THE EFFECT OF TEACHING EXPERIENCE ON SERVICE-LEARNING BELIEFS OF DENTAL HYGIENE EDUCATORS

by

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Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

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ABSTRACT

The purpose of this non-experimental causal-comparative study was to determine if service-learning teaching experience affects dental hygiene faculty perceptions of service-learning benefits and barriers in the United States. Dental hygiene educators from entry-level dental hygiene education programs in the United States completed the Web-based Faculty Service-Learning Beliefs Inventory (wFSLBI) and a short demographic survey to determine the perceived differences in benefits at the classroom and community levels, and barriers at the classroom and institutional levels. Independent samples t tests and Mann-Whitney tests were employed in data analysis. Results from 317 surveys revealed there was a statistically significant difference between dental hygiene educators’ perceptions in three of the four areas (benefits at the classroom and community levels and barriers at the classroom level) based on their service-learning teaching experience. In regards to institutional barriers, there was no significant difference between the two groups. These findings suggest that service-learning teaching experience impacts United States entry-level program dental hygiene faculty beliefs about the educational pedagogy known as service-learning. This tentative evidence contributes valuable knowledge to the field of service-learning in dental hygiene education and the broader field of service-learning in health professions education. It is recommended that other investigations into the service-learning beliefs of higher education faculty include additional health professional educators for contrast and comparison.

Keywords: service-learning, health professions, education, faculty beliefs and/or perceptions
Dedication

I would like to dedicate this work to my Lord and Savior, Jesus Christ. According to Your Word, You will make all things beautiful in its time. I am overwhelmed by the beauty You have exchanged from the ashes I created. Your faithfulness is ever present in my life and in no greater way than in this very work, to You be all glory and honor forever, Amen!

I would also like to dedicate this dissertation to my husband and my two sons. Matthew, I love you. Each moment of the way you encouraged, harangued, pushed, and supported me! Thank you for believing in me, for reminding me that I was not alone and putting up with my “crazy stats talk” conducted at all hours of the night and day! To my sweet boys, Grider and Hawkeye, you both are my life to the full! As God has promised, you are my arrows and a certain inheritance from Him. I cannot be more proud of who you are. Grider my artist, Hawkeye my linguist! I am overwhelmed that you are mine. I am so grateful for your love. I love you both beyond words, beyond time, always!
Acknowledgments

I would also like to acknowledge all those who came before: to my parents, who never, ever gave up on me – even when they had every reason to; to Dr. Raynor Mullins and Dr. Jim Cecil, who taught me so much about public health dentistry and introduced me to the pedagogy of service-learning; to my dental hygiene colleagues at Western Kentucky University who educated me and lead by example and those at Bluegrass Community and Technical College who continue to challenge me to be a better dental hygienist and teacher every single day; and finally, to my dissertation Committee Chair, Dr. Gregg Mowen and the rest of my amazing committee, Dr. Lynne Sanders and Dr. Judy Skelton: each of you fed wisdom, discernment, kindness, and encouragement into this process, without you this would have just been a grand idea, because of you - it is finished!
# Table of Contents

Dedication ......................................................................................................................... 4

Acknowledgements ............................................................................................................. 5

List of Tables ....................................................................................................................... 9

List of Figures ..................................................................................................................... 10

CHAPTER ONE: INTRODUCTION ....................................................................................... 11

Introduction ......................................................................................................................... 11

Background .......................................................................................................................... 12

Problem Statement ............................................................................................................. 14

Purpose Statement .............................................................................................................. 17

Significance of the Study ..................................................................................................... 19

Research Question ............................................................................................................. 19

Hypotheses .......................................................................................................................... 20

Identification of Variables .................................................................................................. 21

Definitions ............................................................................................................................. 22

CHAPTER TWO: REVIEW OF THE LITERATURE ................................................................. 25

Theoretical Framework ....................................................................................................... 29

Research Studies and Scholarly Works ............................................................................. 32

Standard One: Meaningful Service ................................................................................. 33

Standard Two: Link to Curriculum ................................................................................. 34

Standard Three: Reflection ............................................................................................... 35

Standard Four: Diversity ................................................................................................. 37

Standard Five: Student Voice .......................................................................................... 38

Standard Six: Partnerships ............................................................................................... 39

Standard Seven: Progress Monitoring .......................................................................... 40

Standard Eight: Duration and Intensity ......................................................................... 42

Summary ............................................................................................................................... 43

Discussion ............................................................................................................................. 43

Partnerships ......................................................................................................................... 46

Interdisciplinary Relationships ......................................................................................... 47
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustainability and Funding</td>
<td>48</td>
</tr>
<tr>
<td>Assessment and Evaluation</td>
<td>49</td>
</tr>
<tr>
<td>Ethical or Moral Predicaments</td>
<td>50</td>
</tr>
<tr>
<td>Conclusion</td>
<td>51</td>
</tr>
<tr>
<td>CHAPTER THREE: METHODOLOGY</td>
<td>55</td>
</tr>
<tr>
<td>Introduction</td>
<td>55</td>
</tr>
<tr>
<td>Design</td>
<td>56</td>
</tr>
<tr>
<td>Questions and Hypotheses</td>
<td>57</td>
</tr>
<tr>
<td>Participants</td>
<td>59</td>
</tr>
<tr>
<td>Sample Population Statistics</td>
<td>62</td>
</tr>
<tr>
<td>Setting</td>
<td>67</td>
</tr>
<tr>
<td>Instrumentation</td>
<td>69</td>
</tr>
<tr>
<td>Procedures</td>
<td>72</td>
</tr>
<tr>
<td>Data Analysis</td>
<td>75</td>
</tr>
<tr>
<td>CHAPTER FOUR: FINDINGS</td>
<td>80</td>
</tr>
<tr>
<td>Introduction</td>
<td>80</td>
</tr>
<tr>
<td>Descriptive Statistics and Difference Findings</td>
<td>80</td>
</tr>
<tr>
<td>Summary</td>
<td>88</td>
</tr>
<tr>
<td>CHAPTER FIVE: DISCUSSION</td>
<td>89</td>
</tr>
<tr>
<td>Introduction</td>
<td>89</td>
</tr>
<tr>
<td>Statement of Problem</td>
<td>89</td>
</tr>
<tr>
<td>Summary of Findings</td>
<td>89</td>
</tr>
<tr>
<td>Discussion of Findings</td>
<td>92</td>
</tr>
<tr>
<td>Theoretical and Practical Applications</td>
<td>95</td>
</tr>
<tr>
<td>Study Limitations</td>
<td>96</td>
</tr>
<tr>
<td>Alternative Hypotheses</td>
<td>98</td>
</tr>
<tr>
<td>Recommendations for Future Research</td>
<td>100</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>102</td>
</tr>
<tr>
<td>APPENDIX A</td>
<td>114</td>
</tr>
<tr>
<td>APPENDIX B</td>
<td>118</td>
</tr>
<tr>
<td>APPENDIX C</td>
<td>124</td>
</tr>
</tbody>
</table>
List of Tables

Table 1 .................................................................................................................26
Table 2 .................................................................................................................63
Table 3 .................................................................................................................64
Table 4 .................................................................................................................65
Table 5 ...............................................................................................................82
Table 6 ...............................................................................................................83
Table 7 ...............................................................................................................84
Table 8 ...............................................................................................................85
Table 9 ...............................................................................................................86
Table 10 .............................................................................................................86
Table 11 ..........................................................................................................87
Table 12 ..........................................................................................................88
List of Figures

Figure 1 ...............................................................................................................................18
Figure 2 ...............................................................................................................................45
CHAPTER ONE: INTRODUCTION

Service-learning, also known as experiential learning is a teaching and learning strategy which benefits both the student and the community (Learn and Serve America, 2004). Service-learning research within health professions education, specifically dental hygiene education, has largely focused on student learning outcomes, student perceptions, and program evaluation (McMenamin, McGrath, & D’Eath, 2010). There is limited research on how educators in general are impacted by service-learning pedagogy, and this extends to dental hygiene educators (Hou, 2010).

The following exposition will provide a comprehensive definition and description of service-learning, illustrate the use of service-learning in higher education and relate the theoretical frameworks underpinning service-learning instructional strategies and techniques. It will also include a review of scholarly articles published on service-learning in health professions education, followed by a review of service-learning pedagogy within dental hygiene education.

Subsequently, a review of service-learning research involving its impact on faculty, current issues within dental hygiene education and a methodological plan to address a gap in the service-learning literature will be outlined. My goal was that the findings of the study described within this dissertation would allow new information to be disseminated regarding United States dental hygiene entry-level program educators’ perceptions of service-learning benefits and barriers and contribute to the larger field of research in service-learning within health professions education and higher education. Finally, conclusions and recommendations for further research will be outlined.
Background

Service-learning has historical and theoretical roots in Dewey’s experiential learning (Conway, Amel, & Gerwien, 2009). Currently, service-learning is part of a larger movement within higher education described as community engagement. Community engagement is a systematic, structured, integrative continuum of teaching, research and service in institutions of higher learning (Community-Campus Partnerships for Health, 2010).

Within college and university settings, health professional education programs are significantly influenced by these community engagement policies. As demonstrated by the numerous presentations and abstracts submitted to the 2nd North American/Global Dental Hygiene Research Conference in Bethesda Maryland on October 2011, dental hygiene education has responded to these engagement policies by creating diverse service-learning experiences utilizing both clinical and didactic content.

Service-learning is widespread throughout dental hygiene education (Lautar & Miller, 2007) and there are a number of publications dedicated to service-learning research and scholarly work which describes and encourages its use in higher education. Within the service-learning literature dental hygiene student attitudes toward service-learning curriculum, perceptions of service-learning experiences and reflections on service-learning practices are widely discussed. Yet, while many dental hygiene educators obviously include service-learning in their course work, their individual or collective beliefs about service-learning benefits or barriers remain unknown.

Unfortunately, there is a great deal unknown about dental hygiene educators in general. Research conducted with this population has been limited. Most studies have been conducted with dental hygiene education program directors and not individual or groups of dental hygiene
educators. This research has established a basis for identifying dental hygiene educator demographics and academic characteristics. From these studies a discussion within the dental hygiene profession has developed regarding the lack of qualified dental hygiene educators and a shortage of seasoned dental hygiene educators and how these issues impact the future of the profession (Coplen, Klausner, & Taichman, 2011).

Only one study could be found which sought to explain why these shortages are occurring and discusses the impact on dental hygiene curriculum (Carr, Ennis, & Baus, 2010). Yet, other questions remain about dental hygiene educators. Beyond their educational qualifications, what are their teaching philosophies? What are the most common educational strategies and techniques utilized by dental hygiene educators? What are their beliefs about these strategies? A few researchers have sought to answer these and other more specific questions in their own academic endeavors.

For example, one study examined dental hygiene educator’s information seeking behaviors accessing nearly 300 dental hygiene educator members of the American Dental Education Association (Finley-Zarse, Overman, Mayberry, & Corry, 2002). These researchers received a 78% response rate and found that most dental hygiene educators could be categorized as early adopters of innovative technology (Finley-Zarse et al., 2002). Another study assessed full time dental hygiene educators’ participation in and philosophy about clinical practice. The questionnaire in this research was once more completed by dental hygiene education program directors for their faculty (Kiser, Wilder, George, & Fleming, 2006). With a 69.1% response rate, the study found that full time dental hygiene educators were participating in direct patient care (Kiser et al., 2006).

The research described in this dissertation contributes new knowledge to the current
discussion within dental hygiene education. It garnered demographic information that will aid in the dental hygiene educator shortage debate and its impact on the future of dental hygiene curriculum. The research also identified, for the first time, how the strategies that dental hygiene educators utilize impact their perceptions about those strategies. In this case, the educational strategy was service-learning. The gap in the literature regarding dental hygiene educator beliefs, teaching philosophies and utilization of educational strategies is wide, and the research outlined here was distinctive in advancing the body of knowledge surrounding this unique population of professionals.

Problem Statement

A problem within the literature exists; very little research has been conducted to determine the teaching philosophies, beliefs, or perceptions of frequently utilized educational strategies of dental hygiene educators. Furthermore, what is known is often secondhand information retrieved from dental hygiene education program directors. Within the realm of research involving the educational approach of service-learning, there are very few investigations which have involved gaining the beliefs or experiences of educators employed in higher education (Hou, 2010).

One study, a qualitative attempt at better understanding faculty experiences with service-learning, focused on gerontology educators within higher education. Findings revealed specific perceptions of the faculty in regards to: (a) the cost; lack of recognition in promotion and tenure policies; and (b) the reward; enhancement of both teaching and learning during implementation of service-learning instruction (Bulot & Johnson, 2006).

Bauer, Moskal, Gosink, Lucena and Munoz (2007) sought to compare student and faculty attitudes toward community service in general. While this research does not directly inquire
about the strategy of service-learning, it gives greater insight into faculty opinions about using curriculum which requires working in communities (a key component of service-learning pedagogy). The researchers found that faculty attitudes toward community service were more positive than that of students. This suggests a need to refine instructional practices accordingly.

Within the past five years, there have been three dissertations written on the topic of faculty perceptions of service-learning. One doctoral candidate performed a qualitative study carried out with four individual higher education faculty members. It was found that these teachers believed service-learning to be a “powerful catalyst” for delivering discipline specific knowledge as well as beneficial to students on personal and professional levels (Gonsalves, 2008).

Another doctoral candidate set out to predict educator participation in service-learning pedagogy at research institutions. Utilizing a quantitative approach, the study surveyed 3000 full-time tenured and tenure track faculty at five similar research educational organizations. The research provided insight into faculty attitudes toward utilizing service-learning in an environment where recognition for such activities is overshadowed by traditional academic research. It was noted that service-learning activities are “moving more toward the mainstream” (Parkins, 2008, p.101). More importantly it connected faculty use of service-learning pedagogy with ethnicity, rank and teaching goals, and less with their current work environment (Parkins, 2008).

The third dissertation focused on higher education faculty perceptions, motivations and concerns regarding the incorporation of service-learning pedagogy into their course work (M.K. Smith, 2008, p. 4). The researcher concluded that many faculty within higher education simply don’t understand how best to implement service-learning into course work or feel that the effort
to do so is too great a hurdle (M.K. Smith, 2008).

Another relevant study was conducted with faculty from health professions education programs within university settings. This research surveyed 18 health professional faculty members described as community-based research leaders. As mentioned previously, community-based research is often interconnected with service-learning efforts in higher education. Findings indicated that from the perspective of these educators, public and private funding, partnerships, and a more “inclusive” definition of scholarship were interconnected with beliefs about service-learning and public health efforts to eliminate health disparities among varying community groups (Seifer & Calleson, 2004).

Hou (2010) set out to develop a specific instrument to measure perceived service-learning beliefs of higher education faculty. Up until then, as can be noted by the previous discussion, no particular method had been utilized to identify faculty thoughts regarding service-learning practice or describe the effect service-learning teaching experience had on individual faculty groups. With the validation of Hou’s instrument, it is now possible to reliably measure different populations of educator’s perceptions of service-learning benefits and barriers.

The gap within the service-learning literature concerning faculty perceptions could now be assessed. Since there was very little data on how teaching with service-learning impacts the beliefs of dental hygiene educators, the fundamental research question for this dissertation was, “What is the effect of service-learning teaching experience on perceived service-learning benefits and barriers in dental hygiene educators from United States entry-level dental hygiene programs?” The null hypothesis was used in this study because it best fits the logic of inferential statistics for educational research and practice. It is important to understand if a population differs but also in which direction differences occur (Gall, Gall, & Borg, 2007). Therefore the
null hypothesis was, “that there will be no statistically significant difference in United States entry-level dental hygiene program faculty perceived service-learning benefits and barriers between those with service-learning teaching experience and those without service-learning teaching experience.”

**Purpose Statement**

Research surrounding dental hygiene educators has been limited with a minimal focus on teaching philosophy, use of specific educational strategies, or beliefs about teaching approaches. Service-learning researchers have identified a gap in the literature resulting in modest knowledge of faculty perceptions of service-learning pedagogy (Hou, 2010). An improved understanding of dental hygiene educator beliefs about service-learning pedagogy was needed to improve educational outcomes, move the literature forward and to better understand dental hygiene educators within the context of a changing dental hygiene profession.

Related to pedagogical issues are concerns of a shortage of dental hygiene faculty and the lack of qualified dental hygiene faculty. As baby boomer (individuals born between 1946 -1964) dental hygiene educators retire, will there be a void of experts in the field of dental hygiene education who lack both experience and knowledge of service-learning pedagogy? Yet, the profession continues to move forward and it is growing into new areas of clinical and administrative practice. An Advanced Dental Hygiene Practitioner (ADHP) model has been developed and changes in regulation, accreditation, and education will follow (Pera, 2012). Dental hygiene educators have the responsibility to prepare students to take on these new and challenging roles.

These educators must be able to identify and employ the most effective teaching and learning strategies, develop and implement complex curriculum which focuses on working with
diverse populations, and organize student experiences which give instructional content depth and meaning. Since service-learning is an educational approach which meets these goals for dental hygiene education (Yoder, 2006), it will be even more vital to understand how dental hygiene educators are affected by its utilization. To illustrate this, Figure 1 shows the framework for service-learning in dental and dental hygiene education (Yoder, 2006).

![Figure 1](image)


The purpose of this causal-comparative study was to examine whether service-learning teaching experience affects perceived service-learning benefits and barriers for dental hygiene educators in entry-level programs in the United States. The independent variable was defined as service-learning teaching experience. The four dependent variables (service-learning beliefs) were defined as perceived service-learning benefits at the classroom level, perceived service-
learning benefits at the community level, perceived service-learning barriers at the classroom level, and perceived service-learning barriers at the institutional level.

**Significance of the Study**

The information gained by this research contributes to the discussion surrounding the future of dental hygiene education (Rhea & Bettles, 2011). It also adds to the dialogue involving the shortage of qualified faculty (Carr et al., 2010). Furthermore, it aids in the development of progressive and effective instruction (Yoder, 2006) while understanding how educator beliefs and motivations intersect and impact educational practices (Hou, 2010).

Finally, this research gathers preliminary information about the perceptions of service-learning benefits and barriers of dental hygiene educators employed at entry-level dental hygiene programs. As the effect of teaching service-learning on dental hygiene faculty beliefs about service-learning benefits and barriers was unknown, this investigation may have contributed to the knowledge base of service-learning research. This knowledge not only specifically contributes new information in the field of dental hygiene education, but also within the broader fields of health professions education and higher education (Seifer & Calleson, 2004).

**Research Question**

The research question was formulated from the purpose statement to guide the intended measurement of entry-level program dental hygiene educators’ beliefs about service-learning benefits and barriers. Gall, Gall and Borg (2007) explained the connection between the purpose of the research, the questions the research seeks to answer and the chosen tool or design the researchers use to gain those answers. They stated, “The purpose statement provides a general description of what you hope to learn” while “specificity is achieved by preparing a set of research questions” that will later assist in the selection of “appropriate procedures for data
collection and analysis” (p. 31). Below is the research question for this study:

RQ1: What is the effect of service-learning teaching experience on perceived service-
learning benefits and barriers in dental hygiene educators from United States entry-level dental
hygiene programs?

**Research Hypotheses**

For this dissertation there were four central null hypotheses, identified as:

Ho1: There will be no statistically significant difference in entry-level program dental hygiene
educators’ perceived service-learning benefits at the classroom level between those with service-
learning teaching experience and those without service-learning teaching experience as measured
by questions 14 through 20 and 35 through 41 on the Web-based Faculty Service-Learning
Beliefs Inventory (wFSLBI).

Ho2: There will be no statistically significant difference in entry-level program dental hygiene
educators’ perceived service-learning benefits at the community level between those with
service-learning teaching experience and those without service-learning teaching experience as
measured by questions 21 through 26 and 42 through 47 on the Web-based Faculty Service-
Learning Beliefs Inventory (wFSLBI).

Ho3: There will be no statistically significant difference in entry-level program dental hygiene
educators’ perceived service-learning barriers at the classroom level between those with service-
learning teaching experience and those without service-learning teaching experience as measured
by questions 27 through 30 and 48 through 51 on the Web-based Faculty Service-Learning
Beliefs Inventory (wFSLBI).

Ho4: There will be no statistically significant difference in entry-level program dental hygiene
educators’ perceived service-learning barriers at the institutional level between those with
service-learning teaching experience and those without service-learning teaching experience as measured by questions 32 through 34 and 53 through 55 on the Web-based Faculty Service-Learning Beliefs Inventory (wFSLBI).

Identification of Variables

**Independent Variable**

The independent variable for this study was service-learning teaching experience at an entry-level dental hygiene program. The independent variable in this study was not manipulated. It had already occurred at the time of the survey, hence, the causal-comparative design. For the purpose of this study, service-learning teaching experience was defined as those dental hygiene educators who have taught at least one course with a service-learning component or are teaching service-learning for the first time at the time of the survey (Hou, 2010). Those without service-learning teaching experience were defined as dental hygiene educators who are aware of service-learning pedagogy but have not yet taught a course with a service-learning component at the time of the survey (Hou, 2010).

**Dependent Variables**

For the purpose of this study, the dependent variables were levels of perceived service-learning benefits and barriers. The perceived service-learning benefits at the classroom level were defined as enriching the classroom discussion and lecture, teaching enjoyment, deeper understanding of professional strengths and weaknesses, assisting in clarifying areas of focus for scholarship, change in teaching style, importance of contribution to professional portfolio, and aiding in the development of a good relationship with students (Hou, 2010). The perceived service-learning benefits at the community level were defined as experience benefits the community, valuing work with community partners, learning something new from community
partners, community partners playing an active role, enhanced ability to communicate with a community, and feeling as if one has made a difference in the community (Hou, 2010). The perceived service-learning barriers at the classroom level were described as time constraints interfering with teaching, loss of control, difficulty assessing student learning, and reduced class time for instruction (Hou, 2010). Finally, perceived service-learning barriers at the institutional level were described as faculty promotion and tenure policies being non-supportive, administrative leaders not seeing service-learning as an important part of institutional work, colleagues not understanding or valuing service-learning in promotion, tenure and evaluation decisions (Hou, 2010). The dependent variables were measured using a 5-point Likert scale (strongly disagree to strongly agree). This scale was used to “assign meaningful values to an underlying continuum of ratings” (Hou, 2010).

**Definitions**

The core terms and acronyms associated with this research study include dental hygiene and service-learning related definitions. The following list is an overview of these terms and their accepted or common use. It is important to note that several of the terms associated with dental hygiene are outlined not because they are not generally understood by the dental hygiene profession, but instead because this particular dissertation is based on educational theory utilized in dental hygiene curriculum that is likely to be read, reviewed and critiqued by many non-health professionals, as well as non-dental hygiene professionals who, to understand fully the impact of the research, will need at least a basic understanding of the discipline-specific language in the field of dental hygiene.

**Accredited Dental Hygiene Education:** Entry level (Associate and Baccalaureate) programs, degree completion (Baccalaureate), and Master’s degree programs in dental hygiene are
accredited by the Commission on Dental Accreditation (CODA) and must meet specific
guidelines, policies and procedures in relation to dental hygiene curriculum, content and
matriculation (CODA, 2012).

**American Dental Education Association:** The ADEA is the premier association serving
the dental education community. Dental education is a broad and varied field that educates
individuals as general dentists, specialists, dental hygienists, dental assistants, and dental
laboratory technicians (ADEA, 2012).

**American Dental Hygienists’ Association:** The American Dental Hygienists’ Association
(ADHA) is the largest professional organization representing the interests of dental hygienists
and seeks to advance the art and science of dental hygiene, and to promote the highest standards
of education and practice in the profession (ADHA, 2012 a)

**Commission on Dental Accreditation:** The mission of the Commission on Dental Accreditation
(CODA) is to serve the public by establishing, maintaining and applying standards that ensure
the quality and continuous improvement of dental and dental-related (i.e. Dental Hygiene)
education and reflect the evolving practice of dentistry (CODA, 2012).

**Dental Hygiene Educator:** Registered Dental Hygienists’ who teach dental hygiene content,
both didactic and clinical instruction at a community college or university setting, one of the six
professional roles of the RDH (ADHA, 2012 d).

**Entry level Dental Hygiene Education:** These programs prepare graduates to practice clinical
dental hygiene and are guided by core competencies such as the ethics and skills central to the
roles of a professional dental hygienist, health promotion and disease prevention competencies,
patient-client care competencies, community involvement competencies, and competencies
shaped around professional growth and development (American Dental Education Association, 2004).

**Learn and Serve America:** An organization which supports and promotes service-learning in the United States directly and indirectly supporting programs in elementary, secondary and higher education institutions of learning (LSA, 2004).

**National Service-Learning Clearinghouse (NSLC):** America’s most comprehensive resource organization which supports the service-learning community in higher education, kindergarten through grade twelve, community-based organizations, tribal programs, and all others interested in strengthening schools and communities using service-learning (NSLC, 2010).

**Registered Dental Hygienist (RDH):** Dental hygienists are licensed oral health professionals who focus on preventing and treating oral diseases, both to protect teeth and gums, and also to protect patients’ total health. They are graduates of accredited dental hygiene education programs in colleges and universities and must take a written national board examination and a clinical examination before they are licensed to practice. In addition to treating patients directly, dental hygienists may also work as educators, researchers, and administrators (ADHA, 2012 (a)).

**Service-Learning (SL):** An experiential education method which integrates academic instruction, meaningful community service, and reflection to enhance the learning experience (Hou, 2010).

**Web-based Faculty Service-Learning Beliefs Inventory (wFSLBI):** A research instrument developed as an online survey, through a review of existing assessment tools on service-learning, determined as valid and reliable for assessing faculty perceived benefits and barriers involved with service-learning pedagogy (Hou, 2010).
CHAPTER TWO: REVIEW OF THE LITERATURE

Service-learning is a teaching and learning strategy also known as experiential learning (Learn and Serve America, 2004). Service-learning is a structured instructional activity that incorporates purposeful community service, definitive preparation and guided reflection. It is not restricted to a specific educational setting; students from kindergarten to college can engage in service-learning.

Service-learning is community-based and centered; communities are active participants in the identification of needs, project development and program implementation (Community-Campus Partnerships for Health, 2010). Due to the community focus, often the term service-learning is used interchangeably with the term community engaged teaching and learning (Reynolds, 2009). Regardless of whether it is referred to as experiential learning, community engaged learning or service-learning, this instructional approach seeks to enhance scholarship experiences through hands-on participation while edifying civic responsibility, and fortifying communities (Learn and Serve America, 2004).

An important component of service-learning is its reciprocal nature; it is the intent of experiential learning programs that both student and community benefit (Learn and Serve America, 2004). Table 1 shows the definition of service-learning promoted by the Community-Campus Partnerships for Health (CCPH). CCPH seeks to promote health equity and social justice through partnerships between communities and academic institutions.
Table 1

- Service-learning strives to achieve a balance between service and learning objectives - in service-learning partners must negotiate the differences in their needs and expectations.
- Service-learning places an emphasis on addressing community concerns and broad determinants of health.
- In service-learning, there is the integral involvement of community partners - service-learning involves a principle-centered partnership between communities and health professions schools.
- Service-learning emphasizes reciprocal learning - In service-learning, traditional definitions of "faculty," "teacher" and "learner" are intentionally blurred. We all learn from each other.
- Service-learning emphasizes reflective practice - In service-learning, reflection facilitates the connection between practice and theory and fosters critical thinking.
- Service-learning places an emphasis on developing citizenship skills and achieving social change - many factors influence health and quality of life. The provision of health services is not often the most important factor. In service-learning, students place their roles as health professionals and citizens in a larger societal context.

(Seifer, 1998)

Service-learning has a distinct set of characteristics. The National and Community Service Act of 1990 outlines these characteristics. They are summarized here as five identified traits of service-learning. First, service-learning promotes scholarship through active participation. Students are expected to go beyond preparation for the provision of services and discover the context (culture, race, socioeconomic status of a community) in which those services will be provided, how the implementation and action relates to the classroom subject matter and discern what it means to them personally (Reynolds, 2009). Second, service-learning provides prearranged and guided academic exercises for students to reflect on their experiences. Third, service-learning provides the opportunity for students to utilize skills and knowledge in a real world setting. Students must apply what they have learned about their field of study to real people, with individual needs and attitudes. Fourth, service-learning removes the limitations of
the classroom and extends knowledge gathering beyond those four walls. Finally, service-learning instructional activities cultivate compassion for others.

As important as it is to understand the general characteristics of service-learning, it is also imperative that it is made clear that there is a broad spectrum of service-learning pedagogy. Service-learning is often identified as, but also may be separate from, volunteer experiences, traditional community service, practical or clinical rotations, field placements, or internships (Reynolds, 2009). It may be episodic in nature but is rarely an add-on to basic curriculum (Learn and Serve America, 2004). Service-learning is not developed as a graduation completion activity or one-sided (benefiting only the student or only the community). Service-learning is not restricted to educational institutions. Instead, service-learning strategies can be organized and delivered by government agencies, churches, community activists, professional associations or charitable societies (Lautar & Miller, 2007). Service-learning is not restricted to local or regional environments, but it can also be effective for internationally-based (abroad) instructional experiences (Tabor, Carter, Kovar, & Ramsing, 2008).

Service-learning has its roots in the Cooperative Education Movement of the early 1900’s (National Service-Learning Clearinghouse, 2010). For the purpose of this study, the history of service-learning will be limited to a discussion of service-learning in higher education and its impact on health professional programs of study, including dental hygiene education. The history of service-learning in higher education is well documented. According to the National Service-Learning Clearinghouse (2008), in 1969, educational leaders gathered in Atlanta, Georgia, to discuss service-learning and the importance of employing the instructional strategy throughout American colleges and universities. They produced three recommendations for institutions of higher education in regards to service-learning:
a. “Colleges and universities should encourage students to participate in community service, help to make sure that academic learning is part of this service, and to give academic recognition for that learning.”

b. “Colleges and universities, private organizations, and federal, regional and state governments should provide the opportunities and funds for students wanting to participate in service-learning.”

c. “Students, public and private agency officials, and college and university faculty should all participate in the planning and running of service-learning programs.”

Since these initial recommendations, scholars and educational policymakers alike have met regularly to discuss and determine best practice ideas for service-learning instruction. Currently, service-learning is part of a larger movement within higher education described as community engagement. Community engagement is a systematic, structured, integrative continuum of teaching, research and service in institutions of higher learning (CCPH, 2010). Within college and university settings, health professions education programs are significantly influenced by these community engagement policies. A more in-depth review of community engagement will be included in the discussion section of this study. In general, health professions education programs (medicine, nursing, dentistry, dental hygiene, physical therapy, respiratory therapy, etc.) have responded to community engagement policies by developing service-learning instructional strategies as integral segments of their curriculum.

The purpose of the following narrative is to review the literature and research related to service-learning in health professions education, describe its theoretical foundation, while interpreting and outlining effective practices from scholarly works and draw applicable conclusions for furthering the research of service-learning in health professions education. At
times it will be necessary to generalize service-learning in health professions education research, thought, and theory from the broader view of service-learning practice.

Theoretical Framework

As early as 1862, with the establishment of Land Grant Institutions by the Morrill Act, a direct link has connected service and higher education (Titlebaum, Williamson, Daprano, Baer, & Brahler, 2004). Signed into law by Abraham Lincoln, the Morrill Act donated public lands to states to develop institutions of higher learning that would focus on comprehensive education including practical application and scientific pursuits related to agriculture and related community life. With the emergence of John Dewey’s social and educational theories in the early 1900’s, the intellectual foundation for formal and intentional (Emand & Fraser, 2008) service-learning instructional approach was established.

John Dewey’s theory of inquiry, or experimental logic, viewed learning as an active manipulation of the environment, grounded in realism, and defined by a complex, interrelated process which had in its nature ethical and social implications that must be considered and applied for true knowledge to be obtained (Field, 2007). Dewey was part of the school of thought known as constructivism and pragmatism. These were eclipsed in the later parts of the 20th century for more philosophical theories (Field, 2007). Yet, his work stands apart as introductory to the development of the educational field of service-learning.

The Cooperative Education Movement was founded at the University of Cincinnati around the same time John Dewey was refining his theory of experimental logic. It began with a narrow focus, addressing the inefficiencies exclusive to classroom, lecture heavy style of teaching. It is a structured method of combining traditional instruction and work experience (National Commission for Cooperative Education, 2010). The cooperative education movement
laid further theoretical groundwork for service-learning design and practice. It is still a well received, well funded learning strategy. It continues to be linked with service-learning because of the similar practice of connecting research theory and application in a real world environment while emphasizing context and formal partnerships (National Commission for Cooperative Education, 2010). The divergent goals between the two define their differences; especially in service-learning’s reciprocal, beneficial exchange between student and community.

Throughout the 1900’s there continued to be an interest in developing creative and diverse teaching and learning models. Theorists like Pavlov and Skinner made strides in performance based scholastic hypothesis contributing to the discussion of observable and measurable learning behaviors (Mergel, 1998). By mid-1900 the cognitive theory of learning became popular. A major theorist associated with Cognitivism was Jean Piaget. Piaget theorized that learning is adaptive and associated with assimilation of knowledge and accommodation of new information to previously constructed understanding (Hughes, 2008). Both Behaviorism and Cognitivism theoretical constructs had an effect on the emergence of service-learning theory. The fact that learning behaviors are measurable, and previously learned material can be assimilated to new and diverse environments through practice and transfer effects impacted the development of formal service-learning theory.

By 1967 educators Robert Sigmon and William Ramsey had officially coined the phrase “service-learning.” In the next ten years, Sigmon would go on to develop service-learning theory, and by 1979 he had outlined the three principles of service-learning. Sigmon’s three principles of service-learning are: “those being served control the services provided; those being served become better able to serve and be served by their own actions; those who serve also are learners and have significant control over what is expected to be learned” (Titlebaum et al., 2004,
The premise of service-learning as a reciprocal experience was the central component of the definition given by Sigmon (Furco, 1996).

Educator David A. Kolb’s book, *Experiential Learning: Experience as the Source of Learning and Development*, was published in 1984 and set forth an experiential learning model that continued the refining of formal service-learning theory. Kolb’s model (created with fellow educator Robert Fry) consisted of four distinct elements. The circular and continuous model included rudiments of tangible experience, surveillance and reflection, the construction of abstract thought and applying it in diverse environments (Smith, 1996).

Controversy persisted throughout the 1980’s regarding a clear definition and the formal framework for service-learning theory and design. Confusion also existed over the use of alternate terms like experiential or community based teaching and learning. Sigmon continued to be at the forefront of service-learning scholarship (Furco, 1996). He established a service and learning typology for further clarification of the purpose and premise of service-learning. This typology enlarged his earlier “reciprocal learning” designation to comprise the view that “service-learning” occurs when there is a balance between learning goals and service outcomes. This new typology was the solution to creating a universal definition and more standard approach to service-learning (Furco, 1996).

During this same time frame, further scholarly work was being conducted on individual learning styles and outcomes. The realization that students learn differently, and that an identification of their particular learning styles could be made and learning environments could be changed accordingly, was an important one in the continued growth of the theoretical foundation for service-learning (Perry, 2004).
Four main learning styles were identified by research (thinking and doing, feeling and watching, thinking and watching, and feeling and doing). Each one of these learning styles was complimented by service-learning pedagogy. Also, service-learning instructional theory was boosted by Howard Gardner’s theory of multiple intelligences. His initial listing of seven multiple intelligences of individuals was written provisionally and has since seen additions. Gardner’s theory, which encouraged a broad vision of education and the development of local and flexible programs (M.K. Smith, 2008), fits within the service-learning theoretical perspective.

In the 1990 National and Community Service Act, the more formal service-learning theory was still being formulated; since that time the Act has been updated to reflect continued refinement and explanation regarding a multitude of diverse service-learning ideologies. Service-learning research and scholarly activity has developed to encompass clear criteria, including specific standards and indicators with explicit characteristics common to authentic service-learning education. Service-learning in health professions education has benefited from the same basic theoretical foundations covered in this study. The research associated with service-learning in health professions education also exemplifies service-learning standards, indicators and characteristics of authentic service-learning practice and will be reviewed in detail in the next section.

**Research Studies and Scholarly Works**

In the last two decades there has been proliferation of service-learning research, instructional practice, hypotheses and scholarly work dedicated to service-learning theory. There is a broad spectrum of service-learning type programming in health professions education, some adhering very closely to the accepted definition of service-learning and others exhibiting the
more flexible side of service-learning theory. Thus there is a significant amount of variety in service-learning practice and research. The National Service-Learning Cooperative developed eleven essential elements to effective service-learning practice (Alliance for Service-Learning in Education Reform, 1995) and in 2008 sought to update and revise these elements by developing more outcome specific standards and indicators. It is important to note that these standards were largely set utilizing K-12 service-learning research (RMC Research Corporation, 2008). Conversely, there is a multitude of service-learning in health professions education research which is supportive and analytic of the standards and indicators as well. Diverse scholarly works such as these will be utilized in the following segments to illustrate the standards and indicators for effective service-learning practice in health professions education.

**Standard One: Meaningful Service**

Effective service-learning programs provide students with relevant, active and personally meaningful educational experiences (RMC Research Corporation, 2008). Research has found that when students recognized a service-learning experience to be meaningful they were more likely to be devoted to the experience, acquire deeper comprehension and proficiency from the experience, while actively seeking to enhance the project with their own ideas (Billing, Root, & Jesse, 2005). Students who participate in effective service-learning activities will have a greater understanding of the individual difference they can make in communities struggling with poverty, homelessness and limited access to health care services (Peterson, Yockey, Larsen, Twidwell, & Jorgensen, 2006).

For example, nursing students at the University of South Dakota (USD) engaged in a service-learning project involving the homeless, jobless or those otherwise struggling financially in a downtown Sioux Falls soup kitchen. The USD nursing students provided blood pressure
screening, along with health education on hypertension to the medically underserved population utilizing the soup kitchen. The nursing students reported that the experience was impactful to them personally, increasing their humility and understanding of diversity among those living in poverty, and a desire to continue service to populations in need following graduation (Peterson et al., 2006).

One indicator for meaningful and effective service-learning experiences is that students will witness visible and attainable outcomes valued by those being served (RMC Research Corporation, 2008). An example of the fulfillment of this indicator is Southern Illinois University at Carbondale’s dental hygiene program’s service-learning partnership with a faith-based organization in Tamaulipas, Mexico. Combining both international service-learning with multi-cultural, applied dental hygiene skill practice and faith-based mission was highly successful in allowing students to witness the overwhelmingly positive impact on the lives of those in Tamaulipas. Twenty-three adults and over thirty-five children were served by six student dental hygienists using portable equipment in a small village named La Mula. The students provided basic preventive dental hygiene services to the villagers. Reflective writing indicated the immediate observation of the difference they made in the villagers’ lives, and had a significant impact on how meaningful the experience was for the dental hygiene students (Lukes & Miller, 2006).

**Standard Two: Link to Curriculum**

Effective service-learning projects are intentional and seek to meet educational goals and curricular standards (RMC Research Corporation, 2008). Educational researchers in Wisconsin have found that when teachers intentionally connect service-learning activities directly to scholastic content, students mastered greater curriculum understanding and academic skills than
through traditional instruction on the same content with improved grades and decreased absences (Kirkham, 2001). Using clearly articulated goals for service-learning experiences, an indicator for standard two, those service-learning programs (found in rural areas where poverty and racism are prevalent) gave students the opportunity to transfer knowledge and skills learned in the classroom concerning diversity and equality from one setting to another (Harris, 2004).

Health professions education service-learning programs are often explicitly aligned with academic curriculum and found in rural areas. For example, Purdue University School of Nursing’s three year partnership with the Coast Family Health Clinics found on the Gulf Coast of Mississippi. Students used their nursing education and clinical skills to assist displaced individuals, one of the many results of Hurricane Katrina in 2005. The program linked specific nursing skills with the needs of the community by students undergoing focused preparation courses prior to delivering the care during six extended visits to the eight clinical sites within the hurricane ravaged rural communities (Richards & Novak, 2010).

Another health professions education service-learning project at the State University of New York’s graduate health education program at Cortland exemplifies the importance of linking curriculum with clearly articulated goals and maintaining formal recognition of the service-learning in student records (RMC Research Corporation, 2008). The SUNY Cortland graduate program in health education developed an extensive, well documented, content attentive project to assist in staff health and wellness development in local schools, and incorporated comprehensive examinations linked to student feedback and formal course credit (Hodges & Videto, 2008).

**Standard Three: Reflection**
Service-learning integrates numerous exigent reflection activities that are continuous, initiate deep thinking and engender scrutiny from students about themselves and concerning the experience (RMC Research Corporation, 2008). Research indicates that structured reflection activities help students apply learning to real-life situations. This in turn allows them to develop stronger problem-solving skills. Finally, research verifies participating in reflection activities is associated with improved openness to new ideas, the capacity to see issues in a new way and the aptitude to examine situations methodically (Eyler & Giles, 1999). Journaling throughout a service-learning experience can assist students to view their experiences holistically so that at its end they can see the progress they made and evaluate the success of the project in terms of meeting the needs of the community.

An example of a simplified, easy to implement, reflective process is from a community based service-learning course for first year medical students at the University of Kentucky College Of Medicine (Averill et al., 2007). The students designed a health education program for women at a residential substance abuse treatment facility. The first year medical students conducted six weekly intervention based health education lessons from a needs assessment they had developed and conducted. Students were required to use reflection strategies throughout the course and wrote a comprehensive essay at the completion of the course (Averill et al., 2007). Students developed practical skills, utilized research methods and participated in the critical thinking and reflective process.

Another health professions program with a more comprehensive reflective process is at the University of South Dakota. The dental hygiene curriculum at USD is service oriented, granting students multiple opportunities to participate in service-learning activities in a variety of settings. Throughout the program, service-learning reflection strategies are utilized to enhance
evaluation and gain student feedback (Brunick & Kennedy, 2007). Results have been encouraging; students at USD are more aware of social issues surrounding oral health care, have reported higher self esteem, and a greater desire to serve their communities following graduation (Brunick & Kennedy, 2007).

**Standard Four: Diversity**

A significant service-learning goal is to promote diversity and mutual respect between students and the participants they serve (RMC Research Corporation, 2008). Interpersonal skills and conflict management are key indicators of service-learning programs. Students gain an understanding of multiple perspectives while recognizing and overcoming stereotypes (RMC Research Corporation, 2008). Research conducted by Hammond and Heredia (2002) showed that participating in service-learning allowed students to become better “culture brokers,” meaning they are “service providers who are able to assist foreign-born consumers to understand and navigate the system, as well as to advocate for the sometimes unique needs of persons from other cultures” (Disability World, 2001).

An exceptional example of the promotion of diversity in service-learning in health professions education is at the National University of Ireland. Irish nursing students were given the opportunity to better understand global health issues through a four week international service-learning course. Students participated in over 30 hours of training which included extensive content in cultural diversity and sensitivity (Casey & Murphy, 2008). Students lived and served in countries on continents such as Asia, South America and Africa. Students reported significant growth in the areas of cultural sensitivity, multicultural understanding, and shifts in attitude concerning diversity (Casey & Murphy, 2008).
It is important to note that diversity does not just apply to race or ethnicity, but can also be related to gender, marital status or age. The University of Nevada-Reno exemplifies a health professions education program utilizing a broad definition of diversity. The school of public health program in gerontology prides itself in granting students the opportunity to explore the diversity in aging (Anstee, Harris, Pruitt, & Sugar, 2008). They developed a six stage service-learning model and linked classroom lessons to the basics of the model which was followed by student implementation. Outcomes included student development of critical research skills, evaluative practices, enhanced teamwork and collaboration (Anstee et al., 2008). Students reported deeper understanding of the issues surrounding ageism, an increase in their knowledge of economic, social and political issues confronted by aging adults and a change in attitude toward aging in general (Anstee et al., 2002).

**Standard Five: Student Voice**

Service-learning provides the opportunity for students to have a say in planning, implementing and evaluating service-learning experiences via structured guidance by educators (RMC Research Corporation, 2008). Indicators of effective service-learning programs include the student lead process of idea generation, decision-making, and success assessment performed within an environment of trust, encouragement and practical opportunities to enhance leadership skills (RMC Research Corporation, 2008). Research shows that students who are offered more ownership through service-learning activities were able to express themselves more effectively, without sarcasm or doubt, gained knowledge and desire toward social and political activism while increasing their self-confidence and interpersonal communication skills (Morgan & Streb, 2003).
The University of Connecticut Master of Public Health Program is a good example of a service-learning experience with an effective emphasis on student voice. The UC MPH program developed a course for students focused on examining a pressing public health issue in Connecticut. The students self determined the topic, objectives, and developed recommended policy options (Gregorio, DeChello, & Segal, 2008). Topics ranged from childhood obesity to health literacy. Educators found that students were highly invested and experienced positive personal growth.

Another example of how to allow students a voice throughout a service-learning experience is developing requirements to be completed by students that are vital elements to the service-learning project. Berry College, a small liberal arts college in northwest Georgia required students participating in international service-learning to develop a research plan, including primary research questions and sub-questions. The students played major roles in defining and gathering data while engaged in service. The students composed detailed filed notes about the health, culture, and attitudes of the community they were serving, and used them according to a self-planning process in evaluation and critical thinking exercises at the end of the service-learning experience (Smith-Pariola & Goke-Pariola, 2006).

**Standard Six: Partnerships**

Service-learning experiences are collaborative in nature; therefore partnerships are common, mutually beneficial and address specific community needs (RMC Research Corporation, 2008). Partnerships are with a variety of community-based organizations and businesses, are inter-disciplinary and typified by regular communication, shared vision, goals, knowledge and understanding of community needs. A major indicator of an effective partnership is the mutual benefit to all parties, defined by respect and an understanding of the
importance of each partner’s role as valued community resources (RMC Research Corporation, 2008). According to research conducted at the University of California at Berkeley’s Service-Learning Research and Development Center, community partnerships can increase the effectiveness of service-learning programs (Furco & Amman, 2000) and are major factors in the institutionalization of service-learning ideology.

An exceptional example of partnerships contributing to greater effectiveness and institutionalization of service-learning programs is at Southern Illinois University at Carbondale (SIUC). SIUC proposed, developed and utilized multiple community partnerships to implement a fixed public aid dental clinic inside the dental hygiene school to increase access to care (Maurizio, DeMattei, Meyer, & Cotner, 2003). Partners and collaborators included other agencies and academic offices of SIUC, the Lieutenant Governor’s office, the state legislature of Illinois, the state department of public health and local groups like dental societies and the Carbondale Rotary Club (Maurizio et al., 2003). The Heartland Dental Clinic has been successful at developing partnerships to increase the funding, cost-effectiveness and access to care for underserved and unserved populations in Carbondale.

Three universities in Philadelphia (University of the Sciences in Philadelphia, Drexel University, and Temple University) contributed students and faculty from their public health and physical therapy programs to a committee designed to develop a pro bono physical therapy clinic inside a disadvantaged community. The committee consisted of multiple and diverse collaborators such as private rehab associates, the regional Medicaid office, and Philadelphia’s Department of Public Health and community based organizations (Reynolds, 2009). Reportedly, the success of the partnership was based on clear, open, accessible communications built on mutual respect, equal ownership, defining roles based on expertise and high levels of
commitment (Reynolds, 2009).

**Standard Seven: Progress Monitoring**

Service-learning connects participants to a continual process of review, analyzing the excellence of implementation and advancement toward identified goals, and defining uses for outcomes for enhancement and sustainability (RMC Research Corporation, 2008). Effective service-learning progress monitoring is indicated by ongoing data collection, process evaluation, revision of programming, and communicating outcomes to stakeholders. Research illustrates that progress monitoring which specifically included reflection and feedback was necessary to meet service-learning goals (Shumer, 1997) and greater value was placed on the service-learning experience by students when participating in progress monitoring activities.

Tulane University School of Medicine utilized program-wide progress monitoring to determine the type of student involved in service-learning, their progress toward academic achievement and communicated results as a way of engaging administration in discussion over the success of service-learning initiatives within the program (Brush, Markert, & Lazarus, 2006). Their findings included distinct characteristics of students who were more likely committed to service-learning, a correlation with class rank and a determination of the necessity of service-learning activities for ensuring significant contributions to profession and community (Brush et al., 2006).

The University of Southern Indiana, in a desire to collect evidence of service-learning program success, determined to understand service-learning from a student perspective. Utilizing a proven evaluation tool, a randomly sampled group of students completed a self-administered, mail-back survey (Bordelon & Phillips, 2006). The survey included a variety of items aimed at measuring student interest in service-learning, importance of service to student
educational goals and assessing students’ overall perceptions of service-learning (Bordelon & Phillips, 2006). Results were favorable toward the positive impact of service-learning on students and a number of questions were developed from the survey for further discussion, review and implementation of service-learning opportunities at USI.

**Standard Eight: Duration and Intensity**

Service-learning has adequate duration and intensity to determine, prepare and meet community needs and achieve learning and other identified community related outcomes (RMC Research Corporation, 2008). Research studies reveal that more intense service-learning experiences along with varied and demanding responsibilities are associated with stronger academic outcomes, while hours alone do not establish quality. How content is applied to real world circumstances is what truly determines successful and effective service-learning experiences (Eyler & Giles, 1999).

A great example of effective use of duration in service-learning health professions education programming is at the University of North Florida School of Nursing. The UNF School of Nursing, out of a desire to prepare students for successful interdisciplinary practice in a broad range of settings, with a diverse population, developed the home base concept (Kruger, Roush, Olinzock, & Bloom, 2010). Home base refers to the community based organization, facility or partnership that agreed to become a central location for students to practice clinically throughout their entire two year nursing school curriculum. This model allowed nursing students to integrate completely into the community based organization, learn the participatory approach to problem solving, develop clinical skills, and for the service-learning programs itself to increase sustainability (Kruger et al., 2010).

The University of Texas at El Paso’s Physical Therapy Program at the College of Health
Sciences developed a conceptual model for international service learning and is an illustration of intensity to effective service-learning experiences. The Physical Therapy Program determined the need to identify common structures within international service-learning experiences for physical therapy students and utilized a descriptive, exploratory study using grounded theory (Pechak & Thompson, 2009).

Grounded theory is a general research method which uses either qualitative or quantitative data and basically works backwards from the data to generate a hypothesis utilizing processes like coding, sorting and memoing (“What is Grounded Theory?,” 2010). Through data collection and analysis, the study found that across the country at other programs of physical therapy, a varying amount of service-learning activities was occurring with varying amounts of intensity. The study revealed that intensity was especially correlated to successful international service-learning because of the preparation needed for travel, cultural competency, and the immersion experience (Pechak & Thompson, 2009).

**Summary**

The previous examples of the diverse scholarly work related to service-learning theory, design, implementation and effectiveness is a small sample of the multitude of service-learning programming and research being conducted in health professions education programs and institutions. While scholarship suggests that the projects, institutionalization, goals and impact of service-learning in health professions education vary, there are common characteristics that represent authentic service-learning experiences which can be identified throughout the literature. In summary, service-learning in health professions education is identified throughout the literature as positive, meaningful, cooperative, addressing complex health issues, engaging in contextual problem-solving, promoting critical thinking skills, deep learning, and supportive of
emotional, social, and cognitive learning and development in students (Learn and Serve America, 2004).

**Discussion**

The flexibility of the service-learning theoretical model makes it exceptionally diverse in its application for health professions education. Yet, its diversity and flexibility often make service-learning difficult to quantify. Service-learning is widespread throughout health professions education and there are a number of publications dedicated to service-learning research and scholarly work which describes and encourages its use in higher education (Lautar & Miller, 2007).

The *Michigan Journal for Community Service-Learning* is one example of a publication dedicated to informing educators about the issues pertinent to service-learning in higher education, as well as a place to publish academic efforts specifically associated with service-learning (Titlebaum et al., 2004). The impetus to publish quantified service-learning theory in journals such as this has lead researchers in the field to discuss the best approach to designing research to measure service-learning.

It is commonly agreed that current service-learning research is convincing enough to continue its use because it is grounded by theory, has clear constructs, and includes multiple indicators, flexible methods and inferences for education design and academic policy in general (Bringle & Steinberg, 2007). The need for service-learning evaluation to include more transferable and generalized outcomes, to increase causal connections by using theory-based design of service-learning programming, and build long term service-learning experiences to gather more longitudinal data (Bringle & Steinberg, 2007) is vital to the continued growth of service-learning theory.
Much of the pressure health professions educators feel to develop and defend service-learning theory are related to the community engagement movement in higher education. Progressively more institutions are deliberately linking scholastic effort to public problem-solving, a revitalization of early community driven fundamentals that developed higher education in the first place (Higher Education Network for Community Engagement, 2010). This renewal is transforming academic culture and creating a demand for service-learning programming.

The concept of community scholarship by a university or college was defined by Ernest Boyer in 1996 (Hall, 2008) and has changed the discussion related to research, teaching and service in higher education. Institutions of higher education are taking a broader view of research, teaching and service; the literature even re-defines each as discovery, learning and engagement (Hall, 2008). Basically, service-learning is viewed as a means to an end, simply a piece of the larger community engagement puzzle.

Figure 2 is a graphic representation of community engagement, designed by Community-Campus Partnerships for Health. This illustrates the place service-learning holds within the broader view of the community engagement process.
Often linked with service-learning in health professions education is Community Based Participatory Research (CBPR). CBPR is also seen as a vital part of the community engaged university or college. The goal of CBPR, especially in health professions education is the increased health of the public and the quantification of that improvement by evidence based theories and methods with active input (participation) in every stage of study design, implementation and evaluation from the community members themselves (Omenn, 1998).

It is suggested that the process of designing CBPR and the development of service-learning projects in health professions education should occur simultaneously and use common strategies, data collection tools, and utilize a more rigorous comparison to non-service learning sites (Gelman, 2004). It is important to note that not all service-learning initiatives in health professions education are associated with large scale engagement strategies or community based participatory research, but there are things that all service-learning projects have in common. All service-learning in health professions education programs confront matters surrounding partnerships, interdisciplinary or interprofessional relationships, sustainability and funding, assessment and evaluation, along with ethical or moral challenges.

**Partnerships**

As previously discussed in the research and scholarly works section regarding standards of effective service-learning, partnerships are key components that health professions educational institutions must engage in to create successful service-learning projects. Partnerships or collaborative relationships can assist health professions education service-learning projects in maximizing limited resources, granting students the opportunity to
experience real world challenges and victories, and can evolve to meet the changing needs of the project, community or stakeholders (Foss, Bonaiuto, Johnson, & Moreland, 2003).

Partnerships can be informal (without written agreements) or formal (contractual in nature). They are always defined in service-learning as mutually beneficial, with respect between parties as paramount and with each aware of strengths and weaknesses to the benefit of planning and evaluation (Foss et al., 2003). The Pew Health Professions Commission recommends such partnerships to provide diverse opportunities to teach students competence in meeting health professional standards of care (Parkman, 1997). The Pew Health Professions Commission was created to support, via standardization, recommendations and identification of best practices for health professions, academic institutions, and policy makers for responding effectively to the many challenges facing the health care system (Parkman, 1997). Beyond the formation of partnerships, the Pew Commission also recommended interdisciplinary or interprofessional cooperation in health professions education.

**Interdisciplinary Relationships**

The multidisciplinary approach to health professions education is not new; history shows that it was done often and successfully in the past. Creating “silos” of learning did not truly begin until the modern age of education. As health professions have become more specialized and focused, the tradition of interdisciplinary study was set aside for more individualized professional curriculum.

Yet, the changing health care system requires interprofessional cooperation to make more effective use of limited resources and teach students how to work with other health professionals to problem solve. Health care service and delivery models are changing, and these changes are impacting the health professions education system (Cauley, 2001). As programs of study,
nursing, medicine, dental hygiene, and allied health fields are searching for opportunities to assist students in developing proficiency in collaborating with other health care disciplines while developing clinical and critical thinking skills for academic and professional success (Cauley, 2001). Service-learning programming is an ideal fit for such educational opportunities to take place. Studies on interdisciplinary service-learning projects show students benefit from each other, the service-learning setting or site, and the practical application of cooperation while gaining clinical knowledge, building advocacy skills, and developing a greater understanding of social responsibility and mutual respect (Bridges, Abel, Carlson, & Tomkowiak, 2010).

One major benefit of service-learning with a multidisciplinary approach is efficient use of funding and the increased probability of sustainability for the program.

**Sustainability and Funding**

A principle issue faced by health professions education programs as they develop, implement, and evaluate service-learning is how to fund and sustain projects. Sustainability is often linked with funding, but the components of sustained service-learning activities go far beyond finances. Elements favoring sustainability include:

- Institutional support through formal educational goals or strategic planning;
- faculty and staff who understand, value and desire to engage in the preparatory, continuing, and evaluative duties of conducting service-learning;
- partnerships with others in the community who value what students can bring to civic and health problem solving activities; and
- students who see service-learning as a way to foster academic success (CCPH, 2001).

Funding issues are more straightforward; how do we pay for service-learning programs in health professions education? Some institutions of higher learning, because of the community
engagement movement, have developed budgets with funding set aside specifically for service-learning within the university or college. However, most health professions education programs are in the position of searching out and garnering funding for their service-learning projects, but with no specific financial support from their institutions. In these instances health professions education programs are likely to take a few common steps by thinking local, using the web, and seeking federal assistance (National Youth Leadership Council, 2005). Local professional associations, stakeholders within the health care industry, and organizations delivering health care will be common local targets of funding requests.

The Internet is helpful in researching funding from a variety of sources. For example, private foundations, public and governmental agencies, and like-minded professional organizations often offer limited or start-up funding for service-learning activities. Finally, many service-learning activities in health professions education is funded directly by grants garnered from health focused governmental bureaus and agencies. These grantors often require evaluation of programming, the next common challenge encountered by health professions education programs and institutions.

**Assessment and Evaluation**

To ensure that service-learning programming in health professions education is effective, it must be evaluated. As mentioned earlier, researchers often encounter difficulty in quantifying the effectiveness of service-learning, but there are a few suggestions toward making research more relevant and worthy for publication. There are common assessment practices that will assist in identifying effectiveness (RMC Research Corporation, 2009) which will allow programs to understand strengths, weaknesses, and define measureable results for partners, stakeholders, administration and funding sources.
A few of these practices include analysis of previously identified outcomes or diagnostics (such as student learning goals or clinical skills development), specifying comparison groups (before or after), measurement methods (such as focus groups), as well as participating student and organizational feedback (Long, Larsen, Hussey, & Travis, 2001). This process will allow programs to measure efficiency, effectiveness and provide useful information on the challenges which occurred during the service-learning program, especially in the vein of ethical or moral dilemmas faced by students.

**Ethical or Moral Predicaments**

Currently, there is limited discussion in the service-learning literature regarding ethical issues faced in service-learning programs and research (Indiana University-Purdue University Indianapolis, 2008). As a means to address this gap, faculty and administrators have to be exceptionally diligent to raise awareness of ethical considerations in the development phase of service-learning programming. This awareness will draw a greater focus to ethical dilemmas students face (Indiana University-Purdue University Indianapolis, 2008) and create a greater likelihood of students reporting such challenges and an increased number of scholarly works published discussing ethical or moral predicaments.

A way to help students recognize and understand an ethical challenge is through the comprehensive utilization of professional practice related principles or codes of ethics throughout health professions curriculum. Every health profession has written documentation of such codes and often educational institutions also have outlined similar supportive ethical principles.

For universities or colleges that identify themselves as Christian organizations, this is especially true. Faith based learning institutions have historically been very interested and
supportive of health professions educational service-learning programs as it meets the biblical criteria of discipleship. Christian universities and colleges operate from a biblical perspective or worldview, which means they see value in service-learning programs based on scriptures such as Galatians 6:10 which states believers should do good to all people and 1 Timothy 6:18 which encourages believers to be rich in good deeds, generous and willing to share (New International Version).

**Conclusion**

Service-learning in health professions education is characterized as a credit-worthy, content-based educational experience in which students participate in an organized service project (Potter, 2008) to develop deeper understanding of their field of study, practice clinical and critical thinking skills and apply discipline related curriculum to real life situations while assisting communities to become healthier.

In review, service-learning in health professions education shares the theoretical framework of all service-learning. Dewey, Piaget, and more modern theorists such as Sigmon and Kolb have described, defined and developed service-learning instructional theory. Supported by the cooperative education movement, Gardner’s multiple intelligences theory and the National and Community Service Act, service-learning has gained legitimacy throughout higher education as a viable instructional approach.

Service-learning in health professions education literature exists in a variety of disciplines (nursing, medicine, dental hygiene) while demonstrating common standards and indicators. Research and scholarly works related to service-learning in health professions education has identifiable authentic traits, yet retains diversity, flexibility and is applicable for a
multitude of health professions educational institutions and organizational or community sites or settings.

Service-learning in health professions education experiences challenges common to all service-learning programs, such as sustainability, funding, and pressure to incorporate and fulfill a larger community engagement strategy. Demands to create new evaluative research and publication of scholarly items while developing partnerships and interprofessional collaborations are strong. Expectations of a continued focus on the student’s needs, community needs and ultimately, success of the service-learning project also linger. Service-learning in health professions education has a significant historical, educational and theoretical foundation, a multitude of relevant, supportive research findings, and a diverse set of identifiable characteristics and applications documenting it as an effective instructional strategy worthy of critical analysis, refinement of best practices, and continued utilization within health professions education.

In health professions education, service-learning research has clearly been focused on how it is implemented in curriculum, how it is being evaluated, and student attitudes and perceptions of service-learning practice. To further develop service-learning pedagogy, researchers must branch out beyond program evaluation and student perceptions, and begin to inquire about how faculty are impacted by service-learning. Thus, a limited number of research studies have been attempted at garnering data regarding service-learning practice and the impact on teachers, higher education faculty and health professions educators.

These few studies reveal that those within higher education perceive service-learning efforts differently than their students in terms of cost and reward (Bulot & Johnson, 2006). Higher education faculty attitudes are generally better toward community service than that of
students (Bauer et al., 2007). Certain factors such as ethnicity, rank, and teaching goals influence the higher education teacher’s use of service-learning within their courses (Parkins, 2008). Higher education faculty regard service-learning as a powerful delivery tool for disciplinary specific knowledge, and individual faculty worldview impacts their use of the pedagogy (Gonsalves, 2008).

Neeper and Dymond (2012) conducted research which revealed that among special education faculty within higher education, attitudes and beliefs about service-learning varied across educational institutions. They concluded that this variability could be linked to the institution type and size, as well as the size of community in which the institution is found.

Abes, Jackson, and Jones (2002) identified broad motivating factors for higher academic educators to use service-learning pedagogy. These factors included increased student understanding of course content, increased student personal development, development of student understanding of social justice issues, usefulness within the community and creating community-institutional partnerships.

Other researchers have discovered limiting or barrier-like factors perceived by higher education faculty regarding the use of service-learning strategies. These barriers included course and logistical coordination problems, lack of relationships with community partners, and inadequate understanding of how to use service-learning pedagogy effectively (Driscoll, 2000). Most significantly, the lack of institutional support in terms of recognizing service-learning scholarship through promotion and tenure policies has been identified as a major influencing factor in faculty practice of service-learning instruction (Hammond, 1994; Morton & Troppe, 1996).
In terms of health professions faculty, a small study found those with a foundation in community-based research identify a need for greater funding for service-learning initiatives (Seifer & Calleson, 2004). They also desire a more broad definition of scholarship to be associated with service-learning efforts and consider service-learning instruction central to the fight of eliminating health disparities (Seifer & Calleson, 2004). The gap in service-learning research that currently exists in health professions education is in faculty perceptions of service-learning barriers and benefits. This gap should guide the development of future interdisciplinary and discipline specific service-learning research studies.

Accordingly, any study with higher education faculty serving in health professions education programs will contribute new knowledge to the field. Since within the field of dental hygiene education there is limited insight into the pedagogical perceptions of dental hygiene faculty, there is a high expectation that a study developed focusing on this discipline could expand the understanding of service-learning beliefs of health professions and higher education faculty.
CHAPTER THREE: METHODOLOGY

Service-learning (SL) is a teaching and learning strategy that is also known as experiential learning (Learn and Serve America, 2004). Service-learning is a structured instructional activity that incorporates purposeful community service, definitive preparation and guided reflection. Currently, service-learning is part of a larger movement within higher education described as community engagement. Community engagement is a systematic, structured, integrative continuum of teaching, research and service in institutions of higher learning (Community-Campus Partnerships for Health, 2010).

Within college and university settings, health professions education programs are significantly influenced by these community engagement policies. This holds true for programs of dental hygiene. The flexibility of the service-learning theoretical model makes it exceptionally diverse in its application for dental hygiene education, and accounts for its wide use. Grounded by theory, service-learning has clear constructs, includes multiple indicators, flexible methods and inferences for education design and academic policy in general (Bringle & Steinberg, 2007).

Research in the area of service-learning in dental hygiene education has largely focused on its impact on students, how it is utilized in curriculum, and evaluation of specific service-learning programming (principally its duration and intensity). The deficit in service-learning research in health professions education and particularly in dental hygiene education is in the impact on and perceptions of faculty toward service-learning. The methodology in this narrative presents a quantitative research plan that was carried out with the intention of contributing to the service-learning research in this area; the research design, question, hypotheses, participants, setting, instrumentation, procedures and data analysis conducted for the study are fully outlined.
**Design**

A non-experimental causal-comparative research design was employed. This design permitted the researcher to compare two groups, and investigate the relationship between those groups. A distinctive feature of this form of research is that one variable is always measured in the form of categories (Gall et al., 2007). For this study there were two groups of entry-level program dental hygiene educators creating two categories, those with service-learning teaching experience and those without service-learning teaching experience. Consequently, this design was chosen because the population studied varied on this independent variable, allowing for group comparison.

The central research question of the study was, “What is the effect of service-learning teaching experience on perceived service-learning benefits and barriers in dental hygiene educators from United States entry-level dental hygiene programs?” The causal-comparative design assisted in determining how service-learning teaching experience affected the perceptions of service-learning benefits and barriers within a specific population of educators, thus contributing significantly to the service-learning literature.

The causal-comparative design did have some unique limitations. The research did not produce true experimental data (Gall et al., 2007). Random assignment was not possible because the two comparison groups were pre-selected and previously varied on the independent variable, which in this study was service-learning teaching experience. The design did not allow for the manipulation of the independent variable. Since service-learning teaching experience had already occurred, the same kind of controls that would be utilized in an experimental study were not exercised (Gall et al., 2007). Accordingly, caution was applied in interpreting results.

As is necessary in causal-comparative design, alternate potential hypotheses were
investigated, and evidence presented toward controlling for other explanations of the findings. The findings for these alternative hypotheses will be discussed in Chapter 4. The causal-comparative design allowed me to investigate variables not easily manipulated experimentally, provided a platform for decision making, supplied guidance for experimental studies, and were less costly in scope (Gall et al., 2007). As requisite with causal-comparative studies, acquiring a large sample of entry-level dental hygiene educators was necessary. This practice protects the researcher from the likelihood of making Type I or Type II errors and gives the researcher greater confidence in the findings, increasing the power of the research (Gall et al., 2007). The more powerful causal-comparative design was also chosen because it would allow me to tentatively generalize the findings to the larger population of entry-level program dental hygiene educators in the United States, thus making a highly valuable contribution to the service-learning literature within health professions and dental hygiene education. The sample size, power and findings for the study will be outlined in greater depth in this and the next two chapters. For now, questions and study hypotheses will be reviewed.

Questions and Hypotheses

The purpose of this study was to determine if service-learning teaching experience affects perception of service-learning benefits and barriers in dental hygiene educators from U.S. entry-level dental hygiene programs. A problem within the literature existed; there was very little research on how service-learning teaching experience impacts the opinions of dental hygiene educators toward service-learning. The fundamental research question was:

RQ1: What is the effect of service-learning teaching experience on perceived service-learning benefits and barriers in dental hygiene educators from US entry-level dental hygiene programs?
The null hypothesis was used in this study because it best fits the logic of inferential statistics for educational research and practice. It is important to understand if a population differs but also in which direction differences occur (Gall et al., 2007). For this study there were four explicit null hypotheses:

Ho1: There will be no statistically significant difference in entry-level program dental hygiene educators’ perceived service-learning benefits at the classroom level between those with service-learning teaching experience and those without service-learning teaching experience as measured by questions 14 through 20 and 35 through 41 on the Web-based Faculty Service-Learning Beliefs Inventory (wFSLBI).

Ho2: There will be no statistically significant difference in entry-level program dental hygiene educators’ perceived service-learning benefits at the community level between those with service-learning teaching experience and those without service-learning teaching experience as measured by questions 21 through 26 and 42 through 47 on the Web-based Faculty Service-Learning Beliefs Inventory (wFSLBI).

Ho3: There will be no statistically significant difference in entry-level program dental hygiene educators’ perceived service-learning barriers at the classroom level between those with service-learning teaching experience and those without service-learning teaching experience as measured by questions 27 through 30 and 48 through 51 on the Web-based Faculty Service-Learning Beliefs Inventory (wFSLBI).

Ho4: There will be no statistically significant difference in entry-level program dental hygiene educators’ perceived service-learning barriers at the institutional level between those with service-learning teaching experience and those without service-learning teaching experience as measured by questions 32 through 34 and 53 through 55 on the Web-based Faculty Service-
Learning Beliefs Inventory (wFSLBI).

**Participants**

The eligible participants in this study were United States dental hygiene educators who had taught any dental hygiene course within the two previous academic years in an entry-level dental hygiene program. The overall population of these particular dental hygiene educators was estimated through data garnered from previous dental hygiene educator research.

Several studies were found. A study conducted in 2007 by the Center for Health Workforce Studies, University of Albany and funded by the American Dental Hygienists’ Association (ADHA) sampled Registered Dental Hygienists’ from all 50 states and the District of Columbia. The study identified that in 2007 there were 152,000 dental hygienists licensed to practice in the United States. A random sample of 11,366 currently licensed dental hygienists was sent the study survey. The response rate was exceptional, at 44% (Langelier, Wing, & Continelli, 2009). Approximately 534, or 4.7%, of the dental hygienists from the survey reported they were employed either part or full time as dental hygiene educators in an academic institution (Langelier et al., 2009).

Another study described dental hygiene faculty characteristics for those who teach in a baccalaureate dental hygiene program. This study was published in 2007 and used a modified form of a validated 25 item survey to collect its data. The survey was sent to the 35 baccalaureate program directors that were operating in 2007, and it was their responsibility to distribute, collect and return the surveys to the researchers. The study identified 167 educators at the 35 programs, and had a response rate of 68% (Collins, Zinskie, Keskula, & Thompson, 2007).

Based on these studies, and with verification that there are currently 334 entry level dental hygiene programs in the United States, it is estimated that at least two thousand dental
hygiene educators teach in those institutions. Beyond assisting in the estimation of the population of entry-level program dental hygiene educators, previous research studies were useful in identifying a variety of sampling types and methods employed to gain access to the population.

Most studies conducted exclusively with dental hygiene educators, like the baccalaureate program study, have collected data at the dental hygiene program director level. This method of utilizing a secondary source for accessing a population is essentially known as snowball sampling. However, in 2002 a study of dental hygiene educators used an alternative sampling method. Instead of sampling the population through program directors, the researchers utilized active membership in the American Dental Education Association to gain access to 300 full time dental hygiene educators. A mailing was sent to the potential participants and over 234 responded, a response rate of 78% (Finley-Zarse, Overman, Mayberry, & Corry, 2002).

These successful dental hygiene educator studies revealed that an exhaustive list of the estimated two thousand entry-level program dental hygiene educators does not currently exist and would be virtually impossible to compile. The review of the previous research also allowed me to choose the best sample type and sampling method for the study.

I concluded that a criterion sample was needed, and set the predetermined proven criterion of importance to be: (a) either having the role of dean, coordinator, or director of an entry-level dental hygiene program or (b) current membership within the American Dental Education Association. Even so, to recruit as many entry-level program dental hygiene educators as possible, a third unproven criterion was developed: (c) membership in either the ADHA dental hygiene educator list-serv or the Amy’s RDH Yahoo group’s list-serv.

These two electronic discussion board driven list-serv’s were chosen because of their
popularity among dental hygienists’ and dental hygiene educators. However, there was no way to quantify the number of educator participants in either list-serv. Non-educator dental hygienists were also members of these groups and the actual number of educator group participants could not be determined. These facts lead me to believe that any respondents gained from either list-serv could be negligible. But for the sake of gathering the most responses from the population as is required by the causal-comparative design, an electronic survey request message was posted on both list-serv’s to encourage members to participate.

A greater emphasis was placed on the quantifiable electronic mailing to dental hygiene program coordinators and dental hygiene educators who were currently members of ADEA. The electronic request to participate in the survey and ask their assistance in gaining the responses of their entry-level program dental hygiene educator colleagues was sent along with two follow-up requests.

The study used a web-based survey and followed a non-probability sampling method. The overall method was determined based on the aforementioned research and was performed via convenience sampling. Samples can be deemed convenient based on a diverse set of reasons (Gall et al., 2007). This was a convenience sample because it was principally based on records from two well known, easy to draw from, accessible databases of dental hygiene educators. Also, since the study was causal-comparative by design it was important to diminish any limitations on the study. Therefore the greatest number of participants was desired and the convenience sampling method was chosen to assist in reaching the most entry-level program dental hygiene educators. Randomization of the participants was not possible.

First, a list of dental hygiene educator members of ADEA was obtained from the online membership database, along with their email addresses. Second, a list of program directors with
their emails was acquired through ADHA. Currently over 334 entry-level dental hygiene programs are accredited by the Commission on Dental Accreditation (CODA). An additional list was obtained from CODA and each list was compared for accuracy, to detect overlap and confirm the names and email addresses of the criterion sample. These lists became the electronic database for accessing the participants in this research. There were 333 dental hygiene education program directors and 280 ADEA dental hygiene educator members, totaling 613 dental hygiene educators. The electronic survey request was sent to them via electronic mailing.

There were 32 email addresses that failed to deliver, indicated automatic out of office reply messages or retired educator messages. Thus, a total of 581 electronic mailing addresses of dental hygiene program dean, coordinators, and directors and ADEA members were confirmed as the target sample of the population. A causal-comparative study with a sample size of 581 needs at least 174 individuals to respond for performance of valid statistical analysis. The study yielded 381 responses for a response rate of 66%. Out of those, there were 42 respondents who were excluded because they had not taught any course at an entry-level dental hygiene program in the past two academic years.

**Sample Population Statistics**

The participants in this study were dental hygiene faculty from entry-level dental hygiene education programs (N = 317). Demographic questions on the survey included 12 categories. These categories were gender, age, race, tenure or non-tenure track, academic rank, institution type, institution location, highest degree earned, length of career as an RDH, length of career as a dental hygiene educator, estimated retirement timeline and service-learning teaching experience. Several of the demographic questions were strategically developed in accordance with previous research findings regarding the service-learning beliefs of higher education faculty, as well as
research results related to dental hygiene educators in particular.

The sample population statistics held few surprises. As is common with the dental hygiene profession in general, the majority of these educators were white females. Table 2 represents the gender and race demographic findings for the sample population.

Table 2

**Gender and Race**

<table>
<thead>
<tr>
<th></th>
<th>Participants</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>305</td>
<td>96.2</td>
</tr>
<tr>
<td>Male</td>
<td>12</td>
<td>3.8</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>298</td>
<td>94</td>
</tr>
<tr>
<td>Black/African American</td>
<td>6</td>
<td>1.9</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>8</td>
<td>2.5</td>
</tr>
<tr>
<td>Asian</td>
<td>1</td>
<td>.3</td>
</tr>
<tr>
<td>American Indian/Alaska Native</td>
<td>1</td>
<td>.3</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>.9</td>
</tr>
</tbody>
</table>

Strategic demographic questions based on previous research and related to the service-learning beliefs of higher education faculty were those categories pertaining to service-learning teaching experience, tenure or non-tenure track positions, and institution type and location.

Table 3 characterizes the sample population statistics for these categories.
Finally, as mentioned previously, some demographic questions were strategically included due to previous studies conducted with dental hygiene educators in particular. These questions included categories such as age, academic rank, highest degree earned, length of career as an RDH, length of career as a dental hygiene educator, and retirement timeline. Table 4 represents the sample population statistics for these categories.
Table 4

*Strategic Categories based on Previous Research with Dental Hygiene Educators*

<table>
<thead>
<tr>
<th></th>
<th>Participants</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>(n = 316)</td>
<td></td>
</tr>
<tr>
<td>&lt; 30</td>
<td>10</td>
<td>3.2</td>
</tr>
<tr>
<td>30-40</td>
<td>40</td>
<td>12.6</td>
</tr>
<tr>
<td>41-50</td>
<td>57</td>
<td>18.0</td>
</tr>
<tr>
<td>51-60</td>
<td>153</td>
<td>48.3</td>
</tr>
<tr>
<td>&gt; 61</td>
<td>56</td>
<td>17.7</td>
</tr>
<tr>
<td><strong>Academic Rank</strong></td>
<td>(n = 317)</td>
<td></td>
</tr>
<tr>
<td>Instructor</td>
<td>97</td>
<td>30.6</td>
</tr>
<tr>
<td>Assistant Professor</td>
<td>48</td>
<td>15.1</td>
</tr>
<tr>
<td>Associate Professor</td>
<td>65</td>
<td>20.5</td>
</tr>
<tr>
<td>Full Professor</td>
<td>66</td>
<td>20.8</td>
</tr>
<tr>
<td>Other</td>
<td>41</td>
<td>12.9</td>
</tr>
<tr>
<td><strong>Highest Degree Earned</strong></td>
<td>(n = 313)</td>
<td></td>
</tr>
<tr>
<td>Associate degree</td>
<td>24</td>
<td>7.6</td>
</tr>
<tr>
<td>Bachelor degree</td>
<td>47</td>
<td>14.8</td>
</tr>
<tr>
<td>Master degree</td>
<td>202</td>
<td>63.7</td>
</tr>
<tr>
<td>Doctoral degree</td>
<td>40</td>
<td>12.6</td>
</tr>
<tr>
<td><strong>Length of Career/RDH</strong></td>
<td>(n = 317)</td>
<td></td>
</tr>
<tr>
<td>0-5</td>
<td>10</td>
<td>3.2</td>
</tr>
<tr>
<td>6-10</td>
<td>19</td>
<td>6.0</td>
</tr>
<tr>
<td>11-20</td>
<td>54</td>
<td>17.0</td>
</tr>
<tr>
<td>21-30</td>
<td>63</td>
<td>19.9</td>
</tr>
<tr>
<td>&gt; 31</td>
<td>155</td>
<td>48.9</td>
</tr>
<tr>
<td>Not an RDH</td>
<td>16</td>
<td>5.0</td>
</tr>
<tr>
<td>------------</td>
<td>----</td>
<td>-----</td>
</tr>
<tr>
<td>Length of Career/Educator (n = 316)</td>
<td>65</td>
<td>20.5</td>
</tr>
<tr>
<td>0-5</td>
<td>69</td>
<td>21.8</td>
</tr>
<tr>
<td>6-10</td>
<td>87</td>
<td>27.4</td>
</tr>
<tr>
<td>11-20</td>
<td>64</td>
<td>20.2</td>
</tr>
<tr>
<td>21-30</td>
<td>31</td>
<td>9.8</td>
</tr>
<tr>
<td>&gt; 31</td>
<td>40</td>
<td>12.6</td>
</tr>
<tr>
<td>Retirement Timeline (n = 317)</td>
<td>71</td>
<td>22.4</td>
</tr>
<tr>
<td>0-5</td>
<td>101</td>
<td>31.9</td>
</tr>
<tr>
<td>6-10</td>
<td>80</td>
<td>25.2</td>
</tr>
<tr>
<td>11-20</td>
<td>40</td>
<td>12.6</td>
</tr>
<tr>
<td>21-30</td>
<td>25</td>
<td>7.9</td>
</tr>
<tr>
<td>&gt; 31</td>
<td>20</td>
<td>6.3</td>
</tr>
</tbody>
</table>

As a brief discussion, the 317 entry-level program dental hygiene educators included a majority of white females aged 51 to 60 who were currently employed in a community or technical college educational institution. Most of the respondents’ institutions of learning were located in urban areas. Approximately 55% of individuals were working in these institutions under non-tenure track employment agreements with a significant percentage (75%) having earned at least a master’s degree. Interestingly, there was no real majority in the academic rank of the sample. Those who held the highest rank within academic institutions, full professor, were a mere 20%, while those who held the lowest rank within academic institutions (that of instructor) were slightly more, at 30%. While there were a few responding dental hygiene educators who were non-dental hygienists (about 16), the majority of respondents had been RDH’s for longer than 31 years, and 27% had worked in dental hygiene education for 11-20
years. Importantly, over 40% of responding entry-level dental hygiene educators had only been in the education field for 5 to 10 years. Also relevant, the largest percentage of the respondents, 56%, estimated their retirement would likely occur within the next 6 to 20 years. These demographic findings have significant repercussions on the dialogue currently being held within dental hygiene education regarding a shortage of qualified, experienced dental hygiene educators.

**Setting**

The setting for the causal-comparative study was entry-level dental hygiene education programs within the United States. “Dental hygienists are licensed oral health professionals who focus on preventing and treating oral diseases—both to protect teeth and gums, and also to protect patients' total health” (American Dental Hygienists’ Association, 2012 (a)). Upon completion of a dental hygiene education program, dental hygienists must pass both a national written and regional clinical board examination before gaining licensure and receiving the Registered Dental Hygienist designation.

While each state has its own practice act which defines and regulates the range of services a licensed, registered dental hygienist performs (ADHA, 2012 (a)), dental hygiene education programs in the United States have relatively indistinguishable curriculum. This consistency is due to the accreditation process which governs dental hygiene education programs. The Commission on Dental Accreditation (CODA) dictates standards for dental hygiene education, the most recent of which was revised in February 2012. These standards outline items such as institutional effectiveness, content within the educational program, educational support services, health and safety provisions, patient services, and administration, faculty and staff guidelines (CODA, 2012). These standards form the foundation of dental
hygiene education and allow the setting for this research to be largely homogeneous.

Dental hygiene education programs exhibit very little diversity. There are three basic types of dental hygiene education programs. The first and majority (86%) are referred to as entry-level programs (ADHA, 2012 (b)). These dental hygiene education programs prepare graduates to practice clinical dental hygiene (ADHA, 2012 (b)). These entry-level programs are guided by competencies in five domains developed by the American Dental Education Association (ADEA). The five domains include core competencies (such as the ethics and skills central to the roles of a professional dental hygienist), health promotion and disease prevention competencies, patient-client care competencies, community involvement competencies, and competencies shaped around professional growth and development (ADEA, 2004).

Entry-level dental hygiene education programs, again, are largely homogeneous in environment because of accreditation and these competencies. Entry-level dental hygiene education programs offer certificate, associate and baccalaureate degrees (ADHA, 2012 (b)). These dental hygiene education programs require an average of eighty-six credit hours for an associate degree, and one hundred twenty-two credit hours for a bachelor’s degree. Only a small minority offer distance learning, and most are based on full time, on-site learning of content (ADHA, 2012 (b)).

Second, there are dental hygiene education programs which are referred to as degree completion programs. These programs are designed for the returning licensed dental hygienists who have completed their professional education and wish to further their education in dental hygiene or related fields. These programs offer baccalaureate degrees (ADHA, 2012 (b)). Finally, the third type of dental hygiene education program is the master’s degree program, which prepares graduates as educators, researchers and administrators (ADHA, 2012 (b)).
For the purpose of this study, the setting of entry-level dental hygiene education programs was chosen because they are in the majority and have settings that are the most similar to one another due to accreditation and competency standards. It should be noted that some entry-level and degree completion programs overlap in the same institution, so every effort was made to access the population of dental hygiene educators which instruct only in the entry-level program.

Appendix D contains a map of all United States entry level dental hygiene education programs for reference purposes.

**Instrumentation**

The instrument utilized in this causal-comparative study was the Web-based Faculty Service-Learning Beliefs Inventory (wFSLBI). The wFSLBI was developed by a researcher at the University of Georgia. The express purpose was to assess faculty members’ views of the benefits and barriers involved with service-learning pedagogy (Hou, 2010).

Because little research exists regarding the impact of service-learning on faculty members, Hou set out to develop, test and validate an online instrument which would be of use in garnering such data. After gaining Institutional Review Board approval, Hou chose a representative sample of 1200 educators at a university in the Southeast. Eligible faculty members were those who had taught any course within the previous academic year (Hou, 2010).

Hou set a three and a half week window for faculty to respond to the wFSLBI. The wFSLBI took about 12-15 minutes to complete (Hou, 2010). The total number of participants for Hou’s pilot of the wFSLBI was 449. Of these participants, 87 were excluded because they did not know what service-learning was, so the analysis included only 362 responses. Hou (2010) defined service-learning teaching experience as those educators who had taught at least
one course with a service-learning component or were teaching service-learning for the first time at the time of the survey. The faculty without service-learning experience was defined as those who were aware of service-learning pedagogy but had not yet taught a course with a service-learning component at the time of the survey.

The wFSLBI was created by a thorough review of existing service-learning assessment tools (Hou, 2010). Hou adapted, modified and developed items to assess perceptions of faculty with or without prior service-learning experience. Corresponding perception assessment levels of benefits and barriers were developed. Perceived benefits of service-learning measurement items at the classroom and community levels were created while perceived barriers of service-learning measurement items were outlined at the classroom and institutional levels (Hou, 2010).

A definition of service-learning was adopted for Hou’s study. This definition was provided for all faculty participants. Hou’s (2010) definition of service-learning was “an experiential education method which integrates academic instruction, meaningful community service, and reflection to enhance the learning experience.” (p. 80) The wFSLBI included five main sections of demographics, current service-learning practice, perceived benefits and perceived barriers of service-learning and directions for planning future service-learning training opportunities (Hou, 2010).

Data analysis included descriptive statistics, item-total correlation, and Cronbach’s alpha coefficients then confirmatory factor analysis was applied to “examine the proposed four-factor model among each group” (Hou, 2010, p.81). Next, judgments about model fit were made by “assessing the ratio of chi-square to degrees of freedom, root mean square error of approximate, incremental fit index and comparative fit index.” (p.81). Lastly, item-discrimination analysis was conducted to “examine whether the scores of the inventory discriminated faculty with favorable
beliefs toward SL from faculty with less favorable beliefs.” (p.81)

Significant discriminate validities were shown for all items in the four categories of questions as well as on group comparisons. The model fit index was obtained and showed a satisfactory fit. The instrument also showed satisfactory reliability on faculty groups with and without service-learning teaching experience through the use of statistical analysis of reliability coefficients (Hou, 2010). Cronbach’s alpha ranged from .65 to .85 among faculty with service-learning teaching experience and ranged from .74 to .91 among those without service-learning teaching experience (Hou, 2010). Based on this evidence regarding reliability, validity and fit, Hou determined the wFSLBI would be a useful tool in “assessing and understanding salient beliefs motivating or discouraging faculty involvement in SL.” (p.85)

The final wFSLBI elicited twenty items with four categories of questions with separate forms for those with and without service-learning teaching experience, and used a 5-point Likert scale with response options ranging from 1 (strongly disagree) to 5 (strongly agree) (Hou, 2010). The wFSLBI was chosen for this study of dental hygiene educators due to its usefulness in determining dental hygiene faculty perceptions of service-learning benefits and barriers.

It was also appropriate that the instrument was found to be useful in assessing these perceptions in both those with service-learning teaching experience and those without service-learning teaching experience. The wFSLBI was determined to “assess, compare, and evaluate service-learning program effects for faculty members at various stages of SL involvement” (Hou, 2010, p. 85), consequently making it an ideal instrument for my dental hygiene educators study. I made one minor change to the wFSLBI. While Hou chose to use a variety of terminology with the same meaning on the faculty without service-learning experience survey form, I utilized only the word “believes” on that same form for consistency.
Hou reports that the wFSLBI is currently being utilized in a number of other research efforts, and multiple publications are expected to confirm its strength in terms of both validity and reliability.

**Procedures**

Prior to data collection, I obtained requisite permission for access to relevant databases from the AHDA, ADEA, and Amy’s RDH list-serv (Appendix A). I also obtained permission to conduct the research from the Liberty University Institutional Review Board (Appendix E). The study was based on a survey with minimum risk to a non-specialized population and with expectation of anonymity. All IRB guidelines were followed. The study was also founded on a biblical worldview. Guiding principles for the study were found within Holy Scripture such as Matthew 7:12 (the Golden Rule) and Ephesians 6:7 (serve wholeheartedly).

Participants were recruited via an electronic mailing with a participant letter (Appendix B) of invitation including a link to the Web-based Faculty Service-Learning Beliefs Inventory (wFSLBI) (Appendix C). Data gathering occurred via Survey Monkey online survey software. All participants answered the same initial 12 demographic questions. Utilizing skip logic, the two groups were separated on the comparison question, “According to the previous definitions do you have prior service-learning teaching experience?” and directed appropriately to the correct form of the survey. Those with service-learning teaching experience answered questions 14 through 34 and those with no prior service-learning teaching experience answered questions 35 through 55.

According to the Best Practices for Improving Survey Participation Guide, developed by Oracle in 2012, to increase survey participation the survey request should be sent mid-week and in the afternoon. Therefore, the survey invitation was sent out to potential participants on a
Tuesday afternoon. Also, the Guide suggests that a clear deadline be given to potential participants. The potential participants were asked to respond within three weeks.

There were several reasons a three week time period for response was given. First, Hou in the original wFSLBI study utilized a three week response window. Second, dental hygiene educators are often out of the office during the summer. The window also reflects the need to capture these individuals’ responses before summer break began. Finally, research conducted by Lemon (2007), found that shorter time periods between reminder requests may improve some survey response rates. Therefore, I chose a short response window with frequent email reminders of the survey request. The electronic survey reminder was sent on week 2 and week 3 of the study. Incidentally, there was a spike in responses following each reminder email.

All data was recorded by Survey Monkey online software for anonymity and the database was password locked. Access to the data was limited to me and my dissertation committee chair.

In preparation for data analysis, several procedures were performed. First, data was exported from the Survey Monkey online software via an Excel file. This file was a condensed numerical file. Summary data was also exported from Survey Monkey in a portable document format (pdf). Next, the data were sorted, recoded, reviewed for missing items and finally, imported into the Statistical Package for Social Sciences (SPSS) software.

As the data was being sorted, one issue was noted. One question from the original wFSLBI had been included that Hou (2010) noted was “excluded due to non-significant factor loading to the underlying construct.” (p.83) Therefore, this question was deleted from the file as no data analysis would be performed on it.

A codebook was developed to assist in the accurate coding of the data. The codebook
contained all questions, response options, numerical values and variable definitions for the wFSLBI. All data were coded in accordance with the guidelines set forth by the codebook. Values were recoded to maintain consistency with the hypotheses, with higher scores indicating more positive views for the Benefits items and higher scores representing more negative responses for the Barriers items. Once the data were imported into SPSS, some items were also reverse-coded to reflect positive expressions in their corresponding scales.

Upon reviewing the data for missing values, it was noted that 22 individuals had not completed at least 20% of the survey. These values were determined to be missing completely at random (MCAR) because there did not seem to be a distinguishable pattern or systematic reason for the missingness (Rubin, Witkiewitz, St. Andre, & Reilly, 2007). It did seem that more values were missing at the end of the survey with fewer missing from the beginning of the survey, but as is normal with MCAR values, none of the missing values at the end of the survey were dependent on any items measured at the beginning of the survey.

According to research on replacing missing data in Likert scales, it is difficult to maintain a good representation of the original data when both the number of respondents or number of items missing were greater than 20% (Downey & King, 1998). Therefore, I chose to use line item deletion for those 22 responses. Further missing values were handled according to the practice of valid mean substitution (VMS), using intraindividual values on the subscale. Since rates of less than 1% missing data are generally considered trivial, and 1-5% manageable, while 5-15% require attention (McDermid, Funk, & Dennis, 1999) it was determined that items with 5% or more missing values would be handled using VMS. Only three items (the institutional barrier survey items) had missing values with greater than or equal to 5%. The data set of 317 respondents was now organized and primed for statistical analysis.
Data Analysis

Data analysis for this study was based on several factors. These were the research question, hypothesis, research design and type of data collected (Szapkiw, 2010). The research question in this study was “What is the effect of service-learning teaching experience on perceived service-learning benefits and barriers in dental hygiene educators from United States entry-level dental hygiene programs?” As noted earlier, four null hypotheses were tested in terms of specific benefits and barriers. These were:

H₀₁: There will be no statistically significant difference in entry-level program dental hygiene educators’ perceived service-learning benefits at the classroom level between those with service-learning teaching experience and those without service-learning teaching experience as measured by questions 14 through 20 and 35 through 41 on the Web-based Faculty Service-Learning Beliefs Inventory (wFSLBI).

H₀₂: There will be no statistically significant difference in entry-level program dental hygiene educators’ perceived service-learning benefits at the community level between those with service-learning teaching experience and those without service-learning teaching experience as measured by questions 21 through 26 and 42 through 47 on the Web-based Faculty Service-Learning Beliefs Inventory (wFSLBI).

H₀₃: There will be no statistically significant difference in entry-level program dental hygiene educators’ perceived service-learning barriers at the classroom level between those with service-learning teaching experience and those without service-learning teaching experience as measured by questions 27 through 30 and 48 through 51 on the Web-based Faculty Service-Learning Beliefs Inventory (wFSLBI).
Ho4: There will be no statistically significant difference in entry-level program dental hygiene educators’ perceived service-learning barriers at the institutional level between those with service-learning teaching experience and those without service-learning teaching experience as measured by questions 32 through 34 and 53 through 55 on the Web-based Faculty Service-Learning Beliefs Inventory (wFSLBI).

The research question implied a difference test and these four null hypotheses were determined to be hypotheses of difference between two independent groups. Furthermore, the data collected was quantitative, utilizing the wFSLBI. The variables and their scales of measurement also met the criteria for a test of difference (one nominal/categorical and one interval/ratio). Based on these features and the causal-comparative research design, the statistical procedures employed needed to be both descriptive and inferential in nature (Gall et al., 2007). Also, in Hou’s (2010) previous research using wFSLBI, data was analyzed using descriptive statistics like mean and standard deviation and the t test as well.

To address the research question and the four null hypotheses, an analysis of basic descriptive statistics was performed. Also group statistics were computed for each comparison group in the study (entry-level program dental hygiene educators with service-learning teaching experience and those without service-learning teaching experience). This revealed both overall group and comparison group mean and standard deviation.

Next, assumption testing was executed. According to Szapkiw (2010), “There are some assumptions that apply to all parametric statistical procedures” (p. 17). It is important to establish that these assumptions have been met to determine the appropriate statistical procedures for the data. As noted earlier, due to the causal-comparative design utilizing the criterion sample type and convenience sampling method, the assumption of random sampling was violated.
However, the data did meet the assumption regarding the level of measurement (the dependent variable was measured on the interval/ratio level). Also, the research met the assumption regarding independent observations. The observations within each variable did not influence one another. Finally, the assumption of normality was tested. Normality assumes that the population distributions are normal, displaying a bell-shaped curve (Szapkiw, 2010). This was tested via the creation of a histogram, stem-and-leaf plot, normal Q-Q plot and box plot for each survey item. Also, the Kolmogorov-Smirnov test for normality was completed for each item. The assumption of normality can be deemed tenable if the significance level is found to be more than .05 (Szapkiw, 2010).

It was determined that the assumption for normality may have been violated by the data and normality could not be directly assumed. The Kolmogorov-Smirnov test for normality for each item was .000, less than .05. The histogram, stem-and-leaf plot and box plot representations on some items displayed observations that were skewed left (most of the observations were on the right and toward higher values). Yet it was observed that many items (especially items surveying barriers to service-learning pedagogy) displayed near normal bell curves.

Reviewing the skewness and Kurtosis statistics produced concern because the standard score departed from normality. Skewness and Kurtosis statistics with a value of +/- 3.29 when the skewness statistic is divided by its standard error should generate concern (Understanding the Independent-Samples t Test, 2006). Dividing the statistic by the standard error on each item, I found that all but one of the standard scores for the data departed from normal. For example, the skewness statistic for classroom benefit item one was -1.721 (SE = .137) and the Kurtosis value
was 3.177 (SE = .273) giving them a standard score of -12.6 and 11.6, respectively. Appendix F contains a table with both skewness and Kurtosis statistics for all items on the survey.

Finally, it was noted that the observed values on the normal Q-Q plot largely fell close to the expected normal line with very few outliers. Appendix F also contains the histogram and normal Q-Q plot representations for four items from the survey (one item per subscale).

According to Szapkiw (2010), “Parametric procedures are said to be more powerful and precise because nonparametric procedures do not require the number of assumptions that parametric procedures do” (p.16) and statisticians have found the independent t test to be robust (Nelson, 2008). In other words, often t tests provide accurate estimates of statistical significance even when violating the assumption of normality (Gall et al., 2007). It can become unreliable if the distribution is excessively skewed or the variances are vastly different (Nelson, 2008). Thus, in circumstances where these issues abound, nonparametric procedures are recommended (Nelson, 2008).

According to Gall, Gall, and Borg (2007),

If you are concerned about score distributions in your data, you should consider doing both a t test and its nonparametric counterpart…if the two tests yield different results because the scores depart substantially from t test assumptions, you can report just the results of the nonparametric test. (p. 315)

Therefore, because of the concern raised about score distribution within the data, it was determined that both parametric and nonparametric procedure would be performed to test for statistical significance. An independent t test and its counterpart, the Mann-Whitney U test was deemed appropriate to compare the means of the two groups (Gall et al., 2007). Both the
independent-samples $t$ test and Mann-Whitney $U$ test were conducted using IBM SPSS statistical software (version 22).

Finally, the assumption of homogeneity of variance was conducted utilizing the Levene’s Test for Equality of Variance. A significance level of larger than .05 means that equal variance can be assumed (Szapkiw, 2010) so $a$ priori level of significance of $p \geq .05$ was used. Of the 20 items, I determined that there were 18 items that indicated the assumption of equal variance was tenable while two items indicated the assumption was not tenable.
CHAPTER FOUR: FINDINGS

The purpose of this study was to determine if service-learning teaching experience affects perceived service-learning benefits and barriers for dental hygiene educators employed in entry-level programs in the United States. This chapter presents the findings for this study related to the research question and four null hypotheses identified in Chapter 1, concluding with a brief summary of the results.

Descriptive Statistics and Difference Findings

In this causal-comparative study I used IBM SPSS version 22 for statistical analysis and addressed the following research question and hypotheses:

Research Question (RQ): “What is the effect of service-learning teaching experience on perceived service-learning benefits and barriers in dental hygiene educators from United States entry-level dental hygiene programs?”

Hypotheses: Ho1: There will be no statistically significant difference in entry-level program dental hygiene educators’ perceived service-learning benefits at the classroom level between those with service-learning teaching experience and those without service-learning teaching experience as measured by questions 14 through 20 and 35 through 41 on the Web-based Faculty Service-Learning Beliefs Inventory (wFSLBI).

Ho2: There will be no statistically significant difference in entry-level program dental hygiene educators’ perceived service-learning benefits at the community level between those with service-learning teaching experience and those without service-learning teaching experience as measured by questions 21 through 26 and 42 through 47 on the Web-based Faculty Service-Learning Beliefs Inventory (wFSLBI).
Ho3: There will be no statistically significant difference in entry-level program dental hygiene educators’ perceived service-learning barriers at the classroom level between those with service-learning teaching experience and those without service-learning teaching experience as measured by questions 27 through 30 and 48 through 51 on the Web-based Faculty Service-Learning Beliefs Inventory (wFSLBI).

Ho4: There will be no statistically significant difference in entry-level program dental hygiene educators’ perceived service-learning barriers at the institutional level between those with service-learning teaching experience and those without service-learning teaching experience as measured by questions 32 through 34 and 53 through 55 on the Web-based Faculty Service-Learning Beliefs Inventory (wFSLBI).

As outlined in Chapter 3, I determined it would be best to run both the independent t test and a Mann-Whitney test on the data. For all but two items, the results were the same; therefore the findings of the Mann-Whitney will be reported on these items.

Ho1: The results of the independent t test were significant on four of the classroom level sub-scale items, while two of the sub-scale items were not significant. The test revealed that those with service-learning teaching experience \((M = 4.38, 4.17, 3.67, 3.59, 3.57, 4.05; SD = .958, .936, .940, .919, .924, .937)\) differed from those without service-learning teaching experience \((M = 3.86, 3.47, 3.53, 3.31, 3.65, 3.68; SD = .930, .887, .822, .802, .808, .889)\) except on subscale items 3 and 5, \(t (315) = 4.316, t (314) = 5.978, t (314) = 1.209, t (313) = 2.528, t (312) = -.716, t (311) = 3.152, p \leq .05\). The results of the Mann-Whitney test for classroom benefit level sub-scale item number seven were significant \((z = -2.817; z < -1.96)\). Those with service-learning teaching experience \((M = 4.07, SD = .941)\) differed from those dental hygiene educators without service-learning teaching experience \((M = 3.86, SD = .747)\). Since five out of
the seven classroom benefit sub-scale items were significant, I rejected null hypothesis one.

Effect size was also calculated for each of the four significant classroom benefit level sub-scale items identified by the t test. The effect size for items 1 and 2 indicated a moderate magnitude of difference in the means (eta squared = .056; .10) while items 4 and 6 had a small magnitude of difference in the means (eta squared = .02; .03) between those with service-learning teaching experience and those entry-level program dental hygiene educators without service-learning teaching experience.

Table 5 outlines the group statistics for the sub-scale while Table 6 represents the findings for the independent t test or Mann-Whitney test and effect size as appropriate.

Table 5

**Classroom Benefits Sub-Scale Group Statistics**

<table>
<thead>
<tr>
<th>Item</th>
<th>With SL Teaching Experience</th>
<th>Without SL Teaching Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>M</td>
</tr>
<tr>
<td>CLSBEN 1</td>
<td>230</td>
<td>4.38</td>
</tr>
<tr>
<td>CLSBEN 2</td>
<td>229</td>
<td>4.17</td>
</tr>
<tr>
<td>CLSBEN 3</td>
<td>230</td>
<td>3.67</td>
</tr>
<tr>
<td>CLSBEN 4</td>
<td>230</td>
<td>3.59</td>
</tr>
<tr>
<td>CLSBEN 5</td>
<td>228</td>
<td>3.57</td>
</tr>
<tr>
<td>CLSBEN 6</td>
<td>228</td>
<td>4.05</td>
</tr>
<tr>
<td>CLSBEN 7</td>
<td>227</td>
<td>4.07</td>
</tr>
</tbody>
</table>

*Note. CLSBEN = Classroom Benefits, items 14-20; 35-41. SL = Service-Learning.*
### Table 6

**Classroom Benefits Sub-Scale Findings**

<table>
<thead>
<tr>
<th>Item</th>
<th>$t$ or $z$</th>
<th>$p$</th>
<th>95% CI</th>
<th>eta squared</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$t$ or $z$</td>
<td>$p$</td>
<td>$LL$</td>
<td>$UL$</td>
</tr>
<tr>
<td>CLSBEN 1</td>
<td>4.316</td>
<td>.000</td>
<td>.281</td>
<td>.752</td>
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<tr>
<td>CLSBEN 2</td>
<td>5.978</td>
<td>.000</td>
<td>.466</td>
<td>.923</td>
</tr>
<tr>
<td>CLSBEN 3</td>
<td>1.209</td>
<td>.228</td>
<td>-.087</td>
<td>.365</td>
</tr>
<tr>
<td>CLSBEN 4</td>
<td>2.528</td>
<td>.012</td>
<td>.063</td>
<td>.508</td>
</tr>
<tr>
<td>CLSBEN 5</td>
<td>-.716</td>
<td>.475</td>
<td>-.304</td>
<td>.142</td>
</tr>
<tr>
<td>CLSBEN 6</td>
<td>3.152</td>
<td>.002</td>
<td>.139</td>
<td>.601</td>
</tr>
<tr>
<td>CLSBEN 7</td>
<td>-2.817</td>
<td>.005</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* CLSBEN = Classroom Benefits, items 14-20; 35-41. Z value is notated in italics. CI = confidence interval; $LL$ = lower limit; $UL$ = upper limit. Effect size only calculated for significant items indicated by $t$ test.

*p $≤ .05.

*z $< -1.96.

**Ho2:** The results of the independent $t$ test were significant on three of the community level sub-scale items while two of the sub-scale items were not significant. The test revealed that those with service-learning teaching experience ($M = 4.68, 4.45, 4.27, 3.84, 4.47; SD = .704, .752, .784, .819, .760$) differed from those without service-learning teaching experience ($M = 4.22, 4.07, 4.21, 3.95, 4.06; SD = .864, .784, .742, .679, .717$) except on subscale items 3 and 5, $t$ (306) = 4.220, $t$ (305) = 3.869, $t$ (306) = .628, $t$ (176) = -1.231, $t$ (158) = 4.349, $p$ $≤ .05$. The results of the Mann-Whitney test for community benefit level sub-scale item number four was also not significant ($z = -1.626; z < -1.96$). Those with service-learning teaching experience ($M = 3.53, SD = 1.034$) differed from those dental hygiene educators without service-learning teaching experience ($M = 3.78, SD = .746$). Since three of the six benefit sub-scale items were significant, I rejected null hypothesis two.
Effect size was also calculated for each of the three significant community benefit level sub-scale items identified by the $t$ test. The effect size for items 1, 2, and 6 indicated a moderate magnitude of difference in the means (eta squared = .06, .05, .06) between those with service-learning teaching experience and those entry-level program dental hygiene educators without service-learning teaching experience.

Table 7 outlines the group statistics for the sub-scale while Table 8 represents the findings for the independent $t$ test or Mann-Whitney test and effect size as appropriate.

Table 7

<table>
<thead>
<tr>
<th>Community Benefits Sub-Scale Group Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item</td>
</tr>
<tr>
<td>Item</td>
</tr>
<tr>
<td>COMBEN 1</td>
</tr>
<tr>
<td>COMBEN 2</td>
</tr>
<tr>
<td>COMBEN 3</td>
</tr>
<tr>
<td>COMBEN 4</td>
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<tr>
<td>COMBEN 5</td>
</tr>
<tr>
<td>COMBEN 6</td>
</tr>
</tbody>
</table>

Note. COMBEN = Community Benefits, items 21-26; 42-47. SL = Service-Learning.
Table 8

*Community Benefits Sub-Scale Findings*

<table>
<thead>
<tr>
<th>Item</th>
<th>$t$ or $z$</th>
<th>$p$</th>
<th>95% CI</th>
<th>eta squared</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>$LL$</td>
<td>$UL$</td>
</tr>
<tr>
<td>COMBEN 1</td>
<td>4.220</td>
<td>.000</td>
<td>.216</td>
<td>.593</td>
</tr>
<tr>
<td>COMBEN 2</td>
<td>3.869</td>
<td>.000</td>
<td>.184</td>
<td>.566</td>
</tr>
<tr>
<td>COMBEN 3</td>
<td>.628</td>
<td>.531</td>
<td>-.132</td>
<td>.255</td>
</tr>
<tr>
<td>COMBEN 4</td>
<td>-1.626</td>
<td></td>
<td>.104</td>
<td></td>
</tr>
<tr>
<td>COMBEN 5</td>
<td>-1.231</td>
<td>.220</td>
<td>-.297</td>
<td>.069</td>
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<tr>
<td>COMBEN 6</td>
<td>4.349</td>
<td>.000</td>
<td>.222</td>
<td>.591</td>
</tr>
</tbody>
</table>

*Note.* COMBEN = Community Benefits, items 21-26; 42-47. $Z$ value is notated in italics. CI = confidence interval; $LL$ = lower limit; $UL$ = upper limit. Effect size only calculated for significant items indicated by $t$ test.

*$p \leq .05.$

*$z < -1.96.$

Ho3: The results of the independent $t$ test were significant on three of the classroom barriers level sub-scale items while just one of the sub-scale items was not significant. The test revealed that those with service-learning teaching experience ($M = 3.13, 1.95, 2.54, 2.68; SD = 1.124, .667, 1.040, 1.000$) differed from those without service-learning teaching experience ($M = 3.49, 2.24, 2.57, 3.37; SD = .916, .726, .889, .941$) except on subscale item 3, $t (179) = -2.914, t (137) = -3.231, t (300) = -.284, t (300) = -5.406, p \leq .05.$ Since three of the four classroom barriers sub-scale items were significant, I rejected null hypothesis three.

Effect size was also calculated for each of the three significant classroom barriers level sub-scale items. The effect size for items 1 and 2 indicated a small magnitude of difference in the means (eta squared = .03, .03) between those with service-learning teaching experience and those entry-level program dental hygiene educators without service-learning teaching experience,
while item 4 indicated a moderate magnitude of difference in the means (eta squared = .09).

Table 9 outlines the group statistics for the sub-scale while Table 10 represents the findings for the independent t test and effect size.

Table 9

*Classroom Barriers Sub-Scale Group Statistics*

<table>
<thead>
<tr>
<th>Item</th>
<th>With SL Teaching Experience</th>
<th>Without SL Teaching Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>M</td>
</tr>
<tr>
<td>CLSBAR 1</td>
<td>220</td>
<td>3.13</td>
</tr>
<tr>
<td>CLSBAR 2</td>
<td>220</td>
<td>1.95</td>
</tr>
<tr>
<td>CLSBAR 3</td>
<td>220</td>
<td>2.54</td>
</tr>
<tr>
<td>CLSBAR 4</td>
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<td>2.68</td>
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</tbody>
</table>

*Note.* CLSBAR = Classroom Barriers, items 27-30; 48-51. SL = Service-Learning.

Table 10

*Classroom Barriers Sub-Scale Findings*

<table>
<thead>
<tr>
<th>Item</th>
<th>t</th>
<th>p</th>
<th>95% CI</th>
<th>eta squared</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>LL</td>
<td>UL</td>
</tr>
<tr>
<td>CLSBAR 1</td>
<td>-2.914</td>
<td>.004</td>
<td>-.615</td>
<td>-.118</td>
</tr>
<tr>
<td>CLSBAR 2</td>
<td>-3.231</td>
<td>.002</td>
<td>-.476</td>
<td>-.115</td>
</tr>
<tr>
<td>CLSBAR 3</td>
<td>-.284</td>
<td>.777</td>
<td>-.292</td>
<td>.218</td>
</tr>
<tr>
<td>CLSBAR 4</td>
<td>-5.406</td>
<td>.000</td>
<td>-.943</td>
<td>-.440</td>
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</tbody>
</table>

*Note.* CLSBAR = Classroom Barriers, items 27-30; 48-51. CI = confidence interval; LL = lower limit; UL = upper limit. Effect size only calculated for significant items indicated by t test. *p ≤ .05.

Ho4: The results of the independent t test were not significant on two of the institutional barriers level sub-scale items while just one of the sub-scale items was significant. The test
revealed that those with service-learning teaching experience ($M = 2.69, 3.68, 3.52; SD = 1.139, 1.076, 1.016$) differed from those without service-learning teaching experience ($M = 2.64, 3.37, 3.35; SD = .790, .972, .833$) on subscale item 2, $t (211) = .425$, $t (301) = 2.282$, $t (178) = 1.498$, $p \leq .05$. Since two of the three institutional barriers sub-scale items were not significant, I failed to reject null hypothesis four.

Effect size was also calculated for the one significant institutional barriers level sub-scale item. The effect size for item 2 indicated a small magnitude of difference in the means ($\eta$ squared = .02) between those with service-learning teaching experience and those entry-level program dental hygiene educators without service-learning teaching experience.

Table 11 outlines the group statistics for the sub-scale while Table 12 represents the findings for the independent $t$ test and effect size.

Table 11

<table>
<thead>
<tr>
<th>Institutional Barriers Sub-Scale Group Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>INSTBAR 1</td>
</tr>
<tr>
<td>INSTBAR 2</td>
</tr>
<tr>
<td>INSTBAR 3</td>
</tr>
</tbody>
</table>

*Note. INSTBAR = Institutional Barriers, items 32-34; 53-55. SL = Service-Learning.*
Table 12

Institutional Barriers Sub-Scale Findings

<table>
<thead>
<tr>
<th>Item</th>
<th>t</th>
<th>p</th>
<th>95% CI</th>
<th>eta squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>INSTBAR 1</td>
<td>.425</td>
<td>.671</td>
<td>-.179</td>
<td>.277</td>
</tr>
<tr>
<td>INSTBAR 2</td>
<td>2.282</td>
<td>.023</td>
<td>.042</td>
<td>.574</td>
</tr>
<tr>
<td>INSTBAR 3</td>
<td>1.498</td>
<td>.136</td>
<td>-.054</td>
<td>.396</td>
</tr>
</tbody>
</table>

Note. INSTBAR = Institutional Barriers, items 32-34; 53-55. CI = confidence interval; LL = lower limit; UL = upper limit. Effect size only calculated for significant items indicated by t test. *p ≤ .05.

Summary

In brief summary, both the independent t test and Mann-Whitney test were performed on the data utilizing IBM SPSS version 22. I rejected three out of the four null hypotheses generated from the question, “What is the effect of service-learning teaching experience on perceived service-learning benefits and barriers dental hygiene educators from United States entry-level dental hygiene programs?”
CHAPTER FIVE: DISCUSSION

The purpose of this chapter is to review and discuss the findings of this causal-comparative study. The chapter contains seven sections which are made up of a review of the problem statement and a thorough summary and discussion of the findings outlined in Chapter 4, as well as implications, study limitations, alternative hypotheses and recommendations for future research.

Statement of the Problem

A problem within the literature exists; very little research has been conducted to determine the teaching philosophies, beliefs, or perceptions of frequently utilized educational strategies of dental hygiene educators. Also, within the realm of research involving the educational approach of service-learning, there are very few investigations which have involved gaining the beliefs or experiences of educators employed in higher education (Hou, 2010).

Since there was very little data on how service-learning teaching experience impacts the beliefs of dental hygiene educators, the fundamental research question for this dissertation was, “What is the effect of service-learning teaching experience on perceived service-learning benefits and barriers in dental hygiene educators from United States entry-level dental hygiene programs?”

Summary of the Findings

Research Question

The purpose of the research question in this study was to examine how service-learning teaching experience impacts entry-level program dental hygiene educators’ perceptions of the pedagogy’s benefits and barriers. The final sample consisted of 317 dental hygiene faculty from United States entry-level dental hygiene programs (230 with service-learning teaching
experience and 87 without service-learning teaching experience). These 317 educators were surveyed utilizing the Web-based Faculty Service-Learning Beliefs Inventory (wFSLBI).

**Null Hypotheses**

The research question was addressed by four null hypotheses. These four null hypotheses addressed service-learning beliefs in two scales, one in perceived benefits and the other in perceived barriers, each with their own two sub-scales. The two sub-scales of perceived benefits were at the classroom and community levels and the two sub-scales of perceived barriers were at the classroom and institutional levels.

There was a statistically significant difference between entry-level program dental hygiene educators’ perceptions of the benefits and classroom barriers of service-learning instruction based on their service-learning teaching experience. However, in regards to institutional barriers there was no significant difference between the two groups. Below is a summary of the findings per sub-scale.

**Perceived Benefits at the Classroom Level**

The results of the independent \( t \) test were significant on four of the classroom level sub-scale items (\( p = .000; p = .000; p = .012; p = .002 \)) while two of the sub-scale items were not significant (\( p = .228; p = .475 \)). The results of the Mann-Whitney test for classroom benefit level sub-scale item number seven were significant (\( z = -2.817, p \leq .05 \)). Since five out of the seven classroom benefit sub-scale items were significant, I rejected null hypothesis one.

**Perceived Benefits at the Community Level**

The results of the independent \( t \) test were significant on three of the community benefit level sub-scale items (\( p = .000; p = .000; p = .000 \)) while two of the sub-scale items were not significant (\( p = .531; p = .220 \)). The results of the Mann-Whitney test for community benefit
level sub-scale item number four was also not significant ($z = -1.626$, $p \leq .05$). Since three of the six benefit sub-scale items were significant, I rejected null hypothesis two.

**Perceived Barriers at the Classroom Level**

The results of the independent $t$ test were significant on three of the classroom barriers level sub-scale items ($p = .004; p = .002; p = .000$) while just one of the sub-scale items was not significant ($p = .777$). Since three of the four classroom barriers sub-scale items were significant, I rejected null hypothesis three.

**Perceived Barriers at the Institutional Level**

The results of the independent $t$ test were not significant on two of the institutional barriers level sub-scale items ($p = .671; p = .136$) while just one of the sub-scale items was significant ($p = .023$). Since two of the three institutional barriers sub-scale items were not significant, I failed to reject null hypothesis four.

**Discipline Specific Demographic Findings**

Beyond the findings associated with perceptions of service-learning benefits and barriers, demographic findings for the sample of entry-level program dental hygiene faculty included strategic questions developed to gain greater insight into ongoing issues within the discipline of dental hygiene education. Specifically, the questions inquiring after the number of years within dental hygiene education and anticipated retirement timeline garnered data which will have a particular impact on discussions of the future of dental hygiene education. 57.5% of the respondents had been in the field of dental hygiene education longer than 10 years, and 54.3% expect to retire in the next 10 years.
Discussion of the Findings

Research Question

There was a statistically significant difference for perceived service-learning benefits and classroom barriers between those entry-level program dental hygiene educators with service-learning teaching experience and those without service-learning teaching experience. The perceived institutional barriers were similar for both faculty groups. These findings are consistent with the research conducted by Hou (2010), who developed the wFSLBI and used it to compare the service-learning beliefs of higher education faculty who had prior service-learning teaching experience with those who had not.

Perceived Benefits of Service-Learning

Entry-level program dental hygiene faculty with prior service-learning teaching experience scored higher on all but five of the thirteen perceived service-learning benefit items. This relationship was mostly moderate in strength (as noted by the eta squared findings outlined in Chapter 4). These findings were consistent with Hou’s (2010) research as well. The results from the current study suggest that entry-level dental hygiene educators who have taught service-learning are more positive about its benefits in relation to their classrooms and to the community served than those without service-learning teaching experience.

Positive beliefs about classroom level benefits included enriched discussion opportunities, greater enjoyment of the process of teaching, and an enhanced relationship with their students. Similar to a previous study conducted by Seifer and Calleson (2004) with health profession faculty, community level benefits perceived by those dental hygiene educators with service-learning teaching experience included positive beliefs regarding the value of partnerships, the delivery of beneficial services and the ability to make a difference in the
community being served.

While entry-level program dental hygiene faculty without service-learning teaching experience did not score as high as those with experience on the majority of benefit items, in general their scores did conservatively indicate positive beliefs about the benefits of service-learning. These results are supported by previous research which found that higher education faculty members believed service-learning to be a “powerful catalyst” for delivering discipline specific knowledge as well as beneficial to students on personal and professional levels (Gonsalves, 2008).

**Perceived Barriers of Service-Learning**

Entry-level program dental hygiene educators with service-learning teaching experience scored lower on three of the four perceived service-learning classroom barrier items but scored higher on one of the perceived institutional barrier items. This relationship was mostly small in strength (as noted by the eta squared findings outlined in Chapter 4). These results are inconsistent with Hou’s (2010) findings that revealed higher education faculty with previous service-learning teaching experience scored lower on all perceived classroom barrier items. But like Hou (2010) the current study also found that the two groups had similar scores on perceived institutional barrier items.

The lower scores on the classroom level barrier items suggests that entry-level program dental hygiene educators with service-learning teaching experience perceive less difficulty involved in the practice of service-learning pedagogy within their classrooms. The higher, more negative score on the perceived institutional level barrier item, “Administrative leaders actively work to make service-learning a visible and important part of institutional work” tentatively indicates that dental hygiene educators with service-learning teaching experience perceive a
barrier to service-learning instruction at the administrative level of their institutions. These results are in conflict with research conducted in a more traditional academic scholarship environment by Parkins (2008) who connected faculty use of service-learning pedagogy with ethnicity, rank and teaching goals, and not as much with their current work environment.

Entry-level program dental hygiene educators without service-learning teaching experience perceived greater barriers of service-learning in regards to overall time constraints, lack of control, and reduced classroom instruction time. These results are similar to Bulot & Johnson (2006) who found that gerontology educators within higher education who had service-learning teaching experience considered the lack of time as the most prominent perceived faculty cost in utilizing service-learning instruction.

**Discipline Specific Findings Discussion**

Demographic findings for the sample of entry-level program dental hygiene faculty have considerable relevance to current professional issues within dental hygiene education. The dental hygiene faculty shortage is a prominent and well reviewed issue within the dental hygiene profession (Carr et al., 2010). The results of this study suggest that concerns are warranted; with the majority of respondents having been in the profession for over 10 years (and 30% of those for more than 20 years) and over half of the study’s participants indicating a retirement timeline of the next 10 years. These findings are consistent with previous research conducted by Coplen et al. (2011) which suggested the importance of an immediate need to attract qualified individuals into the field.

However, the results of this study differ from Coplen et al. (2011) in that they found only 8% of their sample to be in the early years of teaching and this study found 20.5% of the respondents to be new to the field of dental hygiene education (with less than 5 years of teaching
experience). The results suggest that there has been some headway made in recruiting qualified
dental hygiene faculty, and there may be a reversing of the trend of faculty shortages.

**Theoretical and Practical Implications**

This study addressed perceived benefits and barriers associated with service-learning pedagogy. Service-learning theory is founded in cooperative education and experimental logic. It requires educators, students and communities to work in concert with one another. A unique feature of service-learning is that it benefits both the student and the community. Service-learning theory was formally established less than 40 years ago, yet it is far-reaching and is practiced with a wide amount of diversity and flexibility, especially within health professions education. Little is known about how higher education faculty perceive service-learning and even less is known about how dental hygiene faculty perceive service-learning pedagogy. Therefore, this study has theoretical implications. It suggests that service-learning pedagogy is being utilized within the field of dental hygiene education (the majority of respondents, 230, had service-learning teaching experience). This finding reinforces current research in the area of service-learning theory which emphasizes community engagement (Hall, 2008) especially in health professions education where service-learning addresses public health concerns (Yoder, 2006).

This study also garnered baseline knowledge about entry-level program dental hygiene educator perceptions of service-learning benefits and barriers. These findings have practical implications. Dental hygiene educators with service-learning teaching experience have a more positive view of its benefits and a greater understanding of its barriers at the institutional level in regards to administrative support for the pedagogy. A clear understanding of service-learning instruction can aid in the creation of effective curriculum and assist in improved educational
The findings of the study also outline how educator beliefs impact educational practices within the field of dental hygiene education. It suggests that with service-learning teaching experience comes knowledge about the pedagogy which could make the difference in academic and discipline specific content delivery and research-based community engagement practices. The findings can be used to encourage dental hygiene faculty to become more familiar with and plan more realistically for service-learning experiences within dental hygiene curriculum.

The demographic discipline specific results of this study also have practical implications. They suggest that perhaps some progress has been made in repealing the dental hygiene faculty shortage but that there is quite a distance to go before the shortage threat is abolished. The findings can be utilized to persuade those within the profession to continue to mentor and influence potential dental hygiene educators to choose the field.

**Study Limitations**

The causal-comparative design of this study gave it unique limitations. The research did not produce true experimental data (Gall et al., 2007). The ex post facto design did not allow for the manipulation of the independent variable. Since service-learning teaching experience had already occurred, the same kind of controls that would be utilized in an experimental study could not be exercised (Gall et al., 2007).

The study methodology utilized criterion sampling without any randomization. The lack of a random sample limits the study; there is no assurance for initial equivalence between the two groups of entry-level program dental hygiene educators. The convenience sampling method used with the study could have also weakened the findings. The participants were limited to those who met the criteria I set forth. These limitations were addressed by using as broad of criterion
as possible and sampling a very similar population in other areas such as gender, age, race, and highest degree earned.

The analysis procedures could have also caused limitations. Since the sample population statistics violated the assumption of normality, I had to perform less powerful and precise non-parametric procedures. A few items did require the reporting of the non-parametric findings. The limitation regarding analysis procedures were addressed by running both parametric and non-parametric procedures and comparing the findings. When the findings were the same, I reported the more powerful parametric test results.

Finally, since a self-report survey was utilized as the study instrument, I noted the limitations of self-report measures (participants may have had a specific bias related to service-learning or they could have lied or skewed their answers to make themselves look better). To address this concern, caution was applied in interpreting results.

Steps taken to limit threats to internal validity included the use of a valid and reliable survey instrument, the wFSLBI. I also used exclusion criteria to protect internal validity (those dental hygiene educators who were not from entry-level programs were ineligible). The timeline for survey participation was also chosen to limit the maturation threat to internal validity (a relatively short participation window, only three weeks). Finally, internal validity was protected by the lack of differential selection. The two comparison groups were self-selected based on the independent variable, service-learning teaching experience.

Steps taken to limit threats to external validity included gaining the greatest number of entry-level program dental hygiene faculty for the sample so that the findings could be generalized to the target population defined by the sampling criterion (N = 317).

By acquiring a large sample of dental hygiene educators, I was protected from the
likelihood of making Type I or Type II errors. This gave me greater confidence in the findings, increasing the power of the research. The more powerful causal-comparative design allowed me to generalize the findings to the larger population of entry-level program dental hygiene educators in the United States.

Alternative Hypotheses

Causal-comparative research design requires that alternate potential hypotheses be investigated and evidence presented toward controlling for alternative explanations. Therefore, based on the current literature I chose three alternative hypotheses to test. The associated foundational research, alternative hypotheses and findings are presented next.

Alternative Hypotheses One and Two

Research conducted by Neeper and Dymond (2012) indicated that there were differences in higher education faculty beliefs about service-learning based on the type of educational institution in which they worked and the location of that institution. Alternative hypotheses one and two were developed based on this research. They were:
Alt. Ho1: There will be no statistically significant difference in entry-level program dental hygiene educators’ perceived service-learning benefits or barriers between those who are employed at a University and those are employed at a Community College in the United States as measured by the Web-based Faculty Service-Learning Beliefs Inventory (wFSLBI).
Alt. Ho2: There will be no statistically significant difference in entry-level program dental hygiene educators’ perceived service-learning benefits or barriers between those who are employed in an urban setting and those are employed in a rural setting within the United States as measured by the Web-based Faculty Service-Learning Beliefs Inventory (wFSLBI).
Alternative Hypothesis Three

Based on the academic work of Bulot & Johnson (2006) which indicated that promotion and tenure policies impacted faculty perceptions of service-learning, the third alternative hypothesis was:

Alt. Ho3: There will be no statistically significant difference in entry-level program dental hygiene educators’ perceived service-learning benefits or barriers between those who hold tenure track positions and those who are not tenured within the United States as measured by the Web-based Faculty Service-Learning Beliefs Inventory (wFSLBI).

Findings of Alternative Hypotheses

As outlined in Chapter 3, I determined it would be best to run both the independent t test and a Mann-Whitney test on the data. For any items where the results were not the same between the two tests, the findings of the Mann-Whitney will be reported.

An independent t test was conducted to evaluate whether a statistically significant difference exists in entry-level program dental hygiene educators’ perceived service-learning benefits and barriers between those who are employed at a university and those who are employed at a community college in the United States as measured by the Web-based Faculty Service-Learning Beliefs Inventory (wFSLBI). The results of the independent t test were not significant ($p = \leq .05$) on any of the wFSLBI items. I failed to reject alternative null hypothesis one.

An independent t test was conducted to evaluate whether a statistically significant difference exists in entry-level program dental hygiene educators’ perceived service-learning benefits and barriers between those who are employed in an urban setting and those who are employed in a rural setting in the United States as measured by the Web-based Faculty Service-Learning Beliefs Inventory (wFSLBI). The results of the independent t test were not significant
(\(p \leq .05\)) on 18 of the 20 wFSLBI items. I failed to reject alternative hypothesis two.

A Mann-Whitney test was conducted to evaluate whether a statistically significant difference exists in entry-level program dental hygiene educators’ perceived service-learning benefits and barriers between those who hold tenure track positions and those who are not tenured in the United States as measured by the Web-based Faculty Service-Learning Beliefs Inventory (wFSLBI). The results of the Mann Whitney test were not significant (\(z < -1.96; p = \leq .05\)) for 17 of the 20 wFSLBI items. I failed to reject null hypothesis three.

**Discussion of Alternative Hypotheses**

The findings for alternative hypotheses one and two differed from that of the previous research conducted by Neeper and Dymond (2012) whose findings were with special education faculty in programs of education within higher education institutions. The findings may differ because of the disparity between education professors and dental hygiene professors. The results of these alternative hypotheses one and two assisted me in controlling for alternative explanations to the study findings.

The findings for alternative hypothesis three differed from that of previous research conducted by Bulot & Johnson (2006). The difference could be contributed to the relatively conservative number of dental hygiene educators with tenure track positions in this study (43.8%) compared to those within the Bulot & Johnson study who were funded project directors of various academic ranks (2006). These findings again assisted me in controlling for alternative explanations to the study results.

**Recommendations for Future Research**

It is vital that these alternative hypotheses be addressed by future academic endeavors. The benefit to understanding if, and perhaps why, educators differ in their beliefs about service-
learning cannot be overstated. Delineating faculty perceptions about service-learning pedagogy can aid in the development of curriculum and direct the success or failure of complex content delivery, especially in health professions education.

It would also be highly recommended that the wFSLBI be utilized with other health profession faculty. Do nursing educators differ from dental hygiene faculty on their use or beliefs about service-learning benefits and barriers? Perhaps future research could address this question. Since the two professions have highly similar pre-requisites and program durations they might similarly utilize service-learning. Maybe their perceptions would be alike or perhaps the difference in curriculum, practice standards, and professional autonomy would impact faculty beliefs about service-learning pedagogy. Answers to these questions and more would serve noteworthy for both the service-learning literature and the health professions literature.
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APPENDIX A

APPROVAL LETTERS FOR SURVEY DISTRIBUTION

Approval to Utilize and Publish the Image of the Web-based Faculty Service-Learning Beliefs Inventory

In response to the message from Burch, Sharlee M, 6/29/2012

To: Burch, Sharlee M
This message was sent with High importance.

Dear Sharlee:
Thank you for your interests. Sure, you are welcome to use the wFSLBI and I’d appreciate you would keep me posted on your research updates.
Sincerely,
Su-I

Su-I Hou, DrPH, CPH, MCHES, RN
Associate Professor & OSL Service-Learning Senior Scholar, Health Promotion and Behavior College of Public Health, The University of Georgia

From: Su-I Hou <shou@uga.edu>
Sent: Thursday, October 17, 2013 3:31 PM
To: Burch, Sharlee M
Subject: Re: Publication of Dissertation using wFSLBI

Yes, I’d like to receive a copy of your manuscript. So where will it be published and what is the title? As long as you give proper citation in your dissertation and manuscript on the wFSLBI, I’m happy for you to include the image of the wFSLBI. I’m also trying to track how the wFSLBI has been used and cited, so if you can send a copy of the manuscript, that’ll be wonderful. Congratulations on your publication. I’m so happy to hear this!
Su-I

--

Su-I Hou, DrPH, CPH, MCHES, RN
Associate Professor & OSL Service-Learning Senior Scholar, Health Promotion and Behavior College of Public Health, The University of Georgia
309 Ramsey Center, Athens, GA 30602
Phone: 706-542-8206; Fax: 706-542-4956
Email: shou@uga.edu
http://www.publichealth.uga.edu/hpb/about/directory/faculty/su-i_hou
Approval to Utilize ADHA Entry Level Program Director Database

To: Burch, Sharlee M  
Attachments:  
Entry Level Program Director.pdf (412 KB) [Open in Browser]

June 15, 2012

Hi Sharlee -

As requested in your original email and our subsequent telephone conversation on Wednesday, June 13th, attached is an Adobe PDF copy of the Entry Level Dental Hygiene Program Directors that are members of ADHA. It is identical to the one which appears in the education and careers section of our website, with the exception that the contact information of the program directors that are not ADHA members has been highlighted in black. Also, as I stated in our phone conversation on Wednesday, you will not find the email addresses of those program directors who requested we not display them on our website.

Please keep in mind that is information is current as of today's date. As you well know, membership status is subject to change as renewals come due. Let me know if I can be of further assistance.

LaQuetia McReynolds

LaQuetia McReynolds  
Education Coordinator  
American Dental Hygienists' Association
Approval to utilize AmysRDHlist.com Listserv

Thursday, November 01, 2012 10:32 AM AmyRDH@aol.com

Actions

To: Burch, Sharlee M

You can go ahead. I am making some changes with the list and am not sure what those exactly will be but def. will be done by the end of the year. So, as long as the list is still going, you can go ahead and post your survey at the time. When I make my decision I will be announcing it to the list.

Have a great day!
Amy
Sharlee,
Thank you for your interest in ADEA.

At this time ADEA does not share it's membership lists with third parties per ADEA's privacy policy.

I arranged for our system to send you an invite to reinstate your membership, because you could use the ADEA online membership directory to locate other members who have earned an RDH degree. But you must be an active member, and your membership expired in 2007.

Please let me know if you have any questions.

~Sean

________________

Sean Carter
Senior Manager for Membership
American Dental Education Association
The Voice of Dental Education
APPENDIX B

PARTICIPANT INVITATION LETTERS

Participant Letter for Deans, Program Directors or Program Coordinators

RDH Doctoral Dissertation Survey Request

Dear Dean, Program Director, or Program Coordinator,

My name is Sharlee Burch. I am a dental hygiene educator and doctoral candidate in the School of Education at Liberty University. I am currently completing my dissertation on the service-learning beliefs of dental hygiene educators. The title of which is The Effect of Teaching Experience on the Service-Learning Beliefs of Dental Hygiene Educators.

My goal in this research is to find out if service-learning teaching experience impacts how dental hygiene educators perceive service-learning benefits and barriers. Eligible participants are part or full time dental hygiene educators who have taught any dental hygiene course in the past two years.

I would ask for your cooperation in two ways. First, if you are willing and eligible, please follow the link at the bottom of this email and complete the survey. Second, please forward this email and the attached participant letter to any eligible dental hygiene faculty employed by your program. I am requesting all surveys be completed by April 30, 2013.

Beneath this introduction, you will find the information required by the Institutional Review Board (IRB) at Liberty University. The electronic link for the survey is directly below this information. If you are interested in who you should contact with questions or concerns or how your information will be protected, please refer below. Thank you again for your participation.

Sincerely,

Sharlee Burch, RDH, MPH, EdS, MAADH, Doctoral Candidate

School of Education, Liberty University
IRB information:

You are invited to be in a research study of the effect of teaching experience on the service-learning beliefs or perceptions of dental hygiene educators. You were selected as a possible participant because you are a dental hygiene educator. We ask that you read this form and ask any questions you may have before agreeing to be in the study.

This study is being conducted by Sharlee Burch, RDH, MPH, EdS, MAADH, Doctoral Candidate, Liberty University School of Education.

Background Information:

The purpose of this study is to find out if teaching courses with service-learning components affects how dental hygiene educators view the benefits and barriers of service-learning experiences.

Procedures:

If you agree to be in this study, we would ask you to do the following things: Please complete the web-based survey once. The survey is short and should take you approximately 20 minutes.

Risks and Benefits of being in the Study:

The risks associated with this study are minimal and are no more than you would encounter in everyday life.

The benefits to participation are the contribution to further research in dental hygiene education and involvement in increasing the knowledge base surrounding service-learning in health professions research.

Compensation:

You will not be receiving compensation for participation in this study.

Confidentiality:

The records of this study will be kept private. In any sort of report I might publish, I will not include any information that will make it possible to identify a subject. Research records will be stored securely in the Survey Monkey software and on the personal computer of the researcher. Only I and my faculty advisor will have access to the records. The person in charge of the research study can remove you from the study without your approval. Possible reasons for removal include failure to complete the questionnaire as instructed. The sponsor can also end the research study early. Finally, the data will be stored for a minimum of three years and will be destroyed via electronic deletion and/or shredding of any hardcopies.

Voluntary Nature of the Study:
Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with Liberty University. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

**Contacts and Questions:**

The researcher conducting this study is Sharlee Burch, RDH, MPH, EdS, MAADH. The researcher’s faculty advisor is Dr. Gregg Mowen. If you have questions, you are encouraged to contact them at smburch@liberty.edu and/or ggmowen@liberty.edu.

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher(s), you are encouraged to contact the Institutional Review Board, Dr. Fernando Garzon, Chair.

*You may print a copy of this information to keep for your records.*

**IRB CODE:** IRB Exemption 1567.040413

Your participation in this research is greatly appreciated.

**CONSENT:** By completing the attached survey, the participant is giving their permission to be included in this research.

**SURVEY LINK:** https://www.surveymonkey.com/s/wFSLBI
Participant Letter for Dental Hygiene Educator

RDH Doctoral Dissertation Survey Request

Dear Dental Hygiene Educator,

My name is Sharlee Burch. I am a dental hygiene educator and doctoral candidate in the School of Education at Liberty University. I am currently completing my dissertation on the service-learning beliefs of dental hygiene educators. The title of which is The Effect of Teaching Experience on the Service-Learning Beliefs of Dental Hygiene Educators.

My goal in this research is to find out if service-learning teaching experience impacts how dental hygiene educators perceive service-learning benefits and barriers. Eligible participants are part or full time dental hygiene educators who have taught any dental hygiene course in the past two years. If you are willing and eligible, please follow the link at the bottom of this email and complete the survey once. I am requesting all surveys be completed by April 30, 2013.

Beneath this introduction, you will find the information required by the Institutional Review Board (IRB) at Liberty University. The electronic link for the survey is directly below this information. If you are interested in who you should contact with questions or concerns or how your information will be protected, please refer below. Thank you again for your participation.

Sincerely,

Sharlee Burch, RDH, MPH, EdS, MAADH, Doctoral Candidate

School of Education, Liberty University

IRB information:

You are invited to be in a research study of the effect of teaching experience on the service-learning beliefs or perceptions of dental hygiene educators. You were selected as a possible participant because you are a dental hygiene educator. We ask that you read this form and ask any questions you may have before agreeing to be in the study.

This study is being conducted by Sharlee Burch, RDH, MPH, EdS, MAADH, Doctoral Candidate, Liberty University School of Education.

Background Information:

The purpose of this study is to find out if teaching courses with service-learning components affects how dental hygiene educators view the benefits and barriers of service-learning experiences.
Procedures:

If you agree to be in this study, we would ask you to do the following things: Please complete the web-based survey once. The survey is short and should take you approximately 20 minutes.

Risks and Benefits of being in the Study:

The risks associated with this study are minimal and are no more than you would encounter in everyday life.

The benefits to participation are the contribution to further research in dental hygiene education and involvement in increasing the knowledge base surrounding service-learning in health professions research.

Compensation:

You will not be receiving compensation for participation in this study.

Confidentiality:

The records of this study will be kept private. In any sort of report I might publish, I will not include any information that will make it possible to identify a subject. Research records will be stored securely in the Survey Monkey software and on the personal computer of the researcher. Only I and my faculty advisor will have access to the records. The person in charge of the research study can remove you from the study without your approval. Possible reasons for removal include failure to complete the questionnaire as instructed. The sponsor can also end the research study early. Finally, the data will be stored for a minimum of three years and will be destroyed via electronic deletion and/or shredding of any hardcopies.

Voluntary Nature of the Study:

Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with Liberty University. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

Contacts and Questions:

The researcher conducting this study is Sharlee Burch, RDH, MPH, EdS, MAADH. The researcher’s faculty advisor is Dr. Gregg Mowen. If you have questions, you are encouraged to contact them at smburch@liberty.edu and/or ggmowen@liberty.edu.

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher(s), you are encouraged to contact the Institutional Review Board, Dr. Fernando Garzon.
You may print a copy of this information to keep for your records.

IRB CODE: IRB Exemption 1567.040413

Your participation in this research is greatly appreciated.

CONSENT: By completing the attached survey, the participant is giving their permission to be included in this research.

SURVEY LINK: https://www.surveymonkey.com/s/wFSLBI
APPENDIX C

WEB-BASED FACULTY SERVICE-LEARNING BELIEFS INVENTORY

Web-based Faculty Service-Learning Beliefs Inventory

Consent

Consent: By completing the survey you are giving your permission to be included in this research.

Qualifying Question

*1. Have you taught a dental hygiene course in the past two years at an entry-level dental hygiene program?
   - Yes
   - No

Demographic Information

*2. What is your gender?
   - Female
   - Male

3. Which category below includes your age?
   - 30 or younger
   - 31-40
   - 41-50
   - 51-60
   - 61 or older

*4. What is your race? Please choose one or more.

   - White
   - Black or African-American
   - Hispanic/Latino
   - Asian
   - Native Hawaiian or other Pacific Islander
   - American Indian or Alaska Native
   - Other

   Other (please specify): 


Web-based Faculty Service-Learning Beliefs Inventory

5. What is your tenure status?
   - Tenured/Tenure Track
   - Non-Tenured/Non-Tenure Track

6. What is your academic rank?
   - Instructor
   - Assistant Professor
   - Associate Professor
   - Full Professor
   - Other
   Other (please specify)

7. What is your institution type?
   - Community or Technical College
   - University

8. In what area is your institution located?
   - Urban
   - Rural

9. What is the highest level of school you have completed or the highest degree you have received?
   - Associate degree
   - Bachelor degree
   - Master degree
   - Doctoral degree

10. How long have you been a Registered Dental Hygienist?
    - 0-5 years
    - 6-10 years
    - 11-20 years
    - 21-30 years
    - > 31 years

Not an RDH? What type of dental professional are you?
Web-based Faculty Service-Learning Beliefs Inventory

11. How long have you been a dental hygiene educator?
   - 0-5 years
   - 6-10 years
   - 11-20 years
   - 21-30 years
   - > 31 years

12. When do you plan to retire?
   - 0-5 years
   - 6-10 years
   - 11-20 years
   - 21-30 years
   - > 31 years

Service-Learning

For the purpose of this survey, service-learning will be defined as “An experiential education method, a teaching and learning approach characterized by students’ practical application of academic studies and occurs within a community setting, to the benefit of the student and community.”

For the purpose of this survey, prior service-learning teaching experience will be defined as “those dental hygiene educators who have taught at least one course with a service-learning component or are at the time of this survey teaching a course with a service-learning component for the first time.”

For the purpose of this survey, dental hygiene educators with no prior service-learning teaching experience will be defined as “those dental hygiene educators who have not taught at least one course with a service-learning component at the time of this survey.”

*13. According to the previous definitions, do you have prior service-learning teaching experience?
   - Yes
   - No
Web-based Faculty Service-Learning Beliefs Inventory

14. Service-learning enriches classroom discussions and lectures in my course.
   - Strongly Disagree
   - Disagree
   - Neutral
   - Agree
   - Strongly Agree

15. I enjoy teaching more when the class involves service-learning.
   - Strongly Disagree
   - Disagree
   - Neutral
   - Agree
   - Strongly Agree

16. Service-learning helped me to understand my professional strengths and weaknesses.
   - Strongly Disagree
   - Disagree
   - Neutral
   - Agree
   - Strongly Agree

17. Participating in service-learning helped me clarify areas of focus for my scholarship.
   - Strongly Disagree
   - Disagree
   - Neutral
   - Agree
   - Strongly Agree

18. Teaching service-learning courses has resulted in a change in my teaching style(s).
   - Strongly Disagree
   - Disagree
   - Neutral
   - Agree
   - Strongly Agree
Web-based Faculty Service-Learning Beliefs Inventory

19. Participation in service-learning is an important component of my professional portfolio.

- [ ] Strongly Disagree
- [ ] Disagree
- [ ] Neutral
- [ ] Agree
- [ ] Strongly Agree

20. I was able to develop a good relationship with the students in my service-learning course(s) because of the community work.

- [ ] Strongly Disagree
- [ ] Disagree
- [ ] Neutral
- [ ] Agree
- [ ] Strongly Agree

21. The service my students completed was beneficial to the community.

- [ ] Strongly Disagree
- [ ] Disagree
- [ ] Neutral
- [ ] Agree
- [ ] Strongly Agree

22. I value working with community partners to structure and deliver the service-learning experience for students.

- [ ] Strongly Disagree
- [ ] Disagree
- [ ] Neutral
- [ ] Agree
- [ ] Strongly Agree
## Web-based Faculty Service-Learning Beliefs Inventory

23. I learned something new about the community from my community partners.

- [ ] Strongly Disagree
- [ ] Disagree
- [ ] Neutral
- [ ] Agree
- [ ] Strongly Agree

24. The community members with whom I partner play an active role in the planning or development of my service-learning course(s).

- [ ] Strongly Disagree
- [ ] Disagree
- [ ] Neutral
- [ ] Agree
- [ ] Strongly Agree

25. The work my students and I performed enhanced my ability to communicate my ideas in the community.

- [ ] Strongly Disagree
- [ ] Disagree
- [ ] Neutral
- [ ] Agree
- [ ] Strongly Agree

26. I can make a difference in the community.

- [ ] Strongly Disagree
- [ ] Disagree
- [ ] Neutral
- [ ] Agree
- [ ] Strongly Agree
Web-based Faculty Service-Learning Beliefs Inventory

27. Time constraints interfere with my ability to teach a service-learning course.
   □ Strongly Disagree
   □ Disagree
   □ Neutral
   □ Agree
   □ Strongly Agree

28. I feel that I am giving up control of the learning experience when teaching a service-learning course.
   □ Strongly Disagree
   □ Disagree
   □ Neutral
   □ Agree
   □ Strongly Agree

29. I have a harder time assessing student learning and work in a service-learning course than in a traditional course.
   □ Strongly Disagree
   □ Disagree
   □ Neutral
   □ Agree
   □ Strongly Agree

30. I experience challenges with the reduced time for classroom instruction in my service-learning course.
   □ Strongly Disagree
   □ Disagree
   □ Neutral
   □ Agree
   □ Strongly Agree
### Web-based Faculty Service-Learning Beliefs Inventory

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>31. Using service-learning required more of my time as a teacher.</td>
<td>Strongly Disagree,</td>
</tr>
<tr>
<td></td>
<td>Disagree,</td>
</tr>
<tr>
<td></td>
<td>Neutral,</td>
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<tr>
<td></td>
<td>Agree,</td>
</tr>
<tr>
<td></td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>32. Faculty promotion and tenure policies do not support or encourage my service.</td>
<td>Strongly Disagree,</td>
</tr>
<tr>
<td></td>
<td>Disagree,</td>
</tr>
<tr>
<td></td>
<td>Neutral,</td>
</tr>
<tr>
<td></td>
<td>Agree,</td>
</tr>
<tr>
<td></td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>33. Administrative leaders actively work to make service-learning a visible and important part of institutional work.</td>
<td>Strongly Disagree,</td>
</tr>
<tr>
<td></td>
<td>Disagree,</td>
</tr>
<tr>
<td></td>
<td>Neutral,</td>
</tr>
<tr>
<td></td>
<td>Agree,</td>
</tr>
<tr>
<td></td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>34. My colleagues understand and value service-learning in promotion, tenure, and annual evaluation decisions.</td>
<td>Strongly Disagree,</td>
</tr>
<tr>
<td></td>
<td>Disagree,</td>
</tr>
<tr>
<td></td>
<td>Neutral,</td>
</tr>
<tr>
<td></td>
<td>Agree,</td>
</tr>
<tr>
<td></td>
<td>Strongly Agree</td>
</tr>
</tbody>
</table>
### Web-based Faculty Service-Learning Beliefs Inventory

#### 35. I believe that service-learning will enrich classroom discussions and lectures in my course.

- [ ] Strongly Disagree
- [ ] Disagree
- [ ] Neutral
- [ ] Agree
- [ ] Strongly Agree

#### 36. I believe I will enjoy teaching more when the class involves service-learning.

- [ ] Strongly Disagree
- [ ] Disagree
- [ ] Neutral
- [ ] Agree
- [ ] Strongly Agree

#### 37. I believe service-learning will help me to understand my professional strengths and weaknesses.

- [ ] Strongly Disagree
- [ ] Disagree
- [ ] Neutral
- [ ] Agree
- [ ] Strongly Agree

#### 38. I believe participating in service-learning will help me clarify areas of focus for my scholarship.

- [ ] Strongly Disagree
- [ ] Disagree
- [ ] Neutral
- [ ] Agree
- [ ] Strongly Agree
### Web-based Faculty Service-Learning Beliefs Inventory

#### 39. I believe teaching service-learning courses will result in a change in my teaching style(s).
- [ ] Strongly Disagree
- [ ] Disagree
- [ ] Neutral
- [ ] Agree
- [ ] Strongly Agree

#### 40. I believe participation in service-learning will be an important component of my professional portfolio.
- [ ] Strongly Disagree
- [ ] Disagree
- [ ] Neutral
- [ ] Agree
- [ ] Strongly Agree

#### 41. I believe I will be able to develop a good relationship with the students in my service-learning course(s) because of the community work.
- [ ] Strongly Disagree
- [ ] Disagree
- [ ] Neutral
- [ ] Agree
- [ ] Strongly Agree

#### 42. I believe the service my students will complete will be beneficial to the community.
- [ ] Strongly Disagree
- [ ] Disagree
- [ ] Neutral
- [ ] Agree
- [ ] Strongly Agree

133
# Web-based Faculty Service-Learning Beliefs Inventory

43. I believe I will value working with community partners to structure and deliver the service-learning experience for students.

- [ ] Strongly Disagree
- [ ] Disagree
- [ ] Neutral
- [ ] Agree
- [ ] Strongly Agree

44. I believe I will learn something new about the community from my community partners.

- [ ] Strongly Disagree
- [ ] Disagree
- [ ] Neutral
- [ ] Agree
- [ ] Strongly Agree

45. I believe the community members with whom I will partner will play an active role in the planning or development of my service-learning course(s).

- [ ] Strongly Disagree
- [ ] Disagree
- [ ] Neutral
- [ ] Agree
- [ ] Strongly Agree

46. I believe the work my students and I will perform will enhance my ability to communicate my ideas in the community.

- [ ] Strongly Disagree
- [ ] Disagree
- [ ] Neutral
- [ ] Agree
- [ ] Strongly Agree
<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>47. I believe I will make a difference in the community.</td>
<td>Strongly Disagree, Disagree,</td>
</tr>
<tr>
<td></td>
<td>Neutral, Agree, Strongly Agree</td>
</tr>
<tr>
<td>48. I believe time constraints will interfere with my ability to teach a service-learning course.</td>
<td>Strongly Disagree, Disagree,</td>
</tr>
<tr>
<td></td>
<td>Neutral, Agree, Strongly Agree</td>
</tr>
<tr>
<td>49. I believe I will feel that I am giving up control of the learning experience when teaching a service-learning course.</td>
<td>Strongly Disagree, Disagree,</td>
</tr>
<tr>
<td></td>
<td>Neutral, Agree, Strongly Agree</td>
</tr>
<tr>
<td>50. I believe I will have a harder time assessing student learning and work in a service-learning course than in a traditional course.</td>
<td>Strongly Disagree, Disagree,</td>
</tr>
<tr>
<td></td>
<td>Neutral, Agree, Strongly Agree</td>
</tr>
</tbody>
</table>

135
Web-based Faculty Service-Learning Beliefs Inventory

51. I believe I will experience challenges with the reduced time for classroom instruction in my service-learning course.
- [ ] Strongly Disagree
- [ ] Disagree
- [ ] Neutral
- [ ] Agree
- [ ] Strongly Agree

52. I believe using service-learning will require more of my time as a teacher.
- [ ] Strongly Disagree
- [ ] Disagree
- [ ] Neutral
- [ ] Agree
- [ ] Strongly Agree

53. I believe faculty promotion and tenure policies will not support or encourage my service.
- [ ] Strongly Disagree
- [ ] Disagree
- [ ] Neutral
- [ ] Agree
- [ ] Strongly Agree

54. I believe administrative leaders will actively work to make service-learning a visible and important part of institutional work.
- [ ] Strongly Disagree
- [ ] Disagree
- [ ] Neutral
- [ ] Agree
- [ ] Strongly Agree
### Web-based Faculty Service-Learning Beliefs Inventory

55. I believe my colleagues will understand and value service-learning in promotion, tenure, and annual evaluation decisions.

- [ ] Strongly Disagree
- [ ] Disagree
- [ ] Neutral
- [ ] Agree
- [ ] Strongly Agree

Thank you for your willingness to participate in this study.
APPENDIX D

MAP OF ENTRY LEVEL DENTAL HYGIENE PROGRAMS

APPENDIX E

LIBERTY UNIVERSITY IRB APPROVAL LETTERS

The Graduate School at Libe

April 4, 2013

Sharlee Burch
IRB Exemption 1567.040413: The Effect of Teaching Experience on Service-Learning Beliefs of Dental Hygiene Educators

Dear Sharlee,

The Liberty University Institutional Review Board has reviewed your application in accordance with Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research data safeguarding methods mentioned in your approved application, and that no further IRB review is required.

Your study falls under exemption category 46.101(b)(1,2,3,4,5,6), which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:

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

Please note that this exemption only applies to your current research application, and that any changes to your protocol must be reported to the Liberty IRB for verification of continued exemption status. Any changes must be submitted in a change in protocol form or a new application to the IRB and referencing the above IRB Exemption number.

If you have any questions about this exemption, or need assistance in determining whether possible changes to your protocol would change your exemption status, please email us at irb@liberty.edu.

Sincerely,

Fernando Garzon, Psy.D.
Professor, IRB Chair
Counseling
IRB Change in Protocol Approval: IRB Exemption 1567.040413: The Effect of Teaching Experience on Service-Learning Beliefs of Dental Hygiene Educators

IRB, IRB [IRB@liberty.edu]
Sent: Tuesday, April 09, 2013 2:20 PM
To: Burch, Sharlee M
Cc: IRB, IRB; Moxen, Gregg G; Garzon, Fernando

Good Afternoon Sharlee,

This email is to inform you that your request to change the survey software you plan to use from Qualtrics to Survey Monkey has been approved.

Thank you for complying with the IRB requirements for making changes to your approved study. Please do not hesitate to contact us with any questions.

We wish you well as you continue with your research.

Best,

G. Michele Baker, M.A.
Institutional Review Board Coordinator
The Graduate School

Liberty University | Training Champions for Christ since 1971

https://by2prd0511.outlook.com/owa/?ac=Item&i=IPM.Note&id=RgAAAADNBsOKgh34RZ6t3VQDcX
### APPENDIX F

**SKEWNESS and KURTOSIS TABLE**

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<th>Kurtosis Statistic</th>
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APPENDIX G

HISTOGRAM AND NORMAL Q-Q PLOT FOR SELECTED ITEMS

Histogram

Normal Q-Q Plot of Classroom Benefit 1