: 1) online curriculum design; 2) online instructional strategies; and 3) how both online curriculum design and online instructional strategies influence students' cognitive and socio-emotional learning. In addition, these variables, which appear in the empirical studies, are applicable to the items in the measure used in this study, as noted in parentheses.

Summary of studies. Rogers (2007) and Chao, Saj and Hamilton (2010) found that instructional designers who may be involved in the curriculum design process cannot approach the online courses as a one-size-fits-all mindset. The focus needs to be on skills and real-world contexts rather than on content learning. The creation of courses, in turn, needs to occur in collaboration with faculty input to create a cohesive set of quality standards. Hall (2006), Sciame-Giesecke (2009), Bailey and Card (2009), Seok, Kinsell, DaCosta and Tung (2010), Gazi (2011) and Wang (2007) found that critical to online curriculum design was the integration of

learning activities, discussions, collaborative projects, and a variety of content that represent diverse perspectives. Providing these elements in the online format helped create consistent interaction between students and the instructor (Scale 2: 4, 7, 11).

Rogers (2007), Bailey and Card (2009), Sciame-Giesecke (2009), Leong (2011), Gazi (2011), Koenig (2010), and Young (2003) found that faculty who used a variety of teaching strategies through discussions and written assignments as part of the curriculum design were most successful in developing students' skills (Scale 2: 4, 6, 12). Conceicao (2006), Grasha (2000), Seok, et al. (2010), Drouin and Vartanian (2010), Murdock and Williams (2011), and Malkin and Stake (2004) found that more specific online instructional strategies and technological skills used by faculty established an interactive relationship between the instructor and student, content and student, and student to student (Scale 2: 2, 3, 5, 7). Faculty who possessed further understanding of students' social and behavioral needs displayed detailed knowledge about diversity and provided learning opportunities with variation in learning styles and performance that capitalized on students' skills, progress, and motivation (Scale 2: 4, 9, 10, 11). Edwards, Perry and Janzen (2011) and Bailey and Card (2009) found that faculty effective in achieving students' progress and motivation were those who maintained high expectations of them and challenged them to achieve beyond their current skills (Scale 2: 10).

Third, the result of careful online curriculum design and interactive online instructional strategies influenced students' cognitive and socio-emotional outcomes within the classroom. Rogers (2007), Edwards, et al. (2011), Bailey and Card (2009), Sciame-Giesecke (2009) and Young (2003) found that students exhibited increased interest in the content and their performance that improved their cognitive learning about diversity (Scale 3: 9, 10, 11). Students were willing to discuss and share their cultural experiences and perspectives so long as they did

not perceive cultural differences with the instructor. Socio-emotionally, students demonstrated the desire to learn more, sensitivity to each other's perspectives, and understanding of each other's unique needs for an interactive and respectful classroom climate (Scale 3: 2, 4, 7). Drouin and Vartanian (2010) Murdock and Williams (2011) found that students were further motivated when they felt a sense of community within the class (Scale 3: 7).

Hall (2006), Seok, et al. (2010), Koenig (2010), and Wang (2007) found that students preferred the online medium as a means of maintaining communication and collaboration on projects and assignments with each other as well as with the instructor to improve their cognitive learning (Scale 3: 6). Socio-emotionally, these students, notably Asians or non-Americans, found it difficult to build affinity between classmates since students were from around the world. However, their self-motivation to learn was very high, and they were willing to participate with classmates in order to meet the requirements of the course (Scale 3: 8). American students showed that the interaction and participation served as excellent ways to connect with both students and the learning material (Scale 3: 9, 11).

Conceicao (2006), Chao, et al., (2010), Grasha (2000), Edwards, et al. (2011), Bailey and Card (2009), Leong (2011) and Malkin and Stake (2004) found that students showed increased cognitive growth in understanding equality issues and mastery of skills through interaction with both faculty and peers (Scale 3: 7, 9). Students also demonstrated more independence and self-direction in their cognitive learning; socio-emotionally, students reported increased confidence in career goals and appreciation for diversity (Scale 3: 9, 11).

Critique of studies. All of the above studies mentioned the importance of incorporating diversity issues and managing diverse learning needs of students in online curriculum and instructional design. However, there are four limitations among the cited studies. First, all the

studies identified online curriculum and instruction that primarily reflected practices with little reference to conceptual framework of Shulman, Dewey, Vygotsky, or Gagne, which is what this investigator focuses on.

Second, none of the studies examined discipline-specific online curriculum and instruction to determine specific programmatic actions, characteristics, and needs of individual campuses, their faculty, and their students. This is a weakness because the specific skills to improve the teaching of diversity for a specific campus cannot be identified. This proposed study intends to capture the specific gaps in online curriculum and instruction to teach diversity for specific disciplines that can help identify the needs of programs, its faculty, and its students within the campus.

Third, nine of the studies did not consist of empirical data on the influence online curriculum and instruction has on students' learning (Bailey & Card, 2009; Chao, et al, 2010; Conceicao, 2006; Edwards, et al., 2011; Gay, 1988; Hall, 2006; Rogers, 2007; Sciame-Giesecke, 2009; Wang, 2007). The research available primarily consists of exploring or qualitatively examining this relationship. There is not enough quantitative research done that constructs workable measures to collect and reveal the results of this relationship. This proposed study intends to add to the much-needed quantitative research that examines the relationship between online curriculum and instruction and students' learning.

Fourth, none of the studies examined the relationship between online curriculum design with online instruction. Whether faculty or instructional designers design online curriculum, the impact the design has on instruction remains a mystery. None of the studies examined whether such a design limits the scope for faculty to incorporate diversity into their online curriculum. Only two studies (Chao, et al., 2010; Gazi, 2011) examined the necessity and helpfulness of

guidelines in instructional design, provided these guidelines were adaptable to the needs of the course curriculum, instructor and instructional designer. This proposed study intends to discover whether there is a relationship between online curriculum design and faculty's online instruction to integrate and address diversity to meet students' learning needs.

The above studies, however, have notable strengths that this proposed study intends to replicate. First, all studies focused on students' cognitive and socio-emotional learning needs as the goal of online curriculum and instruction. This proposed study will gather similar data on students' learning based on faculty's perspective in practicing a precise set of established instructional standards within the online curriculum design.

Second, five of the studies have theoretical underpinnings of Dewey's, Vygotsky's, Gagne's, and Banks' frameworks. Gazi (2011) maintains underpinnings of Dewey's constructivist approach to address students' satisfaction in learning the subject matter. Hall (2006) referred to Vygotsky (1981) to express the constructivist and social learning environments to address students' higher level learning needs. Malkin and Stake (2004) have underpinnings of Vygotsky and Dewey as developed by Chickering and Reisser (1991) who argued that interaction and collaboration of work between the student and the instructor were needed to develop students' cognitive and socio-emotional learning. Young (2003) has underpinnings of Gagne as developed by Chickering and Gamson (1987), who advocated that a variety of learning styles and activities in the online environment is needed to engage, motivate, and influence students' learning. Sciame-Giesecke (2009) refers to Banks' multicultural framework in focusing on the cultural sensitivities that needs to be considered when teaching in the online environment to help students reflect upon cultural perspectives and develop diversity awareness. This proposed study aligns its measure to the four major theoretical frameworks to

show the relevancy of the theoretical standards needed in online curriculum and instruction and to teach diversity.

Summation. Through the literature review, it became apparent that Curriculum and Instruction is best viewed as being comprised of two components: the actual course Content, and the Scope, or flexibility that is built into courses. Course content in the setting of this study is prescribed, predesigned, and is thus essentially static. However, scope is dynamic, allowing faculty the flexibility to interact and employ their knowledge and skills, or not. Because the content taught would be highly related to content learned, assessing this relationship on how much course content predicts the students' learning in this particular sample would be a logical first step. Thus, in Hypothesis 1, online course content would need to be a predictor variable in a simple linear regression analysis.

Additionally, the literature review suggested that the faculty's knowledge and skills would impact students' learning through the online content. Therefore, adding faculty's knowledge and skills as an additional predictor to the online content to examine how faculty's teaching impacts the teaching of the content would be the second logical step. Thus, in Hypothesis 2, these two predictors would need to be examined through a hierarchical regression.

Finally, because online scope is dynamic, it is the mechanism through which faculty can employ their knowledge and skills to enhance students' learning. Therefore, examining the relationship between faculty's knowledge and skills and online course scope and how these two predictors' impact students' learning would be the third logical step. Thus, through hypothesis 3, online scope would need to be examined as a potential moderating variable to determine its impact on faculty's knowledge and skills as well as students' learning about diversity.

Establishing the direct connection between online content and student learning will show the baseline relationship between content taught and content learned. Layering it with the interaction of faculty's knowledge and skills becomes the next step. Then examining whether the relationship between faculty's knowledge and skills and the students' learning about diversity was moderated by the online scope will bring an answer to the final research question.

CHAPTER 3: METHODOLOGY

The purpose of this study was to examine the relationships between curriculum content, scope or flexibility of curriculum, teachers' knowledge and skills to teach diversity, and students' learning about diversity, all within an online context. Specifically, this study addressed three research questions and the related hypotheses:

Research Questions.

1) Does the content of the online curriculum design impact students' learning about diversity?

2) Does the faculty's knowledge and skills about teaching diversity add to the students' gaining knowledge about diversity through the online course content?

3) Does the scope of the online curriculum moderate the effect of faculty's knowledge and skills about teaching diversity on students' learning about diversity?

Research Hypotheses.

H1. Online course content (scores on the Subscale 2a) will predict students' learning about diversity (scores on Scale 3) on a 4-point rating scale developed on the INTASC standards.

H2. Faculty's knowledge and skills (scores on Scale 1), in addition to online course content (scores on Scale 2a) will account for an increased amount of variance over students' learning about diversity (scores on Scale 3) on a 4-point rating scale developed on the INTASC standards.

H3. The relationship between faculty's knowledge and skills (scores on Scale 1) and students' learning about diversity (scores on Scale 3) will be moderated by the scope of online curriculum design (scores on Subscale 2b) on a 4-point rating scale developed on the INTASC standards.

This chapter includes the participants, instrumentation, data collection procedures, and data analysis.

Participants

Participants in this study were recruited from a Midwest, non-profit, fully accredited, two-year, degree granting, and higher educational institution. The college serves over 34,000 students worldwide with the help of the online department. The college awards 44 Associate degrees and 60 total programs. All the programs require liberal arts courses. There are approximately 12,400 students per year who take online courses to support their schedules. Faculty members who teach online liberal arts courses include a combination of full-time and part-time faculty, all of who hold a graduate degree that qualifies them to teach in their field of study for the college. Online courses run 12 and 15 weeks per semester.

The minimum sample size for this study was identified by use of Cohen's power table (Cohen, 1992). To ensure adequate statistical power (.80) across all analyses, necessary sample size was determined based on an alpha level of .05 and moderate effect sizes, which would suggest clinical importance. Based on these criteria, 76 participants were necessary to carry out the primary analyses.

One hundred and nineteen faculty members affiliated with the above-noted institution were asked to participate in this study. Potential participants were selected on a nonrandom, purposive sampling basis consistent with predetermined inclusion criteria. There were three criteria for inclusion in this study: 1) possession of a graduate degree in the discipline taught, 2) completion of online training specific to the college, and 3) a minimum of one semester of experience in which they taught the online course in their discipline at this college. The researcher was provided 119 emails to contact faculty who taught online and met the above criteria. The researcher emailed the Information Sheet and recruitment letter as approved by IRB to each faculty member. Interested participants were given the option to complete the survey

online or in-person. The researcher met participants who opted to complete the survey in person.

A total of 104 faculty members ultimately participated in this study. Of these participants, 55

completed the survey in-person and the other 49 completed the online version. Participant

demographics will be presented in detail in Chapter 4.

Protection of Human Participants

This study adhered to the ethical guidelines for the Protection of Human Participants set

forth by Wayne State University's Internal Review Board (IRB). All participants were provided

with a thorough explanation of the purpose of the study, their rights as volunteers, and their

ability to discontinue participation at any time. They were each provided with the Information

Sheet. In order to preserve confidentiality, each questionnaire was assigned a number, so that

identifying information was not connected to the data. It is nearly inconceivable that physical or

emotional harm came to the individuals whose responses were used in the current study, as all

records have no information that could connect them to particular individuals.

Instrumentation

The instruments used for collecting data for this study include the Faculty Demographics

and Background Survey (FDBS) and the Diversity Teaching Survey (DTS).

Faculty Demographics and Background Survey (FDBS). A demographics and

background survey with nominal scale items was created by this researcher to collect

information regarding the experience and preparation faculty bring to their teaching online

courses, with and without diversity themes or pre-designed curriculum.

The items in this survey (see Table 1) included multiple-choice and yes/no questions

designed to assess the following domains: 1) the extent of faculty education, academic

preparation in teaching, education in diversity, professional development focused on teaching

diversity, 2) experience in teaching for K-12, higher education, online education, courses in liberal arts, diversity content, as well as full- or part-time faculty status, and 3) direct experience with curriculum design. Other items address faculty residence and geographical location of on-ground or online teaching. These demographic variables were examined to determine possible influence on the primary variables of interest in this study.

Table 1: *Items in Faculty Demographic and Background Survey for Descriptive Analysis*

Location and Frequency	Education	Experience	Number of Items	Scale Type
Residence	Subject matter	Teaching subject matter		
Teach Online	Teaching	Teaching online	16	Nominal
Teach subject matter online	Online	Curriculum Design		
Teach in higher education	Diversity	Diversity		

The researcher provided this survey for review to Dr. Marc Rosa, Dr. Navaz Bhavnagri, and Dr. Bulent Ozkan. Bhavnagri found the questions beneficial (Personal Communication, July 17, 2010). Ozkan noted that the scale was nominal and that faculty could answer the questions rather quickly (Personal Communication, June 25, 2010). Such information, combined with the second measure, was later analyzed in an attempt to understand whether: a) faculty require further professional development in teaching diversity within a prescribed curriculum; b) the time has come for faculty to undergo a more formalized academic preparation to teach online higher education courses; c) faculty have more flexibility and utilize the opportunity to incorporate diversity into their courses when and if they design their own courses; and d) prescribed curriculums stifle faculty's ability to utilize their instructional skills to teach diversity within their subject matter, especially for part-time faculty who are typically assigned a pre-

designed course.

Diversity Teaching Survey (DTS). The second instrument used in this study was the Diversity Teaching Survey. The DTS intended to examine faculty's opinion about their knowledge and skills to teach diversity, the online curriculum design to teach diversity, and their students' demonstrated learning about diversity within the subject matter. The researcher went through a systematic approach of four main phases in constructing this instrument. The first phase focused on examining existing measures to find a usable measure for this study. The second phase focused on examining standards to design the measure for the study. The third phase focused on how to construct a measure. The fourth phase focused on the actual construction of the measure in five steps.

Phase 1: Examining existing measures used in research. This researcher explored measures of teaching diversity available in empirical research in an attempt to identify an appropriate instrument to consider for use in this study. The researcher found the Faculty Classroom Diversity Questionnaire (FCDQ; *Diversity Report*, 2000), which initially appeared appropriate to use because it examined the integration of teaching diversity in classrooms and pedagogy, just as this study also examines; however, on closer examination, there were four shortcomings of that measure. First, the measure involved questions related to face-to-face teaching. Given that this researcher's study addresses online instruction, the FCDQ was determined to inappropriate. Second, the measure examined whether teaching diversity impacted the classroom dynamics, which was not a focus of the current study.

Third, only eight out of over 54 items on the FCDQ were dedicated to pedagogy. This did not yield enough data to base this researcher's study on. Fourth, the questions of the FCDQ completely depended upon identifiable characteristics of diversity in the student population by

the teachers, which is not true in the online environment. Faculty and students cannot and do not typically identify characteristics of diversity. Thus, the measure was abandoned because the data depended upon face-to-face courses where faculty and students have the advantage of visibly and orally identifying diverse characteristics. Modifying the questions, then, became futile because the questions would have lost their meaning and purpose.

Next, this researcher examined the Student Multicultural Relations Survey (Rothfarb, 1992), which examined students' education about diversity. The questions of that measure seemed to focus on the development of students' knowledge and disposition and initially appeared appropriate to use in this researcher's study; however, upon closer examination, it became apparent that the items focused on students' perceptions about their intergroup relations with each other, teachers, and administrators. Examining interpersonal relations was not the focus of this researcher's study; hence, this measure was abandoned.

Finally, the researcher examined a measure, entitled the Diversity Cohort Questionnaire, which initially appeared appropriate to use because it examined, in part, the influence of faculty members' pedagogical knowledge on students' development of knowledge about diversity (Potthoff, Dinsmoore & Moore's, 2001); however, upon closer examination, not all the elements used in the measure applied to the current study because the focus of that measure was more on determining the equity of knowledge and skills between four ethnic groups based on students' perceptions. Such information is not consistent with the objective of this study because neither does it focus on specific ethnic groups of students, nor does it focus on the issue of social justice within the curriculum, through instruction, or in students' lives. Thus, that measure was abandoned. Given that the measures available in the current literature did not fully meet the requirements of this study, the alternative was for the researcher to create a measure based on

standards of diversity and pedagogy.

   Phase 2: Examining standards to create a measure. In three systematic steps, the researcher examined standards that defined pedagogical and diversity principles.

   Step 1: Upon consultation with Rosa and Bhavnagri (Personal Communication July 28, 2009), the researcher considered standards defined by the National Association of Multicultural Education (NAME) and the National Council for Accreditation of Teacher Education (NCATE) to use as a framework to evaluate faculty knowledge and skills. NAME identified diversity curriculum standards. NCATE identified instructional standards.

   Step 2: This researcher proceeded to create an intersection between NCATE and NAME in an attempt to construct an appropriate measure for use in the current study. The researcher extrapolated wording from both sets of standards to reflect this intersection; however, upon creating a matrix, the descriptions of the standards were too broad, which was further concurred through discussion with Bhavnagri (Personal Communication, August 4, 2009). Rosa and this researcher agreed that further explication of the NAME standards would lose the essence of meaning and prove futile to use (Personal Communication, February 22, 2010). Therefore, creating a measure that used the NAME and NCATE standards was ultimately abandoned.

   Step 3: Upon discarding NAME and NCATE as the foundation for the measure's construction, the researcher considered the Interstate New Teachers Assessment and Support Consortium (INTASC) principles and standards (1992). Despite this standard focusing primarily on K-12, this researcher found that it offered the potentiality of creating a measure with a unifying set of standards applicable to the higher education environment. Three main benefits in using INTASC (1992) standards as the basis for constructing the measure were: 1) INTASC (1992) was developed from the constructivist theory, which is applicable to the basis for online

curriculum design, 2) each principle defined in INTASC (1992) explicitly details instructional methodologies, creating a more consistent interpretation of each standard, and 3) the terms used in INTASC were based on NCATE's definitions, thereby creating uniformity and consistency in meaning. Since the INTASC (1992) standards provided considerable content to create the measure, the researcher concluded that the standards could be modified in a way so that faculty could sufficiently understand and respond to the questions. The researcher was now ready to develop a basic knowledge of test construction to understand how best to create an appropriate measure.

Phase 3: Building basic knowledge in constructing surveys. Because surveys are the most functional way to measure opinions and examine the relationships between variables, this researcher began developing a basic understanding about constructing surveys. The following recommendations were considered in the development of the survey, and were applied in its construction during Phase 4, as noted in parentheses throughout this section. Numerous sources provided standard guidelines in constructing surveys (Alreck & Settle, 1995; Fink, 2003; Fink, 2006; Fowler, 1995; Fowler, 2002; Gillham, 2000).

First, Alreck and Settle (1995) indicate that the most effective survey questions should have three attributes: focus, brevity and clarity. To this regard, the focus should be directly on a single and specific issue that the researcher needs to know (See Steps 3 and 5, under Phase 4). Short questions are less prone to error and less cumbersome on respondents to answer (See Step 3, under Phase 4). Second, the meaning of the question needs to be completely clear to all respondents so that the interpretation of the questions occurs the exact same way by each respondent (See Steps 5, under Phase 4). It is also recommended to examine the questions for focus, brevity and clarity (See Steps 3-5, under Phase 4).

Third, Gillham (2000) indicates that using a variety of question formats prevents boredom for respondents and minimizes their discontinuation of the survey (See Step 4, under Phase 4). Fourth, the standard rules for design reinforce the importance of the survey consisting of closed questions rather than open-ended questions, answerable questions that fit with the respondents' common knowledge and experiences, and interesting questions that respondents will want to answer accurately (Alreck & Settle, 1995; Fink, 2003; Fowler, 1995) (See Steps 1, 3 and 5, under Phase 4). These characteristics are applied in the fourth phase, the actual construction of the survey.

Phase 4: Constructing the survey. Having gained knowledge of the characteristic of a successful survey, the researcher systematically applied this knowledge to construct the survey in six distinct steps.

Step 1: Determining the INTASC principles to use. This researcher methodically determined whether each principle and the standards within were a) relevant to the study, b) related to instructional skills that faculty could be demonstrating in higher education with or without teacher education preparation, and c) applicable within the context of an online, pre-designed course (See Appendix F for list of INTASC principles). Thus, all the principles were used except for #8 and #10. INTASC Principle #8 was not used because faculty members as a whole are not part of the decision-makers for creating assessments. INTASC Principle #10 was not used because this faculty will not be working within the context of families, parents, etc of the student population in our online courses (INTASC, 1992). The exclusion of these two principles allowed the researcher to include only those questions that would relate to faculty members' experiences and common knowledge (Alreck & Settle, 1995; Fink, 2003; Fowler, 1995).

Step 2: Creating the survey. The researcher discovered an overwhelming number of standards per principle. These initially yielded 100 questions and were subsequently revised to capture the entire meaning within one to two questions per principle. This resulted in 60 questions total on a 4-point rating scale, which was the first step towards achieving brevity (Alreck & Settle, 1995).

Step 3: Including the experts. The researcher then gave the survey to three experts at a four-year college for review. One expert oversees the online composition curriculum and faculty, the other teaches composition and oversees the curriculum design, while the other oversees online general education disciplines. According to the three experts, the questions appeared redundant among the three categories of knowledge, skills and disposition. The consensus was that the skills category pre-supposed knowledge of the standard and the disposition to utilize the skill at all. Thus, it was agreed upon that since the only difference between the questions were based on reflecting the words "knowledge," "skills," and "disposition," the duplications could be removed to reflect action on the part of the faculty, i.e. skills. Ultimately, pedagogical knowledge and skills were measured together under one scale. This would mean reducing the number of questions by half. Thus, meeting Alreck and Settle's (1995) recommendation to ensure brevity was well underway.

The clarity and focus further evolved as the experts recommended that the measure examine whether the curriculum provided such education about diversity through its content and scope. In this way, faculty would be able to relate to the questions because the measure would gather their opinions about not only themselves but also the pre-designed curriculum they had to work with. Reducing the number and length of questions and narrowing the focus to one standard in each question reduced the survey to 37 questions, with 3 scales: 1) faculty

pedagogical knowledge and skills, 2) online curriculum content and scope, and 3) students'
learning.

Within the first two scales, 13 questions were listed, but these required answers to an (a)
and (b) for each question in order to examine the dimensions individually. For example, for scale
1, 13 questions on pedagogical knowledge and skills required an answer to faculty's (a)
knowledge and (b) skills. Similarly, for scale 2, 13 questions on online curriculum design
required an answer to online (a) content and (b) scope. This rendered, within a compact format,
52 total questions between the two scales. Scale 3 had 11 questions with no (a) or (b). Thus, the
actual total number of questions was 63. Consequently, the guidelines of survey research on
maintaining brevity, clarity and relatable questions based on respondents' common knowledge
and experience could be followed (Alreck & Settle, 1995; Fink, 2003; Fowler, 1995).

Step 4: Re-structuring the measure. The above version of the measure did not include the
outcome variable of interest, namely the students' learning about diversity. In order to
incorporate that variable into the measure, the researcher collaborated with the experts and
determined that the #3 (as above) scale on "curriculum scope" could be merged with the #2 scale
on "curriculum content" to form two subscales under Scale 2—Online Curriculum Design. The
#3 scale of questions would then focus on students' learning about diversity.

In consulting with statistical experts, it was determined that this measure could be used to
tease apart the influence of 'faculty knowledge and skills' and 'curriculum content devoted to
diversity' on 'students' learning' (Personal Communication, February 4, 2012). Additionally,
upon further discussion with Ozkan, it was determined that this measure could provide a special
examination of whether scope or flexibility in online curriculum might moderate the relationship
between faculty knowledge and skills and students' learning (Personal Communication, June 25,

2010). In consideration of these suggestions, the scales were organized in the following way: 1) 26 questions on faculty pedagogical knowledge and skills, 2a) 13 questions on curriculum content, 2b) 13 questions on curriculum scope, and 3) 11 questions on students' learning about diversity. In this way, curriculum content and scope could be considered separately in the analyses. This afforded the researcher to apply Gillham's (2000) recommendation to vary the questions to help respondents avoid boredom, be inclined to finish the survey, and maintain thoughtful responses to the questions.

Step 5: Finalizing the measure. Once the measure was further defined, Bhavnagri, Rosa, and the researcher agreed that it reflected the study appropriately and now the wording needed to be refined further with common denominators to add clarity and focus when reading each question. Uniformity in the subscales for the questions on the second scale on curriculum emerged to measure it by a) content and b) scope. Likewise, Scale 3 is coordinated with the numbered items on Scales 1 and 2, each item addressing a specific standard. This afforded the researcher to follow recommendations of maintaining focus, clarity, and closed-question design (Alreck & Settle, 1995; Fink, 2003; Fowler, 1995).

Step 6: Creating the Cover Letters. Having completed the items in the survey, the researcher proceeded to design a cover letter for each survey. Upon consulting Alreck and Settle (1995), the researcher created the letters for faculty to explain: a) the study, b) why they would want it, c) why they were picked, d) how important their input is, e) how difficult will this be, f) how long it will take, g) will they be identified, h) how this will be used, and i) when they should do it.

Scoring. Four-point Likert-type score categories were provided for each item of each scale. For Scale 1 items, the categories consisted of 1 = No Knowledge/Skills, No Training; 2 =

Some Knowledge/Skills, Need Training; 3 = Proficient, Knowledge/Training is Current; and 4 = Expert, Can Train Others. For Subscales 2a and 2b, the categories consisted of 1 = 0 Weeks, No Content/Scope; 2 = 1 to 2 Weeks, Minimal Content/Scope; 3 = 3 to 5 Weeks, Some Content or Scope; and 4 = 6 to 15 Weeks, Thorough Content or Scope. Finally, for Scale 3, categories consisted of 1 = No Evidence; 2 = Some Evidence; 3 = Substantial Evidence; and 4 = Consistent Evidence. The scores on items under each scale/subscale were summed to obtain a composite score for each scale/subscale. Specifically, a composite score was calculated for Scale 1, Subscale 2a, Subscale 2b, and Scale 3. Each composite score could then be analyzed as interval data.

Validity. The content validity of the DTS was examined based on the judgments of at least three experts. With three experts, the researcher was able to obtain a content validity index which indicated the percentage of the items agreed upon by the experts as "essential items" to measure what the instrument was supposed to measure. In this light, 67% of items were deemed essential. In addition, the researcher conducted a pilot study that involved asking participants to determine if they understand the survey questions. Thus, the researcher carefully decided if she needed to add or delete some items, combine two items, or modify the wording of existing items.

Reliability. Once these items were finalized, a pilot test of the DTS was conducted with 16 faculty members to examine the internal consistency reliability of the survey. High internal consistency implies that the items within a scale measure the same construct. Cronbach's Alpha was computed for each scale/subscale. As shown in Table 2, each of the DTS scales demonstrated excellent internal consistency reliability (Tavakol & Dennick, 2011).

Table 2

Internal Consistency Reliability of Items in Diversity Teaching Survey (n=16)

Scale Number	Scale Type	Number of Items	Scale Label	Cronbach's Alpha
1	4-point Likert	26	Faculty's Pedagogical Knowledge & Skill	.97
2a	4-point Likert	13	Online Course Curriculum Content	.94
2b	4-point Likert	13	Online Course Curriculum Scope	.90
3	4-point Likert	11	Students Learning About Diversity	.90

Data Collection Procedures

As discussed previously, participants were offered two ways to complete the survey: online or in-person hardcopy. Included with the surveys was an Information Sheet, which explained the purpose of the study and the nature of the included measures. Following approval to conduct the study from the college and Human Investigation Committee (HIC), and following the completion of the pilot study, the researcher began the data collection process.

For the online survey, the researcher emailed the participants a link to the survey using an online survey tool along with the Information Sheet. Participants were asked to complete the two measures: the Faculty Demographics and Background survey (FDBS) and the Diversity Teaching survey (DTS). No intervention was provided to participants. Once a participant completed the survey, they emailed the researcher notification of completion so that the researcher could distribute a $15 giftcard to the participant, which was offered as incentive for participation. Subsequent reminders to complete the survey were sent over the course of three weeks to those who had not emailed the researcher.

For participants who opted for the in-person hardcopy survey, the researcher distributed the survey with the Information Sheet to the participants as a group in a meeting room or individually in their office. As done with the online surveys, participants were asked to complete the two measures: the Faculty Demographics and Background survey (FDBS) and the Diversity

Teaching survey (DTS). No intervention was provided to participants. In general, participants took about 15 minutes or less to complete the survey. Once completed, the researcher provided a $15 giftcard to the participant. No further follow-up was necessary with the participants and the researcher would leave the room.

Research Design and Data Analysis

This study used a non-experimental static group design, which consisted of various continuous variable analyses. Analyses were descriptive in nature, as variables were not manipulated. Likewise, faculty attributes were accepted without being sub-grouped or extricated for any instructional skill or learning style they may or may not have (Johnson & Christensen, 2008). The data collected from the surveys was entered into a computer file for analysis using IBM Statistical Package for the Social Sciences (SPSS) Version 20.0. The data analysis was generally divided into two sections: descriptive and inferential statistics.

Descriptive Statistics. The researcher calculated descriptive data based on FDBS responses. Frequency distributions are presented in the following chapter. These descriptive data provide a profile of the faculty who teach for this particular college and add depth to understanding the factors that influence the outcome variable in this study. In addition, measures of central tendency and dispersion were used to summarize the continuous data in this study (Fraenken & Wallen, 2006).

Inferential Statistics. Statistical analyses were conducted on DTS responses to address the research questions and test the associated hypotheses (See Figure 1). The Type I error rates will be set at .05 for decisions regarding statistical hypothesis testing. The statistical hypotheses involved the regression coefficients set to null.

Statistical Hypotheses.

Hypothesis 1: Scores on Subscale 2a (Online Curriculum *Content* Design) will significantly predict scores on Scale 3 (Student Learning about Diversity).

H01. Scores on the Subscale 2a (Online Course Content) will be unrelated to scores on Scale 3 (Students' Learning about Diversity), producing a slope of 0.

A simple linear regression was used to test Hypothesis 1 to analyze two continuous variables. The predictor variable was Subscale 2a (Online Course *Content*), and the outcome variable was Scale 3 (Student Learning about Diversity).

Hypothesis 2: Scores on Scale 1 (Faculty Knowledge and Skills) will increment over scores on Subscale 2a (Online Course *Content*) in the prediction of scores on Scale 3 (Student Learning about Diversity).

H02. Scores on Scale 1 (Faculty's Knowledge and Skills) and scores on Subscale 2a (Online Course Content) will be unrelated to scores on Scale 3 (Students' Learning about Diversity), producing slopes of 0.

Hypothesis 2 was examined using a hierarchical multiple regression to analyze three continuous variables. The two predictor variables were Scale 1 (Faculty Knowledge and Skills) and Subscale 2a (Online Course *Content*). The outcome variable was Scale 3 (Student Learning about Diversity). In this analysis, Scale 2a was entered into the regression as the first predictor, and Scale 1 was entered as the second. Statistical significance (assessed by *F* statistic for model analyses and *t* statistics for individual predictors) and variability (R^2) in outcome variable scores accounted for by scores of each predictor were examined to determine whether scores on Scale 1 incremented over those of Scale 2a in the prediction of scores on Scale 3.

Hypothesis 3: The relationship between the scores on Scale 1 (Faculty Knowledge and Skills) and the scores on Scale 3 (Student Learning about Diversity) will be moderated by scores on Subscale 2b (Online Course *Scope*).

H03. Scores on Scale 1 (Faculty's Knowledge and Skills) and scores on Subscale 2b (Online Course Scope) will be unrelated to scores on Scale 3 (Students' Learning about Diversity).

Hypothesis 3 was examined using a hierarchical multiple regression to analyze four continuous variables. Three predictor variables included Scale 1 (Faculty Knowledge and Skills), Subscale 2b (Online Course *Scope*), and a new variable created to represent the interaction between Scale 1 and Scale 2b (Faculty Knowledge and Skills * Online Course *Scope*). The outcome variable was Scale 3 (Student Learning about Diversity). Moderation refers to a differential relationship between a predictor and outcome variable, which is dependent upon a third variable. In other words, the effect of a predictor on the outcome varies, depending on values of the moderator variable (Dearing & Hamilton, 2006; Preacher & Hayes, 2004; Preacher, Rucker, & Hayes, 2007). Such a differential relationship is due to an interaction between two predictor variables (Fairchild & MacKinnon, 2009).

In this analysis, moderating effects of Online Course *Scope* on the relationship between Faculty Knowledge and Skills and Student Learning about Diversity were examined by assessing the relationship between the interaction of the predictor variables (Scale 1 and Subscale 2b) and the outcome variable (Scale 3). After examination for an interaction effect, posthoc analyses were conducted as necessary.

Figure 1. *Statistical Analyses*

Hypothesis	Variables	Scale of Measurement	Statistical Analysis
H$_1$. Scores on Subscale 2a (Online Curriculum *Content* Design) will significantly predict scores on Scale 3 (Student Learning about Diversity).	Predictor variable: 1. Subscale 2a (Online Curriculum *Content* Design) Outcome variable: 1. Scale 3 (Student Learning about Diversity)	Interval	Simple Linear Regression
H$_2$. Scores on Scale 1 (Teacher Knowledge and Skills) will increment over scores on Subscale 2a (*Content* of Online Curriculum Design) in the prediction of scores on Scale 3 (Student Learning about Diversity).	Predictor variables: 1. Scale 1 (Teacher Knowledge and Skills) 2. Subscale 2a (Online Curriculum *Content* Design) Outcome variable: 1. Scale 3 (Student Learning about Diversity)	Interval	Hierarchical Multiple Regression
H$_3$. The relationship between the scores on Scale 1 (Teacher Knowledge and Skills) and the scores on Scale 3 (Student Learning about Diversity) will be moderated by scores on Subscale 2b (*Scope* of Online Curriculum Design).	Predictor variables: 1. Scale 1 (Teacher Knowledge and Skills) 2. Subscale 2b (Online Curriculum *Scope* Design) 3. Interaction term comprised of product of Scale 1 (Teacher Knowledge and Skills) and Scale 2b (Online Course	Interval	Hierarchical Multiple Regression, and, if necessary, Simple Slope Analyses

	Scope) Outcome variable: 1. Scale 3 (Student Learning about Diversity)		

Exploratory Analyses. Further analyses were conducted to explore the potential impact of demographic characteristics on the outcome variable in the study. A series of ANOVAs were conducted to determine whether differences in scores assessing student learning would be found between the levels of each demographic variable. Pairwise comparisons were conducted as necessary to determine significant differences between levels in cases where the IV contained more than two levels.

CHAPTER 4: RESULTS

This chapter is divided into two sections: descriptive analyses and interferential analyses. Descriptive analyses pertain to the data obtained from the Diversity Teaching Survey (DTS) and the Faculty Demographics and Background Survey (FDBS). Frequency distributions are presented in order to provide a profile of the faculty and measures of central tendency and dispersion were used to summarize the continuous data in this study. Inferential analyses were conducted on DTS responses to address the research questions and test the associated hypotheses.

Descriptive Analyses

Participant demographics. Participant demographic data were examined in order to provide a description of the sample for the assessment of external validity. Distributions of demographic data for the participants are presented in Table 3. All of the participants in this study were employed in North America as faculty in a two-year institution of higher education. The average participant held a part-time faculty position, taught between 4 and 7 online courses per year, had between 2 and 4 years of online teaching experience, and had not completed a formal teaching education program. Participant disciplines ranged across 21 content areas within the liberal arts.

According to a 2004 survey conducted by the National Center for Education Statistics (Forrest, Fahimi, & Bradburn, 2005), there are an estimated 362,000 faculty employed in two-year post-secondary education programs in the United States. Survey results indicated that approximately 67% of those faculty are employed in part-time positions—a proportion consistent with that found in this study. Full-time faculty in two-year colleges averaged 12.5 years of experience while part-time faculty averaged seven years (*NEA Higher Education Research*

Center, 2007). Statistics on average number of courses taught and teaching certification were unavailable for direct comparison; however, in terms of employment status, the sample used in this study is fairly consistent with the population of two-year faculty in higher education programs in the United States. Therefore, results of this study should generalize to other faculty in the United States rather well.

Table 3
Distribution of Categorical Variables for Entire Sample

Demographic Variable	n	%
Online Teaching Experience		
0-1 Years	1	1%
2-4 years	43	41.3%
5-7 years	35	33.7%
8+ years	25	24%
Total	104	100%
Years Teaching Ground Courses		
0-1 Years	1	1%
2-4 years	15	14.4%
5-7 years	40	38.5%
8+ years	48	46.2%
Total	104	100%
Years of experience teaching diversity in the discipline taught online		
0-1 Years	27	26.0%
2-4 years	32	30.8%
5-7 years	27	26.0%
8+ years	18	17.3%
Total	104	100%
Number of Online Courses designed with assistance		
0-1	64	61.5%
2-3	34	32.7%
4-5	1	1%
6+	5	4.8%
Total	104	100%
Number of Online Courses taught per year		
0-3	37	35.6%
4-7	59	56.7%
8-11	6	5.8%

12+	2	1.9%
Total	104	100%

Number of pre-designed Online Courses taught per year

0-3	62	59.6%
4-7	39	37.5%
8-11	3	2.9%
Total	104	100%

Number of online courses independently designed per year

0-1	73	70.2%
2-3	23	22.1%
4-5	7	6.7%
6+	1	1.0%
Total	104	100%

Demographic Variable	n	%

Years of Professional Development regarding online curriculum/instruction

0-1 Years	35	33.7%
2-3 years	55	52.9%
4-5 years	9	8.7%
6+ years	5	4.8%
Total	104	100%

Years of Professional Development regarding diversity

0-1 Years	54	51.9%
2-3 years	31	29.8%
4-5 years	11	10.6%
6+ years	8	7.7%
Total	104	100%

Discipline in which online courses are taught

Anthropology	2	1.9%
Biology	3	2.9%
Business/Accounting	10	9.6%
Early Childhood Education	1	1.0%
Chemistry	4	3.8%
Computer Information Systems	1	1.0%
Composition	10	9.6%
Economics	3	2.9%
English Literature	6	5.8%
Foreign Language	8	7.7%
Geography	1	1.0%
Health	5	4.8%
History	4	3.8%
Humanities	8	7.7%

Math	5	4.8%
None Mentioned Here	1	1.0%
Philosophy	4	3.8%
Physics	4	3.8%
Political Science	5	4.8%
Psychology	9	8.7%
Sociology	9	8.7%
Speech	1	1.0%
Total	104	100%

Discipline of independently designed online course where faculty included diversity

Anthropology	2	1.9%
Biology	2	1.9%
Business/Accounting	3	2.9%
Chemistry	1	1.0%
Composition	6	5.8%

Demographic Variable	n	%
Economics	3	2.9%
English Literature	4	3.8%
Foreign Language	3	2.9%
Geography	1	1.0%
Health	0	0.0%
History	2	1.9%
Humanities	3	2.9%
Math	1	1.0%
None Mentioned Here	51	49.0%
Philosophy	3	2.9%
Physics	3	2.9%
Political Science	2	1.9%
Psychology	7	6.7%
Sociology	6	5.8%
Speech	1	1.0%
Total	104	100%

Discipline of pre-designed online course where faculty integrated diversity

Anthropology	2	1.9%
Biology	2	1.9%
Business/Accounting	6	5.8%
Chemistry	6	5.8%
Composition	6	5.8%
Economics	3	2.9%
English Literature	6	5.8%
Foreign Language	8	7.7%
Geography	1	1.0%
Health	5	4.8%
History	3	2.9%
Humanities	8	7.7%

Math	2	1.9%
None Mentioned Here	27	26.0%
Philosophy	1	1.0%
Physics	2	1.9%
Political Science	5	4.8%
Psychology	4	3.8%
Sociology	7	6.7%
Total	104	100%

Number of years diversity was a part of faculty's education

0-1 Years	37	35.6%
2-4 years	32	30.8%
5-7 years	27	26.0%
8+ years	8	7.7%
Total	104	100%

Demographic Variable	n	%
Completion of teaching education program		
Yes	23	22.1%
No	77	74%
Total	100	96.2%
Missing	4	3.8%
Final Total	104	100%

Diversity inherent in the curriculum of the subject taught online

Yes	45	43.3%
No	41	39.4%
Total	86	82.7%
Missing	18	17.3%
Final Total	104	100%

Teach full-time vs. part-time

Full-time	30	28.8%
Part-time	74	71.2%
Total	104	100%

Geographic Location

North America	104	100%
Total	104	100%

Examination of distributional characteristics of continuous variables. All variables included in the hypotheses were first examined for violations of normality and other parametric assumptions. These variables included Scale 1—Faculty Knowledge and Skills; Scale 2a— Online Course *Content*; Scale 2b— Online Course *Scope*; and Scale 3—Student Learning about Diversity. Descriptive data for the full list of continuous variables in this study are presented in Table 4.

Table 4
Descriptive Statistics for Continuous Variables (N=104)

Variable	Mean	SD	MIN	MAX	MED	MODE	SK	KT
[a]Faculty K/S	74.89	16.63	26.00	104	75.50	98.00	-0.25	-0.55
[b]Course Content	33.46	9.80	13.00	52	35.00	43.00	-0.34	-0.76
[c]Course Scope	38.01	8.88	13.00	52	40.00	41.00	-0.78	0.06
[d]Student Learn	26.24	5.94	11.00	37	28.00	28.00	-0.29	-0.62

[a]Faculty K/S = Faculty's Knowledge and Skill about Diversity
[b]Course Content = Online Course Content
[c]Course Scope = Online Course Scope
[d]Student Learn = Students' Learning about Diversity

Data screening revealed missing data for two of the 17 demographic variables measured. Four participants (3.8%) did not respond to item 14 of the FDBS (see Appendix A), assessing teaching credentials. Eighteen participants (17.3%) did not respond to item 17 of the FDBS (Appendix A), assessing the inherence of diversity in the online curriculum. Screening identified no missing data for the DTS variables examined in this study. In cases where data for particular variables were missing from a portion of the participants, pairwise deletion was used to include all possible data.

There is no indication that participant's scores had any influence on one another, so that independence of observations was assumed. Normality of the distributions of all continuous variables was determined visually—by histograms, and statistically—by skew and kurtosis

values. None of the variables violated normality, as assessed by skew and kurtosis values exceeding +/- 1.5 (Meyers, Gamst, & Guarino, 2006). Univariate outliers (data points at least 3 standard deviations from the mean of a given variable) were also assessed by calculating z-scores for each scale and determining whether any of the standard score values exceeded +/- 3.0 (Meyers, Gamst, & Guarino, 2006). Examination revealed no univariate outliers for any of the scales. Data were also examined for multivariate outliers by calculating Mahalanobis distance scores for each participant on the combination of variables in this study, and then comparing them to a critical value. No multivariate outliers were identified. As no violations of normality were determined, no transformations or alterations of the data were necessary.

Prior to testing the hypotheses, statistical assumptions of regression, the primary statistic used in this study, were addressed. Linearity of each of the variables used in the analyses was assessed via scatterplot matrices. No violations were indicated. As noted above, normality was previously confirmed. Lastly, homoscedasticity was assessed using case diagnostics and scatterplots, which indicated normality among the errors of prediction; thus, this assumption was also met. As such, no violations of statistical assumptions were identified, and thus the data was deemed suitable for analysis. Multicollinearity was assessed in the following sections for each of the multivariate analyses.

Inferential Analyses

Analysis of hypotheses.

Hypothesis 1. Hypothesis 1 predicted that the faculty's scores on the Online Course Content Scale (Scale 2a) would significantly predict their scores on the Student Learning about Diversity Scale (Scale 3). This hypothesis was accepted.

Simple linear regression was used to test this hypothesis, as the analysis sought to

determine the relationship between one continuous predictor variable (Course Content) and one continuous outcome variable (Student Learning about Diversity). As can be seen in Appendix G, a significant positive Pearson Correlation was found between Online Course Content and Student Learning about Diversity scores.

The regression model was able to significantly predict Student Learning about Diversity scores, $F (1, 102) = 283.71$, $p < 0.001$, $R^2 = .74$. As hypothesized, scores on the Course Content Scale significantly predicted scores on the Student Learning about Diversity Scale; and based on an estimation of the model, Course Content accounted for approximately 74% of the variance in Student Learning about Diversity. As can be seen in Table 5, a one-unit increase in the Online Course Content score corresponds to an increment increase of 0.52 in the Student Learning about Diversity score.

Table 5
Simple Linear Regression for Student Learning about Diversity as a Function of Course Content (N = 104)

Variable	Model Level				Variable Level				
	df	F	Sig	R^2	B	SEB	β	t	Sig
Course Content	1	283.71	< 0.001	0.74	0.52	0.03	0.86	16.84	< 0.001

Hypothesis 2. Hypothesis 2 predicted that the faculty's scores on the Faculty Knowledge and Skills Scale (Scale 1) would increment over scores on the Online Course Content Scale (Scale 2a) in the prediction of scores on the Student Learning about Diversity Scale (Scale 3). This hypothesis was accepted.

Hierarchical multiple regression was used to test this hypothesis, as the analysis sought to determine the relationship between two continuous predictor variables (Online Course Content and Faculty Knowledge and Skills) and one continuous outcome variable (Student Learning

about Diversity), with the predictors entered into the regression equation in two separate blocks.

Scale 2a (Online Course Content) was entered into the regression as the only predictor in Model

1, and Scale 1 (Faculty Knowledge and Skills) was added to the regression as a second predictor

in Model 2. To ensure that there was an absence of perfect multicollinearity for the multivariate

analysis, Tolerance and VIF statistics were examined, and were found to be well within

acceptable values (Tolerance > .01 and VIF < 10). These tests indicated that the independent

variables in the analysis were not inter-correlated to an extent that they would influence the

model.

As can be seen in Appendix G, significant positive Pearson Correlations were found

between Online Course Content and Student Learning about Diversity scores, as well as between

Faculty Knowledge and Skills and Student Learning about Diversity scores.

As can be seen in Table 6 (and consistent with the results of Hypothesis 1), the first

regression model was able to significantly predict Student Learning about Diversity scores, F (1,

102) = 283.71, $p < 0.001$, R^2 = .74. Based on an estimation of the model, Online Course Content

alone accounted for approximately 74% of the variance in Student Learning about Diversity.

The second regression model, which included the addition of the predictor Faculty Knowledge

and Skill, revealed that the addition of this predictor to the model significantly added to the

prediction of scores on the Student Learning about Diversity scale (R^2 *Change* of .01; $p = 0.046$).

Based on an estimation of the model, the model with the inclusion of both predictors accounted

for approximately 75% of the variance in Student Learning about Diversity, indicating a 1%

increase in the total variance accounted for by the model.

Table 6
Hierarchical Multiple Regression for Student Learning about Diversity as a Function of Online
Course Content and Faculty Knowledge and Skill (N = 104)

Block# / Variable	Model Level	Variable Level

	df	F	Sig	R^2		B	SEB	β	t	Sig
1	1	283.71	< 0.001	0.74						
Course Content						0.52	0.03	0.86	16.84	< 0.001
2	2	148.19	< 0.001	0.75						
Course Content						0.45	0.47	0.74	9.41	< 0.001
Faculty K/S						0.06	0.03	0.16	2.02	0.046

[a]Faculty K/S = Faculty's Knowledge and Skill about Diversity
[b]Course Content = Online Course Content

As hypothesized, scores on Faculty Knowledge and Skills Scale significantly added to the prediction of scores on the Student Learning about Diversity Scale over that of scores on the Online Course Content Scale alone. Examination of the partial correlations for each predictor indicated that after covarying, or partialling out, the effects of Faculty Knowledge and Skill, Online Course Content accounted for approximately 46% (Partial Correlation = .68) of the variance in Student Learning about Diversity; and after partialling out the effects of Online Course Content, Faculty Knowledge and Skill accounted for approximately 4% (Partial Correlation = .20) of the variance in Student Learning about Diversity. The remaining estimate of 25% of variance accounted for by the model would be attributed to shared variance between the two predictor variables.

As can be seen in Table 6, considering both predictor variables, a one unit increase in the Online Course Content score corresponds to an increment increase of 0.45 in the Student Learning about Diversity score; and a one unit increase in the Faculty Knowledge and Skill score corresponds to an increment increase of 0.06 in the Student Learning about Diversity score.

Hypothesis 3. Hypothesis 3 predicted that the relationship between the scores on Scale 1 (Faculty Knowledge and Skills) and the scores on Scale 3 (Student Learning about Diversity) would be moderated by scores on Scale 2b (Online Course Scope). This hypothesis was not

accepted.

A hierarchical multiple regression was used to test this hypothesis, as the analysis sought to determine the relationship between the interaction of three continuous predictor variables (Online Course Scope, Faculty Knowledge and Skills, and a new variable created to represent the interaction between Online Course Scope and Faculty Knowledge and Skills), and one continuous outcome variable (Student Learning about Diversity).

Prior to analyzing the data, a new variable needed to be created that would represent the interaction between the two primary predictor variables; to do so, the variables Faculty Knowledge and Skills and Online Course Scope were first centered by subtracting the mean of each variable from every data point of that same variable. This procedure shifts the scales, thereby placing each variable on the same scale with a mean of zero. Centering is recommended to standardize scores for ease of interpreting interaction effects and to decrease possible effects of multicollinearity (Aiken & West, 1991). Next, an interaction term was calculated from the centered variables (Centered Online Course Scope * Centered Faculty Knowledge and Skills).

Next, Scale 1 (Faculty Knowledge and Skills) and Scale 2b (Online Course Scope) were entered into the regression as two individual predictors in Model 1, and the interaction variable (representing the product of Online Course Scope and Faculty Knowledge and Skills) was added into the regression as an additional predictor in Model 2. The outcome variable was Scale 3 (Student Learning about Diversity).

To ensure that there was an absence of perfect multicollinearity for this multivariate analysis, Tolerance and VIF statistics were examined. Values were found to be well within acceptable values (Tolerance > .01 and VIF < 10), which indicated that the independent variables in the analysis were not inter-correlated to an extent that they would influence the model.

As noted previously, significant positive Pearson Correlations were found between Faculty Knowledge and Skills and Student Learning about Diversity scores; and as also can be seen in Appendix G, significant positive Pearson Correlations were found between Online Course Scope and Student Learning about Diversity scores.

The moderating effects of Online Course Scope on the relationship between Faculty Knowledge and Skills and Student Learning about Diversity were examined by assessing the relationship between the interaction of the predictor variables (Scale 1 and Scale 2b) and the outcome variable (Scale 3).

The first regression model, comprised of the two individual predictor variables, was able to significantly predict Student Learning about Diversity scores, F (2, 101) = 119.69, $p < 0.001$, $R^2 = .70$. Based on an estimation of the model, Online Course Scope and Faculty Knowledge and Skill, taken together, accounted for approximately 70% of the variance in Student Learning about Diversity. The second regression model, comprised of both predictor variables with the addition of the interaction term to the regression, did not significantly add to the prediction of scores of Student Learning about Diversity (R^2 *Change* of .00; p = 0.349).

In contrast to what was hypothesized, the interaction between Online Course Scope and Faculty Knowledge and Skills Scale did not significantly predict scores on the Student Learning about Diversity Scale ($t = 0.94$, $p = 0.349$), indicating that Online Course Scope did not moderate the relationship between Faculty Knowledge and Skill and Student Learning about Diversity. In other words, there were no differential effects of Faculty Knowledge and Skill on the Student Learning about Diversity Scale at different levels of Online Course Scope.

As the interaction was not significant, main effects were then examined to determine the impact of each individual predictor on the outcome variable. To do so, a post-hoc hierarchical

multiple regression was run with Faculty Knowledge and Skills entered into the regression as the only predictor in Model 1, and Online Course Scope added to the regression as a second predictor in Model 2. As can be seen in Table 7, the first regression model was able to significantly predict Student Learning about Diversity scores, $F (1, 102) = 111.92$, $p < 0.001$, $R^2 = .52$. Based on an estimation of the model, Faculty Knowledge and Skills alone accounted for approximately 52% of the variance in Student Learning about Diversity. The second regression model, which included the addition of the predictor Online Course Scope, revealed that the addition of this predictor to the model significantly added to the prediction of scores on the Student Learning about Diversity scale (R^2 *Change* of .18; $p < 0.001$). Based on an estimation of the model, with the inclusion of both predictors, the model accounted for approximately 70% of the variance in Student Learning about Diversity, indicating an 18% increase in the total variance accounted for by the model; however, with the addition of Online Course Scope, Faculty Knowledge and Skill no longer significantly contributed to the prediction of scores on the Student Learning Scale ($t = 0.93$, $p = 0.355$). This finding suggests that the effects of Faculty Knowledge and Skill on Student Learning might be subsumed within the effects of Online Course Scope.

Table 7
Hierarchical Multiple Regression for Student Learning about Diversity as a Function of Faculty Knowledge and Skill and Online Course Scope (N = 104)

Block# / Variable	Model Level				Variable Level				
	df	F	Sig	R^2	B	SEB	β	t	Sig
1	1	111.92	< 0.001	0.52					
Faculty K/S					0.26	0.02	0.72	10.58	< 0.001
2	3	119.69	< 0.001	0.70					
Faculty K/S					0.03	0.04	0.09	0.93	0.355
Course Scope					0.51	0.07	0.76	7.83	< 0.001

[a]Faculty K/S = Faculty's Knowledge and Skill about Diversity

Examination of the partial correlations for each predictor indicated that after covarying, or partialling out, the effects of Online Course Scope, Faculty Knowledge and Skill accounted for approximately 1% (Partial Correlation = .09) of the variance in Student Learning about Diversity; and after partialling out the effects of Faculty Knowledge and Skill, Online Course Scope accounted for approximately 38% (Partial Correlation = .62) of the variance in Student Learning about Diversity. The remaining estimate of 31% of variance accounted for by the second model would be attributed to shared variance between the two predictor variables.

Exploratory analyses. A series of ANOVAs were conducted to determine whether differences in scores assessing student learning would be found between the levels of each demographic variable. Descriptive statistics for Student Learning about Diversity by level of each demographic variable are presented in Table 8. Variables excluded due to the large number of levels with insufficient sample sizes were: Discipline Taught, Discipline in which Faculty Integrated Diversity into Non-Predesigned Course, and Discipline in which Faculty Integrated Diversity into Predesigned Course. Geographic location was also excluded, as all participants were captured under one level of the variable. In examining the descriptive data, six variables

Table 8
Student Learning about Diversity Scores by Level of Demographic Variables

Demographic Variable	n	Mean	SD	MIN	MAX
Years Teaching Online Courses					
0-2 Years	1	28.00	-	28.00	28.00
2-4 years	43	24.58	6.31	13.00	37.00
5-7 years	35	26.60	5.35	11.00	36.00
8+ years	25	28.52	5.56	17.00	37.00
Years Teaching Ground Courses					
0-2 Years	1	19.00	-	19.00	19.00

Demographic Variable	n	Mean	SD	MIN	MAX
2-4 years	15	26.27	6.83	16.00	36.00
5-7 years	40	24.77	5.64	11.00	37.00
8+ years	48	27.60	5.69	13.00	37.00
Number of Online Courses taught per year					
0-3	37	23.57	6.17	13.00	37.00
4-7	59	27.49	5.29	11.00	37.00
8-11	6	29.33	4.46	22.00	35.00
12+	2	29.50	10.61	22.00	37.00
Number of Online Courses designed with assistance					
0-2	64	25.61	5.97	11.00	37.00
2-3	34	26.50	5.71	13.00	35.00
4-5	1	37.00	-	37.00	37.00
6+	5	30.40	4.83	22.00	34.00
Number of pre-designed Online Courses taught per year					
0-3	62	25.63	5.95	13.00	37.00
4-7	39	27.05	5.92	11.00	37.00
8-11	3	28.33	6.51	22.00	35.00
Years of Professional Development regarding online curriculum/instruction					
0-1 Years	35	24.74	6.03	16.00	37.00
Demographic Variable	n	Mean	SD	MIN	MAX
2-3 years	55	26.20	5.62	11.00	37.00
4-5 years	9	28.89	6.35	19.00	35.00
6+ years	5	32.40	3.36	28.00	37.00
Years of Professional Development regarding diversity					
0-1 Years	54	22.92	5.39	11.00	36.00
2-3 years	31	28.03	3.65	17.00	34.00
4-5 years	11	33.18	2.82	28.00	37.00
6+ years	8	32.12	4.22	24.00	37.00
Number of online courses independently designed per year					
0-1	73	25.59	5.84	11.00	37.00
2-3	23	27.17	5.79	13.00	34.00
4-5	7	29.71	7.16	18.00	37.00
6+	1	28.00	-	28.00	28.00
Number of years diversity was a part of faculty's education					
0-1 Years	37	20.78	4.64	11.00	32.00
2-4 years	32	27.06	3.42	20.00	33.00
5-7 years	27	31.00	3.67	19.00	37.00
8+ years	8	32.12	4.55	24.00	37.00

Completion of Teacher Education Program

Yes	23	27.65	6.60	11.00	37.00
No	77	26.01	5.49	13.00	37.00

Years of experience teaching diversity in the discipline taught online

0-1 Years	27	20.48	4.81	11.00	30.00
2-4 years	32	26.44	5.49	18.00	37.00
5-7 years	27	28.70	3.58	18.00	36.00
8+ years	18	30.83	4.42	17.00	37.00

Teach full-time vs. part-time

Full-time	30	27.13	6.97	11.00	37.00
Part-time	74	25.88	5.49	16.00	37.00

Diversity inherent in the curriculum of the subject taught online

Yes	45	30.00	5.04	11.00	37.00
No	41	22.27	4.65	13.00	32.00

-Variables excluded due to insufficient samples sizes across levels: Discipline Taught, Discipline Implemented Div Into Non-Predesigned Course, and Discipline Incorporated Div into Predesigned Course.
-Geographic Location excluded due to inclusion of one level only.

were determined to have very low participant representation for one or more levels, to an extent that was insufficient for analyses. For those variables, only levels with sufficient sample sizes were retained in the between-group analyses. As detailed in Table 9, four variables required the

Table 9
Between-Group ANOVAs Exploring Possible Effects of Levels of Faculty Demographic Variables on Student Learning about Diversity (N= 104)

Variable	df	F	Sig
Years Teaching Online Courses[a]	2	3.73	0.027*
Years Teaching Ground Courses[a]	2	2.56	0.083
Number of Online Courses Taught Per Year[b]	1	10.99	0.001*
Number of Online Courses Designed with Assistance[b]	1	0.51	0.477
Number of Pre-des Online Courses Taught Per Year[a]	1	1.37	0.244
Years Professional Development - Online Instruction	3	3.34	0.022*
Years Professional Development – Diversity	3	23.33	< 0.001*
Number Online Courses Ind Designed Per Year[a]	2	1.93	0.150
Years diversity was Part of Faculty's Education	3	41.12	< 0.001*
Teaching Certification	1	1.43	0.234
Years Experience Teaching Diversity – In Discipline	3	21.79	< 0.001*

Teaching Capacity	1	0.95	0.332
Diversity Inherent in Curriculum of Sub Taught	1	54.35	< 0.001*

* Significant group differences
[a]1 level excluded from analysis due to insufficient sample size
[b]2 levels excluded from analysis due to insufficient sample size
-Variables excluded due to insufficient samples sizes across levels: Discipline Taught, Discipline Implemented Div Into Non-Predesigned Course, and Discipline Incorporated Div into Predesigned Course.
-Geographic Location excluded due to inclusion of one level only.

exclusion of one level from the analyses, and two variables required the exclusion of two levels from the analyses. As can be seen in Table 9, seven of the 13 variables included were found to differ significantly across the groups in scores on the Student Learning about Diversity Scale. Four of the variables—Years of professional development regarding diversity (η^2 = .41), years diversity was part of the faculty's education (η^2 = .55), years of experience teaching diversity in discipline (η^2 = .39), and whether diversity was inherent in the online curriculum taught (η^2 = .39) exhibited large effects on the outcome of student learning. The other three significant variables—Years of experience teaching online courses (η^2 = .07), number of online course taught per year (η^2 = .10), and years of professional development regarding online instruction (η^2 = .09), exhibited medium effects on the outcome.

As only two groups (levels of the IV) were included for the variable—whether diversity was inherent in the online curriculum taught, it could be determined that faculty who indicated that diversity was inherent in their curriculum produced significantly higher scores (M = 30.00) on Student Learning about Diversity than those who indicated that diversity was not inherent in the curriculum (M = 22.27). Likewise, as only two groups were retained for the variable— number of courses taught per year, it could be determined that faculty who taught 4-7 courses per year produced significantly higher scores (M = 27.49) on Student Learning about Diversity than those who taught 0-3 courses per year (M = 23.57).

Next, for the five significant variables that consisted of three or more groups (levels of the IV), post hoc pair-wise comparisons were conducted using the Tukey correction for Type I error to explain where the differences lied (Tables 10-14). As can be seen in Table 10, differences in student learning were only found between the highest and lowest levels of experience teaching online courses. Faculty with 8 or more years of experience teaching online courses produced higher scores (M = 28.52) on Student Learning about Diversity than those with 2-4 years (M = 24.58); however, there were no significant differences between faculty with 8 or more years and 5-7 years of experience teaching online courses, or between faculty with 5-7 years and 2-4 years of experience teaching online courses on student learning outcomes.

Table 10
Post Hoc Pair-wise Comparisons (p-values) of Years Teaching Online Courses on Student Learning about Diversity

Group	2-4 years	5-7 years	8+ years
2-4 years	--	0.284	0.023*
5-7 years	--	--	0.421
8+ years	--	--	--

[a]Pair-wise comparisons with Tukey correction.
* Significant group differences

Table 11 also demonstrates that differences in student learning were only found between the highest and lowest levels of years of professional development regarding online instruction. Faculty with 6 or more years of experience teaching online courses produced higher scores (M = 32.40) on Student Learning about Diversity than those with 0-1 years (M = 24.74) of experience.

Table 11
Post Hoc Pair-wise Comparisons (p-values) of Years of Professional Development Regarding Online Instruction on Student Learning about Diversity

Group	0-1 years	2-3 years	4-5 years	6+ years
0-1 years	--	0.646	0.223	0.032*
2-3 years	--	--	0.565	0.103
4-5 years	--	--	--	0.694

| 6+ years | -- | -- | -- | -- |

As can be seen in Table 12, differences in student learning were found among all combinations of years of professional development regarding diversity, except when experience exceeded five years. Faculty with 6 or more years of professional development regarding diversity only differed from those with the least amount of professional development (0-1 years), with the former group producing higher scores (M = 32.12) on Student Learning about Diversity than the latter (M = 22.92). Faculty with 0-1 years (M = 22.92) of professional development regarding diversity also produced scores lower than those with 2-3 (M = 28.03) and 4-5 years (M = 33.18) on the student learning scale. In addition, faculty with 2-3 years (M= 28.03) of professional development regarding diversity produced lower student learning scores than did those with 4-5 years (M = 33.18) of professional development.

Table 12
Post Hoc Pair-wise Comparisons (p-values) of Years of Professional Development Regarding Diversity on Student Learning about Diversity

Group	0-1 years	2-3 years	4-5 years	6+ years
0-1 years	--	< 0.001*	< 0.001*	< 0.001*
2-3 years	--	--	0.011*	0.122
4-5 years	--	--	--	0.961
6+ years	--	--	--	--

aPair-wise comparisons with Tukey correction.
* Significant group differences

As can be seen in Table 13, differences in student learning were found among all combinations of years diversity was part of the faculty's education, except when comparing the groups representing the most years of training. Faculty with 8 or more years of diversity training in their education produced higher scores on student learning about diversity than those with 0-1

(M = 20.78) and 2-4 years (M = 27.06) of diversity training in their education; however, their

scores on student learning did not significantly differ from faculty with 5-7 years of diversity

training. Faculty with 0-1 years (M = 20.78) of diversity training in their education also

produced scores lower than those with 2-4 (M = 27.06) and 5-7 years (M = 31.00) on the student

learning scale. In addition, faculty with 2-4 years (M= 27.06) of diversity training in their

education produced lower student learning scores than did those with 5-7 years (M = 31.00).

Table 13
Post Hoc Pair-wise Comparisons (p-values) of Years Diversity was part of the Faculty's
Education on Student Learning about Diversity

Group	0-1 years	2-4 years	5-7 years	8+ years
0-1 years	--	< 0.001*	< 0.001*	< 0.001*
2-4 years	--	--	0.002*	0.011*
5-7 years	--	--	--	0.900
8+ years	--	--	--	--

[a]Pair-wise comparisons with Tukey correction.
* Significant group differences

Finally, Table 14 demonstrates that faculty with 8 or more years (M = 30.83) of

experience teaching diversity in their discipline produced higher scores on student learning about

diversity than those with 0-1 (M = 20.48) and 2-4 years (M = 26.44) of experience teaching

diversity in their discipline; however, their scores on student learning did not significantly differ

from faculty with 5-7 years experience. Faculty with 0-1 years (M = 20.48) of experience

teaching diversity in their discipline also produced scores lower than those with 2-4 (M = 26.44)

and 5-7 years (M = 28.70) of experience on the student learning scale. Significant differences

were not found between faculty who had 5-7 years (M = 28.70) of experience teaching diversity

in their discipline and those who had 2-4 years (M = 26.44) experience.

Table 14
Post Hoc Pair-wise Comparisons (p-values) of Years Experience Teaching Diversity in
Discipline on Student Learning about Diversity

Group	0-1 years	2-4 years	5-7 years	8+ years
0-1 years	--	< 0.001*	< 0.001*	< 0.001*
2-4 years	--	--	0.257	0.010*
5-7 years	--	--	--	0.447
8+ years	--	--	--	--

[a]Pair-wise comparisons with Tukey correction.
* Significant group differences

These findings, overall, lend support to Hypothesis 2, in that professional development and other diversity training, as well as teaching experience, positively influence student learning outcomes. Additionally, faculty training and experience that were specific to the topic of diversity produced the strongest effects on student learning.

CHAPTER 5: DISCUSSION

The purpose of this investigation was to research the relationships among three concepts that potentially influence students' learning about diversity in online courses: (1) the actual content of the pre-designed curriculum, (2) the faculty's knowledge and skills for teaching diversity, and (3) the scope or flexibility that instructors have in teaching diversity beyond the prescribed curriculum content.   The study was conducted at a two-year post-secondary institution, using a non-experimental static group design, employing two instruments for collecting data: The Faculty Demographics and Background Survey (FDBS), and the Diversity Teaching Survey (DTS).

Both descriptive and inferential statistical procedures were used in this study to provide a clear understanding of the data as well as to investigate the relationships between the variables. This study presented a total of three research questions and hypotheses and they are:

Research Questions.

1) Does the content of the online curriculum design impact students' learning about diversity?

2) Does the faculty's knowledge and skills about teaching diversity add to the students' gaining knowledge about diversity through the online course content?

3) Does the scope of the online curriculum moderate the effect of faculty's knowledge and skills about teaching diversity on students' learning about diversity?

Research Hypotheses.

H1. Online course content (scores on the Subscale 2a) will predict students' learning about diversity (scores on Scale 3) on a 4-point rating scale developed on the INTASC standards.

H2. Faculty's knowledge and skills (scores on Scale 1), in addition to online course content (scores on Scale 2a) will account for an increased amount of variance over students' learning about diversity (scores on Scale 3) on a 4-point rating scale developed on the INTASC standards. H3. The relationship between faculty's knowledge and skills (scores on Scale 1) and students' learning about diversity (scores on Scale 3) will be moderated by the scope of online curriculum design (scores on Subscale 2b) on a 4-point rating scale developed on the INTASC standards.

This chapter first presents a discussion of the three hypotheses that were tested. The findings are presented in light of previous research and with regard to their implications for online teaching and learning about diversity. What are examined next are the demographic variables that show strong relationships to student learning. This discussion will also consider some limitations of the study, concluding with recommendations for continued research in online teaching and diversity.

Inferential Analysis

Discussion of Hypothesis 1: Online Course Content and Student Learning About Diversity. The first research hypothesis stated that the Online Course Content (Subscale 2a) would significantly predict Students' Learning about Diversity (Scale 3). As it was reported in Chapter 4, the research hypothesis was accepted since the analysis of the data showed that when the online course content was considered as the only predictor variable, it predicted student learning with a 74% variance in that model. According to this investigator, this supports the idea that online course content by itself is important to teaching students about diversity and that faculty can indeed teach diversity through the online curriculum design. Such a finding would be expected since every aspect of the online content, such as assignments to discussion questions for each week, must be designed ahead of time. In this regard, this investigator's measure

included items in Scale 2a, concerning diversity through written assignments and discussion as part of the online course content. It would be important to design the content to include diversity so that students receive such learning in a consistent manner. Thus, the online course content needs to contain the learning opportunities about diversity to positively influence students' learning.

Therefore, the results of this hypothesis are consistent with existing studies, which observed the importance of including diversity within the content to positively influence students' learning. Sciame-Giescke (2009) focused on specific diversity elements, such as ethnicity, socioeconomic class, gender, religion and disability that faculty incorporated into their online course content. Some faculty incorporated diversity because their subject matter naturally lent itself to including this dimension within the subject matter. Rogers, et al. (2007) examined international students' perspectives on online curriculum design. They found that not only does the online curriculum design significantly impact students' learning, but also the need for including diversity to be culturally sensitive to students. In fact, they found that content needs to include diverse perspectives and experiences in order to engage and motivate students. While the above studies show similarities in findings with this investigator's study, the measure used by this investigator was unlike their measures. This investigator's measure was developed on INTASC standards, which are currently driving all teacher education programs across the nation in colleges of education. Furthermore, it was specifically designed to address diversity in each item to examine whether a consistent approach to addressing diversity was apparent within the online medium in higher education.

However, this researcher's study was not able to distinguish whether faculty in specific subject areas were more easily able to integrate diversity given the nature of the curriculum due

to the sample size. Sciame-Giesecke (2009), for example, had a large enough sample size in each department to examine that faculty teaching in education and the social sciences were able to integrate diversity because their subject matter naturally included this element. In a simple examination of the results, this researcher found similar patterns. For example, it appeared to this researcher that faculty who taught social science and liberal arts courses were able to integrate diversity more easily than those in biology and math. But the sample size was not large enough in each department to make a conclusive determination. Similarly, Sciame-Giesecke (2009) conducted a longitudinal study that examined faculty over the course of five years. She was able to include faculty comments and a myriad of personalized input on faculties self-report on their curriculum content and teaching methods. This leads the researcher to believe that a similar longitudinal study that allowed for more input from faculty on the ways in which they incorporated diversity would help identify more specific course content that was considered beneficial to students.

Furthermore, the following conceptual frameworks support the results of this hypothesis. First, Vygotsky (1978, 1986, 1997) contended that both the cultural background and cultural experiences in society impacts the student's ability to develop higher cognitive skills. Second, Gagne (1977, 1985) purported that instructional design needs to consist of online curriculum and instruction that develops students' skills to communicate in their diverse social environment. Thus, Vygotsky's and Gagne's contention is in agreement with this study's finding and the studies reported above (Rogers, et al, 2007; Sciame-Giesecke, 2009), namely that online curriculum needs to contain learning opportunities that integrate cultural diversity in order to meet students' learning needs.

Discussion of Hypothesis 2: Faculty Knowledge and Skills and Online Course Content. The second hypothesis predicted an increase in Students' Learning about Diversity when considering the Faculty Knowledge and Skills in addition to the Online Course Content. This research hypothesis was accepted. In other words, the expectation was that the faculty's knowledge and skills in addition to course content would account for a larger amount of learning than would just course content alone. When adding Faculty Knowledge and Skills, it did indeed add 1% to the overall prediction, so that in combination, the two factors now accounted for 75% of Students' Learning about Diversity. Given that there was only a 1% prediction, additional examination on partial correlations was conducted.

Looking further at this particular finding, at partial correlations (controlling for the effects of one of the factors to eliminate any overlapping of influence), Online Course Content accounted for 46% of student learning (having partialled out the Faculty Knowledge and Skills). Likewise, factoring out Online Course Content resulted in Faculty Knowledge and Skills accounting for about 4% of the variance in student learning. Adding those two percentages (46 and 4) brings the total to only 50% of the variance in student learning. As the overall model accounted for 75% of that variance, this leads to the assumption that 25% of the student learning is shared variance, contributed by the combination of course content and faculty knowledge and skills. This overlapping variance is the variance that neither factor uniquely adds to the equation. In other words, there is some portion of student learning that is accounted for only by these two factors combined. When both are present, there is a large effect, giving support for the idea that somehow faculty's knowledge and skills adds more than its unique effect of 4% and course content adds more than its unique effect of 46%. In a significant way, faculty knowledge and skills adds to the delivery of the online course content.

The results of this hypothesis are consistent with existing research, which observed the influence of faculty's knowledge and skills when teaching online content. With regards to faculty's skills, Sciame-Giescke (2009), who focused on a college institution, and Wang (2001), who examined faculty in public schools, found that faculty incorporated collaborative and experiential learning as part of their instruction to positively influence students' learning about diversity. Seok, et al. (2010) observed that the delivery of online courses depended greatly on faculty's teaching experiences. The more teaching experience faculty had, the more knowledge and skills they demonstrated through the online medium. In these studies, faculty were able to engage students in interactive and collaborative activities that developed cultural competence, such as identifying prior understandings about diversity, building communicative abilities, and responding to diverse contexts. These items also appeared in this investigator's measure to which faculty indicated their knowledge and skills to use in the online course content.

Nieto and Booth (2010) examined faculties' perceptions of cultural competence when teaching online. They found that faculty who demonstrated higher levels of intercultural sensitivity were more likely to be conscious of international students' language challenges. Thus, the findings of this researcher's hypothesis support the positive influence faculty's knowledge and skills have on students' learning when teaching diversity through the online course content. In fact, it is not only important for the online course content to contain diversity but equally important for faculty to possess the knowledge and skills to successfully address diversity through their teaching. While the above studies show similarities in findings with this investigator's study, the measure used by this investigator was unlike their measures. This investigator's measure unified faculty's knowledge and skills with online course content based on the INTASC principles to examine whether a consistent approach to addressing diversity

was apparent when teaching online in higher education. In addition, quantitative research needs to grow in examining the impact of faculty's PCK on students' learning about diversity, which this study has offered.

The results of this researcher's study differ from the findings of Velde, et al. (2003) who examined cultural competency of faculty and students in the Allied Health department. First, the study utilized Mason's (1995) Cultural Competence Self-Assessment Questionnaire (CCSAQ), which is an established psychometric survey and not a newly constructed survey based on teaching principles, such as INTASC. Second, the study examined whether faculty and students expressed cultural competency through two notable ways: 1) acknowledgment of cultural differences and awareness of their affects on the helping process and 2) recognizing how to obtain knowledge about specific cultures for use in the helping encounter. The faculty and students showed a mediocre performance in their practice of cultural competency because the mean scores on knowledge of communities (of color), personal involvement (with communities of color), and total cultural competence were about at the median of the possible score ranges on the CCSAQ. Perhaps these above stated characteristics hence could have contributed to Velde's findings differing from this investigator's study.

However, Velde, et al (2005) did find that students who progressed through the curriculum and years in the program improved their performance in cultural competency but their improvement was not enough to make a statistical difference. In this regard, this researcher's study did not include students' self-report on their learning about diversity, which would confirm faculty's interpretation of their students' performance in learning about diversity as well as the impact of faculty's knowledge and skills to teach and integrate diversity within the curriculum of the subject matter. In addition, Velde, et al (2005) found that most faculties'

reaction to the administration of this survey instrument was negative. As a result, the survey instrument, which asked for indications of action-oriented, community involvement behaviors, may have influenced their responses to produce lower cultural competence scores.

The results of this researcher's study also differ from Zhang and Walls (2006) who found that the least commonly implemented online teaching principle by faculty was the integration of knowledge about diverse groups. This principle was based on Chickering and Gamson's (1999) seven principles for online teaching and focused on the development of respect for diverse learning and talent. However, Zhang and Walls utilized a qualitative approach to examine faculty's self-report on their implementation of this principle because of its subjective nature. For them, the lack of student involvement appeared to impede the successful integration of this principle. In contrast, this researcher found faculty able to teach diversity that resulted in students engaged in their learning where the curriculum contained the activities to learn about diversity.

In addition to the perspectives stated in the above studies, the following conceptual frameworks are aligned to the results of this hypothesis. First, Shulman (1986, 1987, 2004a, 2004b) contended that Pedagogical Content Knowledge (PCK) represents the blending of content and pedagogy which are adapted to the students' diverse interests and difficulties in order to meet students' learning needs. This Shulman's contention is in agreement with this study's finding and the studies reported above (Nieto & Booth, 2010; Seok, et al., 2010; Sciame-Giesecke, 2009), namely that faculty integrating similar cultural sensitivity in teaching the subject matter has a positive influence on students' learning.

Second, Dewey (1963) and Vygotsky (1978) purported that curriculum and instruction needs to provide opportunities for social interaction and including students' diverse experiences to make the learning meaningful to students. This Dewey's and Vygotsky's contention is in

agreement with this study's finding and the studies reported above (Nieto & Booth, 2010; Seok, et al., 2010; Sciame-Giesecke, 2009; Wang, 2001), namely that curriculum and instruction needs to include collaborative, social and experiential learning opportunities to have a positive influence on students' learning.

Third, Banks (2001a, 2001b, 2004) purported that curriculum and instruction needs to consist of the construction of cultural knowledge by including learning opportunities that enable students to share and learn diverse perspectives to engage and motivate students. This Bank's contention is in agreement with this study's finding and the studies reported above (Seok, et al., 2010; Sciame-Giesecke, 2009; Wang, 2001), namely that the construction of diverse learning experiences through the subject matter is important to students' learning.

Discussion of Hypothesis 3: The Moderating Effect of the Scope of the Online Course. The third hypothesis considered the impact of faculty's scope (flexibility and opportunity) to teach students learning about diversity within the online curriculum design (molar variable). This flexibility and opportunity was called Online Course Scope. For example, the discussion boards offer faculty the flexibility and opportunity to interact with students, extend their understanding of the subject, introduce and relate diversity to the subject matter, and create an online learning community for students to share their own experiences and perspectives. These items also appear in this investigator's measure.

However, this hypothesis was not accepted. There was no significant interaction found between faculty knowledge and skills and online course scope. Thus, the online course scope did not moderate the relationship between faculty's knowledge and skills and the students' learning. Rather, the online course scope and faculty's knowledge and skills appear to be closely related and share a consistently positive relationship with student learning. As faculty

skills increased, so did students' learning. Online course scope would have interfered with that positive relationship if there had been an interaction.

In examining this hypothesis, the point to note was that when faculty knowledge and skills was added to online course scope as predictors of student learning, the latter was not a significant predictor. In light of the previously discussed findings that initially underestimated the importance of faculty knowledge and skills due to shared variance between predictors, further investigation was warranted. As such, in order to further understand the relationship among faculty knowledge and skills, online course scope, and student learning, a post-hoc analysis was conducted.

This analysis revealed that faculty knowledge and skills, when considered as the sole predictor of student learning, accounted for about 52% of the variance. When online course scope was added as a second predictor, the variance accounted for in student learning increased to approximately 70%. However, faculty's knowledge and skills was no longer a significant predictor. As done previously, it was important then to examine the numbers further. Evaluation of the partial correlations revealed that online course scope accounted for 38% of student learning (having partialled out the faculty knowledge and skills). Likewise, factoring out online course scope resulted in faculty knowledge and skills accounting for about 1% of the variance in student learning. Adding those two scores brings the total to only 39% of the variance in student learning. As the overall model accounted for 70% of that variance, this leads to the assumption that 31% of the student learning is shared variance, contributed by the combination of online course content and faculty knowledge and skills.

This finding indicates that when predicting student learning, faculty's knowledge and skills shared even more variance with the online course scope than it did with content, which

again, at first glance, suggested a minimal impact of faculty's knowledge and skills on student learning. Perhaps there was not a clear enough distinction between online course scope and faculty's knowledge and skills. Online course scope, in fact, as measured in this study, may have been based on faculty's knowledge and skills. This would be an accurate observation because the same items in the measure used for faculty's knowledge and skills were the same as those for online course scope. This investigator believes that had the measure for online course scope contained questions that specifically addressed how and in what way faculty exercised the flexibility and opportunity to teach diversity, rather than basing it solely on the INTASC standards, then perhaps more concrete characteristics of pedagogical methods would have been ascertained.

The findings in this study reveal the overlap of faculty knowledge and skills with both online course content (Scale 2a) and online course scope (Scale 2b). The results seem to lead to the assumption that faculty's knowledge and skills are subsumed in their delivery of online course content and their implementing of online course scope. The overlapping must be a result of the faculty's knowledge and skills in delivering the online content and implementing online course scope. This might explain why the unique factor of faculty's knowledge and skills would not contribute much to these percentages if it were not applied.

Nevertheless, it must still be acknowledged that there is unique variance that comes from the curriculum (46%) and the scope (38%), which is not accounted for by faculty's knowledge and skills. As for online course content, the students have books and online materials that provide the curricular content; that is, students can learn some content with or without a skilled instructor. Regarding online course scope, it appears to the investigator that 38% variance may be coming uniquely from faculty who capitalize on that flexibility and opportunity to incorporate

their knowledge and skills consistently. It would be logical to expect that online course scope can only impact the student with the faculty's presence rather than without. Online course scope cannot impact students' learning without the faculty member.

While this investigator's limited review of literature did not find any research that examined the online course scope specifically or as a moderating variable, the findings of this hypothesis are consistent with the research that examined specific practices that faculty implemented, which would constitute as online course scope. Conceiacao (2006) examined faculty's social presence in the online environment. She found that faculty who maintained consistent discussions and responses to students within the online course and explained the subject matter beyond the text, i.e. used their knowledge and skills about diversity within the context of their subject matter, experienced improved student engagement and motivation to learn. Lee and Bertera (2007) examined the use of an online discussion forum specifically for diversity issues for students in the Masters of Social Work program. They found that students felt they learned more from these online discussion forums if faculty maintained a positive climate within this online forum. Students also interacted more with fellow students in the forum and remained engaged with the subject matter content on social work as they saw the discussions relevant and meaningful to their subject matter.

Similarly, Murdock and Williams (2011) and Malkin and Stake (2004) found that faculty who extended the online course content by maintaining an interactive relationship between themselves and their students, the content and their students, and between the students saw improved student performance in learning and involvement. These studies reveal the importance of faculty's knowledge and skills that can be further demonstrated through the online scope.

While the above studies show similarities in findings with this investigator's study, the measure used by this investigator was different from theirs. This investigator's measure focused on identifying if there indeed would be a difference in faculty's ability to incorporate their knowledge and skills through the online scope given the design of the online course content. The results obviously indicate that such a difference would only be impacted by faculty's own knowledge and skills. In other words, faculty with higher PCK will more likely know how to use the online scope to teach the online course content. At the same time, this investigator's study based all the scales (online course content, online course scope, and faculty's knowledge and skills) on the INTASC principles to provide a unified and systematic examination of teaching online in higher education. The measure also explicitly examined faculty's rating their knowledge, their skills, the online course content, and the online scope separately in order to determine any variance between these dimensions of teaching. What becomes apparent is that such a measure based on the INTASC principles is indeed applicable not only within higher education but for online curriculum and instruction as well.

The findings of this study differ from Wang (2007) and Hall's (2006) examination of faculty's practices in online courses to engage and motivate students. Wang (2007) studied faculty's impact on American and Asian students and Hall (2006) examined faculty's impact on Arabic students. Both found that the use of synchronous tools (such as webchat, video-chat, and conference-calling) with asynchronous tools (such as blogging, discussion boards, and email) met students' learning needs the most and encouraged students to be more engaged with the content and motivated to learn. However, Wang (2007) found that the Asian students preferred less interaction within the online discussion board but more accessibility to the instructor on an individual basis, which would be achieved through synchronous tools. In this regard, this

investigator's measure did not identify or differentiate between tools used to engage and motivate students but subsumed them into learning styles and performance mode in the measure (MV: 11). Nevertheless, Wang (2007) and Hall's (2006) studies do reveal the importance of the faculty's social presence in the classroom, which would appear through the online course scope. This leads the investigator to believe that the faculty who utilized the online course scope had a higher impact on incorporating their knowledge and skills as well as teaching the online course content to positively affect students' learning about diversity.

In addition to the perspectives stated in the above studies, the following conceptual framework is aligned to the results of this hypothesis. Shulman (1986, 1987, 2004a, 2004b) contended that PCK stresses the interdependence between curriculum, instruction, and student learning, the reflection of which guides faculty's action. Instruction, for instance, needs to incorporate a repertoire of various teaching strategies to positively influence students' learning. But the curriculum needs to adapt to such instruction, thereby becoming an adaptive process of teaching. Additionally, Dewey (1963) and Vygotsky (1978) purported that curriculum and instruction needs to provide opportunities for social interaction and including students' diverse experiences to make the learning meaningful to students. In this researcher's study, strong faculty's knowledge and skills to teach diversity and provide the means for social interaction with both the instructor and students was an important factor that impacted not only their ability to utilize the online scope but also students' learning about diversity. This Shulman, Dewey, and Vygotsky's contention is in agreement with this study's finding and the studies reported above (Conceiacao, 2006; Lee & Bertera, 2007; Malkin & Stake, 2004; Murdock & Williams, 2011), namely that, with the moderating variable, online course scope, faculty who indicated high PCK utilized the online medium to incorporate their teaching about diversity while providing the

social forum to do so; this, in turn, positively influenced students' learning. In this sense, while the online scope did not moderate faculty's ability to teach, it did indicate a direct relationship between faculty's PCK and students' learning.

Significant Demographic Variables

Perhaps some of the most interesting findings resulted from the exploratory analyses that indicated highly significant relationships between some of the demographic variables and the outcome variable, Students' Learning about Diversity. The following discussion will highlight the most significant findings.

Diversity-related variables. As seen in Table 9 (see p. 72), four diversity-related features of faculty members showed a large effect, a significant impact on the students' scores on learning about diversity. These items were (1) years of professional development regarding diversity, (2) years diversity was part of the faculty's education, (3) years of experience teaching diversity in their discipline, and (4) whether diversity was inherent in the online curriculum taught. There was a greater impact on student learning about diversity when instructed by faculty with 4-5 years of professional development regarding diversity. Similar effects are apparent when noting diversity as part of the faculty's education. The effect for these two variables (professional development regarding diversity, and faculty education) seemed to plateau at the point where instructors reached 5-7 years of experience teaching online. The findings regarding the diversity-related variables give support to the contention that faculty training in diversity and a faculty that is more experienced in teaching about diversity, are going to have a significantly greater impact on student learning about diversity. Because the sample in this study is comparable to faculty at other two-year colleges, this conclusion could reasonably be generalized to other similar settings.

Online teaching variables. The other demographic variables that significantly influenced students' learning, to a moderate degree, pertained to the faculty's experience with teaching online courses. These three variables, all of which showed a medium effect on students' learning, were (1) years teaching an online course, (2) number of online courses taught per year, and (3) years of professional development in online instruction. Interesting patterns arose in the analyses.

For example, faculty members who had taught online courses for 8 or more years showed much higher scores on students learning about diversity than did the faculty with only 2-4 years of experience. Interestingly, however, there were no significant differences when comparing the 2-4 years group to the 5-7 years group. Likewise, no significant differences were evident when comparing the 5-7 years group with the 8 or more group. Nevertheless, it is reasonable to conclude that more experience in teaching online courses showed a significant impact on the outcome variable of student learning about diversity. This effect may be attributed to the instructors' comfort level in teaching online courses, thus enabling them to exercise more flexibility in how they deliver the content, enhancing it in a variety of ways. The variable "number of courses taught on line per year," which also showed an increase in student learning when faculty had taught more courses, may simply have been another measure of the years of experience in the sense that those with higher seniority are given a priority in teaching courses and may, due to this system, be assigned more courses per year.

The other variable, the years of professional development in teaching online courses, would go hand in hand with experience teaching online courses and would lend strength to the contention that the instructor's training and expertise (Faculty Knowledge and Skill) would be enhanced through experience and professional develop in teaching in the online platform.

When taken together, these findings lend support to the hypothesis that professional development and other education in diversity, combined with teaching experience, add to student learning. Importantly, the most dramatic impact on student learning comes from faculty who are trained and experienced in issues of diversity.

Limitations of the Study

The main limitation of this study is that the data collected was through a self-reported measure, namely a rating scale. The responses faculty gave were therefore based on their perception of their ability to facilitate learning about diversity, and this study has no direct data on their actual performance. Self-report, on the other hand, only provides the faculty's perception of their ability and all individuals tend to provide socially desirable responses. This is a drawback not only of this rating scale but all self-reported measures. In this study, it was not feasible to observe the participants in the study given that they were teaching from all over America, many of whom were teaching from their own residences. It was impossible for this investigator to observe each of them over the same amount of time in order to gather quantitative data. Since the faculty from this investigator's institution was from all over America, this limitation may always remain a limitation, as there is no clear solution. Therefore, this limitation cannot be addressed by observation as would be used in classroom observation.

In addition, the exploratory analyses revealed that faculty in the highest range of years in experience teaching online (8+ years) were statistically different from those who had 0-2 years of experience in teaching online courses regarding their impact on students' learning. Likewise, there was no significant difference when faculty who had 2-4 years of online teaching experience were compared to those with 5-7 years online teaching experience (See Table 10). Again there were no significant differences when comparing faculty with 5-7 years of online teaching

experience with those who had 8 or more years of online teaching experience (See Table 10). This is a limitation because the reasons for the lack of significant differences remain unknown. It is possible that there could be a significant difference between those with minimal years of teaching experience versus those with twenty or more years of teaching experience. Further examination would be needed to determine the factors that may be impeding faculty to have a significant influence on students' learning.

Implications for Further Research

To further expand this study, this investigator suggests that future researchers could use a similar rating scale, of student learning, administered to the students, in conjunction with the measure used for faculty in this study. While self-report would still be used, this would provide additional information about faculty's implementation of diversity based on students' response. The findings would thus that strengthen the examination of the first and second hypotheses.

A second approach could be designed on the findings of the demographic variables on online teaching. For example, a focused-group study could examine faculty's online teaching experience to influence students' learning about diversity. Four focused groups would be based on the range of years of experience in online teaching: A group on those with 8 or more years of experience, those with 5-7 years, those with 2-4 years, and those with less than 2 years. Such a study would enable the investigator to examine the specific challenges faculty face in teaching diversity online. The results of such a finding would additionally provide in-depth information on the ways in which faculty addresses the online course content and the online course scope. This, in conjunction with this investigator's measure, could be then used to determine the challenges and nuances faculty utilize when teaching online, which would strengthen the examination of the first hypothesis. This, in turn, would also help determine the length of

experience impacting their effectiveness along with the kind of online training faculty may need. In addition, it would allow the investigator to explore and determine if other confounding variables exist.

To address a different but related research question, a third approach could be to conduct a study with a larger sample, which might reveal differences in curriculum and instruction among professors who teach in various disciplines. This would allow for a better examination of disciplines that are easily able to include diversity and those that do not. In identifying those that do not, it would then be possible to determine in what ways diversity could be included into that type of content. In this light, this investigator recommends utilizing Mason's (1995) Cultural Competence Self-Assessment Questionnaire (CCSAQ), which is an established psychometric survey. This psychometric survey can be used in conjunction with this investigator's measure, which would allow for a detailed examination of the second hypothesis and possible professional development training needed.

Educational Implications

The educational implications for students and faculty are based on the findings of the first and second hypotheses, namely that 1) faculty's knowledge and skills to teach diversity impact students' learning, and 2) online curriculum design impacts students' learning. Therefore, the following recommendations are that 1) diversity should be integrated across the curriculum in higher education and 2) faculty should have professional education to teach diversity within the online medium.

Given the trends in adult learning, the student population in online higher education is not only increasing but also diversifying (Brookfield, 1986; Bruner, 2007; Frey, Paul & Yankelov, 2003; Giroux, 2006; Kemp, 2006). Because of the convenience and speed in which these diverse

students can complete their degrees to join the global workforce, diversity has become a predominant issue (Brookfield, 1986; Giroux, 2006). Therefore, degree programs need to integrate diversity across the curriculum to provide students with an understanding of the application and relevancy of diversity in the workforce. In addition, such integration across the curriculum would prevent the need for separate courses on diversity to fulfill the institution's diversity component, thereby saving students extra fees. Furthermore, a separate diversity course would only be learned in isolation and not be directly related to their coursework. Thus, diversity across the curriculum would educationally benefit students (Banks, 2004; Garcia, et al, 2005; Gudeman, 2001; Rogers, et al, 2007; Terenzini, Cabrera, Colbeck, Bjorklund, & Parente, 2001; Wang, 2006).

Therefore, faculty also need to be trained in knowing how to address the diverse challenges and perspectives students will bring into the online classroom (Adams, 1992; Baltes, 2010; Banks, 2004; Rothstein-Fisch & Trumbull, 2008). The length of this training can start from limited workshops to full certification in online training. In addition, these workshops should be grounded in the INTASC principles and the basic ideas of the conceptual frameworks noted earlier to help faculty understand the theory and application of teaching diversity online. For example, just as this study has reported that courses must contain opportunities for social interaction that will make the learning reflective, adaptive, and meaningful to students (Bruner, 1966; Chickering, 1977; Dewey, 1963), similarly, the training workshops should implement the above. In this way, faculty can experience and practice expanding their pedagogical content knowledge that is relevant to higher education and for a diverse, adult student population (Grossman, 1990; Grossman, Wilson, & Shulman, 1989; Major & Palmer, 2006). The objectives would be to understand and apply the various teaching strategies through the online content and

online scope as noted in this investigator's measure. For example, lecture, collaborative learning, experiential learning, multimedia, and synchronous with asynchronous tools need to be used as the instructional delivery methods (Rowan, Schilling, Ball & Miller, 2001; Trigwell, Prosser, Martin & Ramsden, 2005).

Summary

The overall findings of this study support the offering professional development opportunities for faculty in all content areas in order to strengthen their background in teaching about diversity. Curriculum design is also an area that can add strength to the students' learning about diversity, regardless of the actual course they are enrolled in. Finally, the role of the instructor's experience in teaching in the online environment is critical in supporting students' learning about diversity. All three of these factors clearly can bear heavily on how students incorporate a more diverse perspective into their own learning and will eventually carry with them to their future workplace.

APPENDIX A: DEMOGRAPHIC AND BACKGROUND SURVEY
Author(s): Mitali Chaudhery with assistance from Dr. Rosa, Dr. Bhavnagri, and Dr. Ozkan.

Demographic and Background Experience Questionnaire

1. How many years have you been teaching online courses in a higher education setting?
   a. 0-1 year
   b. 2-4 years
   c. 5-7 years
   d. 8 or more years

2. How many years have you been teaching on-ground/traditional courses in a higher education setting?
   a. 0-1 year
   b. 2-4 years
   c. 5-7 years
   d. 8 or more years

3. How many online courses have you been involved with curriculum design and development (with Instructional Designers) <u>for this college</u>?
   a. 0-1
   b. 2-3
   c. 4-5
   d. 6 or more

4. What geographic location do you live in?
   a. North America
   b. South America
   c. Europe
   d. Africa
   e. Asia
   f. Australia

5. How many online courses do you teach per year <u>for this college</u>?
   a. 0-3
   b. 4-7
   c. 8-11
   d. over 11 courses

6. How many pre-designed (RTT) online courses do you teach per year <u>for this college</u>?
   a. 0-3
   b. 4-7
   c. 8-11
   d. over 11 courses

7. How many years of professional development or further academic programs concerning online curriculum and instruction have you completed?
   a. 0-1
   b. 2-3
   c. 4-5
   d. 6 or more

8. How many years of professional development or further academic programs concerning diversity education have you completed?
   a. 0-1
   b. 2-3
   c. 4-5
   d. 6 or more

9. How many online courses <u>per year</u> have you designed yourself without the assistance of instructional designers or a pre-designed (RTT) curriculum <u>in this college</u>?   a. 0-1

b. 2-3
c. 4-5
d. 6 or more

10. In which discipline do you teach online courses <u>in this college</u>? (pick only one that you will address for this survey)
    a. Business/Accounting
    b. Health
    c. Biology
    d. Chemistry
    e. Physics
    f. Mathematics
    g. Psychology
    h. Sociology
    i. Anthropology
    j. Composition
    k. English Literature/Poetry
    l. History
    m. Humanities
    n. Speech/Communication
    o. Foreign Language
    p. Geography
    q. Economics
    r. Political Science
    s. Philosophy
    t. None

11. In which discipline of online courses that were <u>not</u> pre-designed have you integrated diversity education as part of the curriculum <u>in this college</u>?
    a. Business/Accounting
    b. Health
    c. Biology
    d. Chemistry
    e. Physics
    f. Mathematics
    g. Psychology
    h. Sociology
    i. Anthropology
    j. Composition
    k. English Literature/Poetry
    l. History
    m. Humanities
    n. Speech/Communication
    o. Foreign Language
    p. Geography
    q. Economics
    r. Political Science
    s. Philosophy
    t. None

12. Which pre-designed online courses have you integrated diversity education as part of your instruction <u>for this college</u>?
    a. Business/Accounting
    b. Health
    c. Biology
    d. Chemistry
    e. Physics
    f. Mathematics

g. Psychology
h. Sociology
i. Anthropology
j. Composition
k. English Literature/Poetry
l. History
m. Humanities
n. Speech/Communication
o. Foreign Language
p. Geography
q. Economics
r. Political Science
s. Philosophy
t. None

13. Approximately how many years was diversity education included in your academic program (undergraduate, graduate, doctorate degrees)?
    a. 0-1 year
    b. 2-4 years
    c. 5-7 years
    d. 8 or more years

14. Have you completed a teacher education program, i.e. secondary teaching certification, Ed.D, etc?
    a. Yes
    b. No

15. How many years of experience teaching diversity within your discipline for online courses do you have?
    a. 0-1 year
    b. 2-4 years
    c. 5-7 years
    d. 8 or more years

16. In what capacity do you work for this college?
    a. Full-time
    b. Part-Time

17. Is diversity awareness an inherent part of the curriculum in the discipline/subject you teach for this college?
    a. Yes
    b. No

APPENDIX B: DIVERSITY TEACHING SURVEY**

1st Subscale: Pedagogical Knowledge and Skills

Rating Scale	1	2	3	4
Faculty's opinion about their personal/professional knowledge to teach about diversity within the online course	No Knowledge, No Training	Some Knowledge, Need Training	Proficient, Knowledge is Current	Expert, Can Train Others
Faculty's opinion about instructional skills to teach diversity within the online course	No Skills, No Training	Some Skills, Need Training	Proficient, Training is Current	Expert, Can Train Others

Directions: Place a check mark (√) in the column that represents your response in teaching one online course in your discipline at this college to the following items:	1	2	3	4
1. To teach my online students to see, question, reflect, and interpret ideas from diverse perspectives,				
a. **I have personal/professional knowledge about how to do this**				
b. **I utilize my teaching skills to accomplish this**				
2. To capture my online students' ideas to link them to prior understandings of diversity,				
a. **I have personal/professional knowledge about how to do this**				
b. **I utilize my teaching skills to accomplish this**				
3. To integrate my knowledge and skills from several subject areas that connect with diversity,				
a. **I have personal/professional knowledge about how to do this**				
b. **I utilize my teaching skills to accomplish this**				
4. To consistently create diverse learning experiences that makes the central concepts in the subject matter meaningful to my online students,				
a. **I have personal/professional knowledge about how to do this**				
b. **I utilize my teaching skills to accomplish this**				
5. To seek to understand my online students' cultures and communities,				
a. **I have personal/professional knowledge about how to do this**				
b. **I utilize my teaching skills to accomplish this**				
6. To draw explicit connections between the subject matter and my online students' cultures and communities as a basis for connecting instruction to students' experiences,				
a. **I have personal/professional knowledge about how to do this**				
b. **I utilize my teaching skills to accomplish this**				
7. To create a learning community where individual differences are respected between my online students that are intertwined with the subject matter,				
a. **I have personal/professional knowledge about how to do this**				
b. **I utilize my teaching skills to accomplish this**				

8. To evaluate how to prepare students to achieve the institution's diversity outcome, choosing alternative teaching strategies and materials to meet my online students' developmental stages, prior knowledge, learning styles, and interests.
     a. **I have personal/professional knowledge about how to do this**
     b. **I utilize my teaching skills to accomplish this**				

9. To make decisions and adjustments to enhance the understanding of diverse social relationships, student motivation and engagement, and productive work within the context of my subject,
     a. **I have personal/professional knowledge about how to do this**
     b. **I utilize my teaching skills to accomplish this**				

10. To employ strategies that build upon and construct new knowledge, appreciation and skills to communicate across diverse populations,
     a. **I have personal/professional knowledge about how to do this**
     b. **I utilize my teaching skills to accomplish this**				

11. To create learning opportunities about diversity with variation in learning styles and performance,
     a. **I have personal/professional knowledge about how to do this**
     b. **I utilize my teaching skills to accomplish this**				

12. To create learning opportunities about diversity to capitalize my online students' skills, progress, and motivation,
     a. **I have personal/professional knowledge about how to do this**
     b. **I utilize my teaching skills to accomplish this**				

13. To use classroom observations, information, and research about my online students as a basis for experimenting with, reflecting on, and revising my teaching practices about diversity as it ties to the subject matter,
     a. **I have personal/professional knowledge about how to do this**
     b. **I utilize my teaching skills to accomplish this**				

**These are based on INTASC standards. Author(s): Mitali Chaudhery with assistance from Dr. Marc Rosa, Dr. Navaz Bhavnagri, and Dr. Bulent Ozkan.

APPENDIX C: DIVERSITY TEACHING SURVEY**

2nd Subscale: Online Curriculum Design

Rating Scale	1	2	3	4
Faculty's opinion of the curriculum's a. **Content** in the course through the semester that educates students about diversity and b. **Scope** Flexibility in course design through the semester that provides added opportunities for faculty to teach about diversity	0 weeks, no content or scope	1-2 weeks, minimal content or scope	3-5 weeks, some content or scope	6-15 weeks, Thorough content or scope

Directions: Place a check mark (√) in the column that represents your response in teaching one online course in your discipline at this college to the following items:	1	2	3	4
1. **The online curriculum contains the:**				
a. *Content* for online students to see, question, reflect, and interpret ideas from diverse perspectives.				
b. *Scope* for online students to see, question, and interpret ideas from diverse perspectives.				
2. **The online curriculum contains the:**				
c. *Content* for online students to link their ideas to prior understandings of diversity				
d. *Scope* for online students to link their ideas to prior understandings of diversity.				
3. **The online curriculum contains the:**				
a. *Content* to prepare online students to connect knowledge and skills from several subject areas with diversity.				
b. *The Scope* to prepare online students to connect knowledge and skills from several subject areas with diversity.				
4. **The online curriculum contains the:**				
a. *Content* to teach diverse learning experiences that make the central concepts in the subject matter meaningful to online students.				
b. *Scope* to teach diverse learning experiences that make the central concepts and development of knowledge in the subject matter meaningful to online students.				
5. **The online curriculum contains the:**				
a. *Content* to integrate the development of diverse cultures and communities.				
b. *Scope* to integrate the development of diverse cultures and communities.				
6. **The online curriculum contains the:**				
a. *Content* that draws explicit connections between the subject matter and online students' cultures and communities as a basis for connecting instruction to students' experiences.				
b. *Scope* that draws explicit connections between the subject matter and online students' cultures and communities as a basis for connecting instruction to students' experiences.				

7. The online curriculum contains the: a. *Content* that creates a learning community where individual differences are respected between my online students that are intertwined with the subject matter.	7.			
b. *Scope* to create a learning community where individual differences are respected between my online students that are intertwined with the subject matter.				
8. The online curriculum contains the: a. *Content* to begin the preparation of meeting the institution's diversity outcome by providing alternative teaching strategies and materials in order to meet online students' developmental stages, prior knowledge, learning styles, and interests.				
b. *Scope* to begin the preparation of meeting the institution's diversity outcome by providing alternative teaching strategies and materials in order to meet online students' developmental stages, prior knowledge, learning styles, and interests.				
9. The online curriculum contains the: a. *Content* to develop the understanding of diverse social relationships, student motivation and engagement, and productive work within the context of my subject matter.				
b. *Scope* to develop the understanding of diverse social relationships, student motivation and engagement, and productive work within the context of my subject matter.				
10. The online curriculum contains the: a. *Content* to challenge and build upon and construct new knowledge, appreciation and skills to communicate across diverse populations.				
b. *Scope* to teach knowledge, appreciation and skills to communicate across race, gender, social class, and ethnicity.				
11. The online curriculum contains the: a. *Content* to provide learning opportunities about diversity with variation in learning styles and performance modes.				
b. *Scope* to provide learning opportunities about diversity with variation in learning styles and performance modes.				
12. The online curriculum contains the: a. *Content* to provide learning opportunities about diversity to capitalize on online students' skills, progress, and motivation.				
b. *Scope* to provide learning opportunities about diversity to capitalize on online students' skills, progress, and motivation.				
13. The online curriculum contains the: a. *Content* to observe, inform, and research more about online students' diversity to evaluate the outcomes of teaching and learning the subject matter.				
b. *Scope* to observe, inform, and research more about online students' diversity to evaluate the outcomes of teaching and learning the subject matter.				

APPENDIX D: DIVERSITY TEACHING SURVEY**

3rd Subscale Students' Learning

Rating Scale	1	2	3	4
Faculty's opinion of students' demonstrated learning	No evidence	Some evidence	Substantial evidence	Consistent evidence

Directions: Place a check mark (√) in the column that represents your response in teaching one online course in your discipline at this college to the following items:	1	2	3	4
1. **My online students demonstrate their learning about diversity by:** Seeing, questioning, reflecting, and interpreting their ideas from diverse perspectives in their discussion or writing.				
2. **My online students demonstrate their learning about diversity by:** Linking their ideas to prior understandings of diversity in their discussion or writing.				
3. **My online students demonstrate their learning about diversity by:** Showing the connection of knowledge and skills from several subject areas with diversity skills, in their discussion or writing.				
4. **My online students demonstrate their learning about diversity by:** Sharing diverse learning experiences that make the central concepts in the subject matter meaningful to them in their discussion or writing.				
5. **My online students demonstrate their learning about diversity by:** Showing the connection between their knowledge of cultures and/or communities and the subject matter's assignments in their discussion or writing.				
6. **My online students demonstrate their learning about diversity by:** Respecting individual differences within the online learning community, in their discussion or writing that is intertwined with the subject matter.				
7. **My online students demonstrate their learning about diversity by:** Showing in their discussion or writing, the development of knowledge in diversity that will prepare them to achieve the institution's diversity outcome.				
8. **My online students demonstrate their learning about diversity by:** Showing in their discussion or writing an understanding of diverse social relationships, motivation and engagement, and productive work within the context of my subject matter.				
9. **My online students demonstrate their learning about diversity by:** Showing in their discussion or writing, increased knowledge, appreciation and skills to communicate across diverse populations.				

10. **My online students demonstrate their learning about diversity by:** Expressing through their discussion or writing, their learning of diversity through various learning styles and performance modes.				
11. **My online students demonstrate their learning about diversity by:** Revealing through their discussion or writing their skills, progress, and motivation to learn *more* about diversity.				

**These are based on INTASC standards. Author(s): Mitali Chaudhery with assistance from Dr. Marc Rosa, Dr. Navaz Bhavnagri, and Dr. Bulent Ozkan.

APPENDIX E: INTASC PRINCIPLES

Principle #1: The teacher understands the central concepts, tools of inquiry, and structures of the discipline(s) he or she teaches and can create learning experiences that make these aspects of subject matter meaningful for students.

Principle #2: The teacher understands how children learn and develop, and can provide learning opportunities that support their intellectual, social and personal development.

Principle #3: The teacher understands how students differ in their approaches to learning and creates instructional opportunities that are adapted to diverse learners.

Principle #4: The teacher understands and uses a variety of instructional strategies to encourage students' development of critical thinking, problem solving, and performance skills.

Principle #5: The teacher uses an understanding of individual and group motivation and behavior to create a learning environment that encourages positive social interaction, active engagement in learning, and self-motivation.

Principle #6: The teacher uses knowledge of effective verbal, nonverbal, and media communication techniques to foster active inquiry, collaboration, and supportive interaction in the classroom.

Principle #7: The teacher plans instruction based upon knowledge of subject matter, students, the community, and curriculum goals.

Principle #8: The teacher understands and uses formal and informal assessment strategies to evaluate and ensure the continuous intellectual, social and physical development of the learner.

Principle #9: The teacher is a reflective practitioner who continually evaluates the effects of his/her choices and actions on others (students, parents, and other professionals in the learning community) and who actively seeks out opportunities to grow professionally.

Principle #10: The teacher fosters relationships with school colleagues, parents, and agencies in the larger community to support students' learning and well-being.
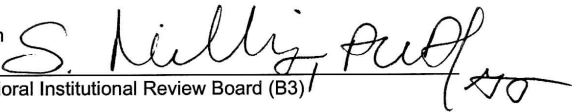
(INTASC, 1992)

APPENDIX F: APPROVAL FROM HIC

WAYNE STATE UNIVERSITY

IRB Administration Office
87 East Canfield, Second Floor
Detroit, Michigan 48201
Phone: (313) 577-1628
FAX: (313) 993-7122
http://irb.wayne.edu

NOTICE OF EXPEDITED APPROVAL

To: Mitali Chaudhery
College of Education

From: Dr. Scott Millis
Chairperson, Behavioral Institutional Review Board (B3)

Date: November 22, 2011

RE: IRB #: 107511B3E

Protocol Title: The Relationship Between Faculty's Pedagogical Content Knowledge and Students' Knowledge on Diversity in Online Courses

Funding Source:

Protocol #: 1110010246

Expiration Date: November 21, 2012

Risk Level / Category: Research not involving greater than minimal risk

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The above-referenced protocol and items listed below (if applicable) were **APPROVED** following *Expedited Review* Category (#7)* by the Chairperson/designee *for* the Wayne State University Institutional Review Board (B3) for the period of 11/22/2011 through 11/21/2012. This approval does not replace any departmental or other approvals that may be required.

- Revised Protocol Summary Form (received in the IRB Office 11/21/2011)
- Protocol (received in the IRB Office 10/13/2011)
- The request for a waiver of the requirement for written documentation of informed consent has been granted according to 45 CFR 46.117(1)(2). Justification for this request has been provided by the PI in the Protocol Summary Form. The waiver satisfies the following criteria: (i) The only record linking the participant and the research would be the consent document, (ii) the principal risk would be potential harm resulting from a breach of confidentiality, (iii) each participant will be asked whether he or she wants documentation linking the participant with the research, and the participant's wishes will govern, (iv) the consent process is appropriate, (v) when used requested by the participants consent documentation will be appropriate, (vi) the research is not subject to FDA regulations, and (vii) an information sheet disclosing the required and appropriate additional elements of consent disclosure will be provided to participants not requesting documentation of consent.
- Research Information Sheet: Pilot Phase (dated 11/02/2011)
- Research Information Sheet (dated 11/02/2011)
- Recruitment Script for Pilot Study
- Recruitment Script for Main Study
- Receipt of Letter of Support from Schoolcraft College (dated 07/19/2011)

- ○ Federal regulations require that all research be reviewed at least annually. You *may* receive a *"Continuation Renewal Reminder"* approximately two months prior to the expiration date; however, it is the Principal Investigator's responsibility to obtain review and continued approval *before* the expiration date. Data collected during a period of lapsed approval is unapproved research and can never be reported or published as research data.
- ○ All changes or amendments to the above-referenced protocol require review and approval by the IRB **BEFORE** implementation.
- ○ Adverse Reactions/Unexpected Events (AR/UE) must be submitted on the appropriate form within the timeframe specified in the IRB Administration Office Policy (http://www.irb.wayne.edu//policies-human-research.php).

NOTE:

APPENDIX G

Pearson Correlations between Continuous Variables from Hypotheses 1 - 3 for Entire Sample (N=104)

Variable	Faculty K/S	Course Content	Course Scope	Student Learn
Faculty K/S	-	0.77**	0.83**	0.72**
Course Content	-	-	0.90**	0.86**
Course Scope	-	-	-	0.84**
Student Learn	-	-	-	-

Significant correlations are indicated by * ($p < .05$) and ** ($p < .01$).

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ABSTRACT

THE RELATIONSHIP BETWEEN FACULTY'S PEDAGOGICAL CONTENT KNOWLEDGE AND STUDENTS' KNOWLEDGE ON DIVERSITY IN ONLINE COURSES

by

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August 2012

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Major: Curriculum and Instruction

Degree: Doctor of Philosophy

The purpose of this proposed study will be to examine the relationship between faculty's pedagogical content knowledge and the design of online curriculum to teach students about diversity in a higher education environment. One hundred twenty-seven faculty teaching online courses at a Midwestern state will be selected on non-random sampling to participate in this study. Two main measures will be used to collected data: (1) Faculty Demographic and Background Survey, and (2) Diversity Teaching survey. The Diversity Teaching Survey was broken into 3 subscales that will examine the following: (1) Faculty's Pedagogical Knowledge and Skills, (2) Online Curriculum Design, and (3) Students' Learning about Diversity within the faculty's subject matter.

A non-experimental, static group design, which consisted of various continuous variable analyses, to examine the relationship between the independent and dependent variables through the use of multiple regression analysis will be used to investigate three research hypotheses of this study.

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