

2007

Comparison of student outcomes in distance learning internships versus traditional dietetic internships

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Comparison of Student Outcomes in Distance Learning Internships versus Traditional
Dietetic Internships

by

Lauri Y. Wright

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
Department of Adult, Career and Higher Education
College of Education
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Date of Approval:

October 29, 2007

Keywords: education, nutrition, residency, training, professional development

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Dedication

I would first like to thank God for all his gifts and blessings. Thanks to my parents, Don and Ellie Ysseldyke, for their support during this process. From babysitting to moral support, my mom was always there. Dad instilled in me goal-setting and the drive to see each goal through to completion. Thanks to you both for all you have done to get me here.

I would also like to express my gratitude to my husband, Britton. You have supported my dream of a doctorate from the very beginning. You never stopped encouraging or believing in me. Thank you.

This dissertation is truly dedicated to my daughters – Meghan, Molly, and Addie. My girls who had to endure night classes, lots of frozen dinners, late pickups from dance, and long hours of mom locked in the study. Your beautiful faces always inspired me on. I hope that my example, in turn, will inspire you to fulfill your dreams and never give up.

Acknowledgements

There are many people without whom this project would not have been successfully completed. I would first like to thank my major professors, Dr. Michael Mills and Dr. Jan Ignash. Without your guidance, encouragement, and patience, I would never have made it. I would also like to acknowledge the other members of my committee - Dr. Mercer and Dr. Cobb-Roberts. Thank you for all the advice and support.

I would also like to thank my supporters at work – Sherri, Martha, Lynn, Anne, Mila, Kadie, Cheri, Steve and many others. From changing my schedule, allowing me to present my latest class project, to never allowing me to quit, your encouragement helped me through this process.

Finally, I would like to thank the graduates, supervisors, and program directors that participated in the study. I learned so much from each of you and truly appreciate your time and willingness. I would also like to acknowledge the Commission on Accreditation for Dietetics Education for their support of my education and research

Table of Contents

List of Tables	v
List of Figures	vii
Abstract	viii
Chapter One: Introduction	1
Statement of the Problem.....	1
Conceptual Framework.....	4
Purpose of the Study	5
Research Questions.....	5
Hypotheses	6
Significance of the Study	7
Delimitations of the Study	7
Limitations of the Study.....	8
Organization of Remaining Chapters.....	10
Summary	10
Chapter Two: Literature Review	12
Dietetics	12
Dietetics Education	13
Competency and Supervised Practice.....	15
Technology in Dietetics Education.....	15

Distance Learning, Dietetic Internships.....	17
Definition of Distance Learning	19
History of Distance Learning.....	20
Description of Distance Learning	20
Theory and Distance Learning.....	21
Equivalency Theory	22
Prevalence of Distance Learning in Higher Education.....	24
Prevalence of Distance Learning in Healthcare Education.....	25
Clinical Judgment	26
Benefits of Distance Learning	28
Barriers in Distance Learning	29
Distant Learning Students.....	31
Faculty Attitude and Satisfaction.....	32
Student Outcomes & Satisfaction	34
Summary	38
Chapter Three: Methodology.....	40
Quantitative Research	42
Design	42
Procedure	42
Instrument	43
Participants.....	44
Analysis.....	47
Qualitative Research	49

Design	49
Procedure	50
Interviews.....	51
Participants.....	52
Analysis.....	53
Ethical Issues	54
Biases, Assumptions and Negotiation of Entry	54
Summary.....	55
Chapter Four: Results	56
Research Question 1	56
Pass Rate Descriptive Statistics	56
Pass Rate Inferential Statistics	57
Research Question 2	59
Research Question 3	66
Research Question 4	73
Traditional and Distance Learning Graduate Interviews	74
Traditional and Distance Learning Program Directors Interviews	83
Traditional and Distance Learning Graduate Supervisor Interviews.....	87
Summary.....	94
Chapter Five: Conclusions.....	96
Discussion of Findings for Research Questions	96
Implications and Recommendations for Future Practice	100
Recommendations for Future Research	103

Conclusion	103
References.....	105
Appendices.....	114
Appendix A: Program Information and Registration Exam Pass Rate Review..	115
Appendix B: Graduate Survey on Preparedness for Practice	116
Appendix C: Supervisor Survey on Preparedness for Practice.....	117
Appendix D: Program Director Interview Guide.....	118
Appendix E: Graduate Interview Guide	120
Appendix F: Supervisor Interview Guide	122
About the Author	End Page

List of Tables

Table 1. Study Phases	41
Table 2. Participation by Programs.....	45
Table 3. Research Question Analysis	49
Table 4. Frequency Table of Program Pass Rates	56
Table 5. Pass Rate Mean Percentages and Normality Tests	57
Table 6. Parametric t-test and Non-Parametric Test Results for Pass Rates	58
Table 7. Parametric t-test Results for Survey Results in Distance Graduates versus Traditional Graduates.....	61
Table 8. Parametric t-test Results for Survey Results in Distance Supervisors versus Traditional Supervisors.....	69
Table 9. Graduate Interview Question #1	74
Table 10. Graduate Interview Question #2.....	75
Table 11. Graduate Interview Question #3	76
Table 12. Graduate Interview Question #4	77
Table 13. Graduate Interview Question #5	78
Table 14. Graduate Interview Question #6.....	79
Table 15. Graduate Interview Question #7	79
Table 16. Graduate Interview Question #8	80
Table 17. Graduate Interview Question #9	80
Table 18. Graduate Interview Question #10.....	81

Table 19. Graduate Interview Question #11	81
Table 20. Program Directors Interview Question #1	83
Table 21. Program Directors Interview Question #2	84
Table 22. Program Directors Interview Question #3	85
Table 23. Program Directors Interview Question #4	85
Table 24. Program Directors Interview Question #5	86
Table 25. Program Directors Interview Question #6	86
Table 26. Supervisors Interview Question #1	88
Table 27. Supervisors Interview Question #2	88
Table 28. Supervisors Interview Question #3	89
Table 29. Supervisors Interview Question #4	89
Table 30. Supervisors Interview Question #5	90
Table 31. Supervisors Interview Question #6	91
Table 32. Supervisors Interview Question #7	91
Table 33. Supervisors Interview Question #8	92
Table 34. Supervisors Interview Question #9	92

List of Figures

Figure 1. Survey Participation	46
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Comparison of Student Outcomes in Distance Learning versus Traditional Dietetic

Internships

Lauri Wright

ABSTRACT

One way in which higher education is responding to technology advances, demographics changes, and economic pressures is through the development of distance learning. Distance learning represents one of the most prominent trends in higher education today. Understanding the impact of this technologically driven change on student outcomes is unmistakably important. One example of this trend in higher education is the distance learning internship in dietetic training programs. The purpose of this study was to compare student outcomes in distance learning dietetic internships to student outcomes in traditional dietetic internships. The pass rate of the registration exam for dietitians, levels of perceived preparation for practice, and evaluation of curricular experiences were compared. The study was divided into three phases. The first phase of the study was the recruitment of dietetic internship directors and program information, including registration exam pass rate. The second phase of the study consisted of surveys on preparedness for practice to the graduates and supervisors. The third phase of the study involved interviews of traditional and distance program graduates, their supervisors, and internship directors on curricular experience and preparation. No significant difference was found in pass rates for the registration exam. Significant differences were found in constructs of dietetic practice based on surveys with graduates and their supervisors. Common themes from interviews with graduates, their supervisors,

and program directors confirmed survey results showing graduates of traditional dietetic internship were prepared at a higher level of practice, competence and clinical judgment. The results of this research do not support equivalency in preparation for practice between distance and traditional dietetic internships.

Chapter One

Introduction

One way in which higher education is responding to technology advances, demographics changes, and economic pressures is through the development of distance learning. Distance learning, in fact, represents one of the most prominent trends in higher education today. With over one-half of all institutions of higher education providing some form of distance learning, our traditional concepts of education are being challenged. Distance learning represents a change in the fundamental orientation of the learning environment (Allen et al, 2004). Understanding the impact of this technologically driven change on student outcomes is unmistakably important. However, it is still unclear what the outcomes of distance learning are.

One example of this trend in higher education is the distance learning internship in dietetic training programs. Traditionally controlled on-site at hospitals and universities, dietetic internships are now being provided at a distance. No comparative data is available on the effectiveness of this new version of dietetics education against its traditional counterpart. This study compares student outcomes in distance learning dietetic internships to student outcomes in traditional dietetic internships.

Statement of the Problem

Higher education is facing many complex challenges from the external environment. Within the societal context of rapid technological change and shifting

market conditions, higher education is being asked to increase education opportunities, to improve the quality of student learning, and to contain or reduce the rising costs of instruction (Twigg, 2003). Many educational institutions are answering these challenges by developing distance learning courses and programs. While educators are rapidly developing courses and programs, there is limited knowledge about student outcomes in distance education (Woo & Kimmick, 2000).

According to the U.S. Department of Education's "Projections of Education Statistics to 2012," enrollment in degree-granting colleges and universities is projected to increase more than 15% by 2012 (DiMaria, 2003). Furthermore, tuition at public four-year colleges rose 9.6% in 2002, the highest rate in a decade, and is expected to continue to rise at a rate greater than the rate of inflation (Young, 2002). Tuition increases reflect the budget difficulties colleges are facing as a result of the nation's economic setbacks and continued reduction in state appropriations for higher education. In addition, there has been an unprecedented call by government, society, and taxpayers for more accountability in the higher education system. Consequently, higher education is being asked to provide increased access without an increased budget and to demonstrate the quality of the education provided.

With the advancement of computer technology, specifically with the availability and extensive usage of the Internet, there has been a dramatic change in the way our society delivers information. These advances in information technology and telecommunication have also brought significant changes to higher education. Distance learning has become an important alternative to traditional methods of education. In a recent survey, the National Center for Education Statistics found that over one-half of

higher education institutions now offer distance education courses (National Center for Education Statistics, 2003). Distance learning expands the ability of institutions to reach students and, in turn, provides convenience and flexibility to students. Although this new mode of education is in its relative infancy, it holds enormous promise for students and institutions. There is much dispute, however, about how well distance learning works and under what conditions it may provide similar or superior instructional results to more traditional teaching modes.

Dietetic education mirrors this trend in higher education. Thirty-three percent of undergraduate programs in dietetics offer some coursework via distance education (Commission on Accreditation for Dietetics Education, 2005). Thirteen of the 264 dietetic internship programs are now offered at a distance, with this number expected to increase. The dietetic internship is a post-graduate clinical practicum required for eligibility to sit for the registration exam for dietitians. Supervised clinical practice is critical in the dietetic education model, providing an opportunity for students to apply scientific principles, develop clinical judgment, and to gain confidence in performing skills (Skipper & Lewis, 2005). The Commission on Accreditation for Dietetics Education (CADE) establishes the required outcomes for the internship in the form of core competencies. Dietetic internships are traditionally based in hospitals and clinical settings. Interns complete their required practice hours in the accredited hospital with an internship director developing and overseeing the learning experiences in coordination with the CADE core competencies. Distance learning dietetic internships differ from traditional dietetic internships in that interns develop their own learning experiences at affiliate hospitals geographically distanced from the accredited institution and internship

director. The distance learning dietetic internships have enjoyed immense popularity with students, but there has been no collective evaluation of student outcomes in this new type of program.

Conceptual Framework

Apple (1991, p. 75) observed that “new technology is not just an assemblage of machines and their accompanying software. It embodies a form of thinking that orients a person to approach the world in a particular way.” Therefore, distance learning does not simply represent replacing traditional classrooms with computers and software. Rather, technology must coincide with teaching practices based on how students learn best (National Council for Accreditation of Teacher Education [NCATE] Task Force on Professional Development, 1997).

The conceptual framework for this research study is the Equivalency Theory. It may be premature to consider the Equivalency Theory a theory yet, but the ultimate goals do align with the goals of this research. This theory advocates designing a collection of equivalent and appropriate learning experiences for distance and local learners with the goal of facilitating equivalent learning outcomes for each student (Keegan, 1995 and Simonson, 1995). The more equivalent the learning experiences of distant learners are to those of local learners, the more equivalent will be the outcomes of the educational experiences for all learners. The more equivalent the outcomes of distance learning, the more acceptance distance education will have from teachers, learners, and the public. This theory aligns most closely with the purpose of this study and the goals of distance dietetics education.

Purpose of the Study

With the formation of this new type of dietetic internship, it was important to examine educational processes and outcomes. Therefore, the purpose of this study is to compare outcomes in distance learning dietetic internships to traditional dietetic internships. Specifically, the pass rate of the registration exam for dietitians and levels of perceived preparation for practice was compared in the quantitative portion of this study. Graduates' and supervisors' perception of students' preparation for practice and graduates' curricular experiences was further evaluated in the qualitative portion of this study. A pragmatic framework was chosen for this study. A pragmatic framework supports the use of both qualitative and quantitative research methods in the same research study (Tashakkori & Teddlie, 2003, p. 21). The rationale for choosing a pragmatic framework is that "methods should be mixed in a way that has complementary strengths and non-overlapping weaknesses," (Tashakkori & Teddlie, 2003, p. 299).

Research Questions

The following research questions were addressed in the quantitative portion of this study:

1. Does the registration exam pass rate differ between distance learning and traditional dietetic internships?
2. Do graduates of distance learning and traditional dietetic internships differ in their assessment of graduates' preparation for practice?
3. Do supervisors of graduates of distance learning and traditional dietetic internships differ in their assessment of graduates' preparation for practice?

In the qualitative portion of this study, the following research question was addressed:

1. How do graduates, their supervisors, and program directors of dietetic internships evaluate interns' curricular experience and preparation for practice?

Hypotheses

It was hypothesized that there is no significant difference in registration exam pass rates between students who complete distance learning dietetic internships and students who complete traditional dietetic internships. Additionally, it was hypothesized that there is no significant difference in perceived levels of preparation between graduates of distance learning internships and graduates of traditional dietetic internships. Finally, it was hypothesized that there is no significant difference in supervisors' perceived level of preparation between students who completed distance learning dietetic internships and students who completed traditional dietetic internships.

H1: There is no significant difference in registration exam pass rates between students who complete distance learning dietetic internships and students who complete traditional dietetic internships.

H2: There is no significant difference in graduates' perceived levels of preparation between those completing a distance learning internships and those completing a traditional dietetic internship.

H3: There is no significant difference in supervisors' perceived level of preparation between students who completed distance learning dietetic internships and students who completed traditional dietetic internships.

Significance of the Study

Distance learning is among the fastest growing trends in higher education today (Siegel, Jennings, & Conklin, 1998). Distance learning provides education to students not otherwise attainable by traditional methods for social, professional, economic, and geographic reasons. There is also some research that suggests distance learning may reduce the cost of education (Mattheos, N., Schitteck, M., Attstrom, R., and Lyon, H. C., 2001). More than one-half of the institutions of higher education in the United States offer distance learning courses and programs, and this figure is expected to rise (National Center for Education Statistics, 2003). Case reports on distance learning outcomes have been enthusiastic, but controlled studies are needed to better evaluate the effectiveness of distance learning courses and programs, and the type of educational experiences and environments in which distance learning is at least equivalent in outcome to traditional forms. Distance learning is being utilized in dietetics education as well. Thirty-three percent of undergraduate dietetic programs offer distance learning courses (CADE, 2005). No studies are currently available on the effectiveness of this new type of dietetics education component. Therefore, the proposed study will add to the body of literature on distance learning, particularly as an educational methodology in dietetics education and for internships. The study will also aid the field and accrediting body of The American Dietetic Association to determine the effectiveness and appropriateness of this new form of internship.

Delimitations of the Study

Delimitations are factors used to intentionally narrow the scope of a study (Creswell, 1998). All studies contain delimitations. This study is limited to one

discipline, that being dietetics. Only one type of education experience was studied – the dietetic internship. Finally, this study is confined to three student outcomes – registration exam pass rates, curricular experience as it relates to preparation, and perceived competency for practice.

Limitations of the Study

Limitations are potential weaknesses of a study. Threats to internal and external validity exist in all quantitative and qualitative studies. Thus, limitations pertinent to this mixed methods study are presented. First, threats to internal validity are presented. This is followed by threats to external validity. Despite the limitations, the use of mixed methods may enhance the inference quality, or the internal validity, and trustworthiness/credibility (Cook & Campbell, 1979, p. 37).

Internal validity is defined as “the condition that observed differences on the dependent variable are a direct result of the independent variable, not some other variable” (Gay & Airasian, 2000, p. 345). One threat to internal validity in this study is the differential selection of participants, or selection bias. There may be substantive differences between dietetic interns enrolled in the distance education internships and the dietetic interns enrolled in the traditional internships, which may affect the effectiveness they derive from the internship. These differences could include differences in undergraduate preparation, work experience, and skills or attitudes of those who adopt new technology and are willing to work independently. These differences may influence performance in the internship and/or on the registration exam for dietitians. Matching bias is another threat to internal validity in this study. Traditional dietetic internships were matched by size, geography, institution type, and defined emphasis area to distance

learning internships. This matching of similar characteristics poses a threat to internal validity because those individuals not matched may possess variables that may be related to the observed findings of the study (Onwuegbuzie & Teddlie, 2003). Researcher bias is another possible threat to internal validity in this study. “Researcher bias may occur during the data collection stage when the researcher has a personal bias in favor of one technique over another” (Onwuegbuzie & Teddlie, 2003, p. 77). Although the researcher does have opinions concerning traditional versus distance learning dietetic internships, the threat should be minimized because the researcher is not implementing the intervention. Other threats to internal validity in this study include instrumentation (i.e., reliability/validity of the registration exam), and mortality (i.e., non-responders).

External validity refers to “the extent to which the results of a study can be generalized to and across populations, settings, and times” (Johnson & Christensen, 2000, p. 200). A threat to external validity in this study is population validity. Population validity refers to the extent to which findings from the sample can be generalized to the population. Because some members of the target populations did not respond to this study, population validity is a threat. Also, internship conditions can vary widely by fields and sites. Ecological validity is another threat to external validity in this study. Ecological validity refers to “the extent to which findings from a study can be generalized across settings, conditions, variables, and contexts” (Onwuegbuzie & Teddlie, 2003, p. 80). It may be difficult to generalize the findings of this study for dietetics education to other allied health internships and residencies due to the fact that only one unique discipline is being studied.

Among the most cited criticisms of qualitative research are the presumed lack of reliability and validity of its findings (McRoy, 1996). Lincoln and Guba (1985) proposed criteria for judging the soundness of qualitative research and offered these as an alternative to more traditional quantitative criteria. The criteria include credibility, transferability, and dependability. Credibility, most similar to internal validity in quantitative research, involves establishing that the results are believable. Transferability, most similar to external validity in quantitative research, refers to the degree to which the results are applicable to other settings. Dependability, most similar to reliability in quantitative research, refers to how true the interpretation is to the data. Ultimately, qualitative research soundness is achieved when the written account or description represents accurately the features of the communication observed. These threats to the validity and generalizability were addressed by the use of purposeful sampling and member checks as discussed in the methods chapter.

Organization of Remaining Chapters

The remaining chapters present information relevant to this study. Chapter 2 is a review of existing research on distance learning in higher education. Chapter 3 details the methodology to be used in this study. Specifically, this chapter includes a discussion of the participants, ethical considerations, instruments, procedures, research design, and data analysis. The results of the research are presented in Chapter 4. Finally, conclusions and implications are offered in Chapter 5.

Summary

Distance learning is a growing trend in higher education. Dietetics education mirrors this trend with 33% of undergraduate dietetics programs offering distance

learning and 13 dietetic internships now being offered at a distance. Despite the popularity of distance learning, little information is available on student outcomes. The purpose of this study was to compare student outcomes in distance dietetic internships to those in traditional dietetic internships.

Chapter Two

Literature Review

Distance learning is instruction delivered over a distance to one or more individuals. Distance education in higher education has been in existence for over a century but a new form using the Internet has resulted in an explosion in its use. The following chapter will begin with a discussion of dietetics education and a new distance learning dietetic education program. This will be followed by the definition, history and description of distance learning, theories, and prevalence in higher education, benefits, barriers, the distance learner, faculty attitude, outcomes in distance learning, and a discussion on clinical judgment.

Dietetics

Nutrition is the study of the food substances vital for health and how the body uses these substances (Wardlaw and Smith, 2005). Dietetics is the profession that utilizes nutrition to promote health and prevent diseases. A registered dietitian is a food and nutrition expert who has met the minimum academic and professional requirements to qualify for the credential “RD” (American Dietetic Association, 2004). In addition to national registration, many states have licensure laws for dietitians. State requirements are generally met through the same education and training required to become an RD. The requirements to become a registered dietitian are as follows: 1) Earn a bachelor's degree with course work approved by Commission on Accreditation for Dietetics Education. Coursework typically includes food and nutrition sciences, foodservice

systems management, business, economics, computer science, sociology, biochemistry, physiology, microbiology, and chemistry; 2) Complete an accredited, supervised, 6-to-12-month internship or experiential practice program at a health-care facility, community agency or foodservice corporation; and 3) Pass a national examination administered by the Commission on Dietetic Registration. Continuing professional educational requirements are in place to maintain professional registration.

The American Dietetic Association (ADA) is the nation's largest organization of registered dietitians (American Dietetics Association, 2004). The majority of registered dietitians work in the treatment and prevention of disease, often in hospitals, doctor's offices and clinics, or other health-care facilities. In addition, a large number of dietitians work in community and public health settings, academia and research. A growing number of registered dietitians work with food and nutrition industry and businesses, journalism, sports nutrition, corporate wellness programs, and other non-traditional work settings. According to the U.S. Bureau of Labor Statistics, dietitians held about 49,000 jobs in the year 2002 and employment of registered dietitians is expected to grow about as fast as the average for all occupations through the year 2012 because of increased emphasis on disease prevention, a growing and aging population, and public interest in nutrition (U.S. Bureau of Labor, 2004).

Dietetics Education

Dietetics is a collegiate career study similar to social work, nursing, physical therapy and pharmacy (Stark and Lattuca, 1997). In these professional studies, the major conveys a knowledge base of skills, attitudes, and behaviors needed for entry to the field.

Collegiate career education also concentrates on preparing students for ambiguous situations calling for informed, complex judgment.

Dietetics education is a dynamic and complex process that translates the science of nutrition into application and practice (Commission on Accreditation for Dietetics Education, 2004). Dietetics education programs provide opportunities for students to acquire the necessary knowledge, skills, judgment and competencies for dietetics practice. The Commission on Accreditation for Dietetics Education (CADE) is ADA's accrediting agency for education programs preparing students for careers as registered dietitians (American Dietetics Association, 2004). CADE is recognized by the Council on Higher Education Accreditation and the United States Department of Education as the accrediting agency for education programs that prepare dietetics professionals. CADE exists to serve the public by establishing and enforcing eligibility requirements and accreditation standards that ensure the quality and continued improvement of dietetics education programs (American Dietetics Association, 2004).

There are two required components of dietetics education: didactic education and supervised practice (Commission on Accreditation for Dietetics Education, 2004). Didactic education provides the foundation knowledge necessary to function as a professional and on which practitioner competencies are built (Commission on Accreditation for Dietetics Education, 2004). This foundation knowledge is obtained in the undergraduate degree in dietetics. Supervised practice provides the practitioner skills, judgment, and competencies essential to perform the specialized functions of a dietitian and is obtained in the hospital-based internship. The Commission on Accreditation for Dietetics Education requires a minimum of 900 supervised practice hours within the

dietetic internship. The general path of study to become a dietitian, then, is an undergraduate degree in dietetics followed by a hospital internship. An alternative to this path is the coordinated undergraduate program. There are 51 coordinated programs that synchronize didactic education with the supervised practice (CADE, 2005). This study will not include coordinated programs because of the difficulty in distinguishing the supervised practice component from the didactic component of the program.

Competency and Supervised Practice

Competency is having adequate abilities and qualities to function. The health care environment mandates that entry-level practitioners possess knowledge and problem-solving skills that are competent and high quality (Forker, 1996). Health care trends challenge dietetics educators as well to prepare competent professionals. In response, ADA developed competencies to address the changing roles of dietitians and to ensure students are well-prepared for practice (Bruening and Pfeiffer, 2002). Dietetic educators must explore innovative ways for students to achieve these competencies (Gates and Sandoval, 1998). Competencies are based upon both objectivist and constructivist criteria, including such skills as assessment, critical thinking, cooperative work, and effective communication skills. Competencies are ultimately designed to assure competent skills and clinical judgment. Indicators of competency used by dietetic internships include students' standardized test scores, grade point averages, attainment of course objectives, performance on registration exams, and job placement.

Technology in Dietetics Education

There is limited research available on the use of technology to enhance dietetics education. Those few studies have indicated that computer-aided instruction is an

efficient, convenient and effective method for promoting competency in health professionals, including dietetics students (Engel, Crandall, Basch, Zybert, and Wylie-Rosett, 1997; Raidl, Wood, Lehman, and Evers, 1995; Lyons, Miller, and Milton, 1998). Instructional technology has been used in many ways in dietetics education, including videotapes, correspondence, audiovisual conferencing, and online instruction. The use of instructional technology enhancements in dietetics education has been demonstrated to have many benefits. Strauss and Dahlheimer (1998) studied the effectiveness of incorporating multimedia technology into lectures on anatomical and physiological concepts using a pre-test/post-test format and cross-over design. Students in the enhanced lectures had higher post-test scores, indicating that enhanced lectures are effective in teaching difficult concepts. Turner, Evers, Wood, Lehman, and Peck (2000) studied the impact of computer-based simulations on the performance of dietetics interns in initial clinical rotations. Repeated-measures analysis of variance and linear regression were used to compare performance ratings between interns receiving computer-based simulations and those receiving the standard orientation. The study demonstrated that the interns who received computer-based simulation had a higher rate of skill development. Raidl, Wood, Lehman, and Evers (1995) studied the effects of a computer-assisted instruction program on learning clinical reasoning skills in undergraduate dietetics students. Four hundred-thirteen students from thirty dietetics programs participated and were divided into two groups – one given a standard drill-and-practice and the other group given a new computer-assisted tutorial. The students given the computer-assisted tutorial scored higher on a simulation test, demonstrating enhanced clinical reasoning skills. Finally, Litchfield, Oakland, and Anderson (2002) examined the use of online

technology to develop competency in dietetics education. Seventy-five dietetic interns from three different programs were divided into those with and without online instruction, to which pre- and post- test key feature exams were administered and registration exam scores were compared. The authors found that those dietetic interns with online instruction had greater improvement on key-feature exams in two of three content areas. There was no statistical difference in performance on the registration exam between the two groups. In summary, a variety of instructional technologies are being utilized in dietetics education with success, having been shown to improve student outcomes including post-test scores, rate of skill development, clinical reasoning skills, and attainment of clinical competencies.

Distance Learning, Dietetic Internships

Within the supervised practice component of dietetics education, there is a new type of program – the distance learning dietetic internship. Traditional internships and distance learning internships are both accredited under the standards of the Commission on Accreditation for Dietetics Education, require dietetic interns to participate in a computerized matching process, and include a minimum of 900 practice hours. The purpose of distance learning and traditional dietetic internships is to provide supervised practice to interns so they achieve the skills, clinical judgment, and competencies needed for entry-level dietetic practice. The distance learning dietetic internships, however, differs from traditional dietetic internships in two ways. The first difference is in proximity of dietetic interns to the accredited institution. Traditional dietetic interns are placed by the internship director into pre-approved practice sites, either within the accredited institution itself, as in a hospital-based internship, or within proximity of the

accredited institution and internship director, as in a university-based internship. Distance learning-dietetic interns, on the other hand, obtain their own practice sites and are separated from the accredited institution and internship director, often by hundreds of miles. The distance learning internship directors communicate via email with the intern and his or her preceptor throughout the program and physically visit the intern and preceptor on-site one time during the program. The distance learning internship directors rely heavily on the preceptor's evaluation of the intern's competence. The second difference in distance learning dietetic internships from traditional dietetic internships concerns the learning experiences. In traditional dietetic internship, the learning experiences are planned and standardized by the internship director in order for interns to obtain all competencies adequately. For example, all interns in a traditional internship are required to attend an interventional study evaluating a patient's ability to swallow in order to satisfy the competency on "being familiar with diagnostic procedures and adjusting diets accordingly." In this way, little variability exists between interns in the learning experiences obtained at a traditional internship. In the distance learning internships, interns are given the list of competencies prescribed by CADE and it is their responsibility to find the practice sites and create their own learning experiences to obtain those competencies. To continue the example, a distance intern may not have swallow studies available at the site he or she chose to intern so he or she reads about the procedure rather than actually viewing the procedure. In this way, the learning experiences are highly individualized, exhibit great variability, and present more chance of an intern not adequately obtaining a competency. Currently, there are thirteen distance

learning dietetic internships approved by CADE, the first originating in 1995. There is no collective data available evaluating the effectiveness of distance learning internships.

Definition of Distance Learning

Distance education in the most general sense of the term is instruction delivered over a distance to one or more individuals located in one or more venues (Phipps & Merisotis, 1999). The newest form of distance education is web-based education, which can be defined as “an approach to teaching and learning that utilizes Internet technologies to communicate and collaborate in an educational context. This includes technology that supplements traditional classroom training with web-based components and learning environments where the educational process is experienced online” (Blackboard, 2002, p. 6). Web-based teaching and learning are changing the face of higher education and rapidly becoming commonplace in colleges. Web-based courses are being developed at a hastened pace, and faculty are working feverishly to develop the skills needed to instruct in an on-line environment. Distance education appears to be a phenomenon that is here to stay. Ronald Phipps and Jamie Merisotis of the Institute for Higher Education Policy note in their 1999 report on distance education, “Technology is having, and will continue to have, a profound impact on colleges and universities in America and around the globe. Distance learning, which was once a poor and often unwelcome stepchild within the academic community, is becoming increasingly more visible as a part of the higher education family” (Phipps & Merisotis, 1999, p.12). Terminology varies, but for the purpose of this study, the terms distance education, distance learning, and the newest form, online education, will be used interchangeably. Within this study, distance learning dietetic internship does not refer to web-based instructors; rather, distance learning

dietetic internship refers to clinical experiences completed at a distance from the internship director and accredited institution.

History of Distance Learning

Distance learning is not a new concept. The earliest form of an extended classroom, or distance education, was paper-based correspondence. As early as 1840, Isaac Pittman was teaching shorthand in England by correspondence (Curzon, 1977). Through the early and middle 1900's, correspondence courses grew (Curzon, 1977). As technology changed, so did the methods of transferring information. Correspondence courses were replaced by courses using radio and television. In 1973, Moore introduced the theory of independent study, suggesting¹⁹ that successful teaching can take place even though teacher and learner are physically separated during the learning process (Galusha, 1997). By the 1980's, laboratory-based independent study programs, cable-television courses, mailed videos with course materials, and teleconferencing were the newer mechanisms being utilized (Curzon, 1977). These forms of distance education were just the beginning of what we are experiencing today. The advent of the Internet and World Wide Web has now brought us to the new frontier of online education.

Description of Distance Learning

At its most basic level, distance education takes place when a teacher and student(s) are separated by physical distance and technology is used to bridge the instructional gap (Reinert, & Fryback, 1997). There is a wide range of technological options available in distance education. The options fall into four categories: voice, video, data, and print (Willis, 2003). Voice technology is an instructional audio tool that includes telephone, audioconferencing, tapes, and radio. Video technology tools include

slides, videotapes, films, and images combined with audioconferencing. Data technology utilizes computers to send and receive information electronically. Computer applications are varied and include the following: (a) computer-assisted instruction (CAI), which uses the computer as a teaching machine; (b) computer-managed instruction (CMI), which uses the computer to organize instruction and track students; and (c) computer-mediated education (CME), involving applications that facilitate delivery of instruction and communication such as electronic mail and fax (Willis, 2003). Print technology is generally the foundation of courses and includes textbooks, syllabi, and study guides.

Theory and Distance Learning

Theory is a set of hypotheses logically related to one another for explaining and predicting occurrences (Simonson, Schlosser & Hanson, 2002). Theory is important to the study of distance education because it guides practice and research. Holmberg (1995), however, suggests that distance education has been characterized by a trial and error approach, with little consideration given to a theoretical basis. The earliest theories of distance education were based on correspondence study and were derived from European models of education. All of these classical theories emphasize the notion that distance education is a fundamentally different form of education. These traditional theories fall into three categories - independence and autonomy, interaction and communication, and industrialization of teaching. The first theories of distant learning, independence and autonomy, are based on works from Wedemeyer (Keegan, 1986) and Moore (1994) who emphasize learner independence and the adoption of technology as a way of implementing independence. The theories also emphasize increased learner responsibility for the learning experiences. The second category of distance learning

theory is interaction and conversation. Holmberg's (1989) theory of distance learning, which he calls a "guided didactic conversation," falls into this category. In his theory, "distance teaching supports student motivation, promotes learning pleasure and makes study relevant to the individual learner and his/her needs, creates feelings of rapport between the learner and the distance education institution, facilitates access to course content, engages the learner in activities, discussions and decisions and generally catering for helpful real and simulated communication to and from the learner" (Holmberg, 1989, p. 123). Peters' (1988) Theory of Industrialization of Teaching proposed that distance education could be analyzed by comparison with the industrial production of goods. He concluded that for distance teaching to be effective, the principle of division of labor is a critical element. While these classical theories attempted to explain early distance learning, they failed to keep abreast with the dynamic nature of distance learning and did not incorporate principles of American education.

Equivalency Theory

Advances in telecommunications, which have allowed the creation of a virtual classroom by electronically linking the instructor and students, have significantly altered the practice of distance education in the United States. As a result, a new theory on distance learning, called the Equivalency Theory, has emerged. In addition to reflecting advances in technology, the new theory is also based on the U.S. system of education, which emphasizes characteristics such as the use of regular classroom teachers to facilitate the teaching and learning process, local control, small class size, rapport between teacher and learner, and personalized learning (Simonson, Schlosser & Hanson, 2002). In contrast to the classical theories, the Equivalency Theory argues that distance

education is a variation of education, not a distinct field of education. This theory is based on the works of Keegan (1995) and Simonson (1995) and includes the following key elements: equivalency, learning experiences, appropriate application, students, and outcomes. Central to this theoretical approach is the concept of equivalency. Education at a distance should be built on the concept of equivalent learning experiences. The second key element of this theory is the concept of learning experience. Distance educators are responsible for designing learning events that are individualized, appropriate, and provide equal value for learners. The goal of instructional planning then is to make the sum of experiences for each learner equivalent. The next key concept is the idea of appropriate application. This concept implies that learning experiences, suitable to the needs of the individual learner and the learning situation, should be available and that the availability of learning experiences should be proper and timely. Students, the fourth key concept of the Equivalency Theory, are the ones involved in the formal learning activities and they should be defined by their enrollment in a course or program, not by their location. The final key concept of this theory is outcomes. Outcomes of learning experiences are those changes that occur because of the students' participation in the education. The theory details two categories of outcomes: instructor-determined and learner-determined. Instructor-determined outcomes are generally the stated course goals and objectives and reflect what the learner should be able to accomplish after the learning experience that they could not do before the learning experience. Learner-determined outcomes are less specific and relate to what the learner hopes to accomplish as a result of participation in the education event. Learner-determined outcomes include enrollment in a follow-up course or application of newly

learned skills to a job. The Equivalency Theory argues that in order for distance learning to be accepted, instructor- and learner-determined outcomes should be equivalent. In sum, the Equivalency Theory advocates equivalent learning experiences and student outcomes in distance education.

The Equivalency Theory was chosen as the conceptual framework for this study for two reasons. First, the Equivalency Theory can serve as a standard of reference for the study. The purpose of the study was to compare outcomes in distance learning dietetic internships to traditional dietetic internships. The theory supports equivalency in student outcomes and in this way, can serve as a standard of reference. The second reason the Equivalency Theory was chosen as the conceptual framework is its similarity to the goals of dietetics education. The Commission for Dietetics Education advocates for dietetic internships to provide equivalent learning experiences in all practice sites. Equivalent learning experiences, in turn, facilitate achievement of competency for entry-level practitioners. Because of the standard it can provide and its similarity to dietetics education goals, the Equivalency Theory was chosen as the framework for this study.

Prevalence of Distance Learning in Higher Education

The National Center for Education Statistics surveyed higher education institutions, using the Postsecondary Education Quick Information System (PEQIS), on distance education courses offered for the twelve month, 2000-2001 academic year (National Center for Education Statistics, 2003). Distance education was defined by the researchers as “education or training courses delivered to remote (off-campus) locations via audio, video, or computer technologies” (National Center for Education Statistics, 1999, p. 3). The survey found 56% of higher education institutions offered distance

education courses. Public institutions were more likely to offer distance education courses than were private institutions, with 90% of public 2-year and 89% of public 4-year institutions as compared to 15% of private 2-year and 40% of private 4-year institutions (National Center for Education Statistics, 2003). An estimated 118,100 different college-level, credit-granting distance education courses were offered, up from 54,470 different courses offered in 1997-1998. (National Center for Education Statistics, 2003). The number of students enrolled in distance-education courses rose from approximately 1,344,000 in 1997-1998 to approximately 3,077,000 in 2000-2001. The distribution of distance education course enrollments was consistent with distribution of institutions offering distance learning, with 48% of the total enrollments at public 2-year institutions and 31% of the total enrollments at public 4-year institutions (National Center for Education Statistics, 2003).

Prevalence of Distance Learning in Health-Care Education

The prevalence of distance education in health-care programs is variable, with no prevalence rate for programs such as medicine and dentistry currently available (Mattheos et al, 2001). A national survey on distance learning in social work education found that 16% of respondents reported the use of distance learning in their social work program (Siegel et al, 1998). This represented a 5% growth in distance education over a two-year period. Twenty-two percent of respondents who were not currently using distance learning in their social work programs indicated that plans were in progress to develop such a system. The largest percentage of users (22%) was public institutions, with a student body of more than 20,000. In a study of distance learning in nursing education, Reinert & Fryback (1997) surveyed all accredited nursing programs in the

United States. There was an 80% return rate for a total of 353 schools. Thirty-eight percent of the schools reported offering some form of distance learning and 19% of schools without distance learning programs reported that they were planning future offerings. Distance learning offerings varied from one or two courses to offering entire degrees online. A report by The American Dietetics Association (ADA) found that 93 dietetics education programs, or 33%, offer some coursework via distance education and that thirteen programs, or 5%, have a distance education option for supervised practice experience (CADE, 2005). According to ADA (2003, p. 10), “The Association is sensitive to the needs of nontraditional students and encourages programs to employ distance learning.” The introduction of distance learning in health-care programs has been delayed but it appears it is becoming an important alternative to traditional methods of education (Mattheos, Schitteck, Attstrom, Lyon, 2001).

Clinical Judgment

One reason distance learning may not be as prevalent in health-care education is the issue of clinical judgment. Clinical judgment refers to the ability to apply knowledge into expert judgment and action. Clinical judgment is becoming a benchmark of professional competence and student performance in health care professionals (DiVito-Thomas, 2005). Clinical judgment has two components – explicit and tacit knowledge (Epstein, 1999). Explicit knowledge refers to facts, theories, concepts, and principles. Explicit knowledge is usually acquired from books, electronic media, or instructors. This component of clinical judgment can be quantified, modeled, and readily communicated. Tacit knowledge on the other hand is more ambiguous and difficult to define. Tacit knowledge includes values, experience, emotions, bias, and personal knowledge. While

explicit knowledge is taught formally, tacit knowledge is usually learned in less direct and explicit ways such as during observation and practice.

The development of both components of clinical judgment is essential to the preparation of the next generation of professionals. Integrated clinical experiences are recognized as the ultimate opportunity to put theory into practice and develop clinical judgment (Malloy & Denatale, 2001). In fact, the apprenticeship, mentorship, or internship is an universal and critical component of all health care education. The interaction and collaboration between mentor and student allows for the transfer of expert judgment. Methods such as case studies and processing between the mentor and students facilitate the acquisition of judgment.

What is the relationship between distance education and clinical judgment? Distance education is enhancing and even replacing traditional education venues. There is continuing debate regarding which academic disciplines are suitable for distance learning. Distance learning is well accepted in many disciplines such as liberal arts, humanities, social and political sciences, business, and mathematics (Phipps and Merisotis, 1999). It seems special characteristics such as the development of clinical judgment has delayed the introduction of distance learning to health-care education. One strength of distance education is to deliver a large amount of information; in regards to clinical judgment, this actually may be a weakness. As Klas (2004) argued “what we have come to recognize as the information revolution is just another way to deliver information. Too often, we confuse information with knowledge and knowledge with judgment.” The challenge to distance education, then, is to find ways to ensure that clinical judgment can be transferred to health care students.

Clinical judgment is a science and an art. The more explicit component is often learned from books while the more tacit component of clinical judgment is learned from observation and experience. It is the apprenticeship in health care education that provides the clinical experiences to develop both components of clinical judgment. While technology is providing more information, this may not translate into clinical judgment. Distance learning needs to find ways in which to provide experiences and interaction that facilitate the development of clinical judgment.

Benefits of Distance Learning

Distance learning, fueled by the World Wide Web, has opened a whole new venue for teaching and learning. Distance learning is enhancing and even replacing many traditional classroom settings. There are many benefits of distance learning. The most obvious benefit of distance learning for both students and faculty may be convenience (Hofmann, 2002; Barron, 1999). Distance learning provides convenience, flexibility, and the ability to “learn anytime, anywhere.” This benefit was reflected in a survey on attitudes toward distance learning where faculty cited convenience as the primary benefit of distance learning – “being able to teach on a schedule and from a location of their own choosing” (National Education Association, 2000, p.9).

Another benefit of distance learning is accessibility. Distance education has the potential to provide access to higher education for students who previously may not have been able to participate due to geography, time, job and family responsibilities, or finances (Boettcher, 1996). Additionally, the National Education Association ‘s (2000) survey found similar results, with faculty citing the ability to reach more students as an added benefit. This is also a benefit for the institutions of higher education, with distance

learning opening new markets. After an extensive review of the empirical findings in educational and training technology, Fletcher (2001) found web-based instruction reduces the cost of instruction by about one-third.

Another potential benefit of distance learning is enhanced learning. Olson and Wisner (2002) argue that unique features of distance education such as multimedia and multi-sensory formats, self-pacing, active learning, and tailored feedback can enhance learning. For example, some students learn from visual stimuli, such as video, and others learn best by listening or interacting with a computer program. If distance learning courses are well designed, they will likely offer learners a wide range of choices, thereby providing the optimal combinations of interaction and media.

A final potential benefit of distance learning pertains to communication. Communication in distance learning can be more equitable and collaborative. Distance learning gives students equal opportunity to participate. Reports have found that students feel more comfortable asking questions electronically than in face-to-face situations with an instructor or peers (Gale, 2000). The communication is also more collaborative, with chat rooms and electronic mail encouraging students to communicate with their instructor and each other. In summary, distance learning offers many advantages for students and faculty.

Barriers in Distance Learning

Distance learning gives learners and faculty the greatest possible control over the time, place, and pace of education. However, there are problems and barriers associated with distance education. These problems and barriers encountered by distant learning students contribute to higher dropout rates, as measured by course completion rates,

among distance learning students when compared to traditional students (Sweet, 1986). Similarly, in a study of 231 students in a college health education course, Diaz (2002) found that online students were twice as likely to drop a course, a 13.5% drop rate for online students versus a 7.2% drop rate for traditional students.

One barrier for the distance student that may contribute to higher dropout rates may be the perceived lack of feedback. Because there is not daily or weekly face-to-face contact with teachers, students may have trouble with self-evaluation, motivation, and study pacing. The isolation that can result from the distance learning process can complicate the learning process for students and lead to higher drop out rates.

Other barriers for distance students that may contribute to higher dropout rates are lack of support and services. Students may be physically separated from the institution and lack support such as technical assistance, tutors, and advisors. Further, students may experience technical issues including incompatible software, unavailable servers, and even lack of technical skills. All of these factors present barriers to learning and may contribute to student drop out. Specific to this study, interns enrolled in distance learning dietetic internships may also experience barriers to learning such as lack of feedback from the internship director or lack of technical skills to obtain reference materials electronically.

Faculty barriers in distance learning include lack of training in course development and technology, time required for course development, lack of institutional support for distance learning in general, perceived threat to tenure, and suspicions about the academic quality of on-line learning (Galusha, 1997). In a study of distance learning in social work education, Siegel et al (1998) found the barriers to distance learning were:

1) philosophic barriers concerning the quality of the classroom and lack of “face-to-face” interactions; and 2) lack of recognition by administrators of the technical support necessary to assist the instructor. In a study of distance learning in nursing education, Reinert and Fryback (1997) interviewed instructors experienced with distance learning to obtain information on their experiences. The authors found barriers in distance learning included comfort with technology, faculty contact and socialization, and students’ need for structure. They also found the facilitators to distance learning included technical support, workload adjustment to prepare for distance learning, and organized but flexible teaching methods. Although no studies have been done on barriers to distance learning in dietetics, informal conversations with dietetics educators have supported the philosophic concerns about the quality of the education.

Distance Learning Students

Moving courses from the traditional classroom to a distance format has the potential to shift human interaction, communication, learning paradigms, and assessment techniques. Distance education places the onus on students to initiate the learning process. Students must be responsible to read the material, explore the links, participate in the discussion, ask questions, learn the objectives, and set aside the time to learn. Therefore, the student must be self-disciplined, motivated, responsible, and active in the learning process.

Online students are becoming an entirely new subpopulation of higher education learners. Many distance education students are older. Adult learners tend to be practical problem solvers. Their life experiences make them autonomous, self-directed, and goal- and relevancy-oriented; they need to know the rationale for what they are learning

(Howell, Williams, & Lindsay, 2003). Distance learners generally have jobs and families. As such, they have many conflicting responsibilities and need the flexibility distance learning allow. Distance learners generally have completed more college credit hours, more degree programs, and have a higher all-college grade-point average than traditional students (Diaz, 2002). For example, Diaz (2002) found that online students received twice as many A's and half as many D's and F's in their completed coursework as compared to students taking traditional coursework. Still, researchers have found that these students feel insecure about their ability to succeed in distance learning, possibly because these students are less traditional learners (Dortch, 2003; Diaz, 2002; Knapper, 1988). Distant students have a variety of reasons for taking courses, from taking courses to broaden their education, to obtaining credentials to qualify for a better job. They are motivated by professional advancement, external expectations, the need to better serve others, social relationships, stimulation, and pure interest in the subject (Howell, Williams, & Lindsay, 2003). Knowing the characteristics and demographics of the distance learners helps instructors and institutions better meet the students' needs and improve their chances of success.

Faculty Attitude and Satisfaction

The National Education Association recently conducted a survey of members in higher education on attitudes toward distance education (National Education Association, 2000). Members were contacted by phone, with a total response of 532 members. The results of the survey indicated that, overall, faculty members were more positive and less divided over distance learning than is commonly believed. Attitudes toward distance education were more favorable among those who had taught distance learning courses,

72% of whom were positive, compared to 51% of respondents who had not taught distance learning classes. Several common concerns emerged from the survey. First, faculty feel it is crucial to have reliable technology, support, and mentoring. Next, faculty routinely report that developing and teaching distance learning courses is more time intensive than traditional courses – thus raising doubts about whether distance learning courses are more cost-effective. Finally, while distance learning affords greater interaction, many faculty are concerned that the interaction lacks a human face. In summary, the results of the survey indicated that the faculty have some concerns but are generally optimistic about distance learning (National Education Association, 2000).

The 1999 National Study of Postsecondary Faculty (NSOPF:99) was sponsored by the U.S. Department of Education's National Center for Education Statistics (National Center for Education Statistics, 1999). The Gallup Organization conducted the third cycle of NSOPF, which included 960 degree-granting postsecondary institutions and an initial sample of 28,704 faculty and instructional staff from these institutions. NSOPF:99 was designed to provide a national profile of faculty, including their professional backgrounds, responsibilities, workloads, salaries, benefits, and attitudes. The fall 1998 study found that those faculty who participated in distance education appeared to interact with students, or be available to them, more than their non-distance counterparts. Full-time faculty teaching distance classes held slightly more office hours per week than their peers who did not teach distance education classes or non-face-to-face classes. And because they taught more for-credit classes, while average class size was comparable, faculty teaching distance classes had more student contact hours per week than those not

teaching such classes. Furthermore, full-time faculty who taught distance classes were more likely than other faculty to communicate with their students via e-mail.

A major factor in the success of distance learning is a strong faculty commitment. Although similar to other aspects of faculty work, a growing body of research and experience has demonstrated that a strong faculty commitment is directly related to levels of personal and professional satisfaction (Thomas, 2002). According to Thomas (2002, p 6), “faculty satisfaction results when those teaching in online programs receive the personal rewards, institutional support and professional recognition they need to feel positive about what they do and to do their jobs well.”

Student Outcomes and Satisfaction

When comparing student outcomes in distance learning courses to traditional courses, a “no significant difference” trend has emerged. Thomas Russell’s (1999) compendium of more than 355 comparative research studies suggests that students in technology-based courses learn as well as their on-campus, face-to-face counterparts. Phipps and Merisotis (1999), however, contend that there are shortcomings to the original research on the effectiveness of distance learning. Their analysis found the following shortcomings: 1) much of the research does not control for extraneous variables and therefore cannot show cause and effect; 2) most of the studies do not use randomly selected subjects; 3) the validity and reliability of the instruments used to measure student outcomes and attitudes are questionable; and 4) many studies do not adequately control for the feelings and attitudes of the students and faculty. The “no significant difference” compendium was based on research prior to 1999 and did not include distance learning classes that utilized internet technology.

Newer research studies have also concluded that cognitive factors such as learning, performance, and achievement in online classes are equivalent to those observed in traditional classes. In a more recent meta-analysis, Allen et al (2004) summarized the quantitative literature comparing the performance of students in distance education versus traditional classes. The authors concluded that the average effect (average $r = .048$, $k = 39$, $N = 71,731$) demonstrated that distance learning students slightly outperformed traditional students on exams and course grades. The examination of several moderating features such as channel of delivery and course content fail to produce a homogeneous solution. Therefore, the authors concluded that the results demonstrated no clear decline in educational effectiveness when using distance education technology. Gagne & Shepherd (2001) compared the performance of students in a distance education version to the performance of students in the on-campus version of an introductory accounting graduate class. The study found no difference between student performance as measured by multiple choice and complex problem solving exam format. Carr (2000) found that undergraduates enrolled in introductory psychology performed better in distance education courses. Students participating in the web-based version of a psychology course consistently scored five percentage points higher on the final exam and general knowledge psychology test than those in the lecture course. The author attributed the results to the structure of the courses – lecture course students tended to study the night before the exam while web-based students have to space out studying in order to complete the weekly assignments. However, the two groups were not comparable since the lecture course students did not receive weekly assignments. Schoech (2000) reported that the grades and performance of students enrolled in a

graduate social work course taught in a distance format were consistent with previous outcomes in traditional courses of similar content. The author concluded that the Internet provides an environment rich enough to teach at a level of quality consistent with a face-to-face classroom. The newer research comparing student outcomes in distance learning to traditional classes seem to support the earlier research that concluded “no significant difference” in student outcomes.

Unlike student outcomes, the studies on perceptions and satisfaction toward distance learning have not shown the same consistency. A recent meta-analysis compared distance learning and traditional courses on the basis of the level of satisfaction students experienced (Allen, Bourhis, Mabry et al, 2002). The investigators searched ERIC, SocioInfo, Psychlit, and ComIndex for sources on distance education and satisfaction. The combined sample size was 4702 student surveys. The results indicated little difference in satisfaction levels, with only a slightly higher level of satisfaction with the traditional education format than the distance learning format ($r = .031, k= 25$). The authors concluded that distance education does not diminish the level of student satisfaction when compared to traditional face-to-face methods of instruction. Buckley (2003), however, found less satisfaction with Web-based courses. Student learning outcomes and satisfaction were compared in nursing students taking a traditional nutrition course to nursing students taking a web-based nutrition course. Fifty-eight students participated in the study. No differences were found in student learning outcomes. The web-based course, however, received significantly lower student satisfaction scores ($F=18.53; p=.000$). From students’ qualitative comments, the author concluded that the less direct form of communication in the Web-based course

contributed to a sense of isolation and interfered with the desired level of closeness with the instructor. While Carr (2000) found that students enrolled in an introductory psychology course performed better in the distance learning version, the students were generally less happy with the course. In a student-satisfaction survey, the distance learning students consistently reported less satisfaction than students in the lecture version. The author surmised that one of the reasons for less satisfaction could be due to the distance learning version requiring a greater time commitment to complete weekly assignments. Another possible reason for less student satisfaction, the author postulated, may be the lack of instructor contact. Rivera and Rice (2002) compared student performance and student satisfaction in a web-based Management Information Systems course to the traditional course. One-hundred thirty-four students participated. Exam scores were used to assess student performance and questionnaires were used to assess student satisfaction. While there was no significant difference between exam scores, students enrolled in the web-based section were less satisfied with the course than students enrolled in the traditional section. This was confirmed through the use of a Chi square test of independence, which showed the results as independent at the 0.079 level of significance. Additionally, only 66% of students in the web-based version said they would sign-up for a similar course in the future as compared to 92% of students in the traditional section. In contrast, Petracchi (2000) reported multisite data addressing the question of how students enrolled in distance learning courses perceive their learning experiences. One hundred forty-two students responded to a survey regarding their experiences with the technology used in their course, their learning environment, the instructor's teaching skills, and perceived resource availability. Respondents were

pleased with their learning experience, with 100% of students indicating they would enroll in a distance learning course again. Schoech's (2000) study on students enrolled in a graduate social work course taught in a distance format found that student satisfaction was similar to traditional courses of similar content, especially when discussion forum and chat rooms were utilized. The results from the studies on student satisfaction are less consistent in their results than the studies comparing student outcomes in distant learning to traditional methods. These studies do provide rich data, however, on areas of importance not studied by purely objectivist outcome studies.

Summary

Distance education is instruction delivered over a distance to one or more individuals. Distance learning in higher education dates back to at least the middle of the 1800s and has taken many forms, including correspondence courses and cable-cast. It is the Internet explosion that has led to the rapid increase in the newest form of distance learning, web-based courses and programs. Approximately one-half of higher education institutions offer distance learning courses. The use of distance learning in allied health education programs is slightly less than its overall use, ranging from 16% to 38%. The primary benefits of distance learning include convenience and access. Research studies on equivalency of student outcomes have been mixed. No consistent differences in student outcomes or satisfaction have been demonstrated, but the study designs are haphazard – often evaluating constructivist teaching methods with objectivist outcomes. Technology enhancements are being utilized in dietetics education with generally positive results. In fact, a new type of dietetic internship has been developed that is offered at a distance. No research is available, however, on the effectiveness of this new

dietetics education program. It is hoped that this study will add to the existing body of knowledge on distance learning and dietetics education by examining student outcomes in the distance learning, dietetic internship.

Chapter Three

Methodology

The focus of this study was on the internship component of dietetics education. Specifically, the purpose of this study was to compare student outcomes in the newest type of dietetic internship, delivered via distance learning, to student outcomes in traditional dietetic internships. The study employed mixed methods. Tashakkori and Teddlie (2003, p. 711) define mixed methods “as a design in which mixing of QUAL and QUAN approaches occurs.” The purpose and rationale for conducting a mixed-methods design in this study was complementary, or “to seek elaboration, enhancement, illustration, clarification of the results from one method with the results from the other method” (Greene, Caracelli, & Graham, 1989, p. 259). Specifically, a sequential explanatory design was used. As noted by Tashakkori and Teddlie (2003, p. 223), “this design is characterized by collection and analysis of quantitative data followed by the collection and analysis of qualitative data.” Triangulation was one strategy used during this study to contribute to the richness of the findings (Tashakkori & Teddlie, 2003). Triangulation, which is the use of different methods to research the same issue, can assist in enriching findings by providing different perspectives (Crane, 2004). In this study, preparedness for practice was studied by both survey and interview. The following research questions were addressed: a) Does the registration exam pass rate differ between distance learning and traditional dietetic internships? b) Do program graduates of distance learning and traditional dietetic internships differ in their assessment of their

preparation for practice? c) Do supervisors of graduates of distance learning and traditional dietetic internships differ in their assessment of graduates' preparation for practice? 4) How do graduates, their supervisors, and program directors of distance learning and traditional dietetic internships evaluate interns' experience and preparation for practice?

The study was divided into three phases as noted in Table I. Phase 1 of the study was the recruitment of dietetic internship directors to solicit program pass rate and information. Phase 2 of the study, or the quantitative phase, was the survey of graduates and their supervisors. Phase 3, or the qualitative phase, was the interviews with graduates, their supervisors, and program directors of traditional and distance learning dietetic internships.

Table 1.
Study Phases

PHASE	QUANTITATIVE vs QUALITATIVE	PARTICIPANTS	INSTRUMENT	PROCEDURE
Phase 1: RD Pass Rates & Program Information	Quantitative	Dietetic Internship Directors	Review – “Program information & registration pass rate”	All 13 DL directors & matched traditional internship directors
Phase 2: Level of Perceived Preparation	Quantitative	Graduates of traditional & distance learning internships and their supervisors	Surveys – “Graduate/ Supervisor Survey on Preparedness for Practice”	Directors from Phase 1 were mailed surveys for distribution to recent graduates & their supervisors
Phase 3: Perceived Preparation & Curricular Experience	Qualitative	Graduates, Employers & Directors of both types of internships	Interview	Those indicating willingness to participate on survey were contacted by phone

Quantitative Research

Design. The quantitative portion of the research utilized a non-experimental, survey design. According to Ary et al. (2002), surveys permit the researcher to summarize the characteristics of different groups or to measure their attitudes and opinions toward some issue. Specifically, a cross-sectional survey, one in which the information is collected at one point in time, was administered (Creswell, 1998). Weaknesses of survey research designs include a lack of control, randomization, and manipulation (Gay & Airasian, 2000). Mailed surveys were the data-gathering technique utilized in this survey design. Email surveys were not used in this study in order to protect confidentiality of participants.

Procedure. For the quantitative portion of this pragmatic study, the positivist paradigm was employed (Tashakkori & Teddlie, 2003). In this paradigm, research starts with theories and uses deductive logic to move to predictions of outcomes. Objective data collection and inquiry are goals of this paradigm (Tashakkori & Teddlie, 2003). This was the theoretical framework that was utilized to obtain the registration exam pass rates and levels of preparation for practice.

A non-experimental design was used to gather data on the registration exam pass rates and level of preparation. In Phase 1 of the study, internship directors were recruited to participate in the study. Internship directors were contacted by phone to obtain program information, using the *Program Information and Registration Exam Pass Rate Review* (Appendix I), and willingness to participate in the study. All distance dietetic internship directors were asked to participate. Traditional internships were then matched to distance learning programs based on size, geography, institution type, and emphasis

area and the directors were asked to participate. In Phase 2 of the study, the participating programs' graduates and the graduates' supervisors of the internship programs were surveyed on the graduates' level of preparation for practice. Because of confidentiality issues, internship directors were asked to mail the surveys, *Graduate Survey on Preparedness for Practice* (Appendix II), to their graduates. Graduates were also mailed the survey, *Supervisor Survey on Preparedness for Practice* (Appendix III), to be given to their first supervisor after graduation. The researcher coded the surveys and the internship directors were asked to record the name of the participants with their corresponding code number. I provided preaddressed envelopes with prepaid postage. All surveys were mailed back to me. I monitored responses by code number and then asked the program directors to send follow-up surveys to non-responders.

Instruments. The surveys, *Graduate Survey on Preparedness for Practice*, and *Supervisor Survey on Preparedness for Practice* were used to collect data for the quantitative portion of the study and are included in Appendices A - C. Currently, there is no standardized tool available to gather data on graduates' and their supervisors' perception of interns' level of preparation for practice. However, it is common for dietetic internships to gather these data to assess program outcomes. As such, I reviewed current surveys from dietetic internships and developed surveys for use in this study. The surveys address the construct of preparation for practice in dietetics by asking questions reflecting key elements of preparedness in dietetics. I conducted a pilot test consisting of two graduates, their supervisors, and two program directors with the developed survey to assess for face validity and revised as recommended.

Participants. The participants of this study were the directors of dietetic internships, graduates of dietetic internships, and supervisors of the dietetic internship graduates. In Phase 1 of the study, the dietetic internship directors were contacted by phone. Because there are only thirteen distance learning dietetic internships, all directors of the distance learning internships were asked to participate. Therefore, the directors who chose to participate are the population sample for the phenomenon under study. I used homogeneous case sampling to select the traditional dietetic internship directors to be in the study. The matched traditional dietetic internship directors were then asked to participate.

Table II details participation by programs. A total of 13 distance learning dietetic internship programs and 15 traditional dietetic internship programs were asked to participate in the study. Of the 26 program directors contacted: five distance learning programs and seven traditional programs agreed and participated in the study; one distance learning program director refused to participate; four distance learning program directors and three traditional program director did not return calls or emails; one distance learning program did not meet study criteria; and two distance learning programs and five traditional programs agreed to participate but no surveys were received from their program constituents. This represents a 46% participation rate. The traditional programs were matched to the distance learner programs based on size, emphasis area, academic affiliation, and length of the program. The programs were not matched by age due to the newness of the distance-learning programs. In fact, the average age of the traditional programs was 18 years old and the average age of the distance-learning programs was 5 years old.

Table 2.
Participation by Programs

Participation Status	Distance Programs	Traditional Programs	Total
Agreed & Participated	5	7	12
Refused to Participate	1	0	1
Did Not Return Calls/Emails	4	3	5
Did Not Meet Study Criteria	1	0	1
Agreed to Participate but No Surveys Received	2	5	7
Total	13	15	26

Phase 2 of the study consisted of surveys with graduates and their supervisors. This phase of the study employed purposive sampling. Purposive sampling is “sampling in which the researcher uses some criterion or purpose to replace the principle of canceled random errors” (Tashiorkkori & Teddlie, 2003, p. 279). Purposive sampling was used to provide maximum insight and understanding by selecting cases that best illuminate the question under study (Tashiorkkori & Teddlie, 2003). The dietetic internship directors from Phase 1 were asked to mail the *Graduate Survey on Preparedness for Practice* (Appendix II) and the *Supervisor Survey on Preparedness for Practice* (Appendix III), to all their graduates from the past three years. Due to confidentiality issues, graduates were asked to give their first supervisor after graduation the *Supervisor Survey on Preparedness for Practice*. This again represented a

convenience sampling method. Only graduates and supervisors from the past three years were included because of the relative newness of the distance learning dietetic internships.

Three hundred forty-five total surveys were sent to program directors for distribution to graduates. A total of 127 surveys were returned. This represents a 37% response rate. Of the 127 completed surveys received: 70 were from distance programs and 57 were from the traditional programs. Of the 70 surveys from the distance programs, 44 were from distance graduates and 26 were supervisors of distance graduates. Of the 57 surveys from the traditional programs, 37 were from traditional graduates and 20 were supervisors of traditional graduates. Figure I is a graphic presentation of the survey participation.

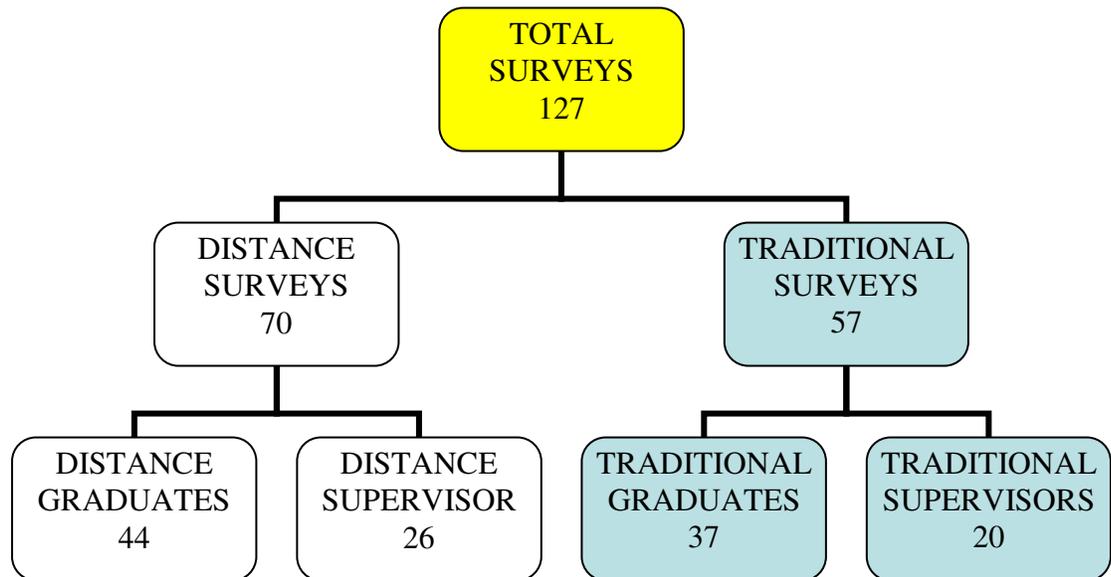


Figure 1.
Survey Participation

There is no information available on the non-responders. Communication with program directors, graduates and supervisors suggest several potential reasons for non-response. First, many responders, especially distance-learners, indicated a preference for electronic surveys and communication. Despite piloting the survey and interview questions among multiple individuals, this preference was only brought to the researcher's attention after the study had already begun. Another potential reason for program directors not participating is that the study took place during intern selection, a very busy time for program directors. Though the survey period was extended, this still may have had a negative impact on the willingness to participate. Another potential reason for lack of response is the circuitous study design. Surveys were sent to program directors who mailed them to graduates, who in turn gave surveys to their employers. There were many steps where a breakdown in the process could occur by mistake or by choice – for example, a graduate not wanting to give a survey to his or her supervisor. A final potential reason for non-response is over-surveying. It is common for graduates and their supervisors to receive surveys from their internship program in an effort to measure program outcomes. The researcher offered to share the program-specific results so these results could be used in lieu of an additional program survey.

Analysis. Statistical analyses was performed using SAS (Statistical Analysis System) software (version 9.1.3, SAS is a registered trademark of SAS Institute, Cary, NC). Descriptive statistics were generated on population characteristics and include measures of central tendency (mean, median, and mode), variability (standard deviation, variance, and range), and distribution (skewness and kurtosis). For research question 1, registration exam pass rate percentages were compared using student t-tests and non-

parametric t-test equivalents to test for significant differences in pass rates between the two groups (distance learning and traditional).

For research questions 2 and 3, preparedness was assessed using the survey questions A – G on parameters of preparedness: ability to communicate, ability to provide comprehensive nutrition therapy, ability to counsel patients, ability to manage foodservice systems, clinical judgment, independence, and work ethic. Table 3 summarizes the research questions with their corresponding measure and analysis. Specifically, responses to questions A - G from the *Graduate Survey on Preparedness for Practice* were used to answer research question 2, graduates' assessment of their preparation for practice. Specifically, responses to questions A - G from the *Supervisor Survey on Preparedness for Practice* were used to answer research question 3, supervisors' assessment of graduates' preparation for practice.

Survey responses were compared using student t-tests and non-parametric t-test equivalents to test for significant differences in preparedness between the two groups (distance learning and traditional). The independent variable was the type of internship. The dependant variables were the preparedness parameters on the survey: ability to communicate, ability to provide comprehensive nutrition therapy, ability to counsel patients, ability to manage foodservice systems, clinical judgment, independence, and work ethic. I began by examining the integrity of the data, looking for such issues as data input errors, which may be identified by data in a different format or extreme outliers. I then looked at the data for the three formal assumptions of the student t-test, equality of covariance matrices, independence of vectors and multivariate normality. Significance was set at $P < .05$.

Table 3.
Research Question Analysis

Research Question	Measure	Analysis
Does the registration exam pass rate differ between distance learning and traditional dietetic internships?	RD pass rate percentages	Student <i>t</i> test, non-parametric equivalent tests
Do program graduates of distance learning and traditional dietetic internships differ in their assessment of their preparation for practice?	Questions A – G on <i>Graduate Survey on Preparedness for Practice</i>	Student <i>t</i> test, non-parametric equivalent tests
Do supervisors of graduates of distance learning and traditional dietetic internships differ in their assessment of graduates' preparation for practice?	Questions A – G on <i>Supervisor Survey on Preparedness for Practice</i>	Student <i>t</i> test, non-parametric equivalent tests
How do graduates, their supervisors, and program directors of distance learning dietetic internships evaluate interns' curricular experience and preparation for practice?	Interview questions	Constant comparative analysis and developing interpretations

Qualitative Research

Design. For the qualitative portion of this pragmatic study, the constructivist paradigm was employed (Tashakkori & Teddlie, 2003). In this paradigm, research starts with data gathering and uses inductive logic to move to inferences or theory. Tashakkori & Teddlie (2003) acknowledge subjective point of view and value-bound inquiry as part of this paradigm. This was the methodology used for this phase of study.

The qualitative phase of the study employed a descriptive research design. The phenomenon studied or focus of inquiry is perceived preparation and curricular experiences from a dietetic internship. Interviewing was the data collection method.

Procedure. Telephone interviews were conducted to obtain perceptions of the curricular experiences and preparation for practice. The Phase II survey to program directors, graduates, and their supervisors included a question on willingness to participate in an interview. Individuals from each subgroup were interviewed: a) distance learning dietetic internship graduates; b) initial supervisors of distance learning dietetic internship graduates; c) program directors of distance learning dietetic internships; d) traditional dietetic internship graduates; e) initial supervisors of traditional dietetic internship graduates; and f) program directors of traditional dietetic internships. The goal was to reach data saturation (Ary, Jacobs, & Razavieh, 2002.) Foundation questions were sent to participants in advance with the responses used to guide the interview as described in the Qualitative Instrument section. I conducted the interviews of the graduates, their supervisors, and program directors and attempted to play a neutral role. Probes and member checks were also used.

Appropriate approvals were obtained as explained in the Ethical Considerations section. I began examining my biases and assumptions, brainstorming, creating questions for the interviews, and negotiating entry into the research as explained in the final section. Member checks, or questions to confirm that interpretations and themes were accurate, were employed during the interviews. Also, at the end of the interviews, I asked the participants whether I had accurately described their experience. After

conducting the interviews, content analysis was used to interpret the data. I first categorized interview responses into different themes as described in the analysis section.

Interviews. Interviews were used to collect data for the qualitative portion of this study. Interviews provide detailed information on overall themes and consisted of one-to-one interaction between the researcher and the participant (Tashakkori & Teddlie, 2003). The use of interviews in this study provided perceptions on the curricular experiences and preparation for practice. I conducted semi-structured interviews. Program directors, graduates, and graduate supervisors from distance learning dietetic internships were interviewed by phone regarding their perceived preparation and curricular experiences in the dietetics internship program. The interviews were recorded. Interviewees were informed that their names and titles would not be used in the study and all audiotapes and records would be destroyed at the conclusion of the study. After arranging dates and times convenient for the participants, I sent the preliminary, open-ended questions to the interviewees prior to the scheduled interviews. This allowed interviewees more time to reflect upon their experiences and the questions served as a guide during the interview. The interview guides are included in Appendices D, E, and F. The interviews with the graduates began with introductions and warm-up questions such as which program the graduate attended and why. This was followed by the two open-ended, preliminary questions sent to the participants in advance: (1) “How would you describe your internship experience?” and (2) “How well did your internship prepare you for practice?” The interviews with the supervisors of dietetic internship graduates began with introductions and warm-up questions such as how long the supervisor has been at his or her current worksite and a description of the facility. This was followed by

the two open-ended questions sent to the participants in advance: (1) “How well was this employee prepared to practice in their current position?” and (2) “How does this employee’s preparation compare to other employees?” The interviews with the program directors of dietetic internships began with how long the internship director has been in charge of the program and a description of the program. This was followed by the two open-ended questions sent to the participants in advance: (1) “How would you describe the internship curriculum?” and (2) “How well are your graduates prepared to practice in their first dietitian position?” Again, these questions were provided to interviewees in advance to allow them time to formulate their responses. These questions served as a beginning for the interviews, with the interviewees’ responses integrated into more probing questions. Follow up questions were also incorporated and included “Did you/the graduate meet the core competencies for entry-level dietitians?” “Would you recommend this internship?” “How would you assess the graduate’s clinical judgment?” “What are the strengths of the internship?” “What are the weaknesses of the internship?” I paraphrased and summarized respondent’s comments as a form of member check. The interview concluded with a debriefing, “I have no further questions. Do you have anything you want to bring up or ask about?” Interviews were primarily informal and lasted on average for forty-five minutes.

Participants. Phase 3 consisted of interviews with graduates, their supervisors, and program directors of distance learning dietetic internships. The Phase 2 survey to graduates and supervisors included a question on willingness to participate in an interview. A sample or selection from those indicating willingness was contacted for interviews. Therefore, convenience sampling was used for this phase of the study.

Interviews were conducted from February 28, 2006 until May 8, 2006. I conducted the interviews by phone with all conversations being recorded. Informed consent was obtained from all participants. A total of 43 interviews were completed: 3 traditional program directors, 3 distance program directors, 10 traditional graduates, 6 traditional supervisors, 11 distance graduates, and 10 distance supervisors. The goal was to reach data saturation, or the point at which no new information is forthcoming from additional participants (Ary, Jacobs, & Razavieh, 2002).

Analysis. After the interviews, the data was organized and prepared for analysis. All interview notes were transcribed. I then reviewed the transcripts to identify keywords and passages used frequently by interviewees. Some data analysis occurred during the interview, as suggested by Bogdan and Biklen (1998), but detailed analysis began with coding *a posteriori*, or after the data from the surveys and interviews is collected (Tashakkori & Teddlie, 2003). Coding is “the process of organizing the material into chunks before bringing meaning to those chunks” (Rossman & Rallis, 1998, p. 171). The constant comparison method, which combines inductive category coding with simultaneous comparison of units of meaning obtained, was the strategy used for identifying themes in this study (Ary et al, 2002, p. 267). Thus, the keywords and phrases were used to group together related text fragments from the transcripts, and these, in turn, were reviewed to develop themes within the data. Because of the large numbers of interviews, qualitative software, Ethnograph, was used. Finally, the connections, important differences, and common aspects among the themes were interpreted and generalizations made.

Ethical Issues

Participation was on a voluntary basis. I obtained informed consent and provided participants with risks and benefits of participation. Participants were not exposed to discomfort, deception, or risks during this study. Further, the confidentiality and privacy of participants was maintained. No cultural and language barriers as encountered.

I had approval from University of South Florida's Institutional Review Board (IRB # 104254). All surveys and interview data is locked in my office. Also, I performed the transcribing and data entry. Transcripts do not include any names and titles. In addition, all interview tapes were destroyed after transcription.

Biases, assumptions and negotiation of entry

As a researcher, I have participated in quantitative research but have no prior experience in qualitative research. I have completed one course on mixed methods research. Thus, readers should be aware of the researcher's limited experience in qualitative methods.

I am a dietitian who has worked in clinical practice for 16 years. For 15 of those years, I served as a preceptor for dietetic interns in a traditional dietetic internship. I am now a dietetic internship director. In addition, I have taught nutrition courses using traditional educational methodology at a community college for 11 years. Recently, I began teaching nutrition courses via distance learning for a local university and community college. These experiences provide me with insight into both teaching modalities. In addition to this work and teaching experience, I am also a site visitor for the Commission on Accreditation for Dietetics Education. As such, I felt comfortable asking dietetic educators to participate in this research.

I expected to find no significant differences between traditional program graduates and distance learning program graduates on the traditional registration exam pass rates. The registration exam for dietitians is the traditional measure used in dietetics education to assess student outcome. The exam, however, is an objectivist measure and therefore may not capture more affective outcomes such as clinical judgment and feelings of competency. The level of preparation from the surveys and description of preparation and curricular experiences from the interviews will be used to assess more affective outcomes and also help judge the equivalency of curricular experiences and student outcomes. I anticipated the distance learner program graduates would report feeling slightly less prepared than traditional program graduates. Regardless, I was open-minded to participants' responses from the survey and interviews.

Summary

A mixed methods design was employed to study student outcomes in distance learning versus traditional dietetic internships. Phase I of the study was the recruitment of dietetic internship directors and obtaining program information including registration exam pass rates. Phase II of the study was the quantitative collection of internship directors', program graduates', and their supervisors' level of perceived preparation by survey. Phase III of the study was the qualitative phase and consisted of interviews with internship directors, program graduates, and their supervisors on perceived preparation and curricular experience. Results were analyzed as summarized in Table 3 for significant differences in student outcomes between the two types of dietetic internships.

Chapter Four

Results

Research Question One

The first research question was “Does the registration exam pass rates differ between distance learning and traditional dietetic internships?” To address this question, pass rates were obtained from participating dietetic internships programs using the “*Program Information and Registration Exam Pass Rate Review.*”

Pass Rate Descriptive Statistics. Responses were received from 5 distance programs and 7 traditional programs. The pass rate percentage frequencies for each type of program are presented in Table 4.

Table 4.
Frequency Table of Program Pass Rates

Pass Rate Percentage	Distance	Traditional	Total
90-100	1	3	4
80-89	1	2	3
70-79	2	1	3
60-69	1	1	2
Totals	5	7	12

The five distance programs had a mean pass rate percentage of 77.00% with a standard deviation of 10.44 and a variance of 109.00. A test of normality indicated that

this sample was not representative of a normally distributed population ($p < .0001$). The seven traditional programs had a mean pass rate percentage of 83.86% with a standard deviation of 14.55 and a variance of 211.81. A test of normality indicated that this sample was also not representative of a normally distributed population ($p < .0001$). The mean pass rate percentage and associated descriptive statistics are presented in Table 5.

Table 5.
Pass Rate Mean Percentages and Normality Tests

Program Type	N	Mean %	Std Dev	Variance	Skewness	Kurtosis	t-Value	Pr > t
Distance	5	77.00	10.44	109.00	-0.69	1.91	16.49	< .0001
Traditional	7	83.86	14.55	211.81	-0.74	-0.70	15.24	< .0001

Pass Rate Inferential Statistics. The sample mean of the registration exam pass rate for the traditional program participants was 6.86 percentage points higher than the sample mean for the distance program participants. This corresponds to a medium effect ($d = .54$). Even though the sample means differed, I did not want to conclude the population means differ without a formal test of the null hypothesis. The null hypothesis was tested with a t-test, which makes the assumptions of independence, equal variance, and normality. The assumption of independence was not violated because participants were not assigned to control or treatment groups by the researcher, but rather by their acceptance into the internship. The F-test ($p > .5419$) for equal variance was not significantly different so the equal variance assumption was not violated and as such, I selected the t-test result corresponding to equal variances. It is conceivable that the samples did not come from normal distributions but the t-test is robust for violations of the normality assumption. The results of this t-test showed a t-value = -0.90 with a Pr >

$|t| = 0.3911$. This test indicated I am unable to reject the null hypothesis that the two means are equal. The corresponding conclusion is that there no significant difference in the population mean pass rates between the traditional programs and the distance programs.

Due to the small sample size, a non-parametric t-test equivalent (SAS npar1way) was conducted providing both a two-way analysis of variance and a Wilcoxon Rank Sums test. These tests require no assumptions about the samples and have been shown to be almost as powerful as a t-test (Cody and Smith, 2006). As Table 6 indicates, both the non-parametric two-way analysis of variance ($p > .3911$) and the Wilcoxon Rank Sums tests ($p > .3901$) agreed with the parametric t-test that there is no statistically significant difference in means on pass rates for distance and traditional programs. These non-parametric results would indicate that the original t-test was valid.

Table 6.
Parametric t-test and Non-Parametric Test Results for Pass Rates Distance versus Traditional Programs

Test	Means	Value	P > t
t-test	Distance = 77.00 Traditional = 83.86	t = -0.9000	0.3911
two-way ANOVA	Distance = 77.00 Traditional = 83.86	F = 0.8035	0.3911
Wilcoxon Rank Sums	Distance = 5.30 Traditional = 7.36	Z = -0.8948	0.3901

There are several possible explanations for the lack of significant difference between the two groups on the registration exam. The primary reason there might not have been a significant difference in pass rates between traditional and distance learning

internship is small sample size (n=12). Without a large sample, there was not enough power to detect potential differences. A second reason there might not have been a significant difference in pass rates between the two groups is lack of sensitivity in the measurement instrument. The registration exam for dietitians is a purely objectivist outcome measure, testing knowledge of nutrition science and dietetics. It is difficult in this multiple-choice format, however, to test application and clinical judgment. Therefore, the registration exam pass rate may not be a sensitive enough measure of competency to practice as a dietitian. The final reason there might not be a significant difference in pass rates between the two groups is because of a similar knowledge base. Dietetic students acquire most of the knowledge base required for the registration exam in the undergraduate program. That knowledge is then applied and refined during the dietetic internship. The dietetic students in this study all came from traditional undergraduate dietetic programs. The differences between groups came later, in the type of internship. Therefore, the similarity in undergraduate programs, where the knowledge base is acquired for the registration exam, may account for the lack of significant differences between graduates of the two groups in registration exam pass rates. Regardless of the test sensitivity or similar knowledge base, the study demonstrated equivalency in the registration exam pass rates between the two types of internships.

Research Question Two

The survey entitled *Graduate Survey on Preparedness for Practice* was used to answer the research question: “Do program graduates of distance learning and traditional dietetic internships differ in their assessment of their preparation for practice?” The surveys asked graduates for their undergraduate grade point average (GPA) and to rank

the perceived level of competence using a Likert scale of 1 to 5, with 1 representing poor and 5 representing excellent, on the following questions: question A - ability to communicate effectively and problem solve; question B - ability to provide comprehensive nutrition care in a variety of settings; question C - ability to counsel patients, individually and in groups; question D - ability to use techniques and tools to effectively manage foodservice systems; question E - clinical judgment; question F - independence and self-direction; and question G - work ethic and professionalism.

Results of the survey questions are presented in Table 7. Overall, traditional graduates had a significantly higher GPA than distance graduates. Traditional graduates ranked themselves significantly higher on their ability to communicate, ability to provide nutrition therapy, clinical judgment, independence, and work ethic. There was no significant difference on the ability to counsel patients and ability to manage foodservice systems.

Table 7.
Parametric t-test Results for Survey Results in Distance Graduates versus Traditional Graduates

Survey Question	N	Mean	Equality of Variance	t-value	Pr > t	2-way ANOVA	Wilcoxon
GPA	44 distance 37 traditional	3.31 3.67	0.0020	-4.75	<.0001*	<.0001*	.0002*
Question A: Ability to communicate	44 distance 37 traditional	4.34 4.62	0.1768	-2.02	0.0465*	0.0465*	0.0301*
Question B: Ability to provide nutrition therapy	44 distance 37 traditional	3.91 4.35	0.8328	-2.72	0.0081*	0.0081*	0.0094*
Question C: Ability to counsel patients	44 distance 37 traditional	3.95 4.27	0.7974	-1.72	0.0885	0.0885	0.0711
Question D: Ability to manage foodservice systems	44 distance 37 traditional	3.82 4.11	0.2696	-1.52	0.1336	0.1336	0.0985
Question E: Clinical judgment	44 distance 37 traditional	3.86 4.38	0.2702	-3.25	0.0017*	0.0017*	0.0033*
Question F: Independence	44 distance 37 traditional	4.66 4.89	0.0001	-2.21	0.0304*	0.0386*	0.0420*
Question G: Work ethic	44 distance 37 traditional	4.70 4.89	0.0038	-2.02	0.0467*	0.0500	0.0333*

* Indicates significance at the .05 level

Student t-tests were conducted comparing GPA and question responses specifically for distance graduates versus traditional graduates to answer the research question. The same three assumptions for t-test (independence, equal variance and normality) applied as discussed earlier. The GPA sample mean for the traditional program graduates was .36 point higher than the GPA sample mean for the distance program graduates. This corresponds to a medium effect ($d=1.04$). A t-test was conducted to test the null hypothesis. The F-test ($p = 0.0020$) for equal variance was significant; therefore non-equal variance was assumed and I selected the t-test result corresponding to unequal variances. The results of this t-test showed a t-value = -4.75 with a $Pr > |t| = < .0001$. This test indicated that I am able to reject the null hypothesis that the two means are equal. The corresponding conclusion is that traditional program graduates have a statistically significant higher GPA mean than the distance program graduates. Both the nonparametric two-way analysis of variance ($p < 0.001$) and the Wilcoxon Rank Sums tests ($p = 0.002$) agreed with the parametric t-test that traditional program graduates have a significantly higher GPA than distance program graduates.

For question A, ability to communicate effectively and problem solve, the sample mean for the traditional program graduates was .31 point higher than the sample mean for the distance program graduates. This corresponds to a small effect size ($d=.45$). A t-test was conducted to test the null hypothesis. The F-test ($p = 0.1768$) for equal variance was not significant; therefore equal variance was assumed and I selected the t-test result corresponding to equal variances. The results of this t-test showed a t-value = -2.02 with a $Pr > |t| = 0.0465$. This test indicated that I am able to reject the null hypothesis that the two means are equal. The corresponding conclusion is that traditional program graduates

scored themselves significantly higher on their ability to communicate effectively and problem solve than did the distance program graduates. Both the nonparametric two-way analysis of variance ($p = 0.0465$) and the Wilcoxon Rank Sums tests ($p = 0.0301$) agreed with the parametric t-test.

For question B, ability to provide comprehensive nutrition care, the sample mean for the traditional program graduates was .44 point higher than the sample mean for the distance program graduates. This corresponds to a medium effect size ($d = .60$). A t-test was conducted to test the null hypothesis. The F-test ($p = 0.8328$) was not significant; therefore, equal variance was assumed and I selected the t-test result corresponding to equal variances. The results of this t-test showed a t-value = -2.72 with a $Pr > |t| = 0.0081$. This test indicated I am able to reject the null hypothesis that the two means are equal. The corresponding conclusion is that the traditional program graduates scored themselves significantly higher on ability to provide comprehensive nutrition care than did the distance program graduates. Both the nonparametric two-way analysis of variance ($p = 0.0081$) and the Wilcoxon Rank Sums tests ($p = 0.0094$) agreed with the parametric t-test.

For question C, ability to counsel, the sample mean for the traditional program graduates was .32 point higher than the sample mean for the distance program graduates. This corresponds to a small effect size ($d = .38$). A t-test was conducted to test the null hypothesis. The F-test ($p = 0.7974$) was not significant; therefore equal variance was assumed and I selected the t-test result corresponding to equal variances. The results of this t-test showed a t-value = -1.72 with a $Pr > |t| = 0.0885$. This test indicated I am unable to reject the null hypothesis that the two means are equal. The corresponding

conclusion is that traditional program graduates did not differ from the distance program graduates in their ratings on ability to counsel. Both the nonparametric two-way analysis of variance ($p = 0.0885$) and the Wilcoxon Rank Sums tests ($p = 0.0711$) agreed with the parametric t-test.

For question D, ability to effectively manage foodservice systems, the sample mean for the traditional program graduates was .29 point higher than the sample mean for the distance program graduates. This corresponds to a small effect size ($d = .34$). A t-test was conducted to test the null hypothesis. The F-test ($p = 0.2696$) was not significant; therefore equal variance was assumed and I selected the t-test result corresponding to equal variances. The results of this t-test showed a t-value = -1.52 with a $Pr > |t| = < .1336$. This test indicated I am unable to reject the null hypothesis that the two means are equal. The corresponding conclusion is that traditional program graduates did not differ from the distance program graduates in their ratings on ability to effectively manage foodservice systems. Both the nonparametric two-way analysis of variance ($p = 0.1336$) and the Wilcoxon Rank Sums tests ($p = 0.0985$) agreed with the parametric t-test.

For question E, clinical judgment, the sample mean for the traditional program graduates was .52 point higher than the sample mean for the distance program graduates. This corresponds to a medium effect size ($d = .73$). A t-test was conducted to test the null hypothesis. The F-test ($p = 0.2702$) was not significant; therefore equal variance was assumed and I selected the t-test result corresponding to equal variances. The results of this t-test showed a t-value = -3.25 with a $Pr > |t| = 0.0017$. This test indicated that I am able to reject the null hypothesis that the two means are equal. The corresponding conclusion is that traditional program graduates scored themselves significantly higher on

clinical judgment than did the distance program graduates. Both the nonparametric two-way analysis of variance ($p = 0.0017$) and the Wilcoxon Rank Sums tests ($p = 0.0033$) agreed with the parametric t-test.

For question F, independence, the sample mean for the traditional program graduates was .52 point higher than the sample mean for the distance program graduates. This corresponds to a medium effect size ($d = .73$). A t-test was conducted to test the null hypothesis. The F-test ($p < .0001$) was significant; therefore non-equal variance was assumed and I selected the t-test result corresponding to unequal variances. The results of this t-test showed a t-value = -2.21 with a $Pr > |t| = 0.0304$. This test indicated that I am able to reject the null hypothesis that the two means are equal. The corresponding conclusion is that traditional program graduates scored themselves significantly higher on independence than did the distance program graduates. Both the nonparametric two-way analysis of variance ($p = 0.0386$) and the Wilcoxon Rank Sums tests ($p = 0.0420$) agreed with the parametric t-test.

For question G, work ethic and professionalism, the sample mean for the traditional program graduates was .19 point higher than the sample mean for the distance program graduates. This corresponds to a small effect size ($d = .44$). A t-test was conducted to test the null hypothesis. The F-test ($p = 0.0038$) was significant; therefore non-equal variance was assumed and I selected the t-test result corresponding to unequal variances. The results of this t-test showed a t-value = -2.02 with a $Pr > |t| = 0.0467$. This test indicated that I am able to reject the null hypothesis that the two means are equal. The corresponding conclusion is that traditional program graduates scored themselves significantly higher on work ethic and professionalism than did the distance

program graduates. Both the nonparametric two-way analysis of variance ($p = 0.0500$) and the Wilcoxon Rank Sums tests ($p = 0.0333$) agreed with the parametric t-test.

In summary, results indicated the traditional program graduates rated their preparedness higher on the following competencies and areas of practice: 1) ability to communicate effectively, 2) ability to provide comprehensive nutrition care, 3) clinical judgment, 4) independence and work ethic, and 5) professionalism. There was no significant difference found on the questions concerning ability to counsel patients and ability to effectively manage foodservice systems. I speculated that no significant difference was found on ability to counsel patients due to the wording of the question. The term “counsel” denotes a higher-level skill for which many of the entry-level graduates may not have felt as well prepared. The meaning of the survey question was, in fact, ability to “educate” patients, which is more of an entry-level skill and one for which graduates may feel more competent. The finding of no significant difference regarding the ability to effectively manage foodservice systems was not surprising. Though CADE considers this to be an entry-level skill, it is very common for graduates to feel unprepared because foodservice is not a common interest in dietetics practice and it is a skill that takes a great deal of experience to acquire. Overall, the graduate survey results on perception of preparation for practice did not support equivalency between the two types of internships. Traditional internship graduates rated themselves significantly higher in most constructs of preparedness.

Research Question Three

The survey entitled *Supervisor Survey on Preparedness for Practice* was used to answer the research question “Do supervisors of graduates of distance learning and

traditional dietetic internships differ in their assessment of their preparation for practice?” The surveys asked supervisors to rank the perceived level of their employee’s competence using a Likert scale of 1 to 5, with 1 representing poor and 5 representing excellent, on the following questions: question A - ability to communicate effectively and problem solve; question B - ability to provide comprehensive nutrition care in a variety of settings; question C - ability to counsel patients, individually and in groups; question D - ability to use techniques and tools to effectively manage foodservice systems; question E - clinical judgment; question F - independence and self-direction; and question G - work ethic and professionalism. The supervisors of graduates were their first employers after the internship. None of the supervisors worked with the graduates during the internship, only after they had completed their program and become registered dietitians.

Results of the survey questions are presented in Table 8. Overall, traditional supervisors ranked their employees significantly higher on their ability to communicate, ability to provide nutrition therapy, ability to counsel patients, ability to manage foodservice systems, clinical judgment, and independence. There was no significant difference on only one construct – work ethic and professionalism.

Student t-tests were conducted comparing survey question responses specifically for distance program supervisors versus traditional program supervisors to answer the research question. The same three assumptions for t-tests (independence, equal variance and normality) applied as discussed earlier. For question A, ability to communicate effectively and problem solve, the sample mean for the traditional supervisors was .67 point higher than the sample mean for the distance program graduates. This corresponds

to a large effect size ($d = .96$). A t-test was conducted to test the null hypothesis. The F-test ($p = 0.0029$) was significant; therefore non-equal variance was assumed and I selected the t-test result corresponding to unequal variances. The results of this t-test showed a t-value = -3.35 with a $Pr > |t| = 0.0018$. This test indicated that I am able to reject the null hypothesis that the two means are equal. The corresponding conclusion is that supervisors of traditional program graduates scored the graduates significantly higher on ability to communicate effectively and problem solve than did the supervisors of distance program graduates. Both the nonparametric two-way analysis of variance ($p = 0.0035$) and the Wilcoxon Rank Sums tests ($p = 0.0084$) agreed with the parametric t-test.

Table 8.
Parametric t-test Results for Survey Results in Distance Supervisors versus Traditional Supervisors

Survey Question	N	Mean	Equality of Variance	t-value	Pr > t	2-way ANOVA	Wilcoxon
QuestionA: Ability to communicate	26 distance 20traditional	3.72 4.54	0.0029	-3.35	0.0018*	0.0035*	0.0084*
QuestionB: Ability to provide nutrition therapy	26 distance 20traditional	3.58 4.43	0.0842	-3.53	0.001 *	0.001*	0.0015*
QuestionC: Ability to counsel patients	26 distance 20traditional	3.60 4.38	0.1769	-3.43	0.0013*	0.0013*	0.0035*
QuestionD: Ability to manage foodservice systems	26 distance 20traditional	3.15 4.61	0.0077	-7.64	<.0001*	<.0001*	<.0001*
QuestionE: Clinical judgment	26 distance 20traditional	3.46 4.28	0.3248	-3.41	<.0014*	0.0014*	0.0023*
QuestionF: Independence	26 distance 20traditional	3.92 4.68	<.0001	-2.26	0.0305*	0.0477*	0.0500*
QuestionG: Work ethic	26 distance 20traditional	4.51 4.85	<.0001	-1.32	0.1970	0.2422	0.2736

*Indicates significance at the .05 level

For question B, ability to provide comprehensive nutrition care, the sample mean for the traditional supervisors was .78 point higher than the sample mean for the distance program graduates. This corresponds to a large effect size ($d = 1.08$). A t-test was conducted to test the null hypothesis. The F-test ($p = 0.0842$) was not significant; therefore equal variance was assumed and I selected the t-test result corresponding to equal variances. The results of this t-test showed a t-value = -3.53 with a $Pr > |t| = 0.0010$. This test indicated that I am able to reject the null hypothesis that the two means are equal. The corresponding conclusion is that supervisors of traditional program graduates scored the graduates significantly higher on ability to provide comprehensive nutrition care than did the supervisors of distance program graduates. Both the nonparametric two-way analysis of variance ($p = 0.0010$) and the Wilcoxon Rank Sums tests ($p = 0.0015$) agreed with the parametric t-test.

For question C, ability to counsel, the sample mean for the traditional supervisors was .73 point higher than the sample mean for the distance program graduates. This corresponds to a large effect size ($d = 1.11$). A t-test was conducted to test the null hypothesis. The F-test ($p = 0.1769$) was not significant; therefore equal variance was assumed and I selected the t-test result corresponding to equal variances. The results of this t-test showed a t-value = -3.43 with a $Pr > |t| = 0.0013$. This test indicated that I am able to reject the null hypothesis that the two means are equal. The corresponding conclusion is that supervisors of traditional program graduates scored the graduates significantly higher on ability to counsel than did the supervisors of distance program graduates. Both the nonparametric two-way analysis of variance ($p = 0.0010$) and the Wilcoxon Rank Sums tests ($p = 0.0035$) agreed with the parametric t-test.

For question D, ability to effectively manage foodservice systems, the sample mean for the traditional supervisors was 1.34 points higher than the sample mean for the distance program graduates. This corresponds to a large effect size ($d = 2.19$). A t-test was conducted to test the null hypothesis. The F-test ($p = 0.0077$) was significant; therefore non-equal variance was assumed and I selected the t-test result corresponding to unequal variances. The results of this t-test showed a t-value = -7.64 with a $Pr > |t| = < 0.0001$. This test indicated that I am able to reject the null hypothesis that the two means are equal. The corresponding conclusion is that supervisors of traditional program graduates scored the graduates significantly higher on ability to effectively manage foodservice systems than did the supervisors of distance program graduates. Both the nonparametric two-way analysis of variance ($p < .0001$) and the Wilcoxon Rank Sums tests ($p < .0001$) agreed with the parametric t-test.

For question E, clinical judgment, the sample mean for the traditional supervisors was .79 point higher than the sample mean for the distance program graduates. This corresponds to a large effect size ($d = 1.06$). A t-test was conducted to test the null hypothesis. The F-test ($p = 0.3248$) was not significant; therefore equal variance was assumed and I selected the t-test result corresponding to equal variances. The results of this t-test showed a t-value = -3.41 with a $Pr > |t| = < .0014$. This test indicated that I am able to reject the null hypothesis that the two means are equal. The corresponding conclusion is that supervisors of traditional program graduates scored the graduates significantly higher on clinical judgment than did the supervisors of distance program graduates. Both the nonparametric two-way analysis of variance ($p = 0.0014$) and the Wilcoxon Rank Sums tests ($p = 0.0023$) agreed with the parametric t-test.

For question F, independence, the sample mean for the traditional supervisors was .50 point higher than the sample mean for the distance program graduates. This corresponds to a medium effect size ($d = .64$). A t-test was conducted to test the null hypothesis. The F-test ($p < .0001$) was significant; therefore non-equal variance was assumed and I selected the t-test result corresponding to unequal variances. The results of this t-test showed a t-value = -2.26 with a $Pr > |t| = 0.0305$. This test indicated that I am able to reject the null hypothesis that the two means are equal. The corresponding conclusion is that supervisors of traditional program graduates scored the graduates significantly higher on independence than did the supervisors of distance graduates. Both the nonparametric two-way analysis of variance ($p = 0.0477$) and the program Wilcoxon Rank Sums tests ($p = 0.0500$) agreed with the parametric t-test.

For question G, work ethic and professionalism, the sample mean for the traditional supervisors was .18 point higher than the sample mean for the distance program graduates. This corresponds to a small effect size ($d = .37$). A t-test was conducted to test the null hypothesis. The F-test ($p < .0001$) was significant; therefore non-equal variance was assumed and I selected the t-test result corresponding to unequal variances. The results of this t-test showed a t-value = -1.32 with a $Pr > |t| = 0.1970$. This test indicated that I am unable to reject the null hypothesis that the two means are equal. The corresponding conclusion is that supervisors of traditional program graduates did not score the graduates significantly higher on work ethic and professionalism than did the supervisors of distance program graduates. Both the nonparametric two-way analysis of variance ($p = 0.2422$) and the Wilcoxon Rank Sums tests ($p = 0.2736$) agreed with the parametric t-test.

In summary, results indicated the supervisors of traditional program graduates rated their employees higher on the following competencies and areas of practice: 1) ability to communicate effectively, 2) ability to provide comprehensive nutrition care, 3) ability to counsel patients, 4) ability to effectively manage foodservice systems, 5) clinical judgment, and 6) independence. There was no significant difference found on the question concerning work ethic and professionalism. I have speculated that no significant difference was found on work ethic and professionalism because these are attitudinal characteristics acquired from observation of preceptors rather than skills. It was somewhat surprising that the distance learning graduates did not score higher on the question regarding independence since the type of internship requires a significant amount of independence and autonomy. This lack of difference could be related to the difference in students' GPA. Overall, the employer survey on perception of preparation for practice did not support equivalency between the two types of internships. Supervisors of traditional internship graduates rated the graduates significantly higher in most constructs of preparedness.

Research Question Four

The final research question was "How do graduates, their supervisors, and program directors of dietetic internships evaluate interns' curricular experience and preparation for practice?" To address this question, telephone interviews were conducted with graduates, their supervisors, and program directors of traditional and distance learning dietetic internships. A total of 43 interviews were completed: a) 10 traditional dietetic internship graduates; b) 11 distance learning dietetic internship graduates; c) 6 supervisors of traditional dietetic internship graduates; d) 10 supervisors of distance

learning dietetic internship graduates; e) 3 traditional dietetic internship program directors; and f) 3 distance learning dietetic internship program directors.

Traditional and Distance Learning Graduate Interviews. Twenty-one graduates participated in the interviews. There were a total of 11 questions asked during the graduate interview. The first question was “Why did you choose the dietetic internship program you attended?” The results are summarized in Table 9. When multiple reasons were cited, they were all coded. The reason for choosing the dietetic internship program cited most often by distance graduates was the location (7). As one distance learning graduate said, “I didn’t have a choice, this was the only type of internship I could do.” The reasons for choosing the dietetic internship program cited most often by traditional dietetic internship graduates were reputation (6) and location (6).

Table 9.
Graduate Interview Question #1

Codes	Distance Graduates	Traditional Graduates
Flexibility	1	0
Awarded prior experience credit	2	0
Location	7	6
Master’s credit	1	2
Reputation	0	6
Curriculum emphasis	1	1

The next question was “How well did the internship prepare you for your first job?” The results are summarized in Table 10. Distance graduates most often reported feeling “adequately prepared” for practice (5). Three distance graduates felt “well

prepared,” while three distance graduates reported feeling “not prepared.” Traditional graduates most often cited feeling “well prepared” for practice (7). Two traditional graduates felt “extremely prepared.” One traditional graduate only felt “adequately prepared” and no traditional graduates reported feeling “not prepared.”

Table 10.
Graduate Interview Question #2

Codes	Distance Graduates	Traditional Graduates
Extremely Prepared	0	2
Well Prepared	3	7
Adequately Prepared	5	1
Not Prepared	3	0

The next question was “What was your first job after the internship?” Graduates reported working in a variety of areas: clinical, specialty positions such as renal and intensive care, long-term care, community, administration, research, and other (private practice and grocery store consultant). The results are summarized in Table 11. Distance dietetic internship graduates most often reported working in clinical (4) and specialty positions (2), including renal and intensive care. Traditional dietetic internship graduates most often reported working in clinical (5) and long-term care (3) positions.

Table 11.
Graduate Interview Question #3

Codes	Distance Graduates	Traditional Graduates
Clinical	4	5
Specialty – renal, intensive care	2	0
Long-term care	1	3
Community	1	0
Administrative	1	1
Research	1	0
Other	1	1

The next question was “What do you see as the program’s strengths?” The results are summarized in Table 12. When multiple reasons were cited, they were all coded. Supportive & responsive faculty (8), flexibility (6), and organization (4) were the strengths most often reported by distance graduates. Variety of experiences (5), supportive & responsive faculty (4), preceptors (3), and thorough preparation (3) were the strengths most often reported by traditional graduates.

Table 12.
Graduate Interview Question #4

Codes	Distance Graduates	Traditional Graduates
Thorough Preparation	0	3
Variety of experiences	1	5
Flexibility	6	0
Learner-driven	1	0
Organized	4	0
Supportive & Responsive Faculty	8	4
Didactic curriculum	2	0
Preceptors	1	3
Emphasis	0	1

The next question was “What do you see as the program’s weaknesses?” The results are summarized in Table 8. When multiple reasons were cited, they were all coded. Weaknesses most often reported by distance graduates were: need for prior work experience (3), need for motivation/initiative (3), expensive (3), lack of communication & support (2), preceptors (2), and lack of collaboration/interaction (2). Weaknesses reported by traditional graduates were the need for specialty training (4), which included pediatrics and eating disorders, and curriculum (2). Two traditional graduates reported “no weaknesses.”

Table 13.
Graduate Interview Question #5

Codes	Distance Graduates	Traditional Graduates
Lack of communication & support	2	0
Didactic Curriculum	3	2
Intern needs prior experience	1	0
Intern needs motivation/initiative	3	0
Expensive	3	1
Preceptors	2	0
Lack of interaction/collaboration	2	0
Need more specialties	0	4
Too long	0	1
No master's credit	0	1
None	0	2

The next question was “How do you rate your clinical judgment?” The results ranged from excellent to good, fair or poor and are summarized in Table 14. Distance graduates most often reported having good (5) or fair (5) clinical judgment. Traditional graduates most often reported having excellent (6) or good clinical judgment (4).

Table 14.
Graduate Interview Question #6

Codes	Distance	Traditional
Excellent	0	6
Good	5	4
Fair	5	0
Poor	1	0

Question seven was “Would you recommend this internship program?” The answers were yes/no and are presented in Table 15. All (11) distance graduates said they recommend their internship program, but 9 of 11 recommended with certain conditions, such as an experienced, mature, disciplined, or assertive learner. As one distance graduate said, “These programs are not for traditional students who need a lot of structure. You have to have experience and be very assertive.” All (10) traditional graduates said they would recommend their internship program, none with conditions.

Table 15.
Graduate Interview Question #7

Codes	Distance Graduates	Traditional Graduates
Yes	11	10
No	0	0

Question eight was “Did you experience any technical or logistical problems during the internship?” The answers were yes/no and are presented in Table 16. Five distance graduates reported difficulties that included securing practice sites and non-

functioning discussion boards. The other distance graduates (6) did not experience problems. None of ten the traditional graduates reported problems.

Table 16.
Graduate Interview Question #8

Codes	Distance Graduates	Traditional Graduates
Yes	5	0
No	6	10

The next question was “Do you feel you had a comparable preparation to other entry-level dietitians?” The answers ranged from “above average preparation”, “comparable preparation”, “less prepared” to “not prepared” and are summarized in Table 17. Distance graduates most often reported “comparable preparation” (5) or “less prepared” (5). Traditional graduates most often reported “above average preparation” (7) or “comparable preparation” (3).

Table 17.
Graduate Interview Question #9

Codes	Distance	Traditional
Above Average Preparation	1	7
Comparable Preparation	5	3
Less Prepared	5	0
Not Prepared	0	0

The next question was “Did you feel competent to practice?” The answers were once again yes/no and are presented in Table 18. Nine distance graduates reported feeling “competent” to practice, while only 2 graduates reported feeling “not competent”

to practice. All 10 traditional graduates reported feeling “competent” to practice. Knowing the subject of the research, one of the traditional graduates said “I don’t feel I would have been successful without such a structured environment.”

Table 18.
Graduate Interview Question #10

Codes	Distance	Traditional
Competent	9	10
Not Competent	2	0

The final question was “Did you feel prepared for the registration exam?” The answers were yes/no and are presented in Table 19. Ten of eleven distance graduates felt prepared for the exam; while only 1 distance graduate reported feeling unprepared for the exam. All 10 of the traditional graduates felt prepared for the registration exam.

Table 19.
Graduate Interview Question #11

Codes	Distance	Traditional
Yes	10	10
No	1	0

In summary, interviews with graduates revealed several themes. The first theme concerned the reason for selecting the internship program. Distance graduates chose their internship based on location. Many of the distance graduates were older and had family commitments that prohibited them from relocating. Traditional graduates also chose their internship program based on location, but more for location familiarity rather than family commitments. Another reason traditional graduates chose their internship is reputation of

the program. A second theme concerned practice area. Most of the graduates are working in clinical nutrition areas. More distance graduates, however, are working in specialty positions, which may contribute to their feelings of being less prepared for practice. The next theme was how prepared for practice graduates felt. All graduates felt prepared for practice but traditional graduates generally reported feeling more prepared. Most graduates felt their clinical judgment was adequate but traditional graduates typically rated their judgment at a higher level. All graduates felt competent for practice and prepared to take the registration exam for dietitians. However, distance graduates felt less prepared than other entry-level practitioners and traditional graduates felt better prepared than other entry-level practitioners. The distance graduates' feelings of being less prepared and competent may be influenced by a lack of confidence from their self-perception as older students. The fourth theme related to strengths and weaknesses of the program. Both groups of graduates reported supportive and responsive faculty as a strength of the program. Distance graduates also felt the flexibility of the program was a strength. Several distance graduates actually said it was the flexibility of the program that allowed them to complete an internship. Traditional graduates felt the variety of experiences was an additional strength of the program. There were no commonalities in program weaknesses. Distance graduates reported many more program weaknesses. The weaknesses were related to: 1) the nature of distance learning, such as need for learner initiative, lack of communication, and lack of interaction; and 2) the newness of the programs (7 years average), such as the curriculum and preceptors. Most traditional graduates reported no weaknesses, which may be related to the fact that most of the traditional programs were well established (18 years average). The one weakness voiced

by the traditional students is the desire for specialty training, which is not an entry-level skill. The final theme concerned recommendation of the internship program. All graduates recommended their programs, but distance graduates recommended their programs for only certain types of learners – more self-directed, experienced learners. In fact, many distance graduates felt that traditional dietetic students might actually be at a disadvantage in the distance environment. Some traditional graduates actually said they didn't feel they would have been successful in a distance internship. Overall, the interviews with graduates indicate that all graduates feel prepared and competent for practice but traditional graduates seem to feel better prepared for practice.

Traditional and Distance Learning Program Directors Interviews. Six program directors participated in the interviews – 3 from traditional programs and 3 from distance learning programs. A total of nine questions were posed to the traditional and distance learning program directors during the interviews. The first question was “How competent/ prepared are your graduates?” Results ranged from “well prepared” to “prepared” and are presented in Table 20. Distance program directors felt their graduates were either “well prepared” (1) or “prepared” (2). Traditional program directors also felt their graduates were either “well prepared” (2) or “prepared” (1).

Table 20.
Program Directors Interview Question #1

Codes	Distance	Traditional
Well Prepared	1	2
Prepared	2	1

The next question was “What do you feel are the strengths of your program?” When multiple answers were given, all were coded. Results are presented in Table 21. Distance program directors felt the strengths of their programs were preceptors (2) and flexibility/individualization (1). Traditional program directors cited their preceptors (2), variety (2), specialty rotation (1) and program emphasis (1) as the strengths of their programs.

Table 21.
Program Directors Interview Question #2

Codes	Distance	Traditional
Preceptors	2	2
Flexibility	1	0
Variety	0	2
Specialty Rotation	0	1
Program Emphasis	0	1

Question three asked “What do you feel are the weaknesses of your program?” Results are presented in Table 22. Distance program directors cited non-traditional students (2) and quality control (1) as the weaknesses of their program. Traditional program directors listed the need for more pediatric experiences (2) and the need for more didactic modules (1) as their program weaknesses.

Table 22.
Program Directors Interview Question #3

Codes	Distance	Traditional
Non-traditional students	2	0
Quality Control	1	0
Need for more pediatrics	0	2
Enhanced didactic modules	0	1

The next question was “How do you assure equivalent learning experiences for interns?” Results are presented in Table 23. Distance program directors all (3) reported using leveling experiences such as worksheets, comprehensive exam, or online modules to assure equivalency. Traditional program directors all (3) reported using the same rotation sites to assure adequacy.

Table 23.
Program Directors Interview Question #4

Codes	Distance	Traditional
Leveling experiences	3	1
Same rotation sites	0	3

The next question was “How would you rate your graduates’ clinical judgment?” Results are presented in Table 24. Distance program directors rated their graduates’ clinical judgment as “above average” (1) or “entry-level” (2). Traditional program directors rated their graduates’ clinical judgment as “above average” (2) or “entry-level” (1). No director, either distance or traditional, felt their graduates’ clinical judgment was “below average.”

Table 24.
Program Directors Interview Question #5

Codes	Distance	Traditional
Above Average	1	2
Entry-level	2	1
Below Average	0	0

The final question was “How do your graduates compare to other entry-level practitioners?” Results are presented in Table 25. Distance program graduates felt their graduates were “above average” (1) or “comparable” (2). All traditional program directors felt their graduates were “above average” (3). No director, either distance or traditional, felt their graduates’ clinical judgment was “below average.”

Table 25.
Program Directors Interview Question #6

Codes	Distance	Traditional
Above Average	1	3
Comparable	2	0
Below Average	0	0

Despite the small numbers, interviews with program directors revealed several themes. The first theme concerned preparation for practice. All program directors felt their graduates were prepared/competent for practice but traditional directors felt their graduates were “well prepared” and had “above average” competency for practice. All program directors felt their graduates had at least entry-level clinical judgment, but traditional directors felt their graduates had “above average” clinical judgment. And all

program directors felt their graduates were at least comparable to other entry-level practitioners but traditional program directors felt their graduates performed above entry-level practitioners. The next theme addresses program strengths and weaknesses. Both traditional and distance program directors felt the strength of their program is preceptors. An additional strength listed by traditional directors was variety of experiences. There were no similarities in program weaknesses. Distance directors felt the nature of the non-traditional student is the main weakness of their program. Most of the distance students were older, had more family and work commitments, and had been out of school longer. Although these characteristics are typical of distance learners, they may have a negative impact on completion of the program. The program weakness listed most often by traditional program directors was the need for more pediatric training, which again is not an entry-level practice skill. Overall, program directors were very proud of their internship programs and felt their students were prepared for dietetic practice, but traditional program directors felt their graduates had above average preparation.

Traditional and Distance Learning Graduate Supervisor Interviews. Sixteen supervisors participated in the survey. There were a total of 8 questions on the Supervisor Interview. The first question was “how well prepared was this employee for practice?” Answers ranged from “well prepared” to “prepared”, to “needed more training” and are presented in Table 26. Three distance supervisors felt their employee was “well prepared,” five supervisors felt their employee was “prepared”, and two supervisors felt their employee “needed more training.” Five traditional supervisors felt their employee was “well prepared” and only one supervisor felt their employee “needed more training.”

Table 26.
Supervisors Interview Question #1

Codes	Distance	Traditional
Well Prepared	3	5
Prepared	5	0
Needed more training	2	1

The next question was “How did the graduate’s training compare to other entry-level dietitians?” Answers ranged from “above average,” to “comparable,” or “below average” and are presented in Table 27. One distance supervisor felt the employee was “above average,” seven felt the employee was “comparable,” and two felt the employee was “below average.” As one distance supervisor said, “I would hire either type of graduate but feel the distance learning graduates need a little more work.” Five of the traditional supervisors felt their employees were “above average,” and only one felt their employee was “below average.”

Table 27.
Supervisors Interview Question #2

Codes	Distance	Traditional
Above Average	1	5
Comparable	7	0
Below Average	2	1

“Was the graduate competent to practice,” was the next question asked. Answers are presented in Table 28. Nine of the distance supervisors felt the graduate was competent,

while one did not feel the graduate was competent for entry-level practice. All six of the traditional supervisors felt the graduates were competent for entry-level practice.

Table 28.
Supervisors Interview Question #3

Codes	Distance	Traditional
Competent	9	6
Not Competent	1	0

The next question asked the supervisors to list the graduate’s strengths. When more than one strength was listed, all were coded. Results are presented in Table 29. The strengths listed most frequently by distance supervisors were independence/maturity (5), counseling skills (2), and clinical skills (2). The strengths listed most frequently by traditional supervisor were independence/maturity (3) and clinical judgment (2).

Table 29.
Supervisors Interview Question #4

Codes	Distance	Traditional
Independent/maturity	5	3
Counseling skills	2	1
Clinical skills	2	1
Clinical judgment	0	2
Program emphasis	1	1
Flexibility	1	0

The next question was “In what areas could the employee have been better prepared?” Results are presented in Table 30. The areas for improvement most frequently cited by supervisors of distance graduates were medical nutrition therapy skills

(4) and the need for more training in specialty areas such as critical care and renal disease (4). Two of the distance supervisor felt there were no areas for improvement. Four of the supervisors of traditional graduates felt there were no areas for improvement. The only areas of improvement cited by traditional supervisors were medical nutrition therapy (1) and the need for more training in specialty areas (1).

Table 30.
Supervisors Interview Question #5

Codes	Distance	Traditional
Medical Nutrition Therapy skills	4	1
More specialty training	4	1
No weaknesses	2	4
Counseling	1	0
Work ethic	1	0

Question six was “How would you rate your employees’ clinical judgment?” Answers ranged from “above entry-level” to “entry-level”, or “below entry-level” and are presented in Table 31. Supervisors of distance graduates rated their clinical judgment as “above entry-level” (4) and “entry-level” (5). Only one supervisor rated the distance graduate’s clinical judgment as “below entry-level.” Supervisors of traditional graduates rated their clinical judgment as “above entry-level” (4) or “entry-level” (2). No traditional supervisor felt the graduates’ clinical judgment was “below entry-level.”

Table 31.
Supervisors Interview Question #6

Codes	Distance	Traditional
Above entry-level	4	4
Entry-level	5	2
Below entry-level	1	0

The next question asked the supervisor to cite the internship program's strengths based on their experience with the program graduate. Results are presented in Table 32. Distance supervisors most often (6) cited independent, self-directed graduates as the program strength. Traditional supervisors most often cited above entry-level preparation (3) and a variety of experiences (2) as the internship program's strengths.

Table 32.
Supervisors Interview Question #7

Codes	Distance	Traditional
Independent/self-directed	6	0
Above entry-level preparation	0	3
Variety of experiences	1	2
Flexibility	1	0
Director	1	0
Structure	1	0
Specialty	0	1

Question eight asked the supervisor to cite the internship program's weaknesses based on their experience with the program graduate. Results are presented in Table 33.

Distance supervisors most often cited the need for more clinical training (9) as the program weakness. Most traditional supervisors (4) felt there were “no program weaknesses.” When weaknesses were reported, traditional supervisors reported the need for more clinical training (1) and the need for more specialty training (1).

Table 33.
Supervisors Interview Question #8

Codes	Distance	Traditional
Need more clinical training	9	1
Need more specialty training	0	1
Need more monitoring, structure	1	0
No program weaknesses	0	4

The final interview question was “Would you recommend this dietetic internship program?” Answers were yes/no and are presented in Table 34. Supervisors of distance program graduates most often recommended the program (9); only one supervisor did not recommend the program. “The graduate needed to much catch-up work.” All (6) of the supervisors of traditional graduates recommended the program.

Table 34.
Supervisors Interview Question #9

Codes	Distance	Traditional
Yes	9	6
No	1	0

In summary, interviews with supervisors of dietetic internship graduates revealed several themes. The first theme concerned preparation for practice. All supervisors felt

the graduates were prepared and competent for practice, but traditional supervisors rated their graduates “well prepared” and “above average” competency while distance learning supervisors rated their graduates as “average” competency. The distance learning supervisors’ responses may have been biased by underlying preconceptions about distance internships. Traditional supervisors also ranked graduates’ clinical judgment higher. The next theme related to graduate strengths and weaknesses. The common graduate strength cited by all supervisors was independence/maturity. It was expected that the distance graduates would have this listed as a strength, since they tend to be older and more experienced, but it was a surprise that this was a strength listed for traditional graduates, since they tend to be younger and inexperienced. It may be that the internship programs develop students’ maturity. Divergent graduate strengths were: 1) distance supervisors also ranked the graduates higher in entry-level skills such as clinical and counseling; 2) traditional supervisors ranked their graduates higher in the more advanced level skill of clinical judgment. Alternatively, supervisors of distance programs cited areas for graduate improvement as the need for more medical nutrition therapy while traditional supervisors cited no areas for graduate improvement. The final theme involved program strengths and weaknesses. Based on their experience with the distant graduate, their supervisors felt the programs’ strength was independent graduates, while supervisors of traditional graduates felt the programs strengths were above entry-level preparation and a variety of experiences. Supervisors of distance graduates felt the program’s primary weakness was the need for more clinical training, while the most supervisors of traditional graduates cited no program weaknesses. As one supervisor said, “Graduates need to be able to hit the ground running.” While distance graduates

may be very independent, they may not have the clinical skills necessary to “hit the ground running.” The implications of the overall findings from the interviews with supervisors is all graduates seem to be prepared at the entry-level, but traditional graduates seem to have more advanced preparation and skills from their supervisors’ perspective.

Summary

This research project was governed by four questions. The first research question was “Does the registration exam pass rates differ between distance learning and traditional dietetic internships?” The results of the study found no significant difference in the pass rates between the traditional programs and the distance programs. The second research question was “Do program graduates of distance learning and traditional dietetic internships differ in their assessment of their preparation for practice?” The study results indicated the traditional program graduates rated their preparedness significantly higher on the following competencies and areas of practice: ability to communicate effectively, ability to provide comprehensive nutrition care, clinical judgment, independence and work ethic, and professionalism. There was no significant difference found on the questions concerning ability to counsel patients and ability to effectively manage foodservice systems. The next research question was “Do supervisors of graduates of distance learning and traditional dietetic internships differ in their assessment of their preparation for practice?” The study results indicated that supervisors of traditional graduates rated their preparedness significantly higher on the following competencies and areas of practice: ability to communicate effectively, ability to provide comprehensive nutrition care, ability to counsel patients, ability to effectively manage foodservice

systems, clinical judgment, and independence. There was no significant difference found on the question concerning work ethic and professionalism. The final research question was “How do graduates, their supervisors, and program directors of dietetic internships evaluate interns’ curricular experience and preparation for practice?” The overall findings from the interviews with graduates indicated that all graduates felt prepared and competent for practice, but traditional graduates felt better prepared for practice. The overall findings from the interviews with program directors were all program directors felt their students were prepared for dietetic practice, but traditional program directors felt their graduates had above average preparation. The overall findings from the interviews with supervisors were all graduates seem to be prepared at the entry-level, but traditional graduates seem to have more advanced preparation and skills from their supervisors’ perspective.

Chapter Five

Conclusions

The purpose of this study was to compare outcomes in distance learning dietetic internships to traditional dietetic internships. Specifically, the pass rate of the registration exam for dietitians, levels of perceived preparation for practice, and evaluation of curricular experiences were compared. The study was divided into three phases. The first phase of the study was the recruitment of dietetic internship directors and program information, including registration exam pass rate. The second phase of the study consisted of surveys on preparedness for practice to the graduates and supervisors. The third phase of the study involved interviews of traditional and distance program graduates, their supervisors, and internship directors on curricular experience and preparation.

This chapter will integrate the discussion of the data collected and analyzed with the theoretical underpinnings of the Equivalency Theory, and consists of three sections. A discussion of findings for each research question is included in the first section of this chapter. The second section presents the implications for practice. Recommendations for further study are featured in the third section.

Discussion of Findings for Research Questions

In this study, there were four research questions guiding the comparison of student outcomes in distance learning dietetic internships to student outcomes in traditional dietetic internships.

Pass rate data was used to answer the research question, “Does the registration exam pass rate differ between distance learning and traditional dietetic internships?” The registration exam for dietitians is a national, validated test. Program pass rate is the primary objective measure used to evaluate student outcome in dietetic education. Student t-test demonstrated no significant difference in total pass rates between traditional dietetic internships and distance dietetic internships. A larger sample size or specific information on domain scores may have detected more differences between groups. The answer to this research question is pass rates do not differ between traditional and distance dietetic internship programs. Therefore, results of this research question support equivalency between traditional distance learning graduates using this objective measure. This finding, however, is most likely attributed to similar undergraduate training rather than the difference in internship program types.

GPA and question responses from the surveys were used to answer the research questions “Do program graduates of distance learning and traditional dietetic internships differ in their assessment of their preparation for practice?” and “Do supervisors of graduates of distance learning and traditional dietetic internships differ in their assessment of graduates’ preparation for practice?” Although developed for this study, the study survey was based on surveys used in the field and was specific for major areas and skills of dietetic practice. Student t-tests were conducted comparing the responses from traditional internship participants with distance internship participants overall, as well as comparing traditional graduate with distance graduates and traditional supervisors with distance supervisors. Survey numbers were larger so the measure had a greater power to detect differences. Overall comparison demonstrated traditional program

graduates had a significantly higher GPA. In the comparison of traditional graduates with distance graduates, traditional graduates scored themselves significantly higher than distance graduates on all constructs of preparation except ability counsel patients and ability to effectively manage foodservice systems. In the comparison of supervisors of traditional graduates with supervisors of distance graduates, supervisors of traditional graduates scored traditional graduates significantly higher on all constructs of preparation except professionalism. The answer to both of these research questions is that graduates and their supervisors differ in their assessment of graduates' preparation, with traditional graduates ranked significantly higher in virtually all areas of preparation. Therefore, the results for these two research questions do not support equivalency in preparation for practice.

Interviews were conducted to answer the final research question, "How do graduates, their supervisors, and program directors of dietetic internships evaluate interns' curricular experience and preparation for practice?" All graduates were very positive about their curricular experiences. Traditional graduates felt preceptors and the variety of experiences were the strengths of their programs. Distance graduates also felt preceptors were the strength their program, as well as the flexibility of the program. In fact, the flexibility of the distance program allowed these graduates access to a dietetic internship that they didn't have through traditional programs. All of the graduates recommended their respective programs, but distance graduates recommended their programs only for self-directed, experienced learners. All graduates felt prepared for entry-level dietetic practice. Traditional graduates, however, felt they were better prepared for practice, were more competent than other entry-level practitioners, had a

higher level of clinical judgment, and were better prepared for the registration exam than the distance graduates reported. Results from the interviews with the graduates' supervisors were similar to the results of the graduate interviews. All supervisors listed independent graduates as a strength of the program. Supervisors of traditional graduates also listed clinical judgment, advanced practice training, and variety of experience as strengths of the traditional programs. There were no similarities in perceived program weaknesses. Supervisors of distance program graduates felt clinical training was a weakness of the distance programs. Supervisors of traditional graduates cited no program weakness. Supervisors of distance graduates felt their employees were prepared and competent for entry-level practice with the corresponding clinical judgment. Supervisors of traditional graduates, however, felt their employees' clinical judgment, preparation and competence were above entry-level practice. Results from interviews with the program directors reflected themes found in interviews with graduates and their supervisors. All program directors, distance and traditional, felt preceptors are the strength of their programs. Directors of distance programs cited certain student qualities as the weakness of their programs while directors of traditional programs cited limited pediatric experience as the weakness of their programs. Distance program directors felt their graduates were prepared and competent at the entry-level of practice. Traditional program directors felt their graduates' clinical judgment, preparation, and competence was above entry-level practice. Therefore, the answer to this study question is that traditional graduates, their supervisors, and program directors differ from distance graduates, their supervisors, and program directors in their evaluation of interns' curricular experience and preparation for practice. All interview participants evaluated

graduates as prepared for entry-level practice but traditional graduates were evaluated as prepared at a higher level of dietetic practice. The results for this research question, then, do not support equivalency in preparation for practice either.

In conclusion, the results of this research do not support equivalency in preparation for practice between distance and traditional dietetic internships. Although there was no significant difference in pass rates for the registration exam, significant differences were found in constructs of dietetic practice based on surveys with graduates and their supervisors. Common themes from interviews with graduates, their supervisors, and program directors confirmed survey results showing graduates of traditional dietetic internship were prepared at a higher level of practice, competence and clinical judgment. These differences in preparation were despite a common undergraduate preparation, which suggests the differences can be attributed to the different type of internship.

Implications and Recommendations for Future Practice

This study addressed the equivalency of student outcomes in distance versus traditional dietetic internships. Overall, the study results did not support equivalent outcomes between traditional and distance learning internships. One of the primary consumers of dietetics education is the employer of the graduates. Due to issues such as staffing and higher patient acuity, employers are expecting graduates' clinical judgment and competence to be at a level more advanced than entry-level. Traditional internship programs seem to be meeting this expectation while distance programs are not. The question then, is how to build an internship program that provides graduates with the appropriate level of clinical judgment and competence. Themes from the research can be used to build a distance program that provides equivalent outcomes. One important

theme that was identified from the interviews concerned equivalent learning experiences. Many traditional program directors reported using leveling experiences such as case scenarios in lieu of same-site rotations to assure equivalent learning experiences among students within the program. Case scenarios not only develop clinical competence, but they also aid in the development of clinical judgment. It appears that leveling experiences among internships might help improve equivalency of program outcomes between programs. Therefore, one practice recommendation to assure equivalency of experiences for interns is for all internships to include leveling experiences.

Related to this theme is the issue of equivalent preceptors. Interviews in this study indicated that preceptors can be a major strength of an internship program. Several programs reported using preceptor training to improve compliance with practice expectations. Preceptor training should include methods to develop clinical judgment such as processing nutritional interventions. In fact, CADE is developing a national preceptor training and certification program. Therefore, a second practice recommendation is for preceptor training to be standard in all dietetic internships.

The study results confirmed the literature reviewed on distance learners. This new subpopulation of higher education learners tend to be older, have many conflicting responsibilities, and need flexible learning experiences. Because of these characteristics and the nature of distance learning, the onus for learning is placed on the student. Despite this recognition of the characteristics of a distance learner, interviews in this study revealed that these student characteristics are seen as a program weakness because they can make it more difficult to succeed in an internship. The distance learning programs have built ultimate flexibility within their programs to help with these

characteristics but more needs to be done. The recommendation for future practice, then, is to use the literature on distance learning along with program experience to determine characteristics associated with success in the distance learning internships. These characteristics can then be used to develop a screening method that ascertains a student's appropriateness for a distance learning internship programs.

One of the reasons this research topic was untaken is a perceived bias by traditional dietetic educators against the distance learning programs. That bias against distance learning programs was also evident in the interviews with employers of internship graduates. This is an important point for students to be aware of when choosing the type of dietetic internship they wish to complete. The implication is that graduates of distance learning programs may experience prejudice when applying for dietitian positions.

The Task Force on Dietetics Education is recommending major alterations in the models of dietetics education. Rather than the traditional model of a bachelor's degree in dietetics followed by a dietetic internship, the new model calls for the coordination of the internship within the course work, culminating in a master's degree. All programs will be university-based and have affiliations with hospital sites. This new model could foreseeable increase the use of distance learning dietetic internships because of limitations in the number of clinical sites immediately around the university. With an increase use of distance internships, it is critical that the distance learning dietetic internships assure learning and outcomes equivalent to traditional dietetic internships.

Recommendations for Future Research

The major recommended areas for research involve the registration exam pass rates. The current study only contained overall pass rates for 12 programs. Further research with a larger sample size is needed to increase the power to detect potential differences between groups. Additionally, research on the domain scores would be beneficial to determine more subtle differences between groups.

Another recommendation for further research concerns the age of the internship programs. Age of a program can have a significant impact on the success of the program due to the experience of the preceptors and internship director. The distance learning internship programs in this study were younger than the traditional internship programs. Further research is needed to compare student outcomes between distance and traditional programs that are more similar in age.

Conclusion

In summary, the results of this study did not demonstrate equivalency between the two types of dietetic internship in preparation for entry-level dietetic practice. There were no significant differences between the two types of internship programs in pass rates. Based on the survey and interview findings, distance-learning graduates appear to be prepared and competent for practice as an entry-level dietitian. Traditional internship graduates in this study, however, appeared to have a higher level of preparation and competence for practice and clinical judgment. The recommendations for future practice and research provided may help lessen the differences found between the two types of internship programs. Overall, this study will aid the field and accrediting body of The

American Dietetic Association to demonstrate the effectiveness and appropriateness of this new form of internship.

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Appendices

Appendix A: Program Information and Registration Exam Pass Rate Review

Dear Internship Directors,

Thank you for your willingness to participate in this study. I am studying outcomes in distance learning and traditional dietetic internships. Please provide the following information on your program.

I. Program Demographics

- a. Name of Program:
- b. Location (city and state):
- c. Number of interns per class: Number of classes each year:
- d. Affiliation (circle one) – hospital university other _____
- e. Age of Program:

II. Program Characteristics

- a. Type of Program (circle one) – traditional distance learning
- b. Emphasis area (generalist, nutrition therapy, food service, community, sports nutrition, research, other):
- c. Program Completion Rate:
- d. Registration Exam Pass Rate for past five years:

Appendix B: Graduate Survey on Preparedness for Practice

Please check the appropriate column to indicate how you perceive your level of preparation for professional practice after graduating from your internship using the 5-point scale shown below.

1. Poor
2. Below Average
3. Satisfactory
4. Above Average
5. Excellent

ABILITIES & SKILLS:	1	2	3	4	5	N/A
A. ability to communicate effectively and problem solve						
B. ability to provide comprehensive nutrition care in a variety of settings						
C. ability to counsel patients, individually and in groups						
D. ability to use techniques and tools to effectively manage foodservice systems						
E. clinical judgment						
F. independence and self-direction						
G. work ethic and professionalism						

Undergraduate Grade Point Average: _____

Area of Practice:

- _____ a. Clinical Dietetics
 _____ b. Community Practice
 _____ c. Foodservice Systems Management
 _____ d. Education/Research
 _____ e. Other

Would you further assist in the study of student outcomes in dietetic internship by agreeing to a 30 minute phone interview to discuss your experiences and opinions on the internship? If so, please provide you name and contact information below. Thanks!

Name:
 Phone:
 Email:
 Address:

Appendix C: Supervisor Survey on Preparedness for Practice

Please check the appropriate column to indicate how you perceive your employee’s level of preparation for professional practice after graduating from their internship using the 5-point scale shown below.

1. Poor
2. Below Average
3. Satisfactory
4. Above Average
5. Excellent

ABILITIES & SKILLS:	1	2	3	4	5	N/A
A. ability to communicate effectively and problem solve						
B. ability to provide comprehensive nutrition care in a variety of settings						
C. ability to counsel patients, individually and in groups						
D. ability to use techniques and tools to effectively manage foodservice systems						
E. clinical judgment						
F. independence and self-direction						
G. work ethic and professionalism						

Graduate’s Area of Practice:

- _____ a. Clinical Dietetics
- _____ b. Community Practice
- _____ c. Foodservice Systems Management
- _____ d. Education/Research
- _____ e. Other

Would you further assist in the study of student outcomes in dietetic internship by agreeing to a 30 minute phone interview to discuss your experiences and opinions on the internship? If so, please provide your name and contact information below. Thanks!

Name:
 Phone:
 Email:
 Address:

Appendix D: Program Director Interview Guide

BRIEFING: *Thank you for your willingness to participate and be interviewed. I am studying outcomes in distance learning and traditional dietetic internships. This interview will take approximately 30 minutes.*

INTRODUCTION:

Introduction of interviewer.

Ask the participant to introduce themselves.

WARM-UP:

How long have you been in charge of the program? Can you give an overview of your program?

PRELIMINARY QUESTIONS:

We are going to start first with the two questions I sent you in advance.

QUESTION #1

Could you describe the internship curriculum?

QUESTION #2

How well are your graduates prepared for practice in clinical, food service and community?

FOLLOW-UP QUESTIONS

What do you see as the program's strengths?

What do you see as the program's weaknesses?

Describe areas of the curriculum that could be improved.

How do you assure equivalency of learning experiences among interns?

Do you feel your students are competent to practice?

Appendix D: (Continued)

How would you rate the graduates' clinical judgment?

How do you feel your graduates' skills compare to other graduates?

Appendix E: Graduate Interview Guide

BRIEFING: *Thank you for your willingness to participate and be interviewed. I am studying outcomes in distance learning and traditional dietetic internships. This interview will take approximately 30 minutes.*

INTRODUCTION:

Introduction of interviewer.

Ask the participant to introduce themselves.

WARM-UP:

(Graduate) Which program did you attend and when. Why did you choose the program?

PRELIMINARY QUESTIONS:

We are going to start first with the two questions I sent you in advance.

QUESTION #1

Describe your internship experience.

QUESTION #2

How well did the internship prepare you for your first job?

What was your first job?

FOLLOW-UP QUESTIONS

What do you see as the program's strengths?

What do you see as the program's weaknesses?

Describe the most beneficial learning experience that prepared you for practice.

Describe areas of practice that you needed more learning experiences.

How would you rate your clinical judgment upon graduation?

Describe any technical or logistical problems encountered during the internship.

Appendix E: (Continued)

Describe areas of the curriculum that could be improved.

Would you recommend this internship? Why or why not?

How would you compare your preparation compared to other entry-level dietitians?

Did you feel competent to practice?

Have you taken the registration exam? If so, did you feel adequately prepared?

Appendix F: Supervisor Interview Guide

BRIEFING: *Thank you for your willingness to participate and be interviewed. I am studying outcomes in distance learning and traditional dietetic internships. This interview will take approximately 30 minutes.*

INTRODUCTION:

Introduction of interviewer.

Ask the participant to introduce themselves.

WARM-UP:

How long have you been at this facility? Can you tell me about the facility and your department?

PRELIMINARY QUESTIONS:

We are going to start first with the two questions I sent you in advance.

QUESTION #1

How well was this employee prepared for practice?

QUESTION #2

How does their preparation compare to other newly hired graduates of internship programs?

FOLLOW-UP QUESTIONS

Overall, was the graduate competent for practice?

In what areas was the graduate strongest?

In what areas could the graduate have been better prepared?

Were there any skills that need remediation?

Appendix F: (Continued)

How would you rate the graduate's clinical judgment?

From you experience with this graduate, what do you see as the program's strengths?

From you experience with this graduate, what do you see as the program's weaknesses?

From you experience with this graduate, would you recommend this internship? Why or why not

About the Author

Lauri Ysseldyke Wright received her bachelor's degree in dietetics from The Ohio State University. She completed the combined dietetic internship/master's degree program at Louis Stokes Veterans Hospital/Case Western Reserve University in Cleveland, Ohio. Ms. Wright worked as a clinical dietitian at the James A. Haley Veterans Hospital in Tampa, Florida for over 15 years where she specialized in Infectious Disease. She conducted research on *The Incidence of Malnutrition and Nutrition-Related Complications in AIDS Patients* and *The Impact of Nutrition Education on the Nutritional Status, Knowledge and Attitude of HIV+ Patients*. In 2004, Ms. Wright began the dietetic internship at the Bay Pines VA in St. Petersburg, Florida. She is an adjunct nutrition instructor for Hillsborough Community College, Manatee Community College, and University of South Florida.