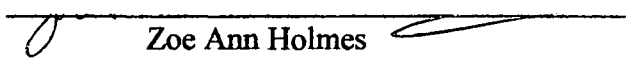


AN ABSTRACT OF THE THESIS OF

Carrie King for the degree of Master of Science in Nutrition and Food Management presented on April 25, 2002.

Title: Distance Education in Undergraduate Dietetic Education.

Abstract approved



Zoe Ann Holmes

The purpose of this study was to assess the usage of distance education in undergraduate dietetics programs. Additionally, the possibility of obtaining an undergraduate degree in dietetics via distance education was examined. The population receiving the survey research was all directors (279) of Commission on Accreditation for Dietetics Education (CADE) approved/accredited undergraduate programs listed in the *2001-2002 Directory of Dietetics Programs*. This included the Didactic Programs in Dietetics and Coordinated Programs. A database of the 54% survey respondents was compiled and a numerical summary was done. Frequencies of the responses were determined. Cross-tabulations using chi-square tests were done with Minitab Statistical Software (version 13.1) to determine demographic influence as it related to key responses, $p < .05$. The findings of the survey were compared with demographic information to look for relationships between the characteristics of the higher education institutions and their likelihood of offering distance education.

The dietetics program directors indicated that 32% ($n=150$) of undergraduate dietetics programs offer distance education courses in some format. Land grant universities were significantly more likely to offer dietetics distance education courses, but less likely to offer non-dietetics distance education courses. Institutions that accept transfer dietetics distance education courses from accredited institutions were more likely to offer dietetics distance education courses. Institutions that offer non-dietetics courses by distance education were more likely to offer dietetics courses by distance education. The most common distance education format utilized in dietetics was 100% Internet courses (48%). The majority of dietetics programs that offer distance education offer a

basic or introductory nutrition course (31%). Perceived barriers to distance education in dietetics most frequently included faculty time constraints (34%), lack of resources (17%) and lack of student and faculty demand or interest (11%). Suggestions for encouraging the development of dietetics distance education courses included give faculty more preparation or release time, or hire more staff (32%), acquire adequate resources (17%) and faculty training (12%). From the data of courses offered or permitted to be transferred, it would not be possible for a student to complete a four-year undergraduate degree in dietetics solely via distance education methodologies.

©Copyright by Carrie King
April 25, 2002
All Rights Reserved

Distance Education in Undergraduate Dietetic Education

by
Carrie King

A THESIS

submitted to

Oregon State University

**in partial fulfillment of
the requirements for the
degree of**

Master of Science

**Presented April 25, 2002
Commencement June 2002**

Master of Science thesis of Carrie King presented on April 25, 2002.

APPROVED:

Major Professor, representing Nutrition and Food Management

Head of the Department of Nutrition and Food Management

Dean of the Graduate School

I understand that my thesis will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my thesis to any reader upon request.

Carrie King, Author

ACKNOWLEDGEMENTS

The author wishes to express sincere appreciation to Dr. Zoe Ann Holmes for her assistance in the preparation of this manuscript, as well as her advisement and guidance through every step of this research process. Special thanks are due to Dr. Zoe Ann Holmes, Dr. Ann Messersmith, and Ms. Naomi Benell for being true visionaries in the use of distance education in the field of dietetics. I thank the members of my graduate committee, Dr. Sylvia Twomey, and Professor Nancy Bryant, for offering their valuable time and expertise to guide my research. Also, I thank Dr. Derek Webb, from the University of Alaska, Anchorage, for his assistance with analyzing the data from my research. Additionally, I thank the Department of Nutrition and Food Management for furnishing the M.S. degree program in Nutrition and Food Management via distance education and for their support throughout my time at Oregon State University. To my long-suffering research assistant, friend and husband, Mr. Dale King, I express unending gratitude for long hours of debate, proof reading and support.

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION.....	1
RESEARCH PURPOSE.....	5
LITERATURE REVIEW.....	6
Distance Education Programs.....	7
Use of Distance Education in Dietetics Education.....	13
Characteristics of Distance Education Students.....	15
Perceptions of Students of Distance Education/Technology.....	17
Performance of Students in Distance Education.....	18
Benefits and Advantages of Distance Education.....	19
Barriers to Distance Education.....	20
MATERIALS AND METHODS.....	28
Population.....	28
Instrument.....	28
Survey Distribution	29
Data Collection and Analysis of Data.....	30
RESULTS AND DISCUSSION.....	32
Demographics.....	32
Status of Dietetics Distance Education Courses.....	34
Dietetics Distance Education Courses.....	34
Non-Dietetics Distance Education Courses.....	37
Methods of Presentation for Dietetics Distance Education Courses.....	37

TABLE OF CONTENTS (Continued)

	<u>Page</u>
Qualitative Survey Comments.....	38
Barriers to Distance Education in Dietetics.....	42
Perceived Barriers to Utilizing Distance Education in Dietetics Education.....	42
Suggestions for Encouraging the Development of Dietetics Distance Education Courses.....	44
RECOMMENDATIONS.....	47
CONCLUSIONS.....	50
BIBLIOGRAPHY.....	52
APPENDICES.....	59

LIST OF TABLES

<u>Table</u>		<u>Page</u>
1.	Selected institutions reporting to have distance education programs.....	9
2.	Barriers to Distance Education.....	21
3.	Commentary on Selected Standards for the Delivery of Distance Education within the American Federation of Teachers " <i>Guidelines for Good Practice</i> " (16).....	26
4.	Summary of Types of Question Used in the Survey Instrument.....	29
5.	Survey Processing with Mailing Number, Distribution Method, and Dates.....	30
6.	Undergraduate Dietetics Courses Offered by Distance Education....	36
7.	Methodologies Utilized for Undergraduate Dietetics Distance Education Courses.....	38
8.	Summary of Distance Education in Undergraduate Dietetic Education Survey Results.....	40
9.	Perceived Barriers to Distance Education in Dietetics.....	43
10.	Suggestions for Encouraging the Development of Dietetics Distance Education Courses.....	45
11.	Study Outcome.....	51

LIST OF APPENDICES

<u>Appendix</u>	<u>Page</u>
APPENDIX A Survey Instrument	61
APPENDIX B Cover Letter, First Mailing.....	67
APPENDIX C Cover Letter, Second Mailing.....	69
APPENDIX D Cover Letter, Third Mailing.....	70
APPENDIX E Summary of Demographic Data of Respondents.....	71
APPENDIX F Cross-Tabulations Using Chi-Square Analysis of Offering Dietetics Courses via Distance Education and Type of Dietetics Programs Offered at Respondents' Institutions	72
APPENDIX G Participating Institutions and Dietetics Distance Education Courses.....	73
APPENDIX H Dietetics Courses Being Planned for Delivery via Distance Education Methodologies.....	82
APPENDIX I Institutions Offering Non-Dietetics Distance Education Courses.....	83
APPENDIX J Cross-Tabulations Using Chi-Square Analysis of Offering Dietetics Courses via Distance Education and Selected Survey Questions.....	86
APPENDIX K Cross-Tabulations Using Chi-Square Analysis of Offering Non-Dietetics Courses via Distance Education and Selected Survey Questions.....	89
APPENDIX L Distance Education Undergraduate Dietetics Courses Provided by a Consortium.....	92
APPENDIX M Glossary.....	93

DISTANCE EDUCATION IN UNDERGRADUATE DIETETIC EDUCATION

INTRODUCTION

Distance education is an exploding phenomenon that is allowing people to pursue higher education on their own time, at a pace that meets their needs, in locations where there are no colleges and universities, or where there is not a desired program of study. Distance education was defined as "formal teacher-learner arrangements in which the teacher and the learner are separated most of the time, and the communication between them is distributed via electronic media" (1). Types of electronic media utilized in distance education include: Internet-based instruction, satellite broadcasts, videotapes, video conferencing, e-mail, threaded bulletin board discussions, synchronous chat technologies, telephone, facsimile, and teleconference (2, 3, 4, 5, 6).

The originators of distance education did not seek to change the traditional method of higher learning; rather, they sought to extend educational opportunities to the previously inaccessible students, in an attempt to overcome the intrinsic characteristics of scarcity and exclusivity (6). Students may be inaccessible for a variety of reasons: remote locations of school or student, part-time status, adult learners, or students are employed full time (3, 6, 7).

The market value of virtual learning, according to financial analysts like Merrill Lynch, will reach \$7 billion by 2003 (8). There were many predictions regarding the increase in the use of technology in education. William A. Draves, president of Learning Resources Network, in December 1999, predicted the following (9):

- "Within 20 years, on-line classes with as many as 1,000 students will replace traditional lecture courses on-campus."
- "Larger class sizes will be a result of businesses' increasing demand for an educated workforce."
- "About 25% of Americans seek to continue their education after college...but that will increase to 50% in the next 20 years."

- "In person classes will specialize in small group discussions."
- "Institutions will start sharing on-line courses."
- "Institutions can specialize in certain areas, carving out a niche that could benefit other institutions and students."

Higher education institutions need to examine their position in the growing market of distance education. Gary Gretchell, the director of distance learning at Cape Cod Community College (10) predicted community colleges would eventually develop on-line courses and as a result, enroll students from across the country. Per Gretchell, higher education institutions would be well advised to develop signature courses and create a strategic position in the market. Administrator Edward Blakely, new dean of the Graduate School of Management and Public Policy at the New School University in New York encouraged his professors to put every course online (11). Blakely believed "those schools that aren't ready for online education will be left behind." Distance education has the ability to meet the changing needs of students, as well as higher education institutions. James H. Ryan, PhD, EdM, Vice President and Dean, Continuing Education, Pennsylvania State University, University Park stated in 1995 that education would become "more individualized, independent and immediately accessible" over the next decade (12).

Many organizations have documented the growth in the expansion of distance education. Sources vary in their report on the current percentage of the nation's colleges and universities that offer distance education. Some sources report more than 50% of higher education institutions currently provide courses over the Internet (8), while another report numbers around 70% (13). The Campus Computing Survey, conducted by Dr. Kenneth C. Green in 2000, (14) found that 59% of college course include the use of e-mail (compared with 20% in 1995) 43% of college courses incorporate Internet sources in classes (compared with 11% in 1995), and 31% of courses have a website (compared with 9% in 1996). A survey recently completed by the U. S. Department of Education's National Center for Education Statistics (NCES) reported an increase in

distance education programs of 72% between 1994-1995 and 1997-1998 (15). The National Center for Education Statistics (NCES) estimated that there were more than 1.6 million students enrolled in distance education courses in 1997-1998 (16).

Speculation on the reasons for the growth in distance education, according to college administrators and public officials, includes that there will be less public funding for higher education, increased student demand and the need for higher education opportunities for non-traditional students, and distance education provides faculty with a challenging environment in which to provide quality education (17).

A review of the literature indicated there is very little research on the use of distance education in the dietetics profession. There are articles available on a variety of topics: the use of distance education to convert traditional nutrition courses to e-mail delivery courses (3, 4), the use of interactive communication technology in a dietetic internship (18), reasons why dietetics professionals should become familiar with and use advanced technology (19), summation of the forms of technology currently used in dietetic education (20), and recommendations to prepare for future practice roles that will incorporate technology at levels much greater than currently used (12).

The most recent investigation on the use of distance education in the dietetics profession, conducted by the Council on Education and American Dietetic Association (ADA) Education and Accreditation staff, was published in 1995 (21). The program directors of all approved/accredited dietetics education programs were asked to provide information on the use of distance education in their programs, on the information request form for the *1994-1995 Directory of Dietetics Programs*. Of the 591 program directors that were asked, 19 programs (3%) reported the use of distance education in their dietetics curriculum. The request was repeated for the *1995-1996 Directory of Dietetics Programs*, however the directors of dietetic internships and professional practice programs were not included. Of the 354 directors of Commission on Accreditation for Dietetics Education (CADE) accredited/approved programs that were asked, 37 respondents (11%) reported the use of distance education in their programs, an increase of 195%. The American Dietetic Association (ADA) website,

<<http://www.eatright.org/cade/dpd.html> - DISTED > (22), shows a current listing of CADE accredited and approved dietetics education programs, and also provides a link with a list of programs that offer distance education. A review of these programs' websites and the recent issues of the *Journal of the American Dietetic Association* indicated no single institution markets a complete dietetics undergraduate degree program via distance education. However, other resources indicate that "most of the last two years of the dietetics degree program may be completed through distance education" at Kansas State University (23).

Certainly the increased use of technology may be a foundation for increased access to distance education. According to a survey published in 2000 by the University of California, Los Angeles (UCLA) Center for Communication (24), in 1997, 19 million Americans were using the Internet; just two years later, greater than 100 million Americans reported use of the Internet, a five-fold increase. Consider that there are approximately 55,000 new users of the Internet each day, 2,289 new users each hour, or 38 new users each minute. By comparison, electricity took 46 years to reach 30% of American households after it became publicly available, telephones reached 30% of households in 38 years; *the Internet took only seven years to reach 30% of American households.*

In order to train students to enter the competitive and ever changing work force, and to maintain a professional edge, the dietetics profession must embrace the new technologies with open arms. With the tremendous increase in use of advanced technology in the past few years, it was critical to survey appropriate populations and determine what the current state of affairs of distance education is in undergraduate dietetic education.

RESEARCH PURPOSE

The purpose of this study was to assess the usage of distance education (instruction provided by courses over the Internet, satellite, teleconference, video and sound tapes, and independent study) in undergraduate dietetics education. Additionally, the possibility of obtaining an undergraduate degree in dietetics via distance education was examined. The findings of the survey were compared with demographic information to identify relationships between the characteristics of the higher education institutions and their likelihood of offering distance education.

The hypotheses for this study were:

- | | |
|---------------------------|---|
| <u>Hypothesis 1 (H1):</u> | It is possible to offer an undergraduate dietetic education program solely by distance education. |
| <u>Hypothesis 2 (H2):</u> | At least 50% of the Commission on Accreditation for Dietetics Education (CADE) accredited/approved programs provide distance education in some format. |
| <u>Hypothesis 3 (H3):</u> | Large (student body of more than 20,000 students), public institutions will be more likely to offer distance opportunities. |
| <u>Hypothesis 4 (H4):</u> | Land grant universities will be more likely to offer distance education opportunities than non-land grant universities. |
| <u>Hypothesis 5 (H5):</u> | The integration of distance education courses from multiple institutions is needed for the success of an undergraduate dietetic education program solely by distance education. |

LITERATURE REVIEW

Siegel, et al, defined distance education as "formal teacher-learner arrangements in which the teacher and the learner are separated most of the time, and the communication between them is distributed via electronic media" (1). The American Federation of Teachers (16) and Yellen (25) agreed that the current use of the term distance education (or distance learning) refers to interactions that occur between the student and the instructor via electronic media (i.e., audio, video, e-mail, chat, teleconferencing and the Internet) versus the more traditional distance education medium of correspondence study. As technology advances and more and more changes occur in higher education, the definition of distance education has become less clear. Part of this has to do with the development of professional programs, continuing education and, even at Oregon State University, the Alumni College. Another factor to further confuse the definition of distance education is the use of technology and the Internet for "on-site" but "unseen" teaching by instructors. At Oregon State University, students on campus may be taking a course via the Internet or video and never see the instructor and have little access (26).

These and other changes in higher education have raised many questions. For example:

- What is the state of distance education in higher education in the United States?
- What is the current state of distance education in dietetics higher education?
- Is distance education appropriate for all students?
- What characteristics do successful distance education students share?
- How do distance students feel about their education?
- How do students perform academically in distance education?
- How does the quality of distance education compare to that of face-to-face instruction?

Perhaps most haunting of the many, just because distance education is a viable option, should higher education be using it? This literature review will briefly explore selected issues surrounding distance education.

DISTANCE EDUCATION PROGRAMS

Current uses of distance education technology range from formal academic programs (27) in higher education to completion of General Education Development (GED) (28), providing equal access to curriculum for rural school districts (29), providing continuing education for health care professionals (30) and employee training (31). New technologies are enabling employers to maintain cost control while training their employees (31). *Training* magazine reported that costly hotel and travel expenses make-up more than two-thirds of employee training expenses each year (17). According to the *Wall Street Journal*, approximately \$4 billion is spent on distance education annually by corporations for employee training (17). Forms of distance technology used for employee training include: CD-ROMs (compact disc read only memory), Internet-based courses, videoconferencing, and satellite-based distance learning (31).

One of the major players in the field of distance education continues to be higher education institutions. In 1999, it was estimated that there were over 6,000 accredited courses available on the Internet, available both to students in the U.S., as well as international students (32). The American Federation of Teachers (AFT), in May 2001, published a report, "A Virtual Revolution: Trends in the Expansion of Distance Education" (17). The AFT report detailed the essence of the growth in distance education and the affects the development of distance education has had on higher education, in addition to describing current types of distance education endeavors. Examples of distance education programs in higher education institutions include the U of I OnLine (University of Illinois), < <http://www.online.uillinois.edu/index.html> > (33). The distance education program at the U of I OnLine was developed in an effort to access new students, compete in a growing technology market and as a way to prevent faculty from selling their courses (17). Twenty-six online programs are offered, into which

students are admitted as a coordinated process with the University of Illinois, versus as a separate process. Other distance education programs described in the AFT report include the State University of New York (SUNY) Learning Network, < <http://www.sln.suny.edu/>> (34); Rio Salado Community College <http://www.rio.maricopa.edu/distance_learning/> (35); and the University of Maryland University College <<http://www.umuc.edu/>> (36). Each of these institutions focus on a particular market segment and take different approaches. The State University of New York (SUNY) Learning Network offers both credit and non-credit undergraduate and graduate courses. Rio Salado Community College was cited by AFT (17) as being one of the largest distance education community colleges, which offers 80% of its general education courses over the Internet and via other distance education mediums. The University of Maryland University College, was the first for-profit distance education venue in the United States established by a public university. It offers 24 comprehensive baccalaureate and Master's degrees online and boasts enrollment of 40,000 students. However, perhaps the most telling indication of the pervasiveness of distance education in higher education is a search with Internet search engines on the term "distance education." From the 1,580,716 results indicated on February 2, 2002 from three search engines [Lycos -307,716 sites (37); Goggle -742,000 (38); Yahoo-531,000 (39)], the listing of some of these institutions and their websites can be seen in Table 1.

Not all distance education efforts are supported exclusively by higher education communities. The "Corporate-University joint ventures" in distance education can be divided into two categories. According to the AFT report (17) the categories are:

- a) course management system vendors (that enable institutions to offer their own distance education courses) and
- b) organizations that "package and distribute courses and content from existing institutions" and organizations.

There are several choices higher education institutions can make within the first category: 1) create their own software and hardware in order to be able to offer distance education courses from their own site, 2) create software templates for distance education courses and seek external sources for the

Table 1. Selected institutions reporting to have distance education programs.^a

Institution	Website
Arizona State University	http://www-distlearn.pp.asu.edu/
Auburn University ^b	http://www.auburn.edu/outreach/dl/
Central Michigan University	http://www.ddl.cmich.edu/
California State University, Chico	http://rce.csuchico.edu/online/site.asp
Dakota State University	http://www.departments.dsu.edu/disted/
Florida State University	http://www.fsu.edu/~distance/
Idaho State University	http://wapi.isu.edu/
Indiana State University	http://indstate.edu/distance/
Michigan State University ^b	http://www.vu.msu.edu/site/wel.htm
NY Institute of Technology	http://www.nyit.edu/olc/
Northern Arizona University	http://www.distance.nau.edu/
Oklahoma State University ^b	http://www.okstate.edu/outreach/ics/
Oregon State University ^b	http://statewide.orst.edu/
South Dakota State University ^b	http://www3.sdstate.edu/Academics/DistanceEducation/
Tennessee Board of Regents	http://www.tn.regentsdegrees.org/
Texas A & M University ^b	http://dist-ed.tamu.edu/
Troy State University	http://spectrum.troyst.edu/~distance/
Univ. of Alaska Southeast	http://www.uas.Alaska.edu/uas/distance/
Univ. of Colorado at Denver	http://www.cuonline.edu/menu_htm/index.shtml
University of Florida ^b	http://www.fcd.ufl.edu/
University of Hawaii ^b	http://www.aln.Hawaii.edu/body.html
University of Houston	http://www.uh.edu/academics/de/
University of Maine System	http://www.learn.maine.edu/
University of Minnesota ^b	http://www.idl.umn.edu/
University of Missouri ^b	http://cdis.Missouri.edu/
University of Montana	http://www.umtonline.net/
University of Oregon	http://distanceeducation.uoregon.edu/
University of So. Carolina	http://www.sc.edu/deis/
Utah State University ^b	http://online.usu.edu
Washington State University ^b	http://distance.wsu.edu/

^aWebsites accessed January 31, 2002.^bThe institution is a Land Grant University.

hardware and training aspects, and 3) contract with suppliers who provide hardware and course management software, which is a significant option because the fastest growing

segment of the distance education market is institutions that are adding distance education courses to their curriculum offerings.

There are several examples of higher education institutions and business organizations that have developed their own course management systems. Kansas State University Online <<http://www.dce.ksu.edu/>> (23) has developed their own course management software. Yahoo Education, is “a website that provides course management software for use by colleges and secondary and elementary schools” for free as long as the institution agrees to display an advertisement banner (40).

The role of the academic higher education institution and course management systems has become increasingly less defined. For example, the two major vendors (Web CT and Blackboard) of software and hardware both assist with course management and with marketing (17). Web CT <<http://www.webct.com/>> (41) offers software, course tools and platforms for distance education to more than 2600 institutions (17). Blackboard <<http://www.blackboard.com/>> (42), which provides services to more than 1900 institutions, including Johns Hopkins and Duke Universities, is remarkable in that it was selected in 2000 by the US Army to provide a \$435 million distance education program for soldiers (17). American Federation of Teachers noted that for future success in this market, student information systems (i.e. course registration) need to be combined with course management services. The potential and problems with such integration is currently being shown in its implementation at Oregon State University. For example, managing the number of students and securities continues to be a problem. Also, instructors are finding the e-mail forwarding aspects to be particularly troublesome.

Examples of “packaging and distribution systems,” which package and distribute courses, include Fathom

<<http://www.cc.columbia.edu/cu/news/special/cdigital/page4.html>> (43), Columbia University’s for-profit distance education branch which described itself as the premier site for authenticated knowledge (17). It counts the University of Chicago, Rand Corporation, the British Museum and the New York Public Library among its’

13 distinguished member institutions, providing 600 Internet courses, and marketing itself as a “source of high quality education.” There has been a substantial amount of free content at Fathom, in an effort to “project the teaching and research mission of Fathom’s member institutions” as well as to reach a potential market of paying students. Fathom tallies approximately 75,000 registered users according to the *Wall Street Journal* (17), but the current tally of paying students is “only in the hundreds.” Apparently, Fathom sees a lustrous economic future, as evidenced by a recent advertisement (October 29, 2001) inside the back cover of the *New Yorker*, an advertising location that typically sells for \$65,000 (44). Other examples of packaging and distribution systems include: Cardean University, Global Education Network (GEN) and Cenquest (17). Cardean University is a “fully accredited, online graduate business school” and the “online subsidiary of Unext.com.” This university offers almost 100 courses and lists its’ member institutions as Columbia, Stanford, Carnegie Mellon, the University of Chicago and the London School of Economics. Global Education Network (GEN), created by a Williams College humanities professor and an investment banker, boasts a commitment to “bringing the ‘soft’ subjects of humanities online.” They have a long-term goal of offering a complete undergraduate core curriculum online, focusing on courses by faculty from “small, prestigious liberal arts colleges, which were not usually associated with distance education.” Cenquest, in association with many university MBA programs, offered more than 100 business courses and graduate degree programs. These programs were distance education adaptations of the traditional courses offered by its’ member institutions (17). These universities and organizations either serve as the vendor or marketing coordinator.

American Federation of Teachers described “virtual universities” as institutions that usually do not have actual physical college campuses (17). These institutions currently account for less than five-percent of all higher education students. There are three dominant virtual universities reported: University of Phoenix Online, Western Governors University, and Southern Regional Electronic Board (17, 45).

The University of Phoenix, <<http://www.phoenix.edu>> (46) created in 1976, has a well-known, flourishing distance education program, which focuses on providing vocational education to working adults (17). There was controversy surrounding the 90% of faculty who teach part-time, meeting the minimum criteria of having a Master's degree and working fulltime in their field of expertise. The part-time faculty were ineligible for tenure or benefits. Additionally, there was a ban imposed on them, "forbidding" them to lecture. Instead the faculty must adhere to the "teaching/learning model" in which courses were developed by the fulltime faculty, all in the name of "standardization," in an effort to ensure all students learn the same set of data and skills. This "unbundling" of the faculty's traditional duties, course development and instruction, was of concern to others in higher education. Some faculty saw the potential for the "standardization" of courses to turn into mass production, as well as the possible loss of the faculty's judgment in how a course should be conducted from start to finish (17). Unbundling could be detrimental to the faculty's role in the integrity of knowledge, a key feature in higher education.

The Western Governors University (WGU)

<<http://www.wgu.edu/wgu/index.html>> (47) was founded in 1997 by the Western Governors Association in response to population growth in the West, as a way to meet the need for an estimated increase in student enrollment at colleges and universities in western states (17). Western Governors University uses courses and faculty from its' member institutions in 22 states, Canada and Guam (45). Controversy surrounded WGU as well, concerning its' "competency-based education," a concept it claimed would "revolutionize higher education" (45). At WGU, students earn credit for courses toward degree or certificate completion by "demonstrating mastery" through research papers, standardized testing, and portfolios, all without actually taking courses (17). Although the concept of competency-based testing was not new, considering some college correspondence courses and colleges that allow students to earn credit for passing standardized tests, WGU was the first higher education institution to offer an entire degree based on competency testing (48). The concept of a "competency-based degree"

versus the more traditional “credit-based degree” strays from the norm. Western Governors University has had financial struggles and attempts to pass some of their expenses onto students failed, when students found loopholes in their system (45). Instead of paying a \$30 per course fee to WGU, students could go to the member institutions’ websites, and pay the standard tuition rates without additional fees. Western Governors University has been chided for its lack of regional accreditation. Currently WGU has national accreditation through the Distance Education and Training Council (DETC) and candidacy status for regional accreditation through the Interregional Accrediting Committee (IRAC) (49). Western Governors University has not been as successful as initially marketed, initially advertising 500 degree-seeking students would be enrolled by 2000 (45).

Southern Regional Education Board’s (SREB) Electronic Campus <<http://www.electroniccampus.org/>> (50), is a consortium of member institutions created with the goal of easing students’ accessibility to online courses (45). The member institutions share a website to market their combined 3,200 courses (102 degree programs) from 262 institutions in 16 states (45). Southern Regional Education Board boasted a student enrollment of more than 20,000 students during the 1998-1999 school year, in stark contrast to the 200 degree-seeking students enrolled in WGU (45).

USE OF DISTANCE EDUCATION IN DIETETICS EDUCATION

The use of technology specifically for dietetics and the related nutrition and food systems management can be traced to the availability of computers for larger businesses and organizations. The original applications were primarily for the handling and use of nutrient databases and inventory and cost control. A review of the professional journal, *Journal of the American Dietetic Association*, showed that articles began to appear in the middle to late 1960’s.

More recently (1997), Hayes, et al, reported ten reasons for dietetics professionals to “travel in cyberspace,” including: the jobs of the future are online, the information needed is online, and the flexibility needed is online (19). New technologies are being

incorporated in dietetics education: recent editions of textbooks have Internet references, some professors upload material to class websites to enhance lectures, there are e-mail lists for outside class discussions, PowerPoint (Microsoft®) presentations are common among instructors and students, and CD-ROM programs create clinical practice settings or assist with nutrition analysis (20). Litchfield, et al, noted that the use of distance education in undergraduate dietetics education up to this point has been mostly “instructor centered:” videotapes, correspondence, audiovisual conferences, and online instruction (18). To create “learner centered” instruction, the authors, suggested using the following: Internet chat rooms or bulletin boards, video and audio interactive simulations, group case study presentations and site visits.

In 1994 at the Future Search Conference, held by the American Dietetic Association (ADA) and the Commission on Dietetic Registration (CDR), members of the steering committee alleged that the previous methods of doing business, were no longer working, and that dietetics professionals can not continue to do business today, as it was done yesterday and maintain success (12). Suggestions for training and education for future practice roles included: “Provide flexible training programs leading to a degree and preprofessional training” (12). In agreement with this recommendation, Glenda D. Price, PhD, provost, Spelman College, Atlanta, GA, stated:

“To succeed at preparing practitioners, researchers, educators, and leaders, it is recommended that dietetics education programs develop part-time and nontraditional options; actively recruit older students and students of color, define additional measures of success; create alliances with other programs to expand opportunities for students to learn and integrate their knowledge into various real-life situations; and incorporate greater levels of educational technology into the curriculum, thus reducing the need for heavy reliance on teacher-centered lectures” (12).

It would seem logical that distance education could satisfy many of these recommendations. The American Dietetic Association has taken note of these changes by supporting the listing <<http://www.eatright.org/cade/programs.html>> (22) of those accredited dietetics programs with distance education offerings.

There has been limited research specifically looking at distance education and dietetics. In 1995, Spangler, et al, advised dietetics educators to be “knowledgeable about technology and aware of how technology will be used to educate students” (21). Keys to the success of dietetics education programs could include the development of quality distance education programs that attract more students, as well as a delivery format that matches students’ lifestyles. Distance education could also potentially help decrease the deficiency of supervised practice options that enable dietetics students to prepare for their registration exams, according to Spangler, et al (21). Using new technologies, such as distance education throughout dietetics undergraduate education will introduce students to the tools they will be working with during their careers. Litchfield, et al, found that using online instruction modules for training exercises during a dietetic internship at Iowa State University could increase interns’ comfort level with technology (18).

CHARACTERISTICS OF DISTANCE EDUCATION STUDENTS

Much of the development, prioritization, and marketing of distance education has been to the “nontraditional student.” The National Center for Education Statistics (NCES) defines a nontraditional student as a student who is “identified by the presence of one or more of the following seven characteristics: delayed enrollment into postsecondary education, attended part time, financially independent, worked full time while enrolled, had dependents other than a spouse, was a single parent, or did not obtain a standard high school diploma” (51). Distance education has the potential to reach students who are homebound, in remote locations or have work and or family obligations (16). It would seem, that for these individuals, distance education would be a viable consideration to meet their higher education goals.

A change in the student demographics over the past ten years has been noted by Litchfield, et al: there is “an influx of geographically bound adult learners who are returning for a second degree or additional certification for career enhancement” (18). A

survey of 120 chairs of agriculture and resource economics departments in the U.S. estimated that in the next five years, the number of undergraduate students enrolled in on-campus programs, between the ages of 18-24 years old will decrease 4% and the number of students, in the same age category, enrolled in of-campus programs or distance education courses will increase by 11% (52). Are higher education institutions preparing to meet this change in student demographics?

In order for students to receive the full benefits provided by distance education, there are traits that they need to develop. To be successful with online learning, students need to be self-disciplined, highly motivated (28), and they need to pace themselves while tracking their level of understanding of the course material (53). According to distance education practitioners, the distance education students who are most likely to succeed are highly motivated and have accurate expectations on the workload associated with distance education (16). In a 1986 study, Moore characterized three types of adult students who often choose distance education (54). The categories included “self-directed learners,” students who choose a course of study because it meets their learning goals. There were also “motivated learners”, a group “motivated by need for a degree or some other formal accreditation.” Lastly there were the students who take educational courses because the process of engaging in learning is to “satisfy an emotional need for dependence.”

Oregon State University Distance and Continuing Education (DCE) maintains statistics on the students in their distance education credit programs (55). Currently, 71% of the students are female, and 29% are male. The average age of female students is 36 years old and the average age of male students is 34 years old. The majority of the students are residents of Oregon (64%), whereas 35% claim residency in other states and 0.5% are International students.

PERCEPTIONS OF STUDENTS OF DISTANCE EDUCATION/TECHNOLOGY

Student perception and opinion of the distance education course format was found by some to be positive, overall. At the University of Wisconsin-Stout, Knous found that students who volunteered to complete an e-mail version of a general nutrition course were significantly more satisfied with their course delivery decision, more apt to agree their independent study skills had improved and significantly more favorable toward the development of other e-mail courses (4). At the Penn State University Nutrition Center, McDonnell and Achterberg offered a nutrition education course using an e-mail component and found that students who chose to take a nutrition education course by distance education had an overall positive reaction to the distance education format and they rated distance education favorably (3). However, distance students at Marist College and the University of Colorado at Colorado Springs reported that they were less satisfied than their on-campus counterparts with an online version of a graduate level accounting course (5). Their complaint appeared to be related to less instructor availability to them than to on-campus students. Phillips and Peters studied the needs of two groups of distance education students (traditional students in urban and suburban environments who lived on-campus or commuted, and rural students who both lived and attended classes off-campus), at Middle Tennessee State University (56). They found that the traditional students had more dissatisfaction with the “accessibility of the instructor” than the rural students, however the levels of satisfaction did not differ significantly between the two groups.

It is critical to understand both the reason that students take the distance course as well as their psyche. Only through such an understanding can the education approach be adjusted to maximize learning. A number of researchers have recognized the need to understand similarities and differences between on-campus traditional versus distance nontraditional students. In 1998 Yellen compared the motivation, wants and perceived what students received of traditional versus distance information system courses at the University of North Texas, Denton (25). There was little difference in motivation for the basic education obtained or cost between the two groups. Both groups were universally

dissatisfied with the ability to socialize with ones peers, the ability to ask the instructor questions or to receive immediate feedback. The study did point out that distance students had lower expectations for a course than on-campus students. Interestingly, the cost, motivation and satisfaction interrelationship of translating this into the educational pedagogy and learning outcomes becomes more difficult. There was some anecdotal evidence to indicate that these studies may increasingly be arcane as the role and perception of technology is rapidly changing in the population at large.

PERFORMANCE OF STUDENTS IN DIETETICS EDUCATION

Several studies have shown that students in a distance education course that is also offered in the traditional face-to-face format, perform academically equally to the traditional format students. In 2000, Knous (University of Wisconsin-Stout) demonstrated that the academic performance of students who volunteered to take the online version of a nutrition course did not statistically differ from traditional classroom instruction in both GPA and age categories (4). Distance education students in a graduate level social work practice course, taught by faculty at the University of Texas at Arlington, performed as well as on-campus students (57). The performance of distance students in an introductory accounting graduate course was reported to be similar to that of students in on-campus courses (5). The aforementioned American Federation of Teachers' survey of 200 member distance education practitioners in 1999 noted that the majority of respondents said the academic performance of distance education students was the same or better than traditional students in comparable courses on campus (16).

A common misconception of distance education is that it is "easier" than the traditional education format (58). In a study during 1999 at the University of Maryland, comparing the effectiveness of a distance education statistics course versus a traditional course, Harrington found students could do as well in a distance course as in a traditional course, especially if they have done well academically in the past (53). However, students who had not done well academically in the past did much worse in the distance course when taking a traditional course (53). Factors that "influence online student

performance include their study skills, effort and time spent working on the class, exam writing skills, related knowledge and/or experience and overall scholastic ability” (58).

A comparison of the competencies of on-campus agricultural education doctoral students (Texas A & M University) versus distance education students (in a joint program with Texas Tech University) was recently completed (59). Linder, et al, reported that distance students had a lower level of competency in knowledge of methods of technological change; evaluation of programs related to agricultural education, theory of agriculture education research and college teaching in agriculture. Of the two groups, distance students had a lower perceived level of skill in information organization, learning strategies, and synthesis/reorganization and higher perceived levels of skill in repairing and installation. The on-campus students were perceived to be better at writing number facility and speech recognition and clarity. This study brought up an important consideration: faculty needs to understand why students choose distance education as their course of study and what their competencies are (59). If distance education faculties are aware of their students’ pre-existing strengths and weaknesses, they can create “individual learning plans” and utilize instruction approaches most appropriate for them. Which leads to another point, is it appropriate for distance education courses to have unlimited seating, with numbers of students in the hundreds, if research shows distance students need just as much mentoring and advising as traditional students?

BENEFITS AND ADVANTAGES OF DISTANCE EDUCATION

Distance education provides many benefits to all of the key people involved in its’ conduction. Benefits to students include: convenience (4); flexible scheduling, “24/7” access to instructors and instructor feedback (53); the ability to network with students around the country or the globe (53,13); less time spent traveling to classes (31, 5, 6); improved reading and writing skills (58); development of a “deeper level of thinking” due to the emphasis on the written word (60); guest lecturers (via videotape or live video feeds) (13); the ability to access programs outside of their geographical region (13); and increased access to higher education (5), especially for nontraditional and rural

students (56). Benefits to the sponsoring institution include: the ability to increase enrollment without additional construction and maintenance (5, 6); attracting new teaching staff who are interested in distance education, provision of a new method of communicating with students, promotion of the institution as being on the forefront of technology and it mandates that the institution stay updated on changes in technology (6).

Educational advantages of Internet-based courses versus traditional classroom courses were reported to include: students will be noticed if they do not participate in discussions because lack of or decreased participation will be reflected in their grade, informational resources can be seamlessly integrated into the class (i.e. website reading, online databases), and Internet-based courses provide an “asynchronous environment” as student and/or teachers can read a posting from a threaded discussion and think about it for a day before responding (60). Previously “unreachable” students were now able to access additional educational opportunities through distance education. Distance education has been used in dietetics education to bring additional opportunities to students in rural locations and underserved populations (18). The use of distance education in New Mexico to provide rural school districts with equal access to curriculum benefits the migrant students the most because they move frequently (29). Community centers are being established so students who do not have computers at home could still gain access to this program (29). The U.S. Army provides a distance education program that helps their recruits who are high school dropouts earn their Graduation Equivalency Diploma (GED); approximately 40% of the recruits who used this program were Hispanic (28).

BARRIERS TO DISTANCE EDUCATION

However, the benefits to the success of distance education are off-set by the real or perceived barriers. Muilenburg and Berge (61) listed ten factors that are barriers to distance learning:

- administrative structure
- organizational change

- technical expertise
- support and infrastructure
- social interaction and quality
- faculty compensation and time
- threat of technology
- legal issues; evaluation/effectiveness
- access
- student-support services

Other researchers have reported on these as well in a similar or slightly different form. Table 2 summarizes these actual or perceived barriers to development and delivery of distance education courses. The mainstreaming of distance education will occur only when the myths are separated from the facts.

Table 2. Barriers to Distance Education

Barriers	Bibliography References
Cost of development and delivery.	17, 62, 63
Cost-benefit data isn't always there to support the student.	8
Inadequate infrastructure.	1, 65
Lack of quality.	16, 66, 67
Philosophical barriers.	1, 68
Lack of qualified instructors.	17, 69
Lack of socialization.	17, 68, 70, 71
Undefined intellectual and ownership issues.	72
Lack of "academia" atmosphere through distance.	73
Lack of research-based articles regarding distance education.	73, 61

The start-up cost of the technology needed to provide distance education can be daunting. In addition to the training teachers need, and ancillary support services need to

be implemented. However, there were a wide number of figures given to the “real cost” of distance education courses. It was estimated that the start-up cost of the technology needed for an institution to offer on-line courses is approximately \$25 million (17). Some institutions have paid as much as \$1 million to develop a single on-line course, whereas others have paid \$1 million to develop four courses (17). On the more conservative side, Diebel, et al, have documented that a sophomore-level wildlife conservation course at Oregon State University totaled approximately \$61,570 for direct costs during the live broadcasting phase of the course (26). There were many reasons for this. Part of it may be that few distance courses are created in a vacuum. Jewett developed a computerized cost-simulation model, as part of a research project financed by the US Department of Education and California State University (62). This model was used to compare the cost of expanding asynchronous Internet or television distance instruction to classroom instruction. Jewett was able to estimate that 97% of the direct cost of classroom instruction was due to the instructor whereas distance instruction is different. Jewett went on to elucidate why this different pattern makes it difficult to calculate costs. Texas A&M University (TAMU) has developed a template for monitoring the expenses and fine-tuning the program costs for distance education courses (63). The template is able to provide them with the data needed to dispute the argument that distance education course delivery costs less than that of traditional courses.

It is critical to consider the validation, or cost-benefit barrier of the advantages of distance education. In October of 2000, Vault.com <<http://vault.com/>> (64) conducted a study that found that 77% of Human Resource officer respondents do not consider an online degree to be equal to a degree earned on-campus (8). Furthermore, greater than 60% of the officers stated concern regarding the lack of social interaction with colleagues among the online students. There may also be an inadequate infrastructure: lack of recognition that technological support is necessary to assist the teacher (1), lack of the imagination needed to transform traditional instruction into distance-based teaching (65), and the existing course content may not be designed for use on the Internet (1). All the

faults and complaints regarding teaching in the classroom are also possible to apply to the distance education with additional ones.

The quality of education provided by distance mediums is a topic of hot debate. The American Federation of Teachers has published “Guidelines for Good Practice” for distance education, in an effort to promote sound teaching practices (16). These guidelines addressed faculty qualifications, course design, interaction with students, class size, curriculum, student research opportunities, student assessment, student advising, intellectual ownership, same-time same place learning, and evaluation of distance courses. A model to ensure quality in the implementation of distance education programs has been reported by Keast (66). Quality implementation procedures or evaluation can improve distance education courses. Dental course evaluation could be used to modify or develop courses so they were of a better quality (67). The dietetics profession has some indirect evaluation of course quality via internship and registration test success. However, if dietetics courses were held to specific criteria for the outcomes required for competencies for accredited programs, this would be the start of assuring quality in distance courses used for dietetics programs.

There are “philosophical barriers” to consider with distance education. Distance education is a nontraditional education format, and this can make many teachers uncomfortable, questioning that the quality of education is not equal with traditional face-to-face education. Siegel, et al, suggested that social work educators have a bias against offering a practice or field integration seminar course via distance education because these types of courses were “interactional” in nature, and are more appropriately taught in a face-to-face format (1). There were also many preconceived thoughts about distance education that needed to be addressed. The ideas that distance education was “second-best” or “less credible and less effective” (68) were harmful to both the faculty and students involved.

One must also consider the qualifications of the instructors who teach via distance mediums. There was a common trend among distance delivery programs to “unbundle” traditional faculty responsibilities, so that some faculty are developing courses, some

deliver them, some evaluate the students' progress, and so on and so forth (17). Are the faculty and staff involved in each aspect of the course's delivery trained in the principles of sound educational practice? There is a need by institutions to identify required faculty competencies. The identification of competencies needed for distance education practitioners at the master's level were described by Ally and Coldeway in the process used in their institution's Master's of Distance Education (MDE) program (69). These competencies were then used to develop the core curriculum for the MDE program. The competencies included: Generic Competencies, Introduction to Distance Education, Decision Making and Research, Instructional Systems Development, and Management of Distance Education.

Lack of socialization was a barrier to distance education and an area of much research. Although many distance education programs required a minimum amount of interaction among students and with faculty (17), the propensity for distance education students to feel "psychological distance," defined by Wolcott as the "mental dimension of separateness or dissimilarity between people," (68) was great. In 1990, Hackman and Walker, at the University of Colorado at Colorado Springs, studied the relationship between a distance education course system design, "in the form of teacher immediacy behavior" and student satisfaction with the learning process (70). They found that the level of interactivity had a positive correlation with student satisfaction and perceptions of learning. Also, the instructors who intentionally tried to minimize the "psychological distance" between themselves and the distance students were rated more "fair and effective." Two methods of interaction were examined in a 1993 study at Purdue University during an interactive televised course (71). Interaction frequency was found to be higher during instructor-facilitated interaction than during student-initiated interaction. It would seem then, that deliberate actions need to be taken by the instructors to reduce the common feelings of isolation in the distance student population.

The question of ownership of the distance education courses that are created by faculty and staff at an institution is one that needs an answer. Copyright and intellectual ownership issues surround distance education, as some institutions attempt to prevent

faculty from selling courses to other buyers (17). An unofficial survey of distance education programs at 40 institutions found that 51% of the respondents had “some kind” of copyright policy, 20% had nothing in place and 16% were in the planning stages (72). However, even if there was a policy in place, it does not resolve the issue of intellectual ownership.

In relation to many of the other barriers to distance education, the lack of the “academia” atmosphere through distance can be a daunting barrier to overcome. Some educators are of the belief that no form of distance education will allow students to become acquainted with the thoughts of other students and educators the way a traditional instruction format can (73).

Critics, as well as supporters of the field of distance education acknowledged the lack of research-based articles regarding distance education. Some educators want to know where the research is that “proves the effectiveness of virtual learning...as a viable alternative for college-aged youth...” (73). Others defend this by pointing to the research regarding the effectiveness of traditional education versus distance education. Worth mentioning also was the deficit in research on the barriers to distance education from the students’ perspective (61) versus the well-studied faculty perspective. Other barriers that may need to be overcome include: the labor intensity to the teachers developing the courses, the cost to the student (which is sometimes greater than the cost of a traditional education), difficulty accessing libraries, the possibility of someone else submitting homework for the student, and restrictions on obtaining financial aid for distance education students (6).

There were a large number of authors that philosophize regarding distance education and the advantages, disadvantages, barriers to development and so forth. However, as one reviews these interesting articles it becomes apparent that many of them rely on “experience and intuition.” Their statements are based on understandings, truisms, and myths not related to hard research data. This author has observed in the nutrition field that research data and facts are more important than anecdotal information.

It does appear that one of the problems is the eternal problem with assessment, a lack of definition of terms or ability to quantitate something indefinite.

Much of the controversy surrounding the field of distance education, some well founded and some, perhaps founded in fear of the unknown or the non-traditional, applies to dietetics. The American Federation of Teachers (AFT) has proposed "*Guidelines for Good Practice*" in distance education based on a survey of 200 member practitioners of distance education in 1999 (16). The fourteen standards within the *Guidelines* relate to the use of distance education in dietetics education, of which three hold this author's greatest interest (Table 3):

Table 3. Commentary on Selected Standards for the Delivery of Distance Education within the American Federation of Teachers "*Guidelines for Good Practice*" (16).

Standard	Commentary
Standard 5. Close Personal Interaction Must Be Maintained.	This should be a given understanding for the successful mentoring of students in any distance education program, and as evidenced and suggested by many authors, it is possible. Participation in a variety of distance courses by this author indicates that mentoring can be uneven.
Standard 8. Experimentation with a Broad Variety of Subjects Should Be Encouraged.	With all of the arguments for and against distance education in mind, dietetics educators should be encouraged, and supported, in the process of trying distance education in dietetics courses, including lab courses.
Standard 13. Full Undergraduate Degree Programs Should Include Same-Time Same Place Coursework.	This standard in itself is no longer realistic. It is not uncommon for a dietetics program to have been made up of many transfer students from community colleges and other institutions.

Specific questions could also be raised. How much of a complete undergraduate dietetics education program is appropriate for distance education delivery? Even if a complete baccalaureate program were available via distance education, should it be?

Seventy-percent of the respondents to the AFT survey, most of who were favorable to the use of distance education, felt that no more than half of an undergraduate degree should be offered via distance education (16). What is the appropriate standard for dietetics education? While this literature review attempted to answer many questions relating to distance education, it is obvious that many more questions remain to be answered, especially regarding the use of distance education in dietetics education.

MATERIALS AND METHODS

The purpose of this study was to assess the usage of distance education (instruction provided by courses over the Internet, satellite, teleconference, video and sound tapes, and independent study) in undergraduate dietetics education. Additionally, the possibility of obtaining an undergraduate degree in dietetics via distance education was examined. Through a tailored survey sent to all directors of coordinated and didactic programs, the current status and projected future of distance education technologies in their institutions' program were assessed. From these answers and demographics the potential for attaining an on-line Bachelor of Science degree in Dietetics was examined.

POPULATION

The research population for the survey research was all directors of Commission on Accreditation for Dietetics Education (CADE) approved/accredited undergraduate programs listed in the *2001-2002 Directory of Dietetics Programs*. This included the Didactic Programs in Dietetics (DPD, n=234) and Coordinated Programs (CP, n=50). Five program directors were listed as the Program Director for a CP as well as a DPD, thus the total population was n=279.

INSTRUMENT

The survey instrument was developed by Carrie King to evaluate the hypotheses, modeled after a survey tool used by Siegel, et al (1) in 1995 to assess the usage of distance learning in social work education. The survey included "yes/no" questions, short answer, table completion, and close-ended questions with established responses. Questions asked in the survey are summarized in Table 4. A sample survey is available in Appendix A. The initial pilot study and final survey were approved by the

Table 4. Summary of Types of Questions Used in the Survey Instrument

Topics in the Survey	• The acceptance of distance education transfer courses from accredited institutions. • Purchasing distance education dietetics or general courses. • Participation in distance education collaborations with other schools. • Dietetics and general courses currently offered, and being planned via distance education methodologies.
Demographic Questions	• Type of school/university (private vs. public) • The size of the school/university (student population) • Types of dietetics programs offered • Numbers of students in their programs.

Oregon State University Institutional Review Board. The survey was reviewed and validated by a review panel of experts, through e-mail and U.S. mail, as a pilot study with colleagues in dietetic internships and/or currently involved in distance education who were not on the listing to be a respondent.

SURVEY DISTRIBUTION

Representational cover letters for each of the three mailings are included in Appendix B, C and D. The schedule and mailings are summarized in Table 5. This schedule of communication was based on the recommendations of Salant and Dillman (74). It was felt that this distribution scheme would minimize cost and maximize return by respondents. The initial e-mail included the request and the survey attached as a word file. Respondents also had the option of accessing a form on the Internet at: <http://food.orst.edu/survey.html> or requesting a hard copy be mailed to them.

A second mailing of the survey was sent approximately one month after the initial e-mail via e-mail to those not responding. There was a delay between the first and second mailings due to the Christmas and New Year's holiday break. In the second

mailing, a brief letter encouraged participants to respond to the previous mailing, request another e-mail with the survey attachment or request a hard copy be mailed to them.

Table 5. Survey Processing with Mailing Number, Distribution Method, and Dates.

Mailing Number	Distribution Method	Total Sent	Dates
1.	Original cover letter and a copy of the survey as an attachment were sent via e-mail.	279	11/29/01-12/1/01
2.	Second e-mailing sent to non-respondents.	223	1/2/02-1/4/02
3.	Third mailing with hard copy of the survey to non-respondents via US mail.	206	1/22/02

Three weeks later, a third and final mailing via U.S. mail with a hard copy of the survey and stamped, return address envelop was sent to those not responding. This was in an effort to obtain additional responses, as well as to target respondents who do not use their e-mail regularly or were experiencing technical difficulties at the time of the first and second e-mailings.

DATA COLLECTION AND ANALYSIS OF DATA

Upon receipt of the surveys, data was entered into an Excel spread sheet, for tabulation and frequency counts. Cross-tabulations using chi-square tests were done with Minitab Statistical Software (version 13.1) (75) to determine demographic influence as it related to key responses. Significance was set at $p < .05$. The findings of the survey were compared with demographic information to look for relationships between the characteristics of the higher education institutions and their likelihood of offering distance education. Because of the number of respondents, the results for all of the data were rounded to the nearest whole number, depending on whether it was greater or less than “.5.”

Data was collected on the number of students in the undergraduate dietetics programs to examine the relationship between program size and likelihood of offering dietetics distance education courses. Most of the respondents could not differentiate between full-time and part-time student status. A total number was added if full-time and part-time numbers were provided. If a range was given, the number closest to the middle of the range was used to represent the program size. The numbers in each dietetic program were put into categories for statistical analysis. The categories for the DPDs were: 0, 1-25, 26-100 and 101-maximum students. The categories for the CPs were: 0, 1-15, 16-30, and 31-maximum students. These categories were cross-tabulated using chi-square analysis with whether a dietetics program offered distance education or not.

There were a total of 161 responses for this research, providing a response rate of 58%. Out of the 161 responses:

- One survey returned as an e-mail attachment that could not be opened.
- One survey returned as an e-mail attachment that was blank.
- Three respondents did not complete the survey, however they did indicate their institution's dietetics program do not offer distance education.
- Three respondents sent an e-mail stating they declined to participate in the survey.
- Two respondents stated their institution's dietetics program was closed.
- One survey was completed by a dietetic internship director, providing data that was not applicable to our research.

Thus, the total number of surveys that were valid for analysis was: 150, or a final response rate of 54%. The response rate was very good for this type of research. A response rate of 60-80% to a mailed questionnaire is considered "excellent," according to Portney and Watkins (76).

RESULTS AND DISCUSSION

Due to the rapid advances in technology, distance education has become a viable option for the delivery of dietetics education. Very little research has been done on the use of distance education in dietetics. This survey attempted to answer questions about the current usage of distance education in undergraduate dietetics education and the feasibility of completing an entire B.S. degree in dietetics via distance education. The survey was responded to by 54% of the initial population of program directors of Commission on Accreditation for Dietetics Education (CADE) approved/accredited undergraduate programs listed in the *2001-2002 Directory of Dietetics Programs* (n=279). The majority of the respondents were from Didactic Programs in Dietetics (DPD) (119, 79%). A little less than half of the respondents responded to the first two mailings (45%) with the balance using the final hard copy of the survey sent by U.S. mail in the third mailing. Overall, 29% of the responses were received via e-mail. Of those responding, not all surveys were filled out completely. This frequency is noted in the data tables (Appendix E through L). During the analysis of the data, a non-response rate was tabulated for each question in order to adjust for the non-responses.

DEMOGRAPHICS

A report of the demographic data of the respondents is available in Appendix E. Only 23% (n=150) of the respondents were from land grant universities. Approximately 20% (n=279) of the total population surveyed were land grant universities. Land grant universities were significantly more likely ($p<.05$) to offer dietetics distance education courses, but less likely to offer non-dietetics distance education courses. Land grant university status was examined in this study due to its founding mission. In the 19th century, land grant universities were created to allow people to gain access to higher education, regardless of their income level or position in society (77). The University of Illinois distance education program, U of I OnLine

<http://www.online.uillinois.edu/index.html> (33), is a modern day (2002) example of trying to reach the underserved population of students who can not attend classes on-campus (78). The supporters of UI-OnLine believe that it will be the “twenty-first century realization of the University’s historical land-grant mission.”

The majority of the respondents were from public institutions (72%, n=150). This mirrors the make-up of the total population, of which approximately 75% (n=279) were public institutions. There was a significant relationship ($p<.05$) between private versus public institution status and offering distance education dietetics courses. Public institutions of higher education were more likely to offer dietetics distance education courses than private institutions. Approximately 40% (n=109) of public institutions offer dietetics courses via distance education as opposed to 10% (n=41) of private institutions.

Most of the respondents were from institutions with populations greater than 10,000 students (59%, n=150). A significant relationship ($p<.05$) was found between the size of the institution and offering dietetics distance education dietetics. As the size of the institution increases, the likelihood of offering dietetics distance education courses increases. Five-percent (n=20) of the respondents from institutions with a total population of less than 3,000 students offer dietetics distance education courses. However, 50% (n=50) of institutions with a total population of 20,000 or greater offer dietetics distance education courses. Therefore, as Siegel, et al (1) found to be true of distance education offerings in the field of social work education, dietetics distance education courses were more likely to be offered by public institutions with more than 20,000 students.

The program directors were asked to list which types of dietetics programs were available at their institution, including Didactic Program in Dietetics (DPD), Coordinated Program (CP), Dietetic Internship, Dietetic Technician Program, graduate program and PhD program. DPDs were the most common response (45%, n=292), followed by CPs (14%). Cross-tabulations (Appendix F) were done between the likelihood of offering dietetics programs by distance education and the type of dietetics programs offered at the respondents’ institutions. Significance ($p<.05$) was found between offering dietetics

distance education courses and dietetics programs with a dietetic internship, graduate program, and PhD program.

Does the relationship between an institution with a Dietetic Internship, graduate program and/or PhD program being more likely to offer distance education indicate a bias by the dietetics profession to using distance education mostly in post-undergraduate coursework and degree programs? Siegel, et al, suggested that social work educators have a bias against offering a practice or field integration seminar course via distance education (although they had no hard data to support this) because these types of courses were “interactional” in nature, and were more appropriately taught in a face-to-face format (1). Many of the undergraduate dietetics courses require labs or practicums that are challenging to complete via distance education, but not impossible. Or, perhaps, do faculty in undergraduate programs have little time left over after fulfilling academic competencies or research requirements?

There is a significant relationship ($p<.05$) between the size of a DPD program and offering dietetics distance education courses. As DPD size increases, the likelihood of offering dietetics courses by distance education increases. DPDs with more than 100 students ($n=23$) are most likely to offer dietetics courses by distance education (57%), versus programs with 1-25 students (11%, $n=27$). There is also a significant relationship ($p<.05$) between the size of the DPD program and offering non-dietetics distance education courses. Non-dietetics distance education courses were more likely to be offered at schools with DPD programs with 26-100 students (88%, $n=64$). No significance was found between the size of CPs and the offering of dietetics or non-dietetics distance education courses.

STATUS OF DIETETICS DISTANCE EDUCATION COURSES

Dietetics Distance Education Courses

Results of this study found that 32% ($n=150$) of the responding institutions offer dietetics courses by distance education. Compared to the 1995 study done by the Council

on Education and ADA Education and Accreditation staff (21) which found distance education to be used in 11% of undergraduate dietetics programs, the use of distance education in dietetics has increased three-fold in the past seven years. A summary of all of the institutions participating in the survey and their dietetics distance education course offerings is available in Appendix G.

A number of responses indicate the definition of various course descriptions may differ from one institution to another per titles provided (Table 6). For example, five different course titles were provided for “Orientation to Nutrition and Dietetics,” which only constituted 6% (n=94) of the responses. In reviewing those undergraduate courses required in the dietetics curriculum available via distance education, approximately 60% of these courses are nutrition related courses. Another 10% are professional courses with the balance being food or management courses. This did not relate to the competencies required to meet the ADA requirements, which are distributed between food, nutrition and management knowledge and abilities. There was no true “list” of required dietetics courses, but there is a “Knowledge, Skills and Competencies for Dietitians” available on the ADA web site, <http://www.eatright.org/cade/standards.html> - curriculums> (79).

In reviewing the dietetics courses that are being planned for delivery via distance education methodologies, 28% (n=150) of institutions indicated that they are in the process of planning courses. See Appendix H for a summary of the dietetics distance education courses that are being planned. The majority of the 28 institutions that reported planning dietetics courses via distance education methodologies were public institutions (82%), with student populations of greater than 20,000 students (46%). This finding correlates with the significant relationship ($p<.05$) of dietetics programs offering distance education if they are from public institutions and have student enrollments greater than 20,000. Also, the majority of the institutions had DPD programs (82%), graduate programs (46%), and dietetic internships (39%). This correlates with the

Table 6. Undergraduate Dietetics Courses Offered by Distance Education

Course Title	Total (n=94)	
	n	% ^a
Basic Nutrition / Introductory Nutrition / Principles of Nutrition	29	31
Medical Nutrition Therapy / Diet Therapy	8	9
Food Service Management	7	7
Community Nutrition	6	6
Intro to Dietetics / Orientation to Nutrition & Dietetics / Profession of Dietetics / Professional Development / Careers in Nutrition & Dietetics	6	6
Advanced Nutrition / Human Nutrition	5	5
Sanitation / Food Sanitation / Food Safety / Food Sanitation and Quality Assurance	4	4
Basic Foods	3	3
Quantity Foods / Principles of Food Production Management	3	3
Medical Terminology / Science Terms	2	2
Food Science / Science of Food	2	2
Vegetarian Nutrition	1	1
Nutritional Biochemistry	1	1
Life Cycle Nutrition	1	1
Preventative Nutrition	1	1
Principles of Food Production Management Lab	1	1
Principles of Management for Healthcare Professionals	1	1
Advanced Institutional Food Service Management	1	1
Food Systems Seminar	1	1
Class Portion of Supervised Practice	1	1
Nutrition at the Cellular Level	1	1
Dynamics of Weight Control	1	1
Nutrition Education and Counseling	1	1
General Education Nutrition	1	1
Dietary Supplements	1	1
Environmental Issues in Hospitality	1	1
Environmental Issues I	1	1
Environmental Issues II	1	1
Leadership in Dietetics Practice	1	1
Cost Controls in Hospitality Operations	1	1

^aDoesn't equal 100% due to rounding rule.

significance ($p < .05$) found between offering dietetics courses via distance education and dietetics programs with a dietetic internship and a graduate program. Nutrition related

courses dominate the courses in planning as well (58%, n=43). Yet, from the anecdotal comments, it was apparent that these “planners” may find that their reported plans would raise other questions. Are these plans related to people “just doing” distance education or are they truly part of the departmental mission and developed for the department? What is the shelf life of distance education courses? Does it continue when a faculty member leaves or retires?

Non-Dietetics Distance Education Courses

The majority of the respondents indicated that their institutions offer non-dietetics distance education courses (65%, n=150). If an institution offers non-dietetics distance education courses, they are significantly ($p<.05$) more likely to offer dietetics distance education courses. Appendix I shows a listing of institutions offering non-dietetics distance education courses. The websites provided can fluctuate and the list was certainly incomplete. There were a number of websites (Distance Education Clearinghouse, Mind Edge, Universities.com) that served as resources for distance education courses. These sites are: Distance Education Clearinghouse <<http://www.uwex.edu/disted/catalogs.html>> (80), Mind Edge, <<http://www.mindedge.com/splid/splidSearch.phtml>> (81), and Universities.com <<http://www.universities.com/>> (82).

METHODS OF PRESENTATION FOR DIETETICS DISTANCE EDUCATION COURSES

The respondents (32%, n=150) indicated that they teach dietetics distance education courses, with 48% (n=95) of these courses being offered entirely on the Internet, 15% via video and sound tapes, and 7% via paper and pencil, correspondence study or independent study (Table 7). The remaining 28% of the distance education courses used interactive television and phone, E-mail or a combination of Internet and other modalities

Table 7. Methodologies Utilized for Undergraduate Dietetics Distance Education Courses

Methodology of Distance Education	Total (n=95)	
	n	% ^a
Internet 100%	46	48
VCR & Sound Tapes 100%	15	16
Paper & Pencil or Correspondence or Independent Study 100%	7	7
Interactive TV & Phone 100%	6	6
Internet 50% / Paper & Pencil 50%	4	4
Internet 75% / Interactive TV & Phone 25%	3	3
Internet 75% / Paper & Pencil 25%	2	2
E-mail 100%	2	2
Internet 50%	2	2
Internet 50% / Practicum 50%	1	1
Internet 50% / Paper & Pencil 25% / VCR & Sound Tapes 25%	1	1
Internet 25% / VCR & Sound Tapes 75%	1	1
Internet / CD Rom	1	1
Internet / Interactive TV & Phone	1	1
Internet / Interactive TV & Phone / VCR & Sound Tapes	1	1
Internet / Interactive TV & Phone / VCR & Sound Tapes / CD Rom	1	1
Phone and E-mail	1	1

^aDoesn't equal 100% due to rounding rule.

previously listed. Several of the respondents indicated they use websites, Internet-based activities, online testing, and discussion groups to supplement their traditional courses.

QUALITATIVE SURVEY COMMENTS

The answers to questions one through eight of the survey (Appendix A) may be skewed slightly due to anecdotal data regarding some confusion about the survey completion. For example, several respondents indicated their institution's dietetics program offered all of the dietetics courses listed in question seven (Appendix A) via distance education technologies. This indicated the need for follow-up as that was a rare finding, which could have significantly affected the findings of this study. When the

respondents were sent a follow-up e-mail request to verify their response they indicated they misunderstood what question seven was asking. The respondents thought question seven was asking them to list the traditional dietetics courses offered at their institution. Also, part “b” of questions three and four had a high non-response rate, possibly indicating that the respondents did not understand the question. See Table 8 for a summary of the data and Appendix J and K for data analysis results. The current study brought out the need for further research to answer the following questions:

- How would collaboration between dietetics programs impact the ability to complete the last two years of a B.S. degree in dietetics entirely via distance education?
- How does the development of dietetics distance education courses fit in with the institution’s goals for distance education?
- What is faculty’s knowledge base of the issues surrounding distance education in general education and in dietetics? For example, what are the institutional barriers? Can their institution purchase distance education courses?

The majority of the respondents (77%, n=150) indicated they had been a part of workshops, discussion groups, presentations, symposiums related to distance learning (question one). This question was very broad as it did not give a true indication of the “non-response” or “don’t know” responses for questions two, three, four, five and six. Future research might focus more on the respondents’ awareness of the issues in distance education. For example, when the respondents indicated “I don’t know” or did not respond to questions two, three or four, the question arose as to whether they really know about the issues or not. Cross-tabulations using chi-square analysis found no significant relationship ($p < .05$) between question one (attendance at workshops, etc., related to distance learning) and questions three (“Does your institution’s dietetics program purchase dietetics courses from another institution?”) and four (“Does your institution’s dietetics program purchase non-dietetics courses from another institution?”).

Table 8. Summary of Distance Education in Undergraduate Dietetic Education Survey Results

Survey Question	Yes (n=150)		No (n=150)		Don't Know/ No Response (n=150)	
	n	% ^a	n	%	n	%
1. Have you been a part of <u>workshops, discussion groups, presentations, or symposiums related to distance learning?</u>	114	76	36	24	0	0
2. Does your institution's dietetics program apply distance education courses from other <u>accredited institutions</u> towards its' dietetics curriculum?	65	43	71	47	14	9
3a. Does your institution's dietetics program purchase <u>dietetics courses</u> from another institution through electronic media?	2	1	146	97	2	1
3b. Could your program do so if it wanted to?	33	22	2	1	115	77
4a. Does your institution's dietetics program purchase <u>non-dietetics courses</u> from another institution through electronic media?	3	2	121	81	26	17
4b. Could your program do so if it wanted to?	23	15	2	1	125	83
5a. Is your institution's program part of a <u>distance education collaboration</u> with other schools?	21	14	112	75	17	11
6a. Is your department <u>willing</u> to be a part of a distance education collaboration with other schools?	54	36	24	16	72	48
7. Is your institution's dietetics program currently presenting <u>credit courses via distance methodologies?</u>	48	32	102	68	0	0
8. Is your institution currently presenting <u>non-dietetics credit courses</u> via distance methodologies?	98	65	31	21	21	14

^aDoes not equal 100% due to rounding rule.

Responses about whether or not a dietetics program would “apply distance education courses from other accredited institutions towards its’ dietetics curriculum” (question two) were almost evenly divided between yes (43%, n=150) and no (47%). Institutions that accept transfer dietetics distance education courses from accredited institutions are significantly more likely ($p<.05$) to offer dietetics courses by distance education. Cross-tabulation using chi-square analysis between question one (attendance at distance learning conferences) and question two was insignificant ($p<.05$). How can a transfer distance education course from an accredited institution not be accepted in the same way a traditional course is? Does the institution generally accept transfer credits from accredited institutions? No significance ($p<.05$) was found between question two and question five (“Is your institution’s program part of a distance education collaboration with other schools?”) and six (“Is your department willing to be a part of a distance education collaboration with other schools?”). The question remains to be answered: if they do not accept transfer distance education courses, are they going to create all of their own distance courses?

Several of the respondents wrote-in comments regarding why their institution’s dietetics program would or would not accept the transfer of distance education courses. Many respondents indicated their program would accept some select courses, although they had not done so yet, but only as a rarity or on a case-by-case basis. Some stated they use their own distance education courses as needed. Overall the responses indicated that the acceptance of transfer courses is not a common practice. For those respondents who indicated their programs would not accept a transferred distance education course, many stated they simply had not considering doing this because there had not been any requests of this nature.

Two respondents (1%, n=150) indicated that their institution’s dietetics program purchase dietetics courses from another institution through electronic media. Three respondents (2%, n=150) indicated that their institution’s dietetics program purchases non-dietetics courses. There is a question about how many dietetics and non-dietetics courses are available in this manner. Further research is needed to address this issue. No

significant relationships ($p<.05$) were found between a program purchasing dietetics courses or non-dietetics courses, or being able to do so if desired, and the likelihood of offering dietetics or non-dietetics distance education.

Of the responding program directors 15% ($n=150$) indicated their institution's dietetics program was part of distance education collaborations with other schools. See Appendix L for a listing of the distance education undergraduate dietetics courses provided by a consortium. The majority of the institutions that participate in a consortium for distance education were public (67%, $n=6$), and land grant universities (50%). Many of the respondents indicated their institution was willing to be a part of distance education collaborations with other schools (36%, $n=150$), although almost half indicated they did not know the answer to this question (48%). There was a significant relationship ($p<.05$) between a program offering dietetics courses by distance education and being a part of a consortium or being willing to do so. There was also a significant relationship between a program being willing to be a part of a consortium and an institution offering non-dietetics courses by distance education. The respondents who indicated their institution's program would not be a part of a consortium stated that there was no clear advantage to doing so, they were not permitted to do this, their program had other priorities, they were not interested at this time, their program had a limited budget, or the philosophy of their institution was not such that they would do this.

BARRIERS TO DISTANCE EDUCATION IN DIETETICS

Perceived Barriers to Utilizing Distance Education in Dietetics Education

Possibly most enlightening in this research study were the answers to questions that were descriptive in nature. Question 14 of the survey (Appendix A) asked respondents "Why do you think more distance courses haven't been developed at your institution or in your institution's dietetics program?" The overwhelming response was faculty time constraints, whether the dietetics program was "too small" or "too overburdened with their current course loads" (34%, $n=93$). Lack of resources, including

money, technology, hardware, software, and technical support, was listed as the next most common reason (17%), followed by lack of student and faculty demand or interest (11%) and difficulty handling the lab component or specialty aspects of dietetics courses (7%). Other perceived barriers are listed in Table 9.

Table 9. Perceived Barriers to Distance Education in Dietetics

Question #14: Why do you think more distance courses haven't been developed at your institution or in your institution's dietetics program?	Total (n=216)	
	n	%^a
Faculty time constraints	73	34
Lack of resources (money, technology, hardware, software, technical support)	37	17
Lack of student/faculty demand or interest	23	11
Difficulty handling lab component/specialty aspect of dietetics Courses	16	7
Lack of faculty training/knowledge	15	7
Lack of social/classroom interaction in distance education	14	7
Other department priorities	11	5
Concerns re: quality of education provided by distance education	10	5
Lack of administrative support	7	3
No need due to metropolitan location	3	1
Unsatisfactory prior experience with distance education	3	1
Unique experience of university environment	2	1
Not appropriate for all learning styles	1	1
No value for dietetic training	1	1

^aDoes not equal 100% due to rounding rule.

The perceived barriers identified in the current study were similar to those reported by Muilenburg and Berge (61). They reported on barriers to distance education including: administrative structure, organizational change, technical expertise, support and infrastructure, social interaction and quality, faculty compensation and time, threat of technology, legal issues; evaluation/effectiveness, access, and student-support services. At least half of the ten barriers in Muilenburg and Berge's discussion were also listed by the respondents in the current study.

There was evidence of philosophical barriers as indicated in the responses about the difficulty handling the lab components or specialty aspects of dietetics courses. The labs or practicum experiences may be more challenging to complete via distance education, however, they are not impossible to carry out. Are undergraduate dietetics programs hesitant to use distance education because of philosophical barriers? The ideas that distance education is “second-best” or “less-credible and less effective,” which are harmful to the students and faculty involved in distance education (68) need to be further evaluated with additional research. The perception that there is a lacking academic environment or lesser quality education is also a potential barrier to the use of distance education in dietetics. Each of these perceptions needs to be further evaluated. First, the basis for the perception of lesser quality in dietetics distance education courses needs to be explored. Additionally, whether this possible perception is valid should be explored. There are guidelines available to direct the development and management of quality distance education courses and programs (16), however they are not specific to dietetics. The American Dietetic Association needs to define competencies for accredited programs using dietetics distance courses.

Suggestions for Encouraging the Development of Dietetics Distance Education Courses

Question 15 of the survey (Appendix A) asked respondents “If you were in charge, what would you do to encourage distance learning.” Once again, the majority of the respondents indicated that time was a factor. See Table 10 for a summary of the responses to question 15. Many suggested offering faculty preparation or release time to develop and manage online courses, or hire more staff (32%, n=93). According to the American Federation of Teachers (AFT) in their May 2001 report “A Virtual Revolution: Trends in the Expansion of Distance Education,” in order to do

Table 10. Suggestions for Encouraging the Development of Dietetics Distance Education Courses

Question #15: If you were in charge, what would you do to encourage distance learning?	Total (n=93)	
	n	%^a
Give faculty preparation/release time or hire more staff	30	32
Acquire adequate resources (money, hardware, software, technology support)	16	17
Faculty training	11	12
Distance education course development within current workload	8	9
Make it a factor in promotional/tenure decisions or offer a financial incentive	7	8
Advertise the courses offered via distance education	6	7
Show need/interest	6	7
Develop copyright/ownership policies	3	3
Show profit potential	3	3
Collaborate with a larger institution	2	2
Develop a distance education team	1	1

^aDoes not equal 100% due to rounding rule.

distance education well, faculty need additional preparation time to work with students, responding to e-mails and providing feedback (17). Other popular suggestions included acquiring adequate resources (17%), faculty training (12%), course development within current workload (9%) and making it a factor in promotional or tenure decisions, or offer a financial incentive (8%). Less popular suggestions included advertising, show a need or interest, develop copyright or ownership policies, show profit potential, collaborate with a larger institution, and develop a distance education team.

The findings in this study were in agreement with another report from the AFT. In the AFT May 2000 report, "Distance education: guidelines for good practice," the AFT lists requirements for supporting faculty who provide distance education (16). The AFT recommends faculty training, technical support (hardware, software and "troubleshooting" support), additional compensation for the increased time spent on distance education (even credit in their academic workload for their distance courses),

and a reward systems that address promotions, tenure and project funding. Texas A&M University (TAMU) has also identified similar needs of faculty who provide distance education (63) including release time and technical assistance.

Analysis of barriers to distance education in dietetics and suggestions for encouraging the development of distance education courses in the current study with private or public status of the institution, approximate size of institution, DPD program size and CP program size (survey questions 14, 15, 9, 10, 12, and 13 respectively) were done with cross-tabulations using chi-square. The only significant result ($p < .05$) was between private versus public status of the institution and lack of social/ classroom interaction in distance education. More private schools (17%, $n=41$) than public schools (6%, $n=109$) indicated this was a concern.

A few of the respondents indicated a dislike for distance education, although they thoroughly completed the survey. Some said it is not appropriate for dietetics courses due to the many labs and practicums that were required, and others simply stated they would not do anything to promote distance education at their institutions. A lot of the comments appeared to be founded in a concern for the unknowns surrounding distance education. What is its' efficacy from an educational standpoint? Is there a benefit to investing time and energy into distance education? Is it appropriate for undergraduate dietetics courses? Is it a sound alternative to traditional education? It appears that further research in the use of distance education in dietetics is needed. Each of the respondents in the current study seemed to assume that these questions had been answered for on-site curriculum.

While the current study has examined the current usage of distance education in dietetics, in addition to the feasibility of obtaining an undergraduate degree in dietetics via distance education, it is apparent that much more research is needed in these areas. Distance education is an emerging method of higher education that needs to be embraced or rejected with factual information.

RECOMMENDATIONS

This current survey emphasized that the availability of distance education for students aspiring to become dietitians requires changes in dietetics education programs, as well as further research. An initial step would be to provide easy access to dietetics distance education course listings currently available. While searching the links provided on the American Dietetic Association website <<http://www.eatright.org/cade/dpd.html> – DISTED > (22) it was very difficult to find which courses were actually provided by distance education. Many of the links were for the institution's home page and a number of the links did not work. How can students take the courses if they can not peruse what is available?

A survey on the types of technology used in both traditional and distance dietetics courses would be beneficial. Available technology was not the focus of this study, therefore additional research would be helpful to confirm our findings. Several of the respondents indicated they use websites, Internet-based activities, online testing, and discussion groups to supplement their traditional courses. Additionally, exploration of reasons and needs for technology support would be useful in future professional and institutional planning.

An improvement upon this study would be to change Ho1 ("It is possible to offer an undergraduate dietetic education program solely by distance education.") to focus on the last two years of required dietetics courses. This study did not collect adequate information from question eight ("Is your institution currently presenting non-dietetics credit courses via distance methodologies?") to address the courses needed for the first two years of general education courses. Further research is needed to determine if a complete Bachelor of Science degree in dietetics or any profession can be earned via distance education.

A follow-up question also needs to be asked regarding the amount of distance education courses a program allows. Do higher education graduate and undergraduate

programs allow 100% of courses to be taken via distance education? In undergraduate degree completion programs via distance education at Oregon State University (OSU) 45 credits have to be taken in “academic residence” at the OSU campus. Distance education courses from OSU are permitted to fulfill the academic residency requirement (83).

The type of distance education dietetics and non-dietetics courses available for institutions to purchase needs further research. Are the courses from credible sources? Which dietetics competencies can be met through purchased courses? In this same vein, studying the knowledge base of faculty regarding the issues surrounding distance education would be beneficial. The current study did not assess faculty’s knowledge of current issues. Understanding the facts faculty have or are deficient in regarding distance education may clarify the interpretation of the data.

Additional research is needed on the barriers to implementing distance education specific to dietetics and how to overcome them. This study collected qualitative data regarding barriers and what could be done to encourage the development of distance education. Although the results were very interesting, they were not the focus of this study.

The relationship between an institution with a dietetic internship, graduate program and/or PhD program being more likely to offer dietetics distance education needs further investigation. Does this relationship indicate a bias by the dietetics profession to using distance education mostly in post-undergraduate coursework and degree programs or are the undergraduate faculty simply too pressed for time or disinterested?

A survey focusing on the attitudes of dietetics professionals towards distance education warrants further study. Several respondents indicated a strong dislike for distance education in dietetics but did not elaborate on their reasoning.

Standards for the assessment and evaluation of the quality and efficacy of dietetics distance education courses are warranted and necessary to protect the integrity of dietetics education. This could be done through exploration of the current

accreditation process. Also, future research might focus more on the respondents' awareness of the issues in distance education.

The future of distance education in dietetics is unknown. The opportunities and possibilities seem as limitless as the opposition to this new avenue. Additional research could help the profession accept distance education as a norm, or better understand why it should be avoided.

CONCLUSIONS

In summary, a review of the five hypotheses would indicate that one hypothesis was accepted. That is, “large (student body of more than 20,000 students), public institutions will be more likely to offer distance opportunities.” As the size of the institution increases, the likelihood of offering distance education increases. No single institution was found to offer a complete undergraduate degree program in dietetics solely by distance education. Kansas State University’s (KSU) website (23) indicates that “most of the last two years of the dietetics degree program may be completed through distance education.” However, “a few courses require a short period of time on campus to complete such activities as lab work...” thus the program is not truly 100% off-campus. The first two years of requirements for a B.S. degree in dietetics at KSU could be taken on-campus at KSU, at a community college or other university, or via distance education. Further research is needed to determine if dietetics programs were willing to collaborate, or allow transfer of dietetics distance education courses, how it might be possible to obtain a B.S. degree in dietetics solely via distance education. Table 11 summarizes the outcome of this study.

The exclusive use of distance education for completing an undergraduate degree in dietetics is not feasible at this time. The technology is in place to do so, but perhaps dietitians do not currently have adequate electronic skills. While this study examined the usage and feasibility of distance education in dietetics, the question remains to be answered as to whether its’ use is appropriate at the undergraduate level, or at all, in dietetics. How distance education should be used in dietetics remains to be answered. Hopefully further research will answer some of the many remaining questions.

Table 11. Study Outcome

Hypothesis #	Hypothesis	Outcome	Accepted
<u>Hypothesis 1</u> <u>(H1):</u>	It is possible to offer an undergraduate dietetic education program solely by distance education.	From the data of courses offered or permitted to be transferred, it would not be possible for a student to complete a four-year undergraduate degree in dietetics solely via distance education methodologies.	No.
<u>Hypothesis 2</u> <u>(H2):</u>	At least 50% of the Commission on Accreditation for Dietetics Education (CADE) accredited/approved programs provide distance education in some format.	This study found that 32% (n=150) of the respondents offer dietetics courses via distance education.	No.
<u>Hypothesis 3</u> <u>(H3):</u>	Large (student body of more than 20,000 students), public institutions will be more likely to offer distance opportunities.	Large (student body of more than 20,000 students), public institutions are more likely to offer distance education. As the size of the institution increases, the likelihood of offering distance education increases.	Yes.
<u>Hypothesis 4</u> <u>(H4):</u>	Land grant universities will be more likely to offer distance education opportunities than non-land grant universities.	Land grant universities are not more likely to offer general distance education courses. However, land grant universities are significantly ($p<.05$) more likely to offer dietetics courses by distance education.	No.
<u>Hypothesis 5</u> <u>(H5):</u>	The integration of distance education courses from multiple institutions is needed for the success of an undergraduate dietetic education program solely by distance education.	From the data of courses offered or permitted to be transferred, it would not be possible for a student to complete a four-year undergraduate degree in dietetics solely via distance education methodologies at any one institution.	No.

BIBLIOGRAPHY

1. Siegel, E, Jennings, J, Conklin, J, Flynn, SAN. Distance learning in social work education: results and implications of a national survey. *Journal of Social Work Education*. 1998; 34:71-81.
2. Dabbagh, NH. The challenges of interfacing between face-to-face and online instruction. *TechTrends*. 2000; 44(6), p. 37-42.
3. McDonnell, E, Achterberg, C. Development and delivery of a nutrition education course with and electronic mail component. *Journal of Nutrition Education*. 1997; 29:210-214.
4. Knous, BL. Outcomes associated with e-mail delivery of a general nutrition course. *Journal of Nutrition Education*. 2000; 32:169-176.
5. Gagne, M, Shepherd, M. Distance learning in accounting. *T.H.E. Journal*. 2001; 28:58-65.
6. Matthews, D. The origins of distance education and its use in the United States. *THE Journal*. 1999; 27:54-61.
7. Kilian, C. Why teach online. *Edu Rev*. 1997; 32 (4): 31-34.
8. Press, E, Washburn, J. Digital diplomas. *Mother Jones*. 2001;26:82-83.
9. Draves, WA. On Line. *The Chronicle of Higher Education*. 1999; 46:A47.
10. Carr, S. Distance-learning group blends offerings of 2- and 4-Year Colleges. *The Chronicle of Higher Education*. 1999;46:A37.
11. Green, J. The online education bubble. *American Prospect*. 2000;11:32-35.
12. Parks, SC, Fitz, PA, O'Sullivan Maillet, J, Babjak, P, Mitchell, B. Challenging the future of dietetics education—dialogue, discovery, and directions: A summary of the 1994 Future Search Conference. *J Am Diet Assoc*. 1995; 95:598-606.
13. Kaeter, M. Virtual cap and gown. *Training*. 2000;37:114-122.
14. Roach, R. Mastering technology's tools and techniques. *Black Issues in Higher Education*. 2000;17:28-31.

15. The Institute for Higher Education Policy. Washington, DC. Quality On the Line: Benchmarks for success in Internet-based distance education. March 2000. Available at: <http://www.ihep.com/PUB.htm>. Executive summary accessed May 19, 2001.

16. American Federation of Teachers. Distance education: guidelines for good practice. May 2000. Available at http://www.aft.org/higher_ed/downloadable/distance.pdf. Accessed November 16, 2001.

17. American Federation of Teachers. A virtual revolution: trends in the expansion of distance education. May 2001. Available at http://www.aft.org/higher_ed/downloadable/VirtualRevolution.pdf. Accessed November 16, 2001.

18. Litchfield, RE, Oakland, RE, Anderson, JA. Improving dietetics education with interactive communication technology. *J Am Diet Assoc.* 2000; 00:1191-1194.

19. Hayes, D, Forsell, G, Hansen, K, Homer-Trobaugh, J. Cyberspace 101: taking a ride on the information superhighway. *J Am Diet Assoc.* 1997; 97:S142-14.

20. Unknown. Practice Points: Innovating dietetics education. *J Am Diet Assoc.* 2000;100:190.

21. Spangler, AA, Spear, B, Plavcan, P. Dietetics education by distance: Current endeavors in CAADE-accredited/approved programs. *J Am Diet Assoc.* 1995; 95:925-929.

22. American Dietetic Association. Dietetics programs offering distance education. Available at <http://www.eatright.org/cade/dpd.html> – DISTED. Accessed January 30, 2002.

23. Kansas State Division of Continuing Education. Available at <http://www.dce.ksu.edu/dce/as/dietetics1.html> Accessed March 30, 2002.

24. UCLA Center for Communication Policy. The UCLA Internet report: surveying the digital future. November 2000. Available at <http://ccp.ucla.edu/pages/internet-report.asp>. Accessed July 17, 2001.

25. Yellen, RE. Distant learning students: A comparison with traditional studies. *Journal Educational Technology Systems.* 1998;26(3):215-224.

26. Diebel, P, McInnis, ML, Edge, WD. Student use and perceptions of distance education technologies. *NACTA Journal.* 1998; 42(1):2431.

27. Griggs, MA, Wilson, A. Cooperative distance learning: University of North Texas & Texas Woman's University. *Arkansas Libraries*. 2000;57:4-6.
28. Unknown. All they can be and a college degree. *Black Issues in Higher Education*. 1999;16:13.
29. Unknown. New Mexico looks to distance learning to provide equal access and content. *Electronic Education Report*. 1999;6:4-5.
30. Hayes, K, Huckstadt, A, Gibson, R. Developing interactive continuing education on the web. *The Journal of Continuing Education in Nursing*. 2000;31:199-203.
31. Asirvatham, S. Beyond the distance barrier. *Journal of Property Management*. 2000;65:42-48.
32. Becker, GS. How the web is revolutionizing learning. *Business Week*. 1999; 3661:40.
33. University of Illinois OnLine. Available at <http://www.online.uillinois.edu/index.html>. Accessed January 26, 2002
34. State University of New York OnLine. Available at <http://www.sln.suny.edu/>. Accessed January 26, 2002.
35. Rio Salado Community College. Available at http://www.rio.maricopa.edu/distance_learning/. Accessed January 30, 2002.
36. University of Maryland University College. Available at <http://www.umuc.edu/>. Accessed January 31, 2002.
37. Search for "distance education." Lycos.com. Available at <http://search.lycos.com/main/default.asp?lpv=1&loc=searchbox&query=%22distance+education%22>. Accessed February 2, 2002.
38. Search for "distance education." Google.com. Available at <http://www.google.com/search?hl=en&q=%22distance+education%22>. Accessed February 2, 2002.
39. Search for "distance education." Yahoo.com. Available at <http://google.yahoo.com/bin/query?p=%22distance+education%22&hc=2&hs=161>. Accessed February 2, 2002.

40. Read, B. Yahoo offers software for online courses. *The Chronicle of Higher Education*. 2001;48 (3):A39.
41. WebCT. Available at <http://www.webct.com/>. Accessed January 26, 2002.
42. Blackboard. Available at <http://www.blackboard.com/>. Accessed January 26, 2002.
43. Fathom Columbia Digital. Available at <http://www.cc.columbia.edu/cu/news/special/cdigital/page4.html>. Accessed January 26, 2002.
44. Carlson, S. Columbia University's fathom seeks users among 'New Yorker' readers. *The Chronicle of Higher Education*. 2001;48(12):A40.
45. Carnevale, D. Two models for collaboration in distance education. *The Chronicle of Higher Education*. 2000;46(37):A53-56.
46. University of Phoenix. Available at <http://www.phoenix.edu>. Accessed January 26, 2002.
47. Western Governors University. Available at <http://www.wgu.edu/wgu/index.html>. Accessed January 30, 2002.
48. Young, JR. A virtual student teaches himself. *The Chronicle of Higher Education*. 1999;45(35):A31-32.
49. Western Governors University. Accreditation status. Available at <http://www.wgu.edu/wgu/academics/accreditation.html>. Accessed January 31, 2002.
50. Southern Regional Education Board (SREB) Electronic Campus. Available at <http://www.electroniccampus.org/>. Accessed January 30, 2002.
51. National Center for Education Statistics. Berkeley, CA. Nontraditional Undergraduates: Trends in Enrollment from 1986 to 1992 and Persistence and Attainment Among 1989-90 Beginning Postsecondary Students. November 1996. Available at <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=97578>. Accessed July 16, 2001.
52. Weldon, RN, Covington, B, Long, BF, Connor, LJ. Who will our students be? A futuristic view. *Review of Agricultural Economics*. 1999;21(2):527-541.

53. Harrington, D. Teaching statistics: a comparison of traditional classroom and programmed instruction/distance learning approaches. *Journal of Social Work Education*. 1999;35(3):343-352.
54. Moore, M. Self-directed learning and distance education. *Journal of Distance Education*. 1986;1(1):7-24.
55. Merickel, M. Oregon State University Distance and Continuing Education. Fact Sheet. January 2002. Distance and Continuing Education Oregon State University, Corvallis, OR 97331.
56. Phillips, MR, Peters, MJ. Targeting rural students with distance learning courses: A comparative study of determinant attributes and satisfaction levels. *Journal of Education for Business*. 1999;74(6):351-356.
57. Coe, JAR, Elliott, D. An evaluation of teaching direct practice courses in a distance education program for rural settings. *Journal of Social Work*. 1999; 35(3):353-365.
58. Zolkos, R. Online education getting good grades. *Business Insurance*. 1999;33:40B.
59. Lindner, JR., Dooley, KE, Murphy, TH. Differences in competencies between doctoral students on-campus and at a distance. *The American Journal of Distance Education*. 2001;15(2):25-40.
60. Smith, GG, Ferguson, D, Caris, M. Teaching college courses online vs. face to-face. *T.H.E. Journal*. 2001;28(9):8-26.
61. Muilenburg, L, Berge, ZL. Barriers to distance education: a factor-analytic study. *The American Journal of Distance Education*. 2001;15(2):7-24.
62. Jewett, FI. BRIDGE: A model for comparing the costs of using distance instruction and classroom instruction. *The American Journal of Distance Education*. 2000;14(2):37-48.
63. Taylor, TH, Parker, GD, Tebeaux, E. Confronting cost and pricing issues in distance education. *Educause Quarterly*. 2001;24(3):16-23.
64. Vault: the inside career network. Available at: <http://vault.com/>. Accessed February 25, 2002.
65. Roberts, B. Training via the desktop. *HR Magazine*. 1998;43:98-103.

66. Keast, DA. Toward an effective model for implementing distance education programs. *The American Journal of Distance Education*. 1997;11(2):39-55.
67. Spallek, H, Berthold, P, Shanley, DB, Attstrom, R. Distance education for dentists: improving the quality of online instruction. *The American Journal of Distance Education*. 2000;14(2):49-60.
68. Wolcott, LL. Distant, but not distanced. A learner-centered approach to distance education. *TechTrends*. 1996;41(5):23-27.
69. Ally, M, Coldeway, DO. Establishing competencies and curricula for the distance education expert at the master's level. *Journal of Distance Education*. 1999;14(1):75-88.
70. Hackman, MZ, Walker, KB. Instructional communication in the televised classroom: The effects of system design and teacher immediacy on student learning and satisfaction. *Communication Education*. 1990;39(3):196-206.
71. Ritchie, H. The effects of interaction mode on participation and interaction frequency during televised instruction with two-way audio. *Journal of Education for Library and Information Science*. 1993;34(3):218-227.
72. Reid, C. Stevens adopts copyright policy for distance learning. *Publishers Weekly*. 2001;249:14.
73. Durden, W. Liberal arts for all, not just the rich. *The Chronicle of Higher Education*. 2001;48(8):B20.
74. Salant, P, Dillman, DA. *How to Conduct Your Own Survey*. New York. John Wiley & Sons, Inc.;1994:137-174.
75. Minitab Statistical Software. Version 13.1. State College, PA, 2000.
76. Portney, LG, Watkins, MP. *Foundations of Clinical Research: Applications to Practice*. Upper Saddle River, New Jersey. Prentice Hall Health;2000:286.
77. Bonne, JT. Land Grant Universities are Changing. Presented at the Michigan State University Department of Agricultural Economics Seminar; October 21, 1996; East Lansing, Michigan.
78. Manning, S, Oakley, B. UI-OnLine: The Realization of the 21st Century Land-Grant University. Available at: <<http://www.aln.org/alnweb/magazine/issue1/oakley2.htm>>. Accessed December 21, 2001.

79. American Dietetic Association. Section IV: Knowledge, Skills, and Competencies for Dietitians. Available at <http://www.eatright.org/cade/standards.html> - curriculums. Accessed March 30, 2002.

80. Distance Education Clearinghouse. Available at <http://www.uwex.edu/disted/catalogs.html>. Accessed March 13, 2002.

81. Mind Edge. Available at <http://www.mindedge.com/splid/splidSearch.phtml>. Accessed March 13, 2002.

82. Universities.com. Available at <http://www.universities.com/>. Accessed March 13, 2002.

83. Degree Completion Programs. Available at <http://statewide.orst.edu/degrees/completion.html>. Accessed April 1, 2002.

84. *The American Heritage Dictionary*. New York, New York. Dell Publishing; 2001:117, 143, 152, 281, 312, 414, 446, 842, 900, 938.

APPENDICES

LIST OF APPENDICES

<u>Appendix</u>	<u>Page</u>
APPENDIX A Survey Instrument	61
APPENDIX B Cover Letter, First Mailing.....	67
APPENDIX C Cover Letter, Second Mailing.....	69
APPENDIX D Cover Letter, Third Mailing.....	70
APPENDIX E Summary of Demographic Data of Respondents.....	71
APPENDIX F Cross-Tabulations Using Chi-Square Analysis of Offering Dietetics Courses via Distance Education and Type of Dietetics Programs Offered at Respondents' Institutions	72
APPENDIX G Participating Institutions and Dietetics Distance Education Courses.....	73
APPENDIX H Dietetics Courses Being Planned for Delivery via Distance Education Methodologies.....	82
APPENDIX I Institutions Offering Non-Dietetics Distance Education Courses.....	83
APPENDIX J Cross-Tabulations Using Chi-Square Analysis of Offering Dietetics Courses via Distance Education and Selected Survey Questions.....	86
APPENDIX K Cross-Tabulations Using Chi-Square Analysis of Offering Non-Dietetics Courses via Distance Education and Selected Survey Questions.....	89
APPENDIX L Distance Education Undergraduate Dietetics Courses Provided by a Consortium.....	92
APPENDIX M Glossary.....	93

APPENDIX A

Survey Of Distance Courses Of Interest To Dietetics Curriculum

Instructions: Print, complete, and mail by U.S. mail to: Carrie King, Dept. of Nutrition and Food Management, Oregon State University, 108 Milam Hall, Corvallis, OR, 97331-5103. Or fax to: (541) 737-6914

Definitions: *Distance education* is the term used to describe those formal teacher-learner arrangements in which the teacher and the learner are separated most of the time, and the communication between them is distributed via a variety of media.

Coordinated Program (CP) provides for the integration of didactic instruction with a minimum of 900 hours of supervised practice within an academic program leading to at least a bachelor's degree.

Didactic Program in Dietetics (DPD) is a term used by the Commission on Accreditation for Dietetics Education (CADE) to describe the program approved under the Standards of Education as meeting academic requirements leading to at least a bachelor's degree.

Web Respondents: Please put your name, address, and e-mail below. Thank you so for this extra effort.

Name_____

Street/Building_____

Institution_____

City/State/Zip_____

E-mail_____

1. Have you been part of workshops, discussion groups, presentations, symposiums related to distance learning?

_____Yes.

_____No.

Survey Of Distance Courses Of Interest To Dietetics Curriculum (Continued)

2. Does your institution's dietetics program apply distance education courses from other accredited institutions towards its' dietetics curriculum?

_____ Yes.

_____ No. Reason: _____

_____ I don't know.

3. Does your institution's dietetics program purchase dietetic courses from another institution through electronic media?

_____ Yes.

_____ I don't know.

_____ No. Could your program do so if it wanted to? _____ Yes.
 _____ I don't know.

4. Does your institution's dietetics program purchase non-dietetics courses from another institution through electronic media?

_____ Yes.

_____ I don't know.

_____ No. Could your program do so if it wanted to? _____ Yes.
 _____ I don't know.

5. Is your institution's program part of a distance education collaboration with other schools?

_____ Yes. What courses are delivered through the collaboration by the consortium? _____

_____ No.

_____ I don't know.

6. Is your department willing to be a part of a distance education collaboration with other schools?

_____ Yes.

_____ No. Reason: _____

_____ I don't know.

Survey Of Distance Courses Of Interest To Dietetics Curriculum (Continued)

7. Is your institutions' dietetics program currently presenting credit course(s) via distance methodologies?

_____ No.

_____ Yes. If yes please indicate the use of the following distance technologies. Either use the generic titles or list your course name that most represents generally meeting ADA competencies. Also, please list the total number of years the course has been offered via distance education (by any delivery method).

Course: Basic Foods**Years in Use:** _____**Type of Delivery:**

Paper & Pencil	_____100%	_____75%	_____50%	_____25%	_____Rarely
Interactive TV & Phone	_____100%	_____75%	_____50%	_____25%	_____Rarely
VCR & Sound Tape	_____100%	_____75%	_____50%	_____25%	_____Rarely
Internet	_____100%	_____75%	_____50%	_____25%	_____Rarely

Course: Quantity Foods**Years in Use:** _____**Type of Delivery:**

Paper & Pencil	_____100%	_____75%	_____50%	_____25%	_____Rarely
Interactive TV & Phone	_____100%	_____75%	_____50%	_____25%	_____Rarely
VCR & Sound Tape	_____100%	_____75%	_____50%	_____25%	_____Rarely
Internet	_____100%	_____75%	_____50%	_____25%	_____Rarely

Course: Basic Nutrition**Years in Use:** _____**Type of Delivery:**

Paper & Pencil	_____100%	_____75%	_____50%	_____25%	_____Rarely
Interactive TV & Phone	_____100%	_____75%	_____50%	_____25%	_____Rarely
VCR & Sound Tape	_____100%	_____75%	_____50%	_____25%	_____Rarely
Internet	_____100%	_____75%	_____50%	_____25%	_____Rarely

Course: Medical Nutrition Therapy**Years in Use:** _____**Type of Delivery:**

Paper & Pencil	_____100%	_____75%	_____50%	_____25%	_____Rarely
Interactive TV & Phone	_____100%	_____75%	_____50%	_____25%	_____Rarely
VCR & Sound Tape	_____100%	_____75%	_____50%	_____25%	_____Rarely
Internet	_____100%	_____75%	_____50%	_____25%	_____Rarely

Course: Community Nutrition**Years in Use:** _____**Type of Delivery:**

Paper & Pencil	_____100%	_____75%	_____50%	_____25%	_____Rarely
Interactive TV & Phone	_____100%	_____75%	_____50%	_____25%	_____Rarely
VCR & Sound Tape	_____100%	_____75%	_____50%	_____25%	_____Rarely
Internet	_____100%	_____75%	_____50%	_____25%	_____Rarely

Survey Of Distance Courses Of Interest To Dietetics Curriculum (Continued)

Course: Advanced Nutrition **Years in Use:** _____**Type of Delivery:**

Paper & Pencil	___ 100%	___ 75%	___ 50%	___ 25%	___ Rarely
Interactive TV & Phone	___ 100%	___ 75%	___ 50%	___ 25%	___ Rarely
VCR & Sound Tape	___ 100%	___ 75%	___ 50%	___ 25%	___ Rarely
Internet	___ 100%	___ 75%	___ 50%	___ 25%	___ Rarely

Course: Food Service Management **Years in Use:** _____**Type of Delivery:**

Paper & Pencil	___ 100%	___ 75%	___ 50%	___ 25%	___ Rarely
Interactive TV & Phone	___ 100%	___ 75%	___ 50%	___ 25%	___ Rarely
VCR & Sound Tape	___ 100%	___ 75%	___ 50%	___ 25%	___ Rarely
Internet	___ 100%	___ 75%	___ 50%	___ 25%	___ Rarely

Other: **Years in Use:** _____**Type of Delivery:**

Paper & Pencil	___ 100%	___ 75%	___ 50%	___ 25%	___ Rarely
Interactive TV & Phone	___ 100%	___ 75%	___ 50%	___ 25%	___ Rarely
VCR & Sound Tape	___ 100%	___ 75%	___ 50%	___ 25%	___ Rarely
Internet	___ 100%	___ 75%	___ 50%	___ 25%	___ Rarely

Other: **Years in Use:** _____**Type of Delivery:**

Paper & Pencil	___ 100%	___ 75%	___ 50%	___ 25%	___ Rarely
Interactive TV & Phone	___ 100%	___ 75%	___ 50%	___ 25%	___ Rarely
VCR & Sound Tape	___ 100%	___ 75%	___ 50%	___ 25%	___ Rarely
Internet	___ 100%	___ 75%	___ 50%	___ 25%	___ Rarely

Other: **Years in Use:** _____**Type of Delivery:**

Paper & Pencil	___ 100%	___ 75%	___ 50%	___ 25%	___ Rarely
Interactive TV & Phone	___ 100%	___ 75%	___ 50%	___ 25%	___ Rarely
VCR & Sound Tape	___ 100%	___ 75%	___ 50%	___ 25%	___ Rarely
Internet	___ 100%	___ 75%	___ 50%	___ 25%	___ Rarely

Courses your institution's dietetics program is planning to offer via distance education:

Survey Of Distance Courses Of Interest To Dietetics Curriculum (Continued)

8. Is your institution currently presenting non-dietetics credit course(s) via distance methodologies?
 _____ No.
 _____ I don't know.
 _____ Yes. If yes please list the types of courses or specific URL where a listing can be surveyed: _____

9. Your institution is: _____ Public _____ Private
10. Size of university: _____ Under 3,000 _____ 3,001-4,999
 _____ 5,000-9,999 _____ 10,000-19,999
 _____ 20,000+
11. Is your program: _____ DPD _____ CP
 (Check all that apply) _____ DI _____ DTR
 _____ Graduate _____ Ph.D.
12. How many DPD students do you have: _____ Full time
 _____ Part time
13. How many CP students do you have: _____ Full time
 _____ Part time
14. Although not part of the survey, why do you think more distance courses haven't been developed at your institution or in your institution's dietetics program?

15. If you were in charge, what would you do to encourage distance learning?

Survey Of Distance Courses Of Interest To Dietetics Curriculum (Continued)

16. Is there anything else you would like to tell us?

Thank you very much for your time. Information of specific course and curriculum availability (1-8) will be made available as public information. All other demographic (questions 9-16) will be used in composite. If you would like more information, please contact:

Carrie King, RD, LD
Dept. of Nutrition and Food Mgmt
Oregon State University
108 Milam Hall
Corvallis, OR 97331-5103
Carrie.King@orst.edu
(907) 743-0372

Dr. ZoeAnn Holmes
Dept. of Food and Nutrition Mgmt
Oregon State University
108 Milam Hall
Corvallis, OR 97331-5103
holmesz@orst.edu
(541) 737-0967

APPENDIX B

Cover Letter, First Mailing

Dear (Colleague),

Over the past few years, my major professor and I have become increasingly interested in the potential to make dietetics education assessable to all students, whether able to physically attend college or not. Distance education is surging in popularity and use, and it may be the vehicle that makes dietetics education available to previously unreachable students. Distance education can be defined as: those formal teacher-learner arrangements in which the teacher and the learner are separated most of the time, and the communication between them is distributed via a variety of media.

This survey, used to complete the thesis research for my distance M.S. degree at Oregon State University in dietetic management, is to assist the profession in determining the current scope of distance education in undergraduate dietetic education. As a director of an undergraduate dietetics program, you hold key information about distance education in your institution's dietetics program. Your participation in completing this survey is voluntary and you may decline to answer any question. The survey should take about 30 minutes to complete.

You can complete the survey using one of three options:

1. The survey is available in a second e-mail that accompanied this letter, in two word files (version 5.1 or 6.0). You can complete the survey and then return it as an attachment via e-mail to: <mailto:Carrie.King@orst.edu>.
2. The survey is available on the Internet at: <http://food.orst.edu/survey.html> You can print a hard copy of the survey, complete it and fax it to: (541) 737-6914 or mail it to: Dr. ZoeAnn Holmes, Dept. of Food & Nutrition Management, Oregon State University, 108 Milam Hall, Corvallis, OR 97331-5103.
3. If you prefer a paper copy via U.S. mail, just return this e-mail to us, and we will send it to you promptly.

A report of the results will be made available to each of the respondents. The name of the individual completing the survey will remain confidential, however, the institution's name and the distance education courses offered at each institution's dietetics program will be published in the report. Additionally, an article will be submitted to the Journal of the American Dietetics Association.

Cover Letter, First Mailing (Continued)

If possible, we would appreciate having this e-mail returned by December 12, 2001. If you have any questions about the survey, please contact Carrie King at (907) 743-0372. Please leave me a message if I'm not available, and I will return your call as soon as possible. If you have questions about your rights as a research subject, please contact the IRB Coordinator, OSU Research Office, (541) 737-3437.

Thank you very much for your assistance with my research. We appreciate your participation.

Sincerely,

Carrie King, RD, LD
Dept. of Nutrition and Food Mgmt
Oregon State University
108 Milam Hall
Corvallis, OR 97331-5103
Carrie.King@orst.edu
(907) 743-0372

Dr. ZoeAnn Holmes
Dept. of Food and Nutrition Mgmt
Oregon State University
108 Milam Hall
Corvallis, OR 97331-5103
holmesz@orst.edu
(541) 737-0967

APPENDIX C

Cover Letter, Second Mailing

January 3, 2002

Dear Colleague,

Last month we sent you a survey via e-mail requesting your participation in assessing the current state of distance education in undergraduate dietetics education. The survey was sent to all program directors of undergraduate dietetics programs as listed in the *2001-2002 Directory of Dietetics Programs*.

If you have already completed the survey and returned it to us, thank you very much. We appreciate your participation in this survey because we believe the results will be of benefit to the dietetics profession in determining the current use of distance education technologies in undergraduate dietetics education.

If you didn't receive the survey, or it was misplaced, please e-mail us at <mailto:Carrie.King@orst.edu> or call us at (541) 737-0967 and let us know whether you would like another e-mail sent to you or a hard copy of the survey sent in the mail, and we will act accordingly, today.

Thank you very much. We appreciate your participation.

Sincerely,

Carrie King, RD, LD
Dept. of Nutrition and Food Mgmt
Oregon State University
108 Milam Hall
Corvallis, OR 97331-5103
Carrie.King@orst.edu
(907) 743-0372

Dr. ZoeAnn Holmes
Dept. of Food and Nutrition Mgmt
Oregon State University
108 Milam Hall
Corvallis, OR 97331-5103
holmesz@orst.edu
(541) 737-0967

APPENDIX D

Cover Letter, Third Mailing

ADDRESS

January 22, 2002

Dear (Colleague),

Approximately three weeks ago we sent you a survey via e-mail requesting your participation in assessing the current state of distance education in undergraduate dietetics education. The survey was sent to all program directors of undergraduate dietetics programs as listed in the *2001-2002 Directory of Dietetics Programs*.

If you have already completed the survey and returned it to us, thank you very much. We appreciate your participation in this survey because we believe the results will be of benefit to the dietetics profession in determining the current use of distance education technologies in undergraduate dietetics education.

If you didn't receive the survey, or it was misplaced, for your convenience we are mailing you a hard copy with this letter. Please e-mail us at <mailto:Carrie.King@orst.edu> or call us at **(541) 737-0967** to let us know if you would prefer to have the e-mail resent to you. You can fax the completed survey to: **(541) 737-6914** or mail it to: Dr. ZoeAnn Holmes, Dept. of Food & Nutrition Management, Oregon State University, 108 Milam Hall, Corvallis, OR 97331-5103.

Thank you very much. We appreciate your participation.

Sincerely,

Carrie King, RD, LD
Dept. of Nutrition and Food Mgmt
Oregon State University
108 Milam Hall
Corvallis, OR 97331-5103
Carrie.King@orst.edu
(907) 743-0372

Dr. ZoeAnn Holmes
Dept. of Food and Nutrition Mgmt
Oregon State University
108 Milam Hall
Corvallis, OR 97331-5103
holmesz@orst.edu
(541) 737-0967

APPENDIX E

Summary of Demographic Data of Respondents

Survey Question		
Total (n=150)		
	n	%
Land Grant University	34	23
Total (n=150)		
	n	%
9. Your institution is public or private?		
Public	109	73
Private	41	27
Total (n=150)		
	n	%^a
10. Approximate size of your institution.		
<3,000	21	14
3,001-4,999	15	10
5,000-9,999	26	17
10,000-19,999	38	25
20,000+	50	33
Total (n=292)		
	n	%
11. Type of dietetics programs offered at your institution.		
Didactic Program in Dietetics (DPD)	131	45
Coordinated Program (CP)	42	14
Dietetic Internship (DI)	55	19
Dietetic Technician (DTR)	1	1
Graduate	48	16
PhD	15	5
Total (n=125)		
	n	%
12. Number of DPD students at your institution.		
1-25	27	22
26-100	75	60
101-maximum	23	18
Total (n=44)		
	n	%
13. Number of CP Students at your institution.		
1-15	11	25
16-30	27	61
31-maximum	6	14

^aDoesn't equal 100% due to rounding rule.

APPENDIX F

Cross-Tabulations Using Chi-Square Analysis of Offering Dietetics Courses via Distance Education and Type of Dietetics Programs Offered at Respondents' Institutions

Type of Dietetics Program			Chi Square	df	Significance Level ^b
	Total (n=292)				
	n	% ^a			
Didactic Program in Dietetics (DPD)	131	45	1.198	1	0.274
Coordinated Program (CP)	42	14	1.926	1	0.165
Dietetic Internship	55	19	3.847	1	0.05 ^b
Dietetic Technician Program	1	1	0.474	1	IS ^c
Graduate	48	16	4.479	1	0.034 ^b
PhD	15	5	6.005	1	0.014 ^b

^a Doesn't equal 100% due to rounding rule.

^b Significant at $p < .05$.

^c Insufficient data set to complete analysis.

APPENDIX G

Participating Institutions and Dietetics Distance Education Courses

Institution Name	Offer Distance Education in Dietetics? (Y or N)	Course Title	Type of Delivery
Univ of Alabama (U of A)	Y	Basic Nutrition	100% VCR & sound tape
U of A	Y	Medical Nut. Therapy	100% VCR & sound tape
U of A	Y	Community Nutrition	100% VCR & sound tape
U of A	Y	Advanced Nutrition	100% VCR & sound tape
U of A	Y	FS Mgmt	100% VCR & sound tape
U of A	Y	Vegetarian Nutrition	100% Internet
U of A	Y	Nutr. Biochemistry	100% VCR & sound tape
U of A	Y	Life Cycle	100% VCR & sound tape
Loma Linda University	N		
Loma Linda University	N		
Calif. St Univ Los Angeles	N		
Univ of Connecticut	N		
Howard University	N		
Univ of Illinois at Chicago	N		
Purdue University	N		
Kansas State University (KSU)	Y	Science of Food	100% VCR & sound tape
KSU	Y	Prin. Of Food Prodxn Mgmt	100% WWW
KSU	Y	Food Prodxn Mgmt Lab	50% Internet, 50% practicum
KSU	Y	Human Nutrition	100% WWW
KSU	Y	Careers in Nut & Dietetics	100% VCR & sound tape
KSU	Y	Environ. Issues I	100% WWW
KSU	Y	Environ. Issues II	100% WWW
KSU	Y	Cost Controls in Hospitality Operations	100% WWW

Participating Institutions and Dietetics Distance Education Courses (Continued)

Institution Name	Offer Distance Education in Dietetics? (Y or N)	Course Title	Type of Delivery
KSU	Y	Clinical Nutrition (graduate)	25% VCR sound tapes / 75% WWW
KSU	Y	Public Health Nutrition (grad)	100% WWW
KSU	Y	Counseling Strategies (grad)	100% WWW
KSU	Y	Lifespan Nutrition (grad)	100% WWW
KSU	Y	Mgmt in Dietetics (grad)	100% WWW
University of Kentucky (U of K)	Y	Basic Nutrition	100% WWW
U of K	Y	Community Nutrition	50% WWW, 50% p & p
U of K	Y	FS Mgmt	100% WWW
U of K	Y	Leadership & evaluation in dietetics practice	100% WWW
Framingham State College	N		
Eastern Michigan Univ (EMU)	Y	Basic Nutrition	25% p & p/ 75% WWW
EMU	Y	MNT	100% WWW
EMU	Y	Advanced Nutrition	50% p & p/ 50% WWW
EMU	Y	FS Mgmt	100% WW
EMU	Y	Orientation to Nutrition & Dietetics	100% WWW
University of Minnesota	Y	Principles of Nutrition	100% paper & pencil
University of Missouri-Columbia	N		
UMDNJ-SHRP (Newark, NJ)	Y	Medical Nutrition Therapy	WWW, VCR, TV/phone, CD Rom
UMDNJ-SHRP	Y	Community Nutrition	WWW, TV/Phone

Participating Institutions and Dietetics Distance Education Courses (Continued)

Institution Name	Offer Distance Education in Dietetics? (Y or N)	Course Title	Type of Delivery
UMDNJ-SHRP	Y	Preventative Nutrition	WWW, VCR, TV/phone
Buffalo St. College, SUNY	N		
Syracuse University	Y	Food Sanitation and Quality Assurance	100% WWW
Univ of North Dakota	Y	Basic Nutrition	100% p & p (plan to do WWW)
The Ohio State University (OSU)	Y	Basic Nutrition	100% WWW
OSU	Y	Prin. Of Mgmt for Health Care Professionals	100% WWW
Gannon University	N		
Mercyhurst College	N		
Marywood University (MU)	Y	Basic Nutrition	100% WWW
	Y	Community Nutrition	100% WWW
University of Texas SW Med Center at Dallas	N		
The University of Texas-Pan American	N		
Texas Christian University	N		
Utah St University	Y	Adv. Institutional FS Mgmt (graduate)	100% WWW
University of Utah	N		
Washington State University (WSU)	Y	Basic Nutrition	Correspondence course
WSU	Y	Advanced Food Service Mgmt	Phone/email
WSU	Y	Food Systems Seminar	Email
WSU	Y	Class portion of Supervised Practice	Email
Viterbo College	N		

Participating Institutions and Dietetics Distance Education Courses (Continued)

Institution Name	Offer Distance Education in Dietetics? (Y or N)	Course Title	Type of Delivery
Univ of Wisconsin, Madison	N		
Mt. Mary College	N		
University of Montevallo	N		
Alabama A&M University	N		
The U of Alabama (U of A)	Y	Intro to Dietetics	100% video
U of A	Y	Nut. @ Cellular Level	100% video
U of A	Y	Dynamics of Wt Control	100% video
Arizona State Univ East	N		
University of Arizona	Y	Basic Nutrition	50% WWW
Henderson State Univ	N		
Univ of Central Arkansas	N		
University of Arkansas, Fayetteville	N		
Univ of AR at Pine Bluff	N		
Harding Univ	N		
Cal State Univ (Chico)	N		
Cal St Univ (Fresno)	N		
Cal St Univ (Long Beach)	N		
Cal St Univ (Northridge)	N		
Cal St Polytechnic Univ (Pomona)	N		
Cal St Univ (San Bernardino)	N		
San Diego St University	N		
San Francisco State U	N		
Colorado St University	N		
Univ of N Colorado (UNC)	Y	Basic Nutrition	100% WWW
UNC	Y	Professional Development	50% WWW, 50% paper & pencil

Participating Institutions and Dietetics Distance Education Courses (Continued)

Institution Name	Offer Distance Education in Dietetics? (Y or N)	Course Title	Type of Delivery
UNC	Y	Medical Terminology	50% WWW, 25%p & p, 25% VCR/sound
University of Connecticut	N		
St Joseph College	Y	FS Mgmt	50% WWW
University of New Haven	N		
Univ of the District of Columbia	N		
University of N Florida	Y	Basic Nutrition	100% WWW
Florida Int'l University	Y	Graduate Gerontology	100% WWW
University of Georgia	Y	Basic Nutrition	100% p & p
Georgia St Univ (GSU)	Y	Food Science	75% WWW, 25% p & p
GSU	Y	Food Safety	100% WWW
Fort Valley St University	N		
Life University	N		
Univ of Hawaii-Manoa (Honolulu)	Y	Basic Nutrition	100% interactive TV & phone
So. Illinois University Carbondale	N		
E. Illinois University	Y	Basic Foods	50%p&p, 50% WWW
Bradley University	N		
Dominican University	N		
University of Illinois at Urbana-Champaign	Y	Food Sanitation	WWW/CD ROM
Indiana University	N		
Marian College	N		
Purdue University	Y	The Profession of Dietetics	100% VCR & sound tape
Iowa State University (ISU)	Y	Basic Nutrition	100% WWW
ISU	Y	Medical Nutrition Therapy	100% WWW
ISU	Y	Nutrition Ed & Counseling	100% WWW

Participating Institutions and Dietetics Distance Education Courses (Continued)

Institution Name	Offer Distance Education in Dietetics? (Y or N)	Course Title	Type of Delivery
Kansas St. Univ (KSU)	Y	Quantity Foods	100% WWW
KSU	Y	Med. Nut. Therapy	100% WWW
KSU	Y	Community Nutrition	100% WWW
KSU	Y	FS Mgmt	100% WWW
KSU	Y	Intro to Dietetics	25% WWW, 75% VCR/ sound tapes
KSU	Y	Environmental Issues in Hosp.	100% WWW
Berea College	N		
Morehead St University	N		
Murray State University	N		
Eastern KY University	N		
Louisiana St University	N		
University of Louisiana-Lafayette	N		
McNeese State University	N		
Boston University/Sargent College	N		
Simmons College	N		
University of Michigan	N		
Marygrove College	N		
Madonna Univ (MU)	Y	Basic Nutrition	100% VCR & sound tape
MU	Y	Basic Nutrition	100% WWW
MU	Y	Medical Nutrition Therapy	100% WWW
The College of St. Scholastica	N		
Minnesota St. Univ	N		
College of St. Catherine	N		
Mississippi State University	N		
University of Mississippi	N		

Participating Institutions and Dietetics Distance Education Courses (Continued)

Institution Name	Offer Distance Education in Dietetics? (Y or N)	Course Title	Type of Delivery
SE Missouri St Univ (SEMSU)	Y	Basic Nutrition	100% WWW
SEMSU	Y	Sanitation	100% WWW
Northwest Missouri State University	N		
College of the Ozarks	N		
Southwest Missouri State University	Y	Basic Nutrition	100% Interactive TV & Phone
St. Louis University	N		
Central Missouri State University (CMSU)	Y	Basic Nutrition	WWW
CMSU	Y	Community Nutrition	WWW
CMSU	Y	Advanced Nutrition	WWW
Montana St Univ-Bozeman	N		
University of Nebraska @ Kearney	N		
Univ of New Hampshire	Y	Advanced Nutrition	75% WWW/ 25% p & p
Montclair State University	N		
Long Island Univ/C.W. Post Campus	N		
Buffalo St. Col., SUNY	N		
Queens College-CUNY	N		
St Univ of NY at Oneonta	Y	Community Nutrition (grad)	WWW
St Univ of NY at Oneonta	Y	Food Service Mgmt (grad)	WWW
St Univ of NY at Oneonta	Y	Applied Med Nutr Ther (grad)	WWW
St Univ of NY at Oneonta	Y	Nutrition in the Community (grad)	WWW
Plattsburgh State University of NY	N		
Rochester Institute of Technology	N		

Participating Institutions and Dietetics Distance Education Courses (Continued)

Institution Name	Offer Distance Education in Dietetics? (Y or N)	Course Title	Type of Delivery
Syracuse University	N		
Marymount College	N		
The Sage College	N		
Appalachian St University	N		
Univ. of NC at Greensboro	Y	Dietary Supplements	100% WWW
East Carolina University (ECU)	Y	Medical Nut. Therapy	100% WWW
ECU	Y	Grad. Program in Nutrition	100% WWW (except for 1-2 stats courses)
Meredith College	N		
Ohio University (OU)	Y	Basic Foods	100% TV & phone
OU	Y	Basic Nutrition	100% TV & phone
OU	Y	FS Mgmt	100% TV & phone
Bowling Green St. Univ	N		
University of Cincinnati	N		
Case Western Reserve University	N		
The Ohio State University (OSU)	Y	Quantity Foods	75% WWW, 25% TV/Phone
OSU	Y	Basic Nutrition (non-majors)	WWW
OSU	Y	Food Service Mgmt	75% WWW, 25% TV/Phone
University of Dayton	N		
Miami University	N		
Univ of Oklahoma Health Sciences Center.	N		
Oklahoma St University	N		
Northeastern St. University	N		
Cedar Crest College	N		

Participating Institutions and Dietetics Distance Education Courses (Continued)

Institution Name	Offer Distance Education in Dietetics? (Y or N)	Course Title	Type of Delivery
Messiah College	N		
Immaculata College	N		
Mansfield University	Y	Basic Nutrition	100% WWW
The Pennsylvania State University	Y	Introductory Nutrition	"independent learning"
Johnson & Wales Univ	N		
Winthrop University	Y	Basic Nutrition	100% WWW
South Dakota St University	Y	Basic Nutrition	100% WWW
Mount Marty College	N		
Tenn. Technological Univ	N		
University of Tennessee	N		
The University of Memphis	Y	Basic Nutrition	3 yr VCR/ sound tapes
Tennessee St University	N		
Abilene Christian Univ	N		
Univ. of Texas at Austin	Y	Basic Nutrition	100% WWW
Texas A&M University	N		
University of Houston	N		
Sam Huston State Univ	Y	Basic Nutrition	p & p
Texas Tech University	Y	Scientific Terminology	100% p & p
Stephen F Austin St Univ)	N		
Southwest TX St. Univ	Y	Basic Foods	100% WWW
Tarleton St University	N		
Baylor University	N		
Bastyr University	N		
Washington State University (WSU)	Y	Basic Nutrition	p & p
Marshall University	Y	Diet Therapy	100% interactive TV & phone
West Virginia University	N		
Univ of Wisc., Green Bay	N		
Univ of Wisc., Stout	Y	General Ed Nutr	WWW
Univ of Wisc., Stevens Point	N		
University of Puerto Rico	N		

APPENDIX H

Dietetics Courses Being Planned for Delivery via Distance Education Methodologies

Institution Name	Planned dietetics courses
University of Alabama	Food Science via the Internet
Kansas State University	HN 620 Nutrient Metabolism (Sp '02-100% Internet), HN 450 Nutritional Assmt. with Texas Tech University, Science of Food (2002-100% Internet), Basic Nutrition (50% VCR, 50% Internet)
Eastern Michigan University	Community Nutrition, Behavioral/Cultural Nutrition, Nutrition Across Lifespan
University of Minnesota	Principles of Nutrition (100% Internet)
UMDNJ-SHRP	Additional CP nutrition classes (all?)
Syracuse University	Nutrition in the Life Cycle
University of North Dakota	Basic Nutrition by 6/02
University of Tx SW Med Cntr at Dallas	Medical Term., Nut. & Growth & Dev.
Utah State University	Graduate courses for Master of Dietetic Administration
University of Alabama	Intro to Nutrition (100% Internet)
University of Arizona	Med. Nut. Thpy. (MNT), Sports Nutrition
University of Arkansas at Pine Bluff	Elementary Nutrition
Colorado State University	MNT
University of Northern Colorado	Dietetic internship review courses
St. Joseph College	Basic Nutrition
University of New Haven	Dean wants everyone to develop online course by next fall.
Florida International University	Graduate courses in aging
Georgia State University	Nut. for nursing students, basic nutrition
Kansas State University	Basic Nutrition, Basic Foods
Simmons College	Introduction to Nutrition
Central Missouri State University	MNT, Advanced Nutrition
State University of New York at Oneonta	Current Internet courses are a part of new distance education internship.
The Sage College	Basic Nutrition (summer '02)
Ohio University	Meal Management, Food Science, Sanitation, Adv. Food Ser. Mgmt. Courses
Winthrop University	Medical Terminology
Texas Tech University	Sports Nutrition, Nutrition Assessment (summer '02), Sci.Term., 100% Internet.
Southwest Texas State University	Food Systems, Quantity Foods
Tarleton State University	Non-lab courses

APPENDIX I

Institutions Offering Non-Dietetics Distance Education Courses

Institution Name	Type of Course or Website
University of Alabama	http://bama.disted.ua.edu
California St. University, Los Angeles	General education primarily
University of Connecticut	"Don't know which courses."
Kansas State University	http://www.dce.ksu.edu/dce/outreach/search.html
University of Kentucky	www.uky.edu-e.courses
Framingham State College	www.choosefsc.org
Eastern Michigan University	www.emuonline.edu
University of Minnesota	Principles of nutrition for non-majors
University of Missouri-Columbia	http://mudirect.inthrop.edu/
UMDNJ-SHRP (Newark, NJ)	www.shrp.umdnj.edu
Buffalo State College, SUNY	disted@buffalostate.edu
Syracuse University	http://suce.syr.edu/Programs/Courses/distance/index.htm
University of North Dakota	Sports nutrition
The Ohio State University	http://telr.ohio-state.edu/courses/findcourses.html
Gannon University	Humanities, business, education
Marywood University	
The University of TX-Pan American	
Texas Christian University	
Utah State University	http://online.usu.edu/classes
University of Utah	
Washington State University	
University of Wisconsin-Madison	Intro nutrition courses via WebCT
Alabama A&M University (Normal, AL)	Technology courses
The University of Alabama (Tuscaloosa)	
Arizona State University East (Mesa)	www.dlt.asu.edu or www.asu.edu/xed or http://asuonline.asu.edu
University of Arizona	www.azdistancelearning.org www.eu.inthro.edu/dist/
Henderson State University	Management courses
University of Central Arkansas	Nursing, Graduate business courses
University of Arkansas, Fayetteville	Human Development
University of Arkansas at Pine Bluff	
Harding University	Graduate courses in nursing, business, ed
California State University (Chico)	
California State University (Fresno)	
California State University (Long Beach)	http://www.ideas.uces.csulb.edu/on-line

Institutions Offering Non-Dietetics Distance Education Courses (Continued)

California St University (San Bernardino)	Upper division writing courses for natural sciences
San Francisco State University	Management 405
Colorado State University	Childhood Nut for Daycare Providers, Healthy Heart Trainer's Program
University of Northern Colorado	Chemistry, several others
University of Connecticut	Non-Credit Food Safety
St Joseph College	CTDLC.org
University of New Haven	Accounting, English, business
University of Northern Florida	
Georgia State University	gactr.uga.edu/usgis
Ft. Valley State University	Clothing and Textiles
Life University	www.life.edu
University of Hawaii-Manoa (Honolulu)	FSHN 475
Southern Illinois University Carbondale	http://www.dce.siu.edu/siuconnected/Distance_Education.html
Eastern Illinois University	FCS 3300 Consumer Education www.eiu.edu/~lsimpson
Dominican University	www.dom.edu (Graduate library science)
University of Illinois at Urbana-Champaign	http://www.outreach.uiuc.edu/gis
Indiana University	Basic Nutrition via correspondence
Iowa State University	www.lifelearner.iastate.edu
Kansas State University	www.dce.ksu.edu
Morehead State University	
Murray State University	English, History, general ed courses
Eastern Kentucky University	General education
McNeese State University	Business, Nursing, Clothing Art, Education
Madonna University	www.inthro.edu
The College of St. Scholastica	MS degree, Nursing, PT, Health Info Mgmt
College of St. Catherine	www.stkate.edu
SE Missouri State University	semo.edu
Northwest Missouri State University	http://www.northwestonline.org/
Southwest Mo. State University	http://smsuonline.smsu.edu/
St. Louis University	Medical Terminology
Central Missouri State University	www.cmsu.edu/extcamp
Montana State University-Bozeman	www.montana.edu/Nutrition/pages/distopp.html
University of Nebraska @ Kearney	Business courses
Buffalo State College, SUNY	
Plattsburgh State University of NY	Nursing, Business Ed.

Institutions Offering Non-Dietetics Distance Education Courses (Continued)

Rochester Institute Of Tech	RIT.edu (liberal arts, business, science)
The Sage College	Economics, Phil of Law, Law Office Tech, Tech Writing
Appalachian State University	www.appstate.edu
University of North Carolina at Greensboro	www.uncg.edu
Ohio University	
Bowling Green State University	Technical writing
University of Cincinnati	No specific listing
The Ohio State University	Basic Nutrition for non-majors
University of Dayton	Psychology
University of Oklahoma Health Science Center	PT – www.ouhsc.edu/rehab/home.html
Oklahoma State University	College Capstone
Northeastern State University	Mostly business courses
Immaculata College	Basic Nutrition, Microbiology, History, Biology, Business
Mansfield University	Psy 101, eng 112, art 101, eco 101, geo 101/102, accounting
The Pennsylvania State University	Economics, psych, mgmt, http://www.worldcampus.psu.edu/pub /index.shtml
Winthrop University	www.winthrop.edu
South Dakota State University	www.sdstate.edu
Tennessee Technological Univ	Ag, engineering, accounting
The University of Memphis	
Tennessee St University	tnstate.edu
University of Houston	
Sam Huston State University	www.shsu.edu
Stephen F Austin State University	http://www.sfasu.edu
Southwest Texas State University	swt.edu
Tarleton State University	Business & education courses, www.tarleton.edu
Washington State University	
Marshall University	
University of Wisconsin—Green Bay	Nursing
University of Wisconsin-Stout	General Education Nutrition

APPENDIX J

Cross-Tabulations Using Chi-Square Analysis of Offering Dietetics Courses via Distance Education and Selected Survey Questions

Survey Question	Yes		No		Don't Know/ No Response		Chi Square	df	Significance Level ^b
	Total (n=150)		Total (n=150)		Total (n=150)				
	n	% ^a	n	%	n	%			
Land Grant University Status	34	23	16	77	0	0	8.860	1	0.003 ^b
1. Have you been a part of <u>workshops</u> , <u>discussion groups</u> , <u>presentations</u> , or <u>symposiums</u> related to distance learning?	114	76	36	24	0	0	12.193	1	<0.001
2. Does your institution's dietetics program apply distance education courses from other <u>accredited institutions</u> towards it's dietetics curriculum?	65	43	71	47	14	9	5.568	1	0.018 ^b
3a. Does your institution's dietetics program purchase <u>dietetics courses</u> from another institution through electronic media?	2	1	146	97	2	1	0.286	1	IS ^c
3b. Could your program do so?	33	22	2	1	115	77	0.416	1	0.519

^a Doesn't equal 100% due to rounding rule.

^b Significant at p<.05.

^c Insufficient data set to complete analysis.

Cross-Tabulations Using Chi-Square Analysis of Offering Dietetics Courses via Distance Education and Selected Survey Questions (Continued)

Survey Question	Yes		No		Don't Know/ No Response		Chi Square	df	Significance Level ^b
	Total (n=150)		Total (n=150)		Total (n=150)				
	n	% ^a	n	%	n	%			
4a. Does your institution's dietetics program purchase <u>non-dietetics courses</u> from another institution through electronic media?	3	2	121	81	26	17	0.002	1	IS ^c
4b. Could your program do so if it wanted to?	23	15	2	1	125	83	0.324	1	IS ^c
5a. Is your institution's program part of a <u>distance education collaboration</u> with other schools?	21	14	112	75	17	11	7.017	1	0.008 ^b
6a. Is your department <u>willing</u> to be a part of a distance education collaboration with other schools?	54	36	24	16	72	48	8.954	1	0.003 ^b
8. Is your institution currently presenting <u>non-dietetics credit courses</u> via distance methodologies?	98	65	31	21	21	14	8.164	1	0.004 ^b

^a Doesn't equal 100% due to rounding rule.

^b Significant at $p < .05$.

^c Insufficient data set to complete analysis.

Cross-Tabulations Using Chi-Square Analysis of Offering Dietetics Courses via Distance Education and Selected Survey Questions (Continued)

Survey Question	Yes	No	Don't Know/ No Response	Chi Square	df	Significance Level ^b
9. Private vs. Public Institution.				12.830	1	<0.001 ^b
10. Size of Institution.				16.114	4	0.003 ^b
12. Number of DPD students.				12.084	3	0.007 ^b
13. Number of CP Students.				3.613	3	0.306

^bSignificant at $p < .05$.

^cInsufficient data set to complete analysis.

APPENDIX K

Cross-Tabulations Using Chi-Square Analysis of Offering Non-Dietetics Courses via Distance Education and Selected Survey Questions

Survey Question	Yes		No		Don't Know/ No Response		Chi Square	df	Significance Level ^b
	Total (n=150)		Total (n=150)		Total (n=150)				
	n	% ^a	n	%	n	%			
Land Grant University Status	34	23	16	77	0	0	3.474	1	0.062 ^b
1. Have you been a part of <u>workshops, discussion groups, presentations, or symposiums related to distance learning?</u>	114	76	36	24	0	0	3.714	1	0.054
2. Does your institution's dietetics program apply distance education courses from other <u>accredited institutions</u> towards it's dietetics curriculum?	65	43	71	47	14	9	0.928	1	0.335
3a. Does your institution's dietetics program <u>purchase dietetics courses</u> from another institution through electronic media?	2	1	146	97	2	1	0.309	1	IS ^c
3b. Could your program do so?	33	22	2	1	115	77	0.179	1	0.672

^a Doesn't equal 100% due to rounding rule.

^b Significant at p<.05.

^c Insufficient data set to complete analysis.

Cross-Tabulations Using Chi-Square Analysis of Offering Non-Dietetics Courses via Distance Education and Selected Survey Questions (Continued)

Survey Question	Yes		No		Don't Know/ No Response		Chi Square	df	Significance Level ^b
	Total (n=150)		Total (n=150)		Total (n=150)				
	n	% ^a	n	%	n	%			
4a. Does your institution's dietetics program purchase <u>non-dietetics courses</u> from another institution through electronic media?	3	2	121	81	26	17	1.053	1	IS ^c
4b. Could your program do so if it wanted to?	23	15	2	1	125	83	0.224	1	IS ^c
5a. Is your institution's program part of a <u>distance education collaboration</u> with other schools?	21	14	112	75	17	11	1.239	1	0.266
6a. Is your department <u>willing</u> to be a part of a distance education collaboration with other schools?	54	36	24	16	72	48	5.197	1	0.023 ^b
7. Is your institution's dietetics program currently presenting <u>credit courses via distance methodologies</u> ?	98	65	31	21	21	14	8.164	1	0.004 ^b

^a Doesn't equal 100% due to rounding rule.

^b Significant at p<.05.

^c Insufficient data set to complete analysis.

Cross-Tabulations Using Chi-Square Analysis of Offering Non-Dietetics Courses via Distance Education and Selected Survey Questions (Continued)

Survey Question	Yes	No	Don't Know/ No Response	Chi Square	df	Significance Level ^b
12. Number of DPD students.				9.260	3	0.026 ^b
13. Number of CP Students.				2.647	3	0.449

^bSignificant at $p < .05$.

APPENDIX L

Distance Education Undergraduate Dietetics Courses Provided by a Consortium

Institution Name	#5B Courses provided by consortium
Loma Linda University	"In development."
Kansas State University (KSU)	Counseling Strategies with Iowa State University
Washington State University	Seminars arranged by Central Washington University.
Iowa State University (ISU)	KSU/ISU: Nutrition Education and Counseling
Abilene Christian University	Family Consumer Sciences (FCS) Distance Education Alliance with Texas universities—Internet FCS courses.
Southwest TX State University	In development with Texas Tech University—FCS and Food & Nutrition courses

APPENDIX M

GLOSSARY

<u>ADA:</u>	American Dietetic Association
<u>AFT:</u>	American Federation of Teachers (16, 17).
<u>Bulletin Board:</u>	A system for sending or reading electronic messages of general interest (84, p. 117).
<u>CADE:</u>	Commission on Accreditation for Dietetics Education
<u>CDR:</u>	Commission on Dietetic Registration
<u>CD-ROM:</u>	A compact disc that functions as read-only memory (84, p. 143).
<u>Chat room:</u>	A site on a computer network where online conversations are held in real time (84, p. 152).
<u>E-mail:</u>	A message or messages sent and received electronically over a computer network (84, p. 281).
<u>Fax:</u>	A printed page or image transmitted or received by a fax machine (84, p. 312).
<u>Facsimile:</u>	To transmit (printed matter or an image) by electronic means (84, p. 312).
<u>HTTP (or http):</u>	A protocol used to request and transmit files, especially over the Internet (84, p. 414).
<u>Internet:</u>	An interconnected system of networks that connects computers around the world (84, p. 446).
<u>Internet-based instruction:</u>	Instruction provided solely via the Internet.
<u>Listserv:</u>	An interactive mailing list that distributes information to a large number of people at the same time (19).

GLOSSARY (continued)

- Teleconference: A conference held among people in different locations with telecommunications equipment (84, p. 842); also known as an audiovisual conference.
- VCR: An electronic device for recording and playing back video images and sound on a videocassette (video cassette recorder) (84, p. 900).
- World Wide Web (WWW): The complete set of documents on all Internet servers that use HTTP protocol, accessible to users via a simple point-and-click system (84, p.938).