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Marcyjanik, Diane L. *An Analysis of Web Accessibility in Online Nursing Education for Persons with Disability*

Abstract

This descriptive study examined nurse educators' knowledge and application of Web accessibility standards. An online survey was sent to 141 nurse educators at three comprehensive universities in the UW System. A total of 56 (39.7%) completed the survey. The sample consisted of 41 (29 %) of nurse educators who identified teaching in the online environment (i.e. fully online, hybrid/blended, web enhance). The survey identified nurse educators have limited knowledge of Web accessibility standards, Universal Design Principles for Instruction and 1973 Rehabilitation Act Section 508 as they pertain to the online environment. Respondents (75.6 %) reported lack of training and professional development in regards to Web accessibility standards. Other barriers reported in applying Web accessibility standards included, implementation, support, and time issues. Furthermore, the study indicated the need for Web accessibility standards with over 50% of students within the last five years requesting accommodation in the online environment. Nurse educators (44.7 %) have provided some accommodations in the online environment such as extended test times. Beginning a dialogue regarding Web accessibility guidelines is the first step to creating Web accessible learning environments for all students. Additional recommendations for increasing nurse educators' knowledge and application of Web accessibility standards are provided.

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Chapter I: Introduction

The number of students with disabilities and those enrolled in postsecondary education has shown an increase over the last decade. Boyle et al., (2011) conducted a study from 1997-2008 regarding the prevalence of disabilities in children ages 3-17 years. Their findings concluded that 1 in 6 children in the U.S have a developmental disability and increased 17% over the years studied. In addition, the U.S. Department of Education, National Center for Education Statistics (NCES) (2012) reported undergraduate enrollment rose 37% from 15.3 million to 21.0 million students between 2000 and 2010. Furthermore, a survey of 4,170 postsecondary institutions during 2008-2009 reported the number of institutions enrolling students with a disability was 3,680 or 88% (Raue & Lewis, 2011). Along with legal mandates such as Americans with Disabilities Act (ADA) 1990, Individuals with Disabilities Education Act (IDEA) 2004, and No Child Left Behind 2001, educators are seeing an increase in students with disabilities entering higher educational institutions.

Upon entering secondary education, persons with disability (PWD) are required to self-identify their need for accommodation either to faculty or the appropriate campus office that facilitates accessibility (Marcyjanik and Zorn, 2011). Raue and Lewis (2011) further identify that institutions report types of student disabilities as 31% as learning disabilities, 18% were identified as Attention Deficit Disorder (ADD) and Attention Deficit and Hyperactivity Disorder (ADHD), 15% as mental illness/ psychological or psychiatric conditions, 11% were health impairment, 4% with difficulty hearing and 3% with a sight impairment that cannot be corrected by wearing glasses or contacts. Title II of the Americans with Disabilities Act (ADA) requires state and local governments to provide PWD an equal opportunity to benefit from their services which includes higher educational institutions (Yu, 2002).

In addition, the number of online learning environments in higher education has increased exponentially over the last two years. Based on responses from more than 2,500 colleges and Universities, Allen and Seaman (2011) noted online education is vital to the long-term strategy of these institutions. Furthermore, Allen and Seaman stated, “over 6.1 million students were taking at least one online course during the fall 2010 term; an increase of 560,000 students over the number reported the previous year” (p.4). Therefore, with this increase so does the responsibility to provide PWD Web accessibility.

When applying Web accessibility standards in the online environment educators must recognize the relationship between universal design (UD) and Web accessibility. Universal design, in the simplest term, as defined by the National Council on Disability (2004) “is that all people, young and old, with and without disabilities, can have access to the same opportunities” (p. 23). Some examples of physical universal design principles include electronic doorways to provide access to buildings and screen readers for increasing computer access for PWD. As part of their mission the World Wide Web Consortium’s (W3C) (2012) primary goal is to make the Web “available to all people, whatever their hardware, software, network infrastructure, native language, culture, geographical location, or physical or mental ability” (para. 3).

Therefore , as faculty require students to go online for all or part of the course, access to the Web for PWD becomes ever more challenging. Hackett, Parmanto and Zeng (2005) conducted a retrospective study focusing on Web site accessibility over time. They discovered that as Web designers started to expand from text-based formats to include images, tables and animation, barriers began to become more apparent to PWD. Thus, incorporating the use of universal design principles into teaching demonstrates a proactive approach to instruction design for all students (Scott, McGuire, & Foley, 2003).

Studies conducted regarding Web accessibility standards describe the importance of faculty awareness and application of these standards into the online environment (Keeler & Horney, 2007; Savi, Savenye, Rowland, 2008; Thompson, 2005). Yates (2005) discovered that guidelines for accessible Web sites are open for interpretation and recommends the use of guidelines set forth by W3C. Foley (2007) invited the reader to think about accessibility as fluid so it can be adapted to “meet the changing needs of users and available technology” (p.21). Therefore, the need for faculty to obtain the necessary skills to make online courses a success is essential particularly in regard to PWD.

Web accessible pages means all information is available for use by everyone; including PWD. Hackett, Parmanto, Zeng (2005) and Foley (2007) acknowledge educators are often alone and receive minimal assistance from Web designers when creating course Web pages. In addition, Marcyjanik and Zorn (2011) stated, “working in isolation, these educators frequently are not aware of Web accessible design principles and their use, or the potential adverse consequences when the principles are neglected” (p. 244). Therefore, nursing educators specifically working in the University of Wisconsin (UW) system might consider examining their own online teaching environments to determine the degree of Web accessibility for PWD. In conclusion, Savi, Savenye and Rowland (2008) discovered when Web sites utilize Universal Design principles all students benefit.

Statement of the Problem

Limited data exists on nursing educators’ knowledge and application of Web accessibility standards.

Purpose of the Study

The purpose of this study was to analyze the nurse educators within the University of Wisconsin system knowledge and application of Web accessibility standards in online teaching environments for persons with disability. To date no studies have been conducted on nursing educators at the three campuses within the UW system and their knowledge and application of Web accessibility standards for the online environment.

Research Questions

1. To what extent are nurse educators aware of Web accessibility standards?
2. Is there a relationship between nurse educator's years of experience and their knowledge of Web accessibility standards
3. What is nursing educators that teach all online courses self- reported level of application of Web accessibility standards?
4. What is nursing educators that teach hybrid/blended courses self- reported level of application of Web accessibility standards?
5. What is nursing educators that teach web enhanced courses self- reported level of application of Web accessibility standards?

Limitations

The following are limitations of this study:

1. The results of this study are not generalizable beyond the nursing educators as within the University of Wisconsin systems were surveyed.
2. The survey was developed by the researcher and therefore has limited evidence of reliability and validity.

Definition of Terms

The meaning of various words can be complex and open for interpretation depending on whom and how they are being utilized. To maintain consistency throughout the study the following definitions are utilized.

Blended Learning. “In the broadest sense, blended learning can be defined or conceptualized as a wide variety of technology/media integrated with conventional, face-to-face classroom activities” (Picciano, 2009, p. 10).

Disability. Disability was defined as a physical or mental condition that causes functional limitations that substantially limit one or more major life activities, including mobility, communication including sight, hearing and speech, emotional illness and learning disorders (ADA, 2008). In addition Section 504 of the Rehabilitation Act corroborates the above definition defining individuals with disabilities “as persons with a physical or mental impairment which substantially limits one or more major life activities” (Section 504, 2006, para 3), including mental illness, visual and hearing impairments.

E-Learning. This term will be used synonymously with online learning during this study.

Hybrid Learning. Is defined, “allows students to receive significant portions of instruction through both face-to-face and online means” (U.S. Department of Education, 2012, p. 2).

Online Learning. Is defined by the U.S. Department of Education (2012) as “a wide variety of programs that use the Internet within and beyond school walls to provide access to instructional materials as well as facilitate interaction among teachers and students. Online learning can be fully online or blended with face-to-face interactions” (p.2).

Universal Design for Instruction. Is defined as “the design of instruction of products and environments to be usable by all students, to the greatest extent possible, without the need for adaptation or specialized design” (Burgstahler, 2012, p. 1).

Web Accessibility. The World Wide Web Consortium (W3C) states, “The Web is fundamentally designed to work for all people, whatever their hardware, software, language, culture, location, or physical or mental ability. When the Web meets this goal, it is accessible to people with a diverse range of hearing, movement, sight, and cognitive ability” (W3C, 2012, para. 1).

Web Enhanced. Sloan consortium identifies a web enhanced course when there is some computer usage component involved. Another definition utilized by Sloan stated, “Online course activity complements class sessions without reducing the number of required class meetings” (Sloan, 2013).

Chapter II: Literature Review

This chapter provides a summary of; (a) literature on the evolution of online learning, (b) common disabilities, (c) development of web accessibility guidelines and (d) issues regarding faculty knowledge and application of web accessibility standards in the online environment.

Evolution of Online Learning

To understand what is intended by Web Accessibility guidelines and recommendations a brief history of the evolution of online learning is discussed. Online learning was initiated in what was known as distance education. In infancy distance education was physical mail correspondence courses that developed into educational television and video conferencing. It was described as any education that could be delivered to remote sites through audio, video, live or prerecorded instruction (US DOE, OPEPD, 2009; NCES, 2012). Technology continued to advance from Web 1.0 tools of just delivering content to students via audio or video to Web 2.0 tools where more information sharing took place in the forms of wikis, blogs and podcasts.

Distance education now became known as blended or hybrid learning where students received and presented information via face-to face and in online learning platforms (Picciano, 2009, U.S. Department of Education, 2012). Furthermore, hybrid and blended course provided a platform for student to contribute in information sharing through written discussion, email, or synchronous dialogue. The NCES (2012) defined distance education when one or more technologies were utilized to distribute instruction to students who are separated from the instructor utilizing a synchronous (i.e., simultaneous or “real time”) or asynchronous (i.e., not simultaneous, occurs at irregular intervals) platform. Some examples of synchronous instruction would include interactive computer conferencing or relay chat verses asynchronous where Web tools such as e-mail and discussion forums are utilized.

As a result, distance education matured into what is now known as online learning. The U.S. Department of Education (2012) defined online learning as “a wide variety of programs that use the Internet within and beyond school walls to provide access to instructional materials as well as facilitate interaction among teachers and students” (p.2). These interactions can be completely online or a combination as in the blended or hybrid online platforms.

Online learning environments continued to increase in higher education. The National Center for Education Statistics (NCES) reported in 2007–08, about 4.3 million undergraduate students took at least one distance education course (2012). Allen and Seaman (2011) reported over 6.1 million students were taking at least one online course in fall 2010. This was an increase of 560,000 from the previous year. Furthermore, the survey of over 2,500 colleges and universities in the U.S. revealed an annual growth rate of 18.3% of students in the online environment from fall 2002 to fall 2010 (Allen & Seaman). With the increase in online enrollment, numerous higher educational institutions view online learning as a critical component of their strategic plan. Thus, the focus has moved toward how to best meet the needs of the increasing population of online learners.

Common Disabilities

Disability was defined by the Americans with Disabilities Act (ADA) (2009) as a physical or mental condition that causes functional limitations that substantially limit one or more major life activities, including mobility, communication including sight, hearing and speech, emotional illness and learning disorders. Section 504 of the 1973 Rehabilitation Act corroborates the above definition defining individuals with disabilities “as persons with a physical or mental impairment which substantially limits one or more major life activities” (Section 504, 2006, para 3), including mental illness, visual and hearing impairments.

The World Health Organization (WHO) defined disability as a health condition that can be visible or invisible, temporary or long term, degenerating and painful. Furthermore, the WHO acknowledged people with disabilities as very diverse in relation to age, gender, socioeconomic status, ethnicity and cultural heritage. Finally, the WHO reported over a billion people have some form of disability that may be due to birth defect, ageing, accident or chronic health condition (2012).

Types of disabilities that may present challenges in the online learning environment include; visual impairments (e.g., color blindness, cataracts, and visual field defects), hearing impairments (e.g., hard of hearing or deafness), cognitive disabilities (e.g., Attention Deficit Hyperactivity Disorder, Autism Spectrum Disorders, and dyslexia), mobility difficulties (e.g., paralysis, weakness, cerebral palsy, spinal cord injury, carpal tunnel, broken bones), and concerns related to mental health issues (e.g., anxiety disorder, depression). These types of disabilities along with many others may create challenges for students in online environments (WHO, 2012).

As a group, persons with disability (PWD) experience decreased access to health care, goods of society and ultimately Web resources (Yu, 2002; Tandy & Meacham, 2009). Raue and Lewis (2011) concluded the number of students entering post-secondary institutions with a disability was 3,680 or 88 % during 2008-2009. The WHO (2012) recognized lower education achievements and less economic participation in persons with a disability. Therefore, Web accessibility is an essential consideration for faculty teaching in the online learning platform.

Development of Web Accessibility Guidelines

Understanding Web accessibility guidelines is a critical component of online education for PWD. The foundation for Web accessibility guidelines can be found in several legislative acts and principles. Marcyjanik and Zorn (2011) have described the evolution of Universal Design (UD), Universal Design for Instruction (UDI) and Web accessibility guidelines utilizing a figure to depict this historical foundation (Figure 1). As noted in Figure 1 three phases to this relationship exist.

In Phase 1 (Figure 1), Americans with Disabilities Act (ADA), Individual with Disabilities Education Act (IDEA), along with the Rehabilitation Act Section 504 and 508 have contributed to the principle of Universal Design (Foley, 2007; Thompson, 2005; & Yu, 2002; Marcyjanik & Zorn, 2011). Furthermore, Sections 504 and 508 of the Rehabilitation Act ensured electronic information technology purchased by the federal government be usable by all PWD. Institutions of higher learning who receive federal funding are required to develop policies for maintaining Web accessibility for PWD (Bradbard & Peters, 2010). Thus the ADA (1990) and Rehabilitation Act Section 504 and 508 ensured PWD have equal access to postsecondary education.

The IDEA guaranteed the right to free and appropriate public education for PWD (IDEA, 2004). These legislative acts paved the way for the principle of UD. Universal Design provided access to the environment for all including, but not limited to ramps and electronic doorways. However, specific language regarding mandates for accessibility to web pages is vague. This tends to create a digital divide for having access to information technology and having limited or no access to information technology.

Figure 1: Relationship Between Web Accessibility and Universal Design

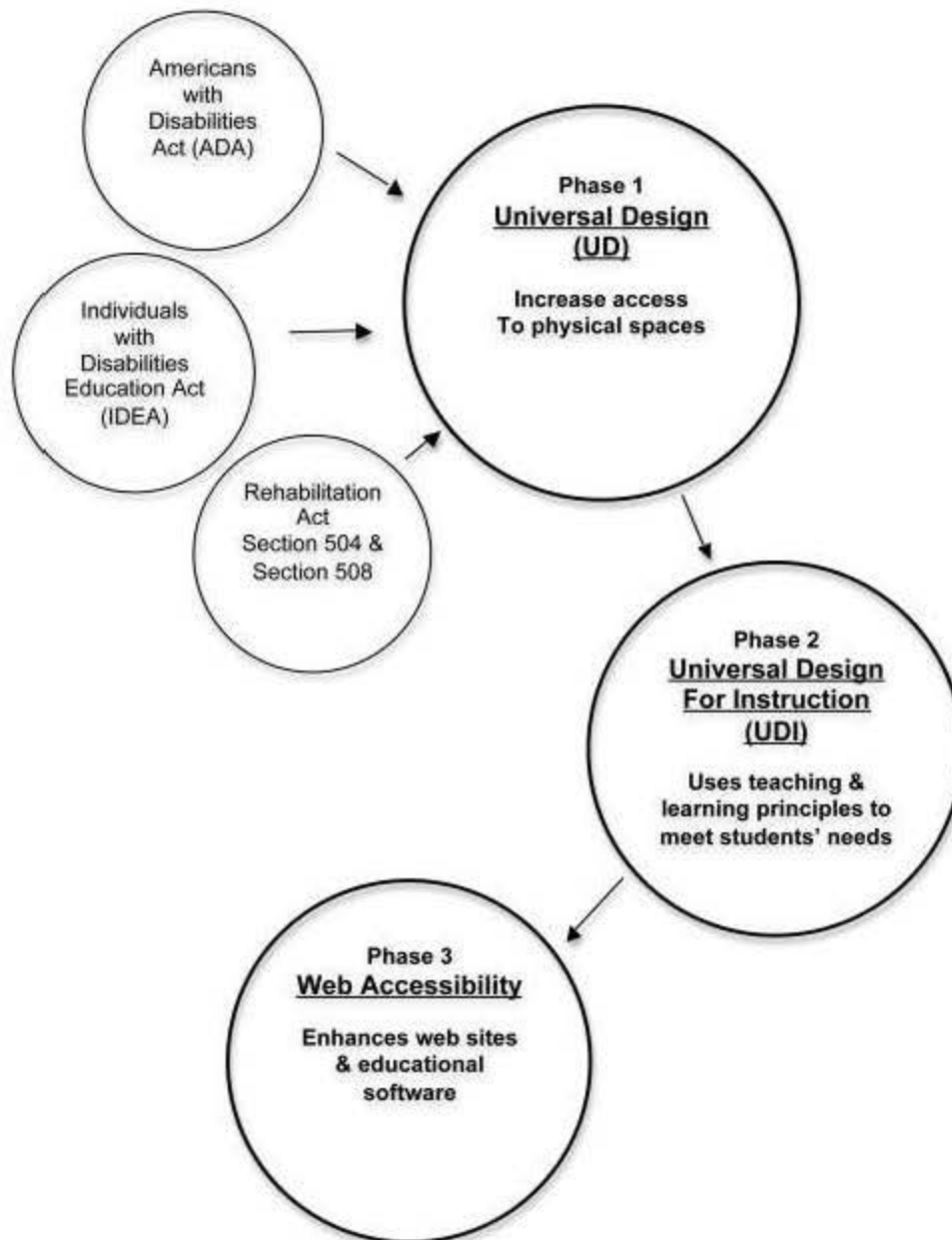


Figure 1. Relationship between Web accessibility and Universal Design depicts the evolution of Web accessibility standards. Adapted from “Accessibility in Online Nursing Education for Persons with Disability.” by D. Marcyjanik & C. Zorn, 2011, *Nurse Educator*, 36(6), p. 242. Copyright 2013 by Diane Marcyjanik.

Phase 2 (Figure 1), Universal Design for Instruction principles focused on permitting students to utilize a variety of learning strategies to meet the requirements of the course. Scott, McGuire, and Foley (2003) recognized the importance of implementation and ongoing validation of the nine principles of UDI in the classroom. The FacultyWare website, describes these principles (Scott, et al., in press). The following is a brief discussion of each of the nine principles of UDI and how they may be implemented in the online environment.

Principle 1: Equitable use is demonstrated when all students can access the information utilizing the same means. For example, utilization of web-based courseware that provides links to online support so students can have access to the needed materials despite challenges.

Principle 2: Flexibility in use referred to providing a wide array of options for student assessment. Students could pick from a variety of options (e.g., taking an exam, writing a paper, or creating a project). *Principle 3:* Simple and intuitive instruction offered a simple straightforward design. Grading rubrics that defined expectations are essential for Principle 3. (Shaw, et al., 2001; Scott, et al., 2003; Scott, et al., in press).

Principle 4: Perceptible information would include information that is communicated in a deliberate manner. Students with diverse learning needs would be able to access instructional information utilizing whatever supports they require. Examples would include obtaining a hard copy or using screen readers. *Principle 5:* Tolerance for error allowed the student to work at their own learning pace by providing opportunities for constructive feedback prior to submitting the final product. *Principle 6:* Low physical effort enabled students to maximize their concentration toward the learning goal. The use of a word processor for editing papers would provide an example of conserving physical effort (Shaw, et al., 2001; Scott, et al., 2003; Scott, et al., in press).

Principle 7: Size and space for approach and use is purposeful. For example, do not rely on color alone to convey meaning of information. *Principle 8:* A community of learners would be demonstrated by creating discussion groups or utilizing chat rooms. Finally, *Principle 9:* Instructional climate identified a welcoming and inclusive environment with statements which encourage to students to identify special learning needs. (Shaw, et al., 2001; Scott, et al., 2003; Scott, et al., in press). When faculty implemented these principles a broad variety of student's needs were met not only for those with PWD but for all students in the course (Scott, et al. 2003; Marcyjanik & Zorn, 2011).

Phase 3 (Figure 1), identified how UD and UDI paved the way for Web accessibility guidelines. Marcyjanik and Zorn (2011) noted to apply the nine principles of UDI to the online classroom the focus was to be intentional regarding Web accessibility for PWD. Web accessibility overcomes the physical environment by using assistive technology such as screen readers for visual impairments. It also provides an accessible web page design enabling users to access the information in many formats. For example, if someone is color blind then a web page would not rely solely on color to convey the meaning.

In conclusion, Figure 1 illustrated the progression of legislative acts to develop a foundation that would provide Web accessibility to PWD in the online learning environment. To ensure Web accessibility faculty should be aware of these legislative acts in order to comply with legal mandates when working with PWD.

The United Nations Convention provided another essential component to understanding the importance of ensuring Web accessibility. It recognized and declared "countries to identify and eliminate obstacles and barriers and ensure that persons with disabilities can access their environment, transportation, public facilities and services, and information and communications

technologies” (UN, 2012, para 11). Thereby ensuring PWD have equal access and equal opportunity in regards to the online environment through the utilization of Web accessibility standards.

Web sites need to be accessible with more than just traditional Web browsers to access the Internet. Web accessibility standards come from the World Wide Web Consortium (W3C). The W3C is an international association that consists of organizational members, a full-time staff, and public participation in developing and setting standards for the Web. There are three host sites for W3C operating out of North America, Europe and Asia along with outreach offices in sixteen countries. The primary mission is devoted to “developing protocols and guidelines that ensure long-term growth for the Web” (W3C, 2012). Furthermore, the W3C is acknowledged as the expert authority on standards for Web site guidelines, software, tools and providing accessible design solutions (Foley 2007; Hackett et al., 2005; Thompson, 2005; Yates, 2005).

There are five domains of the W3C; architecture, interaction, technology and society, ubiquitous web and web accessibility initiative (WAI). It is the latter domain, WAI, which has produced Web Content Accessibility Guidelines (WCAG). Thompson (2005) surveyed 91 participants from U.S. public and private higher educational institutions and the United Kingdom. The survey revealed 50 % of the institutions based their Web accessibility guidelines and policies on Section 508 and the WCAG guidelines.

The Web is recognized as a fluid environment by the WAI and therefore standards continue to be updated. The first version was known as the WCAG 1.0 created in the 1990’s and updated in 2008 known as WCAG 2.0. The mission of the WAI is “to lead the Web to its full

potential to be accessible, enabling people with disabilities to participate equally on the Web” (W3C, 2012).

The WCAG 2.0 is built on 12 guidelines that are organized under four principles. These principles are identified as perceivable, operable, understandable and robust. Perceivable referred to providing alternative text for non text content such as images; operable required all content to be accessible by utilizing a keyboard; understandable maintained text and content is readable and predictable; and robust ensured compatibility is maintained with the use of assistive technologies (W3C, 2012). These guidelines are regarded as the international standard for Web accessibility (W3C, 2012). They were developed in 2008 to make Web content more accessible to people with disabilities. The WAI recognized disabilities such as “blindness and low vision, deafness and hearing loss, learning disabilities, cognitive limitations, limited movement, speech disabilities, photosensitivity and combinations of these” when considering Web accessibility guidelines (W3C, 2012).

The WCAG 2.0 guidelines will be discussed along with examples of how they can be applied in an online course. The W3C website, <http://www.w3.org/>, provided more detailed information on the application, techniques and success criteria for implementation of these guidelines in the online environment.

The first principle, *Perceivable*, has four guidelines regarding how content is delivered. It is important to provide alternative text options for non-text content. For example, provide a clear description of images; captions or transcript would be utilized for videos; bold text or chimes would indicate the start or end of content; and lastly color and audio are clear so that important content is in the main focus.

The second principle, *Operable*, indicated all functionality is achievable through the use of a keyboard to make navigation easy. Keyboards can function by voice commands, on screen by using a mouse and with various other assistive technologies. By ensuring content is accessible with the use of a keyboard more flexibility for the user is provided. Operable also referred to allowing users enough time to process the content and eliminating flashing content that may provoke a seizure. In addition, this principle required ways to help users keep track of their location and find content with the utilization of page headers and navigation bars.

The third principle, *Understandable*, ensures text is provided in many formats. Text is offered via visual or auditory means. Acronyms or abbreviations are accompanied by expanded forms and definitions. Also, content is presented in a predictable order, if multiple web pages are utilized the layout should be consistent throughout. The last aspect of this principle helped users avoid and identify errors. Creating a clear description of the error is essential to assist the user on how to correct the mistake. Error messages can be in many formats such as text or audio.

The fourth principle, *Robust*, requires content to be presented in a markup language that is compatible with current and future tools. The markup language must contain start and end tags an example would be the common Hypertext Markup Language (HTML) which is a standardized system language.

The WAI has provided evaluation tools to help faculty identify if WCAG 2.0 are being met. The goal is to determine which principles are being met and ways to improve. One example is the Preliminary Review of Web Sites for Accessibility Checklist found at: <http://www.w3.org/WAI/eval/preliminary.html> (W3C, 2012). This checklist provided step by step instructions when evaluating web sites. It does not require the reviewer to know markup

languages but be familiar with downloading software and changing settings on the browser. This is one place for faculty to start to determine if their course web pages have met the WCAG 2.0 principles.

Another organization who helps ensure and evaluate for Web accessibility is Quality Matters (QM). Quality Matters is a nationally recognized peer-based continuous improvement organization committed to best practices in distance learning. This organization was built on literature review and application of research findings in order to certify the quality of online and blended courses. The rubric utilized to certify online courses contained eight general standards which include:

1. Course Overview and Introduction
2. Learning Objectives (Competencies)
3. Assessment and Measurement
4. Instructional Materials
5. Learner Interaction and Engagement
6. Course Technology
7. Learner Support
8. Accessibility

Note: From: <http://www.qmprogram.org/rubric>

The last standard Accessibility is based on Universal Design and WCAG guidelines to ensure Web accessibility. Criteria for this standard would include a text transcript for multimedia and captions for images.

Web accessibility guidelines and evaluation tools can be overwhelming for Nurse Educators when appraising their web sites. However, the first important step for Nurse Educators is to increase knowledge of WCAG. Then they can begin to apply and assess for Web accessibility guidelines in the online environment.

Faculty Knowledge and Application

Several studies have begun to explore disabilities and the importance of Web accessibility in relation to PWD. Hackett, Parmanto, and Zeng, (2005) conducted a study of postsecondary institutions over a five year period and found Web sites have become inaccessible and more complex over time especially for PWD. Tandy and Meacham (2009) discussed the increasing complexity of technology in relation to challenges of an online course. Some disabilities are considered an invisible disability where there is no physical indication of a disability such as a learning disability. Technical design barriers and challenges related to difficulty reading and concentrating issues would go undetected by the instructor in the online classroom unless identified by the student (Tandy & Meacham).

A study of 60 students in a secondary school evaluated the accuracy of responses and time when utilizing a Web accessible site versus a non Web accessible site. Students with and without learning disabilities were compared using a 2-way analysis of variance (ANOVA). The results of this study indicated for both groups of students the score was higher when using the Web accessible site, than those who used the non Web accessible site (Savi, Savenye, & Rowland, 2008). Therefore with the expansion of online learning environments, students are required to go online for all or a portion of the course, and legal mandates, faculty need understand and apply Web accessibility guidelines.

The literature supported the importance of faculty understanding and applying Web accessibility guidelines identified by the W3C in the form of WACG 2.0 (Bradbard & Peters, 2010; Foley, 2007; Hackett et al., 2005; Keeler & Horney, 2007; Yates, 2005).

Gladhart (2010) surveyed instructors teaching in an online delivering system to determine if instructors had identified students need for accommodation in their online course(s). Eighty-

one responses out of 421 surveyed responded. The results revealed the instructors had encountered the need for accommodation for various disabilities the largest being 40 % for learning disabilities. The study also indicated the lack of knowledge of the instructor to improve accessibility in their course.

Bradbard and Peters (2010) documented their activities and efforts in personal diaries to understand the application of Web accessibility guidelines in their own courses. They consider themselves typical faculty members at a federally funded institution. They describe in detail the efforts utilized to evaluate and correct their own online course sites. The diaries provided the complexity of understanding and applying Web accessibility guidelines for the typical faculty member. The diaries revealed that different tools utilized to evaluate the course site for Web accessibility provide different results. These conflicting results created more confusion and inability to conform to the Web accessibility guidelines. Bradbard and Peters also concluded that “there has been no formal survey of faculty Web pages and faulty awareness related to Web accessibility published to date” (p.40).

In order for nurse educators to maintain and ensure equal access for all students in the online learning environment knowledge of Web accessibility guidelines is the first step. Nurse educators also need to assess for student disabilities in their online classrooms. The importance of designing Web accessible course sites remains in the forefront of online learning.

Summary

Distance education has paved the way for online learning from the first physical mail correspondence course of delivering information to the sharing of information via Web 2.0 tools (US DOE, OPEPD, 2009; NCES, 2012). As technology continues to advance, faculty are designing Web pages and placing more information in the online environment. Allen and Seaman (2011) report over 6.1 million students are taking at least online course.

In addition, the number of students entering post-secondary institutions with a disability was 3,680 or 88 % during 2008-2009 (Raue & Lewis, 2011). There are many definitions of disability however the WHO (2012) recognized lower education achievements and less economic participation in persons with a disability. Therefore, is it imperative for nurse educators teaching in the online environment to assess and accommodate for various types of disabilities.

Other factors relevant to this field study are knowledge and application of Web accessible guidelines. Nurse educators need to consider legal mandates for Web accessible guidelines. Understanding the Sections 504 and 508 of the Rehabilitation Act and ADA in relation to electronic information technology for PWD is essential in the online environment.

Online learning environments present challenges to students with disabilities. The W3C has acknowledged these challenges and have developed the WCAG 2.0. These 12 guidelines provide nurse educators the tools to create a Web accessible course. When Web accessible guidelines are implemented in online learning environment equal access for all students is enhanced.

Chapter III: Methodology

This chapter explains the research methodology used in the current field study, along with a description of the target population, sample selection, instrumentation, and procedures.

Purpose of the Study

The purpose of this study was to analyze the nurse educators within the University of Wisconsin system knowledge and application of Web accessibility standards in online teaching environments for PWD. To date no studies have been conducted on nurse educators at the three campuses within the UW system and their knowledge and application of Web accessibility standards for the online environment.

Target Population and Sample Selection

The University of Wisconsin System (UW System) “is one of the largest systems of public higher education in the country, serving more than 181,00 students each year and employing more than 39,000 faculty and staff statewide” (UW System, 2013a, p. 1). The Regent Policy Documents, Section 14: Discrimination Prohibited stated,

“The University of Wisconsin System is committed to making individuals with disabilities full participants in its programs, services and activities through its compliance with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA) of 1990” (UW System, 2013b, para. 1).

Also, the UW System promotes the concept of universal design meaning “all designs should attempt to optimize usability for everyone, regardless of abilities. This includes the physical environment, the information environment and the curricular environment” (UW System, 2013b, para. 3).

There are 13 four-year universities within the UW System and five of these campuses offer nursing programs. The five nursing campuses are also involved in a consortium offering the BSN@Home program. This program offers Registered Nurses the ability to return to school and earn their bachelors degree. This program offers the majority of coursework to be completed in the online environment (<http://www.bsnathome.com/>).

The five nursing campuses were involved in a five year research grant, from 2006-2011, funded by Health Systems and Research Administration (HRSA). The projects main goal was to “expand the nursing informatics content in the undergraduate nursing programs” (WI-TECNe, 2011). Each of the five UW System Schools of Nursing focused on their area of expertise in the area of informatics they are as follows:

- Year 1- Madison -Telehealth and informatics
- Year 2- Eau Claire -Mechanical simulators
- Year 3- Oshkosh-Virtual simulations
- Year 4- Milwaukee- Problem based case learning
- Year 5- Green Bay- E-learning

Nurse educators from each of the campuses were chosen to participate in the grant. The last year of the grant focused on E-learning. Although the program was completed in fall of 2011 resources remain available to nurse educators from the WI-TECNe website (<https://research.son.wisc.edu/tecne/>) regarding the five learning areas. The last year of the grant focused on best practices for E-learning hosted by UW System- Green Bay.

For the purposes of this field study, three of the five campuses offering nursing programs were selected. This purposive sample was selected based on the three campuses being identified as comprehensive universities. The focus is on teaching and learning rather than a profound research focused. The typical faculty course load at a comprehensive university is three to four

courses a semester versus two at research institutions. Comprehensive universities typically encourage faculty to embrace new teaching pedagogies.

The UW System has divided the thirteen institutions into two separate core missions. The core missions of the two Doctoral Clusters include degree programs at the baccalaureate, masters' and doctoral level and organized programs of research. Whereas the core mission of the University Cluster Institutions offer degree programs at baccalaureate and selected graduate programs with a focus on teaching excellence and offer a core of liberal studies (UW-System, About, 2013a). The following Table 1 represents the five nursing campuses in relation to number of nursing educators, highest degree offered and cluster.

Table 1

UW-System Nursing Campuses: Number Nurse Educator, Highest Degree Offered, Cluster

| UW-Campus | Number Nurse Educators | Highest Degree Offered | University Cluster |
|------------|------------------------|-------------------------------------|--------------------------------|
| Green-Bay | 10 | Bachelors of Science (BSN) | University Cluster Institution |
| Eau Claire | 56 | Doctorate of Nursing Practice (DNP) | University Cluster Institution |
| Oshkosh | 75 | Doctorate of Nursing Practice (DNP) | University Cluster Institution |
| Madison | 93 | Doctor of Philosophy (PhD) | Doctoral Clusters |
| Milwaukee | 146 | Doctor of Philosophy (PhD) | Doctoral Clusters |

Based on the above factors related to comprehensive universities and involvement with the BSN@Home program the three comprehensive campuses within the UW System were selected. The population size for the study included 141 Nurse Educators creating a sample size large enough to perform valid statistical analyses.

Instrumentation

An online survey method was chosen for this study. The online survey method was utilized for several reasons. Hunter (2012) concluded e-questionnaires are inexpensive and a convenient way to collect data. Online questionnaires provide a quick response and make it easier for people to respond. Tracking participation and sending personal email reminders help to encourage participation is another advantage.

In addition, online data collection appears to be “more reliable than data gathered on paper because they are not subject to processing errors” (Hunter, p. 14). Online surveys can ensure anonymity of data responses. Data can be analyzed at anytime and can be presented in graphs and tables embedded in the online survey program.

The purpose of the research was focused in the online environment therefore utilizing online questionnaires remains consistent with the topic. Also, the researcher had access to Qualtrics online survey platform (<https://www.qualtrics.com/>).

The survey consisted of 22 questions, including a five point Likert scale (1=Poor to 5 = Excellent) and multiple choice questions with some permitting multiple responses. The Qualtrics platform provides an opportunity within multiple choice questions to create an “other” option that allow for text boxes when a choice was not available. Also, “skip logic” was utilized to direct respondents to end the survey if certain criteria were not met. For example, a question asked the respondent if they taught in the online environment, if the response was ‘no’ the survey ended. The survey questions along with the two by two matrix are found in Appendix A.

The researcher developed the survey since there were no sufficient surveys in existence. The questions were devised from the literature review and from the researcher’s knowledge and experience of online learning. The researcher has an Online E-Learning Teaching Certificate

from UW- Stout and is a peer reviewer for Quality Matters, a nationally recognized organization which certifies the quality of online course design. The respondents were not expected to have excellent (1=Poor to 5= Excellent) knowledge of 1973 Rehabilitation Act Section 508, Universal Design Principles or Web accessibility guidelines as they pertain to the online learning environment.

Questions 1-6 pertained to demographic information. It was felt that this was important because the data can be divided into various data groups to create data analysis across multiple demographics. Data can be analyzed using number of years of online teaching experience and nursing programs respondents currently teach in.

Questions 5- 12 dealt with the type of online environment and knowledge of Web accessibility guidelines, Universal Design principles, and 1973 Rehabilitation Act Section 508. These questions assisted in gaining understanding of nurse educator's knowledge of the legislation and guidelines for Web accessibility. They helped answer the research questions pertaining to type of online environment and knowledge and application of Web accessibility standards.

Questions 13-16 covered student and disabilities. This data provided information on the number of students with disabilities and the types of disabilities enrolled in online nursing courses. The data regarding students requiring disability accommodation were questions required the respondents to have firsthand knowledge. The nurse educators teaching the courses would have been asked to provide the accommodation.

Questions 17-18, asked about accommodation for persons with disability in the online environment. The specific accommodation questions evolved from Universal Design Principles and Web Content Accessibility Guidelines.

Questions 21-22, covered professional development and barriers to application. This was important because identifying challenges faced by nurse educators when applying Web accessibility guidelines can assist in developing resources.

The survey was developed utilizing a two by two matrix method to ensure validity. The matrix grid demonstrated that the survey questions were equally distributed among the research questions. Four nurse educators, one media specialist and one committee member reviewed the survey questions in relation to the research questions for content reliability. Feedback was obtained from the reviewers and the survey was revised accordingly. Revisions to the survey included editorial changes and the additions of web site address. Web site addresses were added for Universal Design Principles, 1973 Rehabilitation Act Section 508 and Web Accessibility guidelines to help the respondents identify these subject areas. It was also suggested to change the Likert scale from a four point scale to a five point scale, creating a less biased measurement.

Procedures

The research questions, survey and matrix along with appropriate Institutional Review Board (IRB) forms (consent to participate and protection of human subjects) were submitted on March 20, 2013. Notification of approval from IRB was received on March 22, 2013.

The email addresses of nurse educators were collected from the nursing faculty web pages from the three UW System campuses. They were collated on an Excel spreadsheet in order to be uploaded into the Qualtrics survey platform. The option in the program to ensure the responses would remain anonymous was turned on prior to sending out the survey. This guaranteed the researcher could not connect the responses to the individual respondent. Thus, creating an environment where the respondents could feel safe to respond honestly to the questions.

Utilizing the 'distribute survey' icon located in Qualtrics the first email invitation to take the survey was sent to all 141 participants on March 26, 2013. Within the first 3 days 35 participants completed the survey. One week later, April 2, 2013, a reminder email was sent to the participants who had not taken the survey. Another 15 participants completed the survey. It is important to note Qualtrics filtered those who took the survey and only those who had not completed the survey received the reminder. In addition, a thank you was automatically generated to those who completed the survey. A second reminder email was sent out on April 5, 2013 encouraging participation in the survey and 2 more responses were collected. A final notice was sent on April 8, 2013 informing participants the survey would be closing on April 12, 2013. One more response was collected. There were 59 respondents who started the survey. The total number of respondents who completed the survey was 56. The consent to participate and email notices can be found in Appendix B.

Data Analysis

Once the survey was closed percentages and frequencies of responses were reviewed and tabulated from the Qualtrics program. An Excel file was also exported from Qualtrics for further analysis. The file was exported to Statistical Package for Social Sciences 19 (SPSS 19). The responses were analyzed and examined to answer the research questions.

Chapter IV Results

This chapter will present the findings of the study, including demographic data and results from the online survey. The purpose of this study was to analyze the nurse educators within the University of Wisconsin system knowledge and application of Web accessibility standards in online teaching environments for persons with a disability (PWD). To date no studies have been conducted on nursing educators at the three campuses within the UW-System and their knowledge and application of Web accessibility standards for the online environment.

Out of the 141 nurse educators who received an email invitation to participate in the study, 59 respondents started the survey and 56 (39.7 %) completed the survey. Forty-Three of the 56 respondents indicated that they teach in an online environment (i.e. fully online, hybrid or blended, web enhanced. The remaining 13 respondents who answered 'no' were directed to the end of the survey. Two respondents did not complete the whole survey and were eliminated from the final data analysis. Therefore, the concluding data analysis consisted of a final sample size of 41 respondents. This identified a 29 % response rate of nurse educators who are engaged in the online environment.

Demographic Information

Demographic data was collected in the survey regarding UW System affiliation. Table 2 depicted this information with Eau Claire representing 22 (53.7 %) of the respondents.

Table 2

UW System Affiliation

| UW System | Number of Faculty Received | Number who Responded | Percent that Responded | Total Percent of Respondents |
|-------------------|-----------------------------------|-----------------------------|-------------------------------|-------------------------------------|
| Eau Claire | 56 | 22 | 39 | 53.7 |
| Green Bay | 10 | 6 | 60 | 14.6 |
| Oshkosh | 75 | 13 | 17 | 31.7 |
| Total | 141 | 41 | 29 | |

The results of the highest degree obtained by the respondents are displayed in Table 3.

Table 3

Highest Degree Obtained

| Degree | Frequency | Percent |
|---------------|------------------|----------------|
| MSN | 16 | 39.0 |
| NP | 4 | 9.8 |
| DNP | 5 | 12.2 |
| EdD | 2 | 4.9 |
| PhD | 13 | 31.7 |
| Other | 1 | 2.4 |
| Total | 41 | 100 |

The results provided a representative sample of nurse educators employed at comprehensive universities with the largest group holding a MSN followed by PhD. One respondent indicated ‘other’ and wrote in “PhD Candidate”.

The survey also asked respondents to indicate which nursing programs they currently teach. The respondents could check all that apply, typically nurse educators teach in more than one nursing program. Table 4 represented the results. Total percentages would not be valid since respondents could choose as many options as appropriate.

Table 4

Nursing Programs Respondents Teach

| UW Campus | BSN | ABSBN | BSN@Home | MSN | DNP |
|----------------------|-----------------|-----------------|-------------------|-------------------|-------------------|
| Eau Claire | 16 (72.7%) | 1 (4.5%) | 9 (40.9%) | 8 (36.4%) | 9 (40.9%) |
| Green Bay | 4 (66.7%) | 0 | 6 (100%) | 1 (16.7%) | 0 |
| Oshkosh | 12 (92.3%) | 2 (15.4%) | 2 (15.4%) | 5 (38.5%) | 1 (7.7%) |
| Total | 32 (78%) | 3 (7.3%) | 17 (41.5%) | 14 (34.1%) | 10 (24.4%) |

The programs offered at the three comprehensive universities are identified as, Bachelors of Nursing (BSN), Accelerated Bachelors of Nursing (ABSBN), the Bachelors of Nursing (BSN@Home), Masters of Nursing (MSN), and Doctorate of Nursing Practice (DNP).

Of the 41 respondents, the programs identified the most were the BSN 32 (78 %) and BSN@Home, 17 (41%.5). Therefore the bachelors nursing degree program is the most frequently taught program identified. It is important to note that a PhD option was not included since this nursing program is not offered at comprehensive universities.

Online Environment Questions

When respondents were asked to indicate the types of online environments they taught in, fully online and hybrid/blended were the most frequently selected environments. Respondents could select more than one category. Table 5 illustrates the responses. As indicated 24 (58.5 %)

and 22 (53.7) of online learning is occurring in the fully online and hybrid/blended environments.

Table 5

Types of Online Environment

| UW System | Fully Online (No Face-Face) | Hybrid/Blended (Face to Face and Online) | Web Enhanced (Complements Face to Face) |
|-------------------|--|---|--|
| Eau Claire | 8 (36.4%) | 13 (59.1%) | 12 (85.7%) |
| Green Bay | 6 (100%) | 2 (33.3%) | 0 |
| Oshkosh | 10 (76.9 %) | 7 (53.8%) | 2 (15.4%) |
| Total | 24 (58.5%) | 22 (53.7 %) | 14 (34.1%) |

The next question requested respondents to indicate the number of years they have been teaching in the online environment. The respondents were divided into two categories, less than five years teaching experience and more than five years teaching experience. This was based on the novice to expert model with novice being identified as less than 5 years of experience (Benner, 1982). The majority of the respondents, 21 (51 %) indicated teaching 5 or more years in the online environment. Table 6 depicts the responses.

Table 6

Years Teaching in Online Environment

| Years Teaching Online | Frequency | Percent |
|------------------------------|------------------|----------------|
| Less than 5 years | 20 | 48.8 |
| More than 5 years | 21 | 51.2 |
| Total | 41 | 100.0 |

Web Accessibility Questions

The next six questions, Questions 7-12, in the survey asked respondents to indicate their knowledge and application of Web Accessibility standards, Universal Design principles, and 1973 Rehabilitation Act Section 508 in relation to web accessibility. Reference links were embedded in each of the questions for respondents. The responses were collected on a five point Likert scale (1=Poor to 5= Excellent). The results were reported using the scale identified in Table 5 for number of responses based on types of learning environments identified by respondents. Tables 7- 9 indicate percentages and frequencies of Nurse Educator's knowledge of Web accessibility standards. The number varies by table because not all of the respondents answered all of the questions. A discussion follows the Tables.

Table 7

Web Accessibility Standards: Teach Fully Online

| Standards | Poor (1) | Fair (2) | Good (3) | Very Good (4) | Excellent (5) |
|--|---------------------|---------------------|---------------------|--------------------------|--------------------------|
| Knowledge Web Accessibility | 7 (29%) | 8 (33 %) | 4 (17 %) | 5 (21 %) | 0 |
| Application Web Accessibility | 8 (33 %) | 6 (25 %) | 6 (25 %) | 4 (17 %) | 0 |
| Knowledge UDI principles | 11(48 %) | 6 (26 %) | 2 (9 %) | 4 (17 %) | 0 |
| Application UDI principles | 11 (48 %) | 4 (4 %) | 4 (4%) | 4 (4%) | 0 |
| Knowledge Section 508 | 13 (57 %) | 5 (22 %) | 3 (13 %) | 2 (9 %) | 0 |
| Application Section 508 | 13 (57 %) | 3 (13 %) | 5 (22 %) | 2 (9%) | 0 |
| Total | 63 | 32 | 24 | 21 | 0 |

Fully Online (N=24)

The respondents who teach fully online (no face-to-face) 15 (62 %) indicated a poor to fair knowledge of Web accessibility standards. In addition, 14 (58 %) respondents rated their application of Web accessibility standards as poor to fair.

Table 8

Web Accessibility Standards: Teach Hybrid/Blended

| Standards | Poor (1) | Fair (2) | Good (3) | Very Good (4) | Excellent (5) |
|---|---------------------|---------------------|---------------------|--------------------------|--------------------------|
| Knowledge Web Accessibility (n=22) | 7 (30 %) | 7 (33 %) | 4 (20 %) | 4 (17 %) | 0 |
| Application Web Accessibility (n=21) | 6 (38 %) | 7 (34 %) | 4 (14 %) | 4 (14 %) | 0 |
| Knowledge UDI principles (n=20) | 4 (40 %) | 7 (35 %) | 1 (5 %) | 4 (20 %) | 0 |
| Application UDI principles (n=19) | 7 (37 %) | 7 (37 %) | 1 (5 %) | 4 (21 %) | 0 |
| Knowledge Section 508 (n=20) | 9 (45 %) | 7 (35 %) | 1 (5 %) | 3 (15 %) | 0 |
| Application Section 508 (n=20) | 10 (50 %) | 6 (30 %) | 1 (5 %) | 3 (15 %) | 0 |
| Total | 43 | 41 | 12 | 22 | 0 |

Hybrid Blended (N= 22)

The respondents who teach hybrid/blended (face-to-face and online) 14 (63 %) indicated a poor to fair knowledge of Web accessibility standards. In addition, 13 (72 %) respondents rated their application of Web accessibility standards as poor to fair.

Table 9

Web Accessibility Standards: Teach Web Enhanced

| Standards | Poor (1) | Fair (2) | Good (3) | Very Good (4) | Excellent (5) |
|--|---------------------|---------------------|---------------------|--------------------------|--------------------------|
| Knowledge Web Accessibility | 5 (35 %) | 3 (22 %) | 4 (29 %) | 2 (14 %) | 0 |
| Application Web Accessibility | 4 (27 %) | 5 (33 %) | 4 (27 %) | 1 (13 %) | 0 |
| Knowledge UDI principles | 7 (50 %) | 4 (29 %) | 1 (7 %) | 2 (14 %) | 0 |
| Application UDI principles | 5 (36 %) | 6 (43 %) | 1 (7 %) | 2 (14 %) | 0 |
| Knowledge Section 508 | 9 (64 %) | 3 (21 %) | 0 | 2 (14 %) | 0 |
| Application Section 508 | 8 (57 %) | 4 (29 %) | 0 | 2 (14 %) | 0 |
| Total | 38 | 25 | 10 | 11 | 0 |

Web Enhanced (N= 14)

The respondents who teach web enhanced (complements face-to-face) 8 (57 %) indicated a poor to fair knowledge of Web accessibility standards. In addition, 9 (60 %) respondents rated their application of Web accessibility standards as poor to fair. Furthermore, 11 (86 %) indicated poor to fair application of Section 508.

Tables 7, 8 and 9 provide supporting data that the majority of nurse educators who responded rate their knowledge and application of Web accessibility, Universal Design for Instruction (UDI) and 1973 Rehabilitation Act Section 508 (Section 508) in the poor to fair range on the five point Likert scale. Further statistical analysis was warranted.

Since respondents could chose more than one online environment the mean and standard deviation between those who identified each of the online environments and those who did not are provided in Table 10. The mean and standard deviation of their knowledge and application of Web accessibility guidelines, UDI and Section 508 are presented.

Table 10

Knowledge and Application (Likert Scale 1=Poor to 5=Excellent)

| Guidelines And Principles | Fully Online Yes Mean (SD) | Fully Online No Mean (SD) | Hybrid/ Blended Yes Mean (SD) | Hybrid/ Blended No Mean (SD) | Web Enhanced Yes Mean (SD) | Web Enhanced No Mean (SD) |
|--|---|--|--|---|---|--|
| Knowledge Web Accessibility | 2.30 (1.146) | 2.28 (1.274) | 2.33 (1.197) | 2.25 (1.209) | 2.21 (1.122) | 2.33 (1.240) |
| Application Web Accessibility | 2.26 (1.137) | 2.24 (.970) | 2.45 (1.143) | 2.00 (.907) | 2.29 (1.069) | 2.23 (1.070) |
| Knowledge UDI principles | 1.96 (1.147) | 1.73 (1.100) | 2.05 (1.177) | 1.68 (1.057) | 1.85 (1.144) | 1.88 (1.130) |
| Application UDI principles | 2.04 (1.186) | 1.69 (.630) | 2.11 (1.183) | 1.72 (.826) | 2.00 (1.080) | 1.87 (1.014) |
| Knowledge Section 508 | 1.74 (1.010) | 2.00 (1.195) | 1.95 (1.079) | 1.74 (1.098) | 1.69 (1.190) | 1.92 (1.077) |
| Application Section 508 | 1.83 (1.072) | 1.64 (.824) | 1.84 (1.119) | 1.67 (.804) | 1.69 (1.190) | 1.79 (.932) |

As shown in Table 10 the overall means are low for each group based on a five point Likert scale (1=Poor to 5=Excellent). The statistical analysis supports the data identified in Tables 7, 8 and 9 which nurse educators rate their knowledge and application of Web accessibility, UDI and Section 508 in the poor to fair range.

Next, an analysis was completed on the number of years teaching in an online environment and knowledge of Web accessibility standards. Based on the responses in Table 6 the groups were divided into two groups; those with less than five years teaching (n=20) and those with more than five years teaching (n=21). A one-way ANOVA was used to test for difference between the number of years teaching online and application of Web accessibility standards. There was a group difference in the number of years teaching online and application of Web accessibility standards at the $p < 0.05$ level for the conditions [F (1, 38)=4.824, $p = .034$] shown in Table 11.

Table 11

Application of Web Accessibility Standards: ANOVA Number Years Teaching

(Less than 5 years and More than 5 years)

| | Sum of Squares | df | Mean Square | F | Sig. |
|-----------------------|-----------------------|-----------|--------------------|----------|-------------|
| Between Groups | 4.900 | 1 | 4.900 | 4.824 | .034 |
| Within Groups | 38.600 | 38 | 1.016 | | |
| Total | 43.500 | 39 | | | |

p < 0.05 level

In addition; a one-way ANOVA was used to test for the difference between the number of years teaching online and knowledge of Web accessibility standards. There was not a group difference in the numbers of years teaching online and knowledge of Web accessibility standards at the $p < .05$ level for the conditions [$F(1, 38) = 3.331, p = .076$] as shown in Table 12.

Table 12

Knowledge of Web Accessibility Standards: ANOVA Number Years Teaching

(Less than 5 years and More than 5 years)

| | Sum of Squares | df | Mean Square | F | Sig. |
|-----------------------|-----------------------|-----------|--------------------|----------|-------------|
| Between Groups | 3.947 | 1 | 3.947 | 3.331 | .076 |
| Within Groups | 45.028 | 38 | 1.185 | | |
| Total | 48.975 | 39 | | | |

p < 0.05 level

Therefore, those with greater than five years of experience teaching in the online environment had an increase in application of Web accessibility standards to those that had less than five years experience. However, there was no statistical difference in the number of years teaching in the online environment to increased knowledge of Web accessibility standards.

Disability and Technology Questions

Respondents were also asked about students requesting accommodation. The questions were limited to the last five years in order to obtain recent data. Questions included requests by the institution's disability services and those made by the students without support from disability services. The response choices included once, twice, three, more than three and never.

The first question asked, "How many times you have recommended a student to contact disabilities services?" Thirty-three respondents answered this question and eight did not respond

to these questions. All of those who responded indicated at least once they have recommended a student to contact disabilities services. Table 13 displays the results for Questions 13-16 by UW System campus.

Table 13

Students Requesting Accommodation with and without letter from Disabilities Service

| UW System | Recommend Student Contact Disabilities Service (n=33) | Disabilities Service Contact Faculty (n=32) | Student Contact Faculty with Letter (n=34) | Student Contact Faculty without Letter (n=32) | Total Requests (n=131) |
|----------------------|--|--|---|--|-------------------------------|
| Eau Claire | 17 (51.5%) | 19 (59.4 %) | 19 (55.9%) | 19 (59.4 %) | 74 (56.4%) |
| Green Bay | 5 (15.2 %) | 2 (6.3%) | 4 (11.8%) | 2 (6.3 %) | 13 (10%) |
| Oshkosh | 11 (33.3 %) | 11 (34.4%) | 11 (32.4%) | 11 (34.4 %) | 44 (33.5%) |
| Total (n=131) | 33 (25.1 %) | 32 (24.4 %) | 34 (25.9 %) | 32 (24.4%) | |

The results from these questions support that students with disabilities are enrolled in nursing programs. The results also supported nurse educators have been notified to provide accommodation for persons with disabilities. Nurse educators are also recommended that students seek out services provided by the Disabilities Services office available at comprehensive universities.

The next question asked respondents to indicate the types of disabilities they have provided accommodation in their online course. Percentages are not valid since respondents could chose as many that applied. Table 14 displayed the nurse educators' frequency of working with students who have identified a disability.

Table 14

Type of Disabilities Reported by Nurse Educators (Frequency)

| UW System | Hearing Impairment | Learning Disability | Visual Impairment | Speech Impairment | None | Other |
|------------------|---------------------------|----------------------------|--------------------------|--------------------------|-------------|--------------|
| Eau Claire | 2 | 7 | 1 | 0 | 9 | 2 |
| Green Bay | 2 | 2 | 2 | 0 | 1 | 2 |
| Oshkosh | 0 | 6 | 0 | 0 | 5 | 0 |
| Total | 4 | 15 | 3 | 0 | 15 | 4 |

Respondents also chose ‘other’ and provided text for disabilities not identified. These types of disabilities included bedridden and mental health issues. Bedridden was not recognized a disability but a functional limitation. The survey results provided evidence that students with disabilities are enrolled in nursing programs within the UW- System.

Respondents were asked to indicate the types of accommodation they have provided in their online courses for persons with disability. The following Table 15 depicts the responses.

Table 15

Types of Accommodation Provided by Nurse Educators in Online Environments (Frequency)

| UW System | Caption/Scripted Audio | Captioned videotapes/ CD/DVDs | Enlarged Print | Extended Test Times | None | Other |
|-------------------|-------------------------------|--------------------------------------|-----------------------|----------------------------|-------------|--------------|
| Eau Claire | 1 | 1 | 2 | 8 | 7 | 1 |
| Green Bay | 1 | 0 | 0 | 1 | 1 | 3 |
| Oshkosh | 0 | 0 | 0 | 8 | 3 | 0 |
| Total | 2 | 1 | 2 | 17 | 11 | 4 |

(N=37)

The results indicated extended test times were the most frequent required accommodation in the online environment as 17 respondents identified this choice. The 'other' option provided a text box for respondents to comment. Four of the respondents indicated that they provided all of the options in the online classroom however; only one choice could be checked.

The next question asked respondents to identify the types of online learning platforms utilized. The most frequent online learning platform identified was Desire2Learn (D2L). All 39 of the respondents who answered this question chose the D2L platform. This was not surprising as the three comprehensive universities studied utilize this platform. However, a small percentage of other types of platforms were identified such as; Blackboard with five responses and WebCT with three responses.

Training and Barriers

The last three questions of the survey, Questions 19-21, inquired about training, professional development and barriers for incorporating Web accessibility guidelines in the online learning environment. Thirty six of the respondents answered the question about receiving training on Web accessibility accommodation for the online environment. Thirty one (75.6 %) respondents answered 'no' to receiving training. Thirty seven responded to the question regarding attending professional development on Web accessibility accommodation for the online environment. Thirty one (75.6 %) also responded 'no' to receiving professional development. This indicates there may be a lack of training and professional development for Nurse Educators for applying Web accessibility standards in the online environment.

Nurse educators identified barriers to application of Web accessibility standards in their online courses. The results are depicted in Table 16. The frequency is noted because respondents could check all that apply.

Table 16

Barriers to Application of Web Accessibility Standards

| UW System | Knowledge Issues | Training Issues | Support Issues | Implementation Issues | Time Issues |
|-------------------|-------------------------|------------------------|-----------------------|------------------------------|--------------------|
| Eau Claire | 15 | 14 | 9 | 7 | 9 |
| Green Bay | 5 | 1 | 2 | 1 | 3 |
| Oshkosh | 9 | 9 | 5 | 6 | 4 |
| Total | 29 | 24 | 16 | 14 | 16 |

(N=31)

Twenty-nine of the respondents identified knowledge issues and 24 identified training issues as barriers to application of Web accessibility standards. These results support the lack of training and professional development as identified by 75.6 % of the respondents noted no training or professional development related to Web accessibility standards. These results indicated the importance for nurse educators to have the availability of training and professional development on Web accessibility standards.

Summary

The results from this study indicated nurse educators reported limited knowledge and application of Web accessibility standards, signifying that PWD may not have equal access to content in the online environment.

Chapter V: Conclusions, Recommendations and Summary

This chapter will present conclusions, recommendations and a summary of the study.

The purpose of this study was to analyze University of Wisconsin system nursing educators' knowledge and application regarding online teaching environments for PWD. No studies were found to have been conducted on nursing educators at the three campuses within the UW system on their knowledge and application of Web accessibility standards for the online environment.

The results of this study will provide information on nurse educators' knowledge and application of Web accessibility standards into the online learning environment. It will also provide information on the types of disabilities encountered in the online environment. Also, it will provide nurse educators the importance of understanding and applying Web accessibility standards in their online course. Finally, application of Web accessibility standards in the online environment will benefit all students, those with and without disability.

The following research questions were addressed in this study:

1. To what extent are nurse educators aware of Web accessibility standards?
2. What is the relationship between nursing educator's years of experience and their knowledge of Web accessibility standards?
3. What is nursing educators that teach all online courses self-reported level of application of Web accessibility standards?
4. What is nursing educators that teach hybrid/blended courses self-reported level of application of Web accessibility standards?
5. What is nursing educators that teach web enhanced courses self-reported level of application of Web accessibility standards?

Nurse educators from three of the five UW System campuses offering nursing programs were selected for participation in this study. The sample consisted of nurse educators from the three campuses being identified as comprehensive universities.

An online survey consisting of 22 questions was sent to 141 nurse educators at three comprehensive UW System campuses that offer Nursing programs. Online surveys appear to be “more reliable than data gathered on paper because they are not subject to processing errors” (Hunter, p. 14). The return rate was 56 (39.7 %) respondents who completed the survey.

The concluding data analysis consisted of a final sample size of 41 respondents who indicated teaching in the online environment (Fully online, Hybrid/Blended, Web Enhanced).

The researcher developed a survey since there were no sufficient surveys in existence. The researcher utilized a two by two matrix when developing the survey. The survey was reviewed by four nurse educators, one Media Specialist and one committee member and revisions were made accordingly.

Conclusions

The demographic data indicated that nurse educators are teaching in the online environment. Of the 56 (39.7 %) respondents who completed the survey 41 responded ‘yes’ to teaching in the online environment. All 41 respondents (100%) identified teaching in the Desire2Learn online platform. This is consistent with the over 6.1 million students who were taking at least one online course in fall 2010 (Allen and Seaman, 2011).

The majority of respondents identified having a Master of Science Nursing (MSN) (39%) followed by those with PhD (31.7 %). The respondents were nearly divided equally between the numbers of years teaching in the online environment. Twenty-one responded teaching more than five years and 20 responded teaching less than five years in the online environment.

Research Questions and Findings

1. Research question 1: “To what extent are nurse educators aware of Web accessibility standards?” Thirty-seven respondents indicated their knowledge of Web accessibility standards is poor to fair rating on a five point Likert scale (1=Poor to 5=Excellent). In addition 36 respondents indicated their application of Web accessibility standards is poor to fair on the same scale. These results indicate nurse educators have little or no knowledge or application of Web accessibility standards in the online learning environment. These results are consistent with other findings concluding faculty may not be aware of Web accessibility standards (Bradbard, et al., 2010; Gladhart, 2010).
2. Research question 2: “What is the relationship between nursing educator’s years of experience and their knowledge of Web accessibility standards?” The results showed a statistical significance in the number of years teaching and application of Web accessibility standards. The nurse educators who had five or more years teaching experience in the online environment had an increase in the application of Web accessibility standard. However, it is also important to note that there was no difference between the groups, those with more than five years and those with less than five years, with regards to knowledge of Web accessibility standards.

Research questions 3, 4, and 5 utilized a five point Likert scale (1=Poor and 5=Excellent) to gain understanding of the relationship between understanding type of online environment and application of Web accessibility standards. The following is a summary of these findings.

3. Research question 3: “What is nursing educators that teach all online courses and self-reported level of application of Web accessibility standards? The results presented on

Table 7 stated that nurse educators identified 33 % poor and 25 % fair in relation to application of Web accessibility standards in the online environment. This indicated the there was limited application of Web accessibility standards for nurse educators teaching in all online courses.

4. Research question 4: “What is nursing educators that teach hybrid/blended courses self-reported level of application of Web accessibility standards?” Table 8 stated that nurse educators identified 38 % poor and 34 % fair in relation to application of Web accessibility standards in the online environment. This indicated the there was limited application of Web accessibility standards for nurse educators teaching in hybrid/blended courses.
5. Research question 5: “What is nursing educators that teach web enhanced courses self-reported level of application of Web accessibility standards?” As seen in Table 9 the results of nurse educators reported 27 % poor and 33 % fair in relation to application of Web accessibility standards in the online environment. This indicated the there was limited application of Web accessibility standards for nurse educators teaching web enhanced courses.

Knowledge and application of Web accessibility standards was limited for most of the respondents. In addition, nurse educators seem to have limited knowledge and application of Web accessibility standards, Universal Design for Instruction, and the Rehabilitation Act of 1973 Section 508 as they pertain to the online environment. It is important to note none of the respondents indicated an excellent (1=Poor to 5=Excellent) rating for the Web accessibility guidelines. However, application of Web accessibility standards increased with the increase in the number of years teaching in the online environment.

Furthermore, nurse educators verified there are students with disabilities in their online learning environments. Fifteen of the respondents identified learning disabilities followed by six respondents' who identified hearing impairment and three identified visual impairment. Thus, the need for applying Web accessibility standards in the online learning environment is essential.

These results are consistent with the disabilities identified by the web accessibility initiative (WAI) (W3C, 2012). The WAI recognized disabilities such as "blindness and low vision, deafness and hearing loss, learning disabilities, cognitive limitations, limited movement, speech disabilities, photosensitivity and combinations of these" when considering Web accessibility guidelines (W3C).

Nurse educators identified utilizing tools for Web accessibility in the online environment such as extended test times, captioned audio and videotapes/CD/DVDs, and enlarged print. Even though the respondents identified a lack of knowledge and application some were utilizing web accessibility tools. These tools were consistent with Web Content Accessibility Guidelines (WCAG 2.0).

Lack of training or professional development in relation to Web accessibility standards is prevalent with 75.6% of respondents identifying no training or professional development. Barriers identified included knowledge, support, training, implementation and time. Nurse educators need to be proactive in finding resources available to assist with application of Web accessibility guidelines. Once resources are identified nurse educators can begin to create Web accessible learning environments.

Limitations of the Study

There were several limitations to the present study that should be acknowledged. The sample size consisted of only nurse educators at three comprehensive UW System campuses;

therefore, the results are not generalizable to the entire population of nurse educators. In addition the small sample size reduced the ability to perform a broader range of statistical analyses. This may have excluded potential areas of importance and significance.

Another limitation to this study included the researcher developed survey. Surveys require a self-report and thus results may be biased. Lastly, all of the respondents indicated teaching primarily in the Desire2Learn online learning platform.

Recommendations

1. Starting a dialogue regarding Web accessibility guidelines will help to improve online courses. Understanding the foundation for Web accessibility guidelines as described by Marcyjanik and Zorn (2011) will enable nurse educators to recognize this intertwining relationship. Creating discussion groups where nurse educators can learn about Web accessibility guidelines for the online learning is a good place to start.
2. It may be beneficial to provide resources for nurse educators to help overcome some of the barriers to applying Web accessibility guidelines. The Web is recognized as a fluid environment by the Web Accessibility Initiative (W3C, 2012). Therefore standards continue to be updated and nurse educators need to know where and how to access the information. Providing nurse educators with the World Wide Web Consortium (W3C) website: (<http://www.w3.org/standards/Webdesign/accessibility>) would be an excellent beginning.
3. Nurse educators would benefit from further studies to compare knowledge and application of Web accessibility standards to nurse educators at other universities to determine the representativeness of these results.

4. Another area would be to expand on identifying resources available to nurse educators for knowledge and application of Web accessibility standards. For example, “What resources are available on your campus for assistance in application of Web accessibility standards?” Nurse educators could seek out resources such as Learning and Technology Centers or Disabilities Services.
5. If the study is replicated in the future, it is recommended that slight changes be made to the questions to help provide clarity and more consistent responses. For example, use a check all that applies for the question regarding types of web accessibility tools.
6. Providing incentives to achieve a higher response rate would allow for increased representativeness of the target population and expanded data analysis.
7. Conducting a multimethod of research would enhance the richness of the information. Through the use of qualitative and quantitative research methods. This could also provide more information on types of training and professional development.

Nurse educators need to be aware of Web accessibility standards and guidelines.

Therefore, providing and implementing the above recommendations will improve Web accessible online learning environments.

Summary

This descriptive study provided overall information regarding nurse educators’ knowledge and application of Web accessibility guidelines. The survey identified nurse educators have limited knowledge of Web accessibility guidelines, Universal Design Principles for Instruction and 1973 Rehabilitation Act Section 508 as they pertain to the online environment.

Nurse educators in this study taught primarily using the Desire2Learn online learning platform. Limitations regarding knowledge and application of Web accessibility, UDI, and 1973 Rehabilitation Act Section 508 were reported. Respondents (75.6 %) reported lack of training and professional development in regards to Web accessibility standards. Other barriers reported in applying Web accessibility standards included, implementation, support, and time issues.

The study also reported students with hearing, visual and learning disabilities are enrolled in nursing programs. Furthermore, the study indicated the need for Web accessibility standards with over 50% of students within the last five years requesting accommodation in the online environment. Nurse educators (44.7 %) have provided some accommodations in the online environment such as extended test times. In addition nurse educators reported accommodation requests for enlarged print and captioned or scripted audio.

In conclusion, those with greater than five years of experience teaching in the online environment had an increase in application of Web accessibility standards to those that had less than five years experience. Lastly, sharing the results of this study with nurse educators, administrators and technology support personal can assist in creating Web accessible online learning environments for all.

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Appendix A

Survey Questions and Matrix

Four questions per page were displayed when respondents took the survey.

Page 1: Demographic Data

1. What UW-System are you affiliated with?
 Eau Claire _____ Oshkosh _____ Green Bay _____

2. What is the highest degree you have obtained?
 MSN ___ DNP ___ NP ___ EdD ___ PhD ___ Other _____

3. What Nursing programs do you currently teach? Check all that apply
 BSN _____ ABSN _____ MSN _____ DNP _____ PhD _____
 BSN@Home _____ Other _____

4. Do you teach in an online environment (i.e. fully online, hybrid or blended, web enhanced)? Yes _____ No _____
Skip Logic here:
 No- survey will end. Yes- will continue to next questions.

Page 2: Type of Online environment and knowledge of Web Accessibility Guidelines

5. Identify the type of online environments in which you teach...
Check all that apply
 Fully online _____
 Hybrid/ Blended _____
 Web Enhanced _____
 Other _____ Please identify _____

6. How many years have you been teaching Nursing courses in the online environment?
 Less than 1 year _____
 1-2 years _____
 2-3 years _____
 3-4 years _____
 4-5 years _____
 More than 5 years _____

7. Please rate your **knowledge** of Web accessibility standards.

Reference Link: <http://www.w3.org/standards/webdesign/accessibility>

(1)Very limited (2) Slightly limited (3) Good (4)Very Good (5)Excellent

8. Please rate your **application** of Web accessibility standards within courses your teach.

Reference Link: <http://www.w3.org/standards/webdesign/accessibility>

(1)Very limited (2) Slightly limited (3) Good (4)Very Good (5)Excellent

Page 3: Knowledge of Universal Design and 1973 Rehabilitation Act Section 508

9. Please rate your **knowledge** of Universal Design principles for Web accessibility.

Reference Link: <http://www.washington.edu/doit/Brochures/Academics/instruction.html>

(1)Very limited (2) Slightly limited (3) Good (4)Very Good (5)Excellent

10. Please rate your **application** of Universal Design principles for instruction and Web accessibility within courses you teach.

Reference Link: <http://www.washington.edu/doit/Brochures/Academics/instruction.html>

(1)Very limited (2) Slightly limited (3) Good (4)Very Good (5)Excellent

11. Please rate you **knowledge** of the 1973 Rehabilitation Act Section 508 Guidelines for Web Accessibility. Reference Link: [https://www.section508.gov/_____](https://www.section508.gov/)

(1)Very limited (2) Slightly limited (3) Good (4)Very Good (5)Excellent

12. Please rate your **application** of Rehabilitation Act Section 508 Guidelines for Web

Accessibility within the course you teach. Reference Link: <https://www.section508.gov/>

(1)Very limited (2) Slightly limited (3) Good (4)Very Good (5)Excellent

Page 4: Student and Disabilities**Questions 13-16 pertain to the last 5 years:**

13. Within the last 5 years; how many times have you recommended that a student contact disabilities services at your institution?

- 1 ___
- 2 ___
- 3 ___
- More than 3 ___
- Never _____

14. Within the last 5 years; how many times have you been contacted by your institution's disabilities services staff that a student needs accommodation?

- 1 ___
- 2 ___
- 3 ___
- More than 3 ___
- Never _____

15. How many times have you been contacted by a student requesting accommodation without a letter from your institution's disabilities services?

- 1 ___
- 2 ___
- 3 ___
- More than 3 ___
- Never _____

16. How many times have you been contacted by a student requesting accommodation with a letter from your institution's disabilities services?

- 1 ___
- 2 ___
- 3 ___
- More than 3 ___
- Never _____

Page 5: Accommodation for Disability and Online Environment

17. Which disability have you provided accommodation in your online course?

Check all that apply:

- Speech impairment _____
- Learning disability _____
- Visual impairment _____
- Hearing impairment _____
- Unknown _____
- Other _____ Please identify _____
- None _____

18. Please identify types of Web accessibility tools utilized in your online environment?

- Extended test times _____
- Captioned videotapes/ CD/DVDs _____
- Captioned or scripted audio _____
- Enlarged print _____
- Alternative text for images _____
- Other _____ Please identify _____

19. Please identify types of online learning platforms you utilize.

Check all that apply:

- Desire2Learn (D2L) _____
- Moodle _____
- Blackboard _____
- WebCT _____
- Other (Please identify) _____

20. Have you received any training on web accessibility accommodation for the online learning environment?

- Yes _____ No _____

Page 6: Professional Development and Barriers

21. Have you received any professional development on Web accessibility accommodation for the online learning environment?

Yes ___ No ___

22. Please identify barriers to applying Web accessibility standards.

Check all that apply:

Knowledge issues ___

Support issues ___

Training issues ___

Implementation issues ___

Time issues ___

Other ___ Please explain _____

End of Survey:

We thank you for your time spent taking this survey.

Your response has been recorded.

Two by Two Matrix of Survey Questions

| Survey Questions | Objective 1 | Objective 2 | Objective 3 | Objective 4 | Objective 5 | Demographic Data |
|-------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|-------------------------|
| 1 | | | | | | X |
| 2 | | | | | | X |
| 3 | | | | | | X |
| 4 | | | | | | X |
| 5 | | | X | X | X | |
| 6 | | X | | | | |
| 7 | X | X | X | X | X | |
| 8 | | | X | X | X | |
| 9 | X | X | X | X | X | |
| 10 | | | X | X | X | |
| 11 | X | X | X | X | X | |
| 12 | | | X | X | X | |
| 13 | X | X | | | | |
| 14 | X | X | | | | |
| 15 | X | X | | | | |
| 16 | X | X | | | | |
| 17 | | | | | | X |
| 18 | | | X | X | X | X |
| 19 | X | | | | | |
| 20 | X | | | | | |
| 21 | X | X | X | X | X | |

Research Questions/ Objectives

The following research questions were addressed in this study:

1. To what extent are nurse educators aware of Web accessibility standards?
2. What is the relationship between nursing educator's years of experience and their knowledge of Web accessibility standards?
3. What is nursing educators that teach all online courses self- reported level of application of Web accessibility standards?
4. What is nursing educators that teach hybrid/blended courses self- reported level of application of Web accessibility standards?
5. What is nursing educators that teach web enhanced courses self- reported level of application of Web accessibility standards?

Appendix B

Survey Notice and Follow-up Email

First Survey Notice: Sent on March 26, 2013

Hello,

My name is Diane Marcyjanik and I am currently enrolled at UW-Stout in the Education Specialist Degree program.

**This email is inviting you to participate in an online survey:
Web Accessibility in Online Nursing Education for Persons with Disability.**

**The Survey will only take approximately 5-10 minutes to complete.
Please read the consent to participate below.**

**Thank you in advance for considering this request,
Sincerely, Diane Marcyjanik, MSN, RN**

Consent to Participate In UW-Stout Approved Research

| | |
|---|---|
| Title: Web Accessibility in Online Nursing Education for Persons with Disability | Research Sponsor: Dr. Howard Lee Email: leeh@uwstout.edu |
|---|---|

Investigator:
Diane Marcyjanik
Email: marcyjanikd@my.uwstout.edu
Phone: 715-933-0625

Description:

The purpose of this study is to analyze Nurse Educator's knowledge and attitudes regarding online teaching environments for Persons with Disability (PWD). The online survey will enable the investigator to understand the awareness, knowledge and attitudes of Nurse Educators in relation to Web accessibility standards for the online environment.

Risks and Benefits:

There are no foreseeable risks to participating in this study. Strict anonymity will be enforced during the collection, interpretation, and use of the data and will be accomplished by having no names on the surveys. All data will be kept confidential and results will be reported as group data. Your participation is completely voluntary and you may withdraw from this study at any time without penalty or prejudice.

Time Commitment:

You were chosen to participate in this study because you are a Nurse Educator. You are being asked to fill out an electronic survey which will take approximately 5 minutes to complete. While there are no direct benefits from your participation, the information you provide may have implications for the design and delivery of online learning for persons with disability and the development of Web Accessibility continuing education for Nurse Educators.

Confidentiality:

Your name will not be included on any documents. We do not believe that you can be identified from any of this information.

Right to Withdraw:

Your participation in this study is entirely voluntary. You may choose not to participate without any adverse consequences to you. You have the right to stop the survey at any time. It is important to note: you are participating in an anonymous online survey, once you submit your response; the data cannot be linked to you and cannot be withdrawn.

IRB Approval:

This study has been reviewed and approved by The University of Wisconsin-Stout's Institutional Review Board (IRB). The IRB has determined that this study meets the ethical obligations required by federal law and University policies. If you have questions or concerns regarding this study please contact the Investigator or Advisor. If you have any questions, concerns, or reports regarding your rights as a research subject, please contact the IRB Administrator.

Investigator:

Diane Marcyanik
Email: marcyjanikd@my.uwstout.edu
Phone: 715-933-0625
2102 Regal Court
Bloomer, WI 54724

Advisor:

Dr. Howard Lee
leeh@uwstout.edu

IRB Administrator

Sue Foxwell, Research Services
152 Vocational Rehabilitation Bldg.
UW-Stout
Menomonie, WI 54751
715.232.2477
foxwells@uwstout.edu

Statement of Consent:

By participating in this study, you acknowledge that you have been informed of the purpose, benefits, and risk of participating in this study. You have been given the opportunity to ask questions and have them answered to your satisfaction. You also acknowledge that you are interested in participating in this study and understand that your signature is not required for consent but your agreement to participate in the study is assumed by completing the following survey you agree to participate in the project entitled, Web Accessibility in Online Nursing Education for Persons with Disability.

Thank you for considering participation in this study,

Follow this link to the Survey:

[\\${1://SurveyLink?d=Take the Survey}](#)

Or copy and paste the URL below into your internet browser:

[\\${1://SurveyURL}](#)

Follow the link to opt out of future emails:

[\\${1://OptOutLink?d=Click here to unsubscribe}](#)

Follow-up email

Follow-up email reminders are identified below. It is important to note the consent to participate accompanied each follow-up email.

First Reminder: April 2, 2013:

Survey Reminder...I have a good response to my survey but of course the data would not be complete without YOU!

Just a reminder to complete the: Web Accessibility in Online Nursing Education for Persons with Disability Survey

Thank you for your time to complete this 5 minute survey.

Follow this link to the Survey:

[\\${1://SurveyLink?d=Take the Survey}](#)

Consent to Participate In UW-Stout Approved Research

Second Reminder: April 5, 2012:

A gentle reminder to complete the: Web Accessibility in Online Nursing Education for Persons with Disability Survey

Thank you for your time to complete this 5 minute survey.

The data would not be complete without YOU!

Follow this link to the Survey:

Take the Survey

Consent to Participate In UW-Stout Approved Research

Third and Final Notice: April 8, 2013:

Final Notice: This is your last chance to take the Web Accessibility in Online Nursing Education for Persons with Disability Survey! Survey will close on April 12, 2013.

Please consider taking 5 minutes to complete the Survey.

Thank you in advance for contributing to this important research.

Follow this link to the Anonymous Survey:

[\\${l://SurveyLink?d=Take the Survey}](#)

Or copy and paste the URL below into your internet browser:

[\\${l://SurveyURL}](#)

Follow the link to opt out of future emails:

[\\${l://OptOutLink?d=Click here to unsubscribe}](#)

Sincerely,

Investigator:

Diane Marcyjanik

Email: marcyjanikd@my.uwstout.edu

Phone: 715-933-0625