

Prevalence of Fully Online Courses in Dietetics Education Programs

Denise M. Brown, PhD, RD, LD
Associate Professor
Department of Nutrition and Food Systems
The University of Southern Mississippi

Susan K. Davidson
Graduate Assistant
Department of Nutrition and Food Systems
The University of Southern Mississippi

Abstract:

In this descriptive study, Didactic Programs and Dietetic Technician programs offered a larger percentage of coursework in a fully online format as compared to Internships and Coordinated Programs. Introductory nutrition classes were identified most frequently. Few foodservice systems, food management, or other management courses were offered fully online. Frequent use of electronic mail communication and electronic submission of assignments was reported. Video streaming, chat sessions, and synchronized lectures with slides were used least frequently. Dietetics educators, especially those in the food systems and food management areas, have numerous opportunities to expand online course delivery within all dietetics education program types.

Key Words: online learning, distance learning, technology in dietetics education

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Introduction

Developing the maximum potential of technology to meet the lifelong learning requirements of dietetics professionals is prudent in an environment of limited resources, global competition and information accessibility. Online delivery of course content is recognized as a possible delivery mechanism to meet the needs of individual students who are unable to attend college and university programs in residence. College and university based courses offer an alternative for practicing professionals, especially those individuals practicing in rural areas, which often have limited access to workshops and professional meetings. Klevans and Parrett (1990) described interest by dietetics professionals in Pennsylvania. Distance education options may range from communication mechanisms such as electronic mail or listservs to fully executed online courses for academic credit. Barbrow, Jeong, and Parks (1996) evaluated student and preceptor attitudes concerning online course delivery. Gaetke, Forsythe, and Wesley (2002) studied the utility of a listserv for information sharing. A relationship between learning styles and the utility of online course delivery was reported by Schrader, Gould, Lohse, and Shanklin (2004). Brown (1999) and Manning (2004) assessed the intricacies of course development using an online environment. Kihato and Bedner (2004) assessed the evaluation of various components within an online course by students and instructors. A description of the course content currently available and suitable for online delivery methods in dietetics education is lacking.

Methods

The objective of this study was to identify the extent to which online courses are available in the various types of dietetics education programs. A descriptive study design was used to conduct this study. The assessment included identification of specific numbers and types of courses offered in an online format, individual software tools and course management tools used by programs, and specific materials used within an online course.

The subjects of this study were identified from a listing of dietetics education programs available from the Commission on Accreditation for Dietetics Education. The programs selected for survey administration included all programs that indicated that a distance learning component was a part of the respective program structure. The project was reviewed and approved by the university Human Subjects Protection Review Committee.

A telephone survey methodology was used following the Dilman (2000) total survey design method. Individuals were notified by mail that they had been selected to participate in a telephone survey. A draft survey instrument was developed based upon a previously designed telephone survey format used by the university. The instrument was modified to reflect questions specific to online course format and dietetics education program options. The survey instrument was reviewed by dietetics education faculty for clarity and relevance to dietetics education programs. In addition to the dietetics faculty, university faculty with responsibility for online course delivery participated in the initial instrument review. Based on the feedback from these two reviewer groups, the initial instrument was revised.

A total of 113 institutions with dietetics education programs were identified that met the selection criteria to be contacted. Of those 113 programs, 12 programs were randomly selected for pilot testing of the initial instrument. Pilot testing was conducted during August 2005. The pilot test programs were initially contacted by mail with a follow-up telephone call approximately two weeks following the date of the letter. Nine programs of the 12 randomly selected completed the survey instrument and provided comments to improve the quality and overall content of the instrument. Unclear questions were identified and participant comments were used to revise the instrument for final survey administration.

The revised telephone survey was administered from September 27 – October 17, 2005 by a graduate assistant trained to administer the telephone survey. One individual conducted all survey telephone calls. Notification letters were mailed. Calls were initiated two weeks following the mail notification letter to permit time for mail delivery.

Participant responses were recorded individual survey instruments and subsequently coded for data entry for statistical analysis. A double data entry method was used. Data sets were compared for similarities and differences. Where differences existed, survey instruments were reviewed to identify the source of discrepancy. Any necessary corrections were made to one data set which was used for subsequent statistical analysis. The finalized data set was analyzed using SPSS version 13.0 (August, 2004). Descriptive statistics were calculated on all data. Counts, means, and standard deviations were calculated where appropriate. Comments were grouped and summarized in a text document.

Results and Discussion

Eighty institutions participated of the possible 101 institutions identified for the project, a 79% response rate. Of the 21 institutions that did not participate in the study, 20 program directors did not respond to phone messages or electronic mail contacts requesting a convenient time to participate in the study. One program director began the telephone survey but was unable to complete the survey. Further attempts to contact this program director were unsuccessful. From the 80 institutions that participated in the study, 110 individual programs were evaluated. A number of institutions included multiple types of dietetics programs.

Of the 599 Dietetics Education Programs that existed at the time of the study, approximately 18% identified distance education components that were available to students. The distribution of accredited dietetics education programs nationwide was: 38% DPD programs, 43% DI programs, 9.5% DT programs, and 8.5% CPs. The distribution of the respondent group in this study was 43% DPD programs, 33% DI programs, 16% DT programs, and 8% CPs. The slightly higher percentage of DPD and DT programs reporting distance education options was not surprising since community colleges and four year colleges and universities are more likely to have access to the financial and technological resources needed. Software and training needed to support a fully online course environment is also generally more available in higher education settings.

Dietetic program enrollment varied by program type. The highest enrollments were noted in DPD programs (Mean enrollment = 81.33 ± 67.78 students) followed by DT programs (Mean

enrollment = 29.72 ± 24.28 students). Graduate CPs reported lowest enrollment (Mean enrollment = $6 \pm .71$ students) while DIs program and undergraduate CPs reporting similar mean enrollment levels (DI Mean enrollment = 15.7 ± 8.07 students; undergraduate CP Mean enrollment = 17.14 ± 6.07 students).

Dietetics programs that include supervised practice (DI and CP) are required to offer at least one emphasis area and may offer several if adequate resources are available. A number of supervised practice programs included in this study offered multiple emphasis areas. The 36 DIs responding to this survey offered a total of 42 emphasis areas; 32 programs offered 1 emphasis area, 2 programs offered 2 emphasis areas, and 2 programs offered 3 emphasis areas. The 7 undergraduate CPs offered 12 emphasis areas; 4 programs offered 1 emphasis area, 2 programs offered 2 emphasis areas, and 1 program offered 4 emphasis areas. Both graduate CPs offered one emphasis area.

The General emphasis was offered in 49% of the supervised practice programs (28 of 57). The second most prevalent emphasis area was Nutrition Therapy for both DIs and CPs (11 of 57), followed by a Community emphasis (8 of 57). Only 5 of the 57 supervised practice programs offered a Foodservice Systems Management emphasis area and only one Business/Entrepreneur emphasis area was reported in this study population. A Special (uniquely defined) emphasis area was reported for two DI programs.

Program directors were asked to estimate the percentage of courses offered fully online. Thirty-eight of the 46 didactic programs surveyed (83%) indicated that at least 10% or more coursework was available in a fully online format. The majority of the programs indicated that 25% or less of the coursework was available fully online. Three DPD programs indicated that 100% of coursework could be completed online.

Four of the 9 undergraduate and graduate CP directors (44%) indicated some coursework was available fully online. Similar to DPD programs, the majority of CP directors indicated that 25% or less of the coursework could be completed online. One CP director indicated that 100% of the coursework could be completed online. Eleven of 18 DT programs (61%) indicated coursework was offered in a fully online format. Slightly more than one-half (55%) of the DT programs offered 50% or less of the coursework online while slightly under one-half (46%) indicated more that 50% of the coursework could be completed online. Three DT programs reported 100% of the academic coursework was available in this format.

Program types that included supervised practice (DI, CP, and DT programs) were asked a similar question concerning availability of any courses related to supervised practice. Nineteen of the possible 63 programs with supervised practice components indicated that some portion of the supervised practice coursework could be completed online. Of these 19 programs, 12 programs indicated 100% of the didactic coursework associated with supervised practice could be completed online.

Program directors were asked to identify the general types of classes most frequently offered in a fully online format. Differences were noted between online offerings of didactic coursework and supervised practice coursework. Table 1 shows the typical coursework offered

in decreasing frequency for DPD, CP, and DT programs. Table 2 depicts typical coursework offered for the supervised practice component of those programs with a supervised practice requirement (excludes DPD programs).

Nutritional science courses were offered by over 90% of all the programs. An introductory or foundational nutrition class required of all majors was mentioned most frequently. Program directors commented that an introductory nutrition course was also frequently required for other majors in the college or university. Community nutrition, advanced nutrition, and maternal and child nutrition courses were mentioned by three programs.

Table 1
Typical Courses Offered in a Fully Online Format for Didactic Portions of Dietetics Education Programs

Course Type	Number of Programs Offering (n=53)*
Nutrition Science Courses	49 (92%)
General Education Classes	46 (87%)
Supporting Social Science Classes	40 (75%)
Supporting Business Classes	39 (74%)
Foodservice Systems/ Foodservice Management	23 (43%)
Supporting Science Classes	22 (42%)
Other courses related to dietetics	21 (40%)
Labs in Support of Lecture Courses	15 (28%)
Supervised Practicum Courses	12 (23%)

* More than one response was permitted for this question.

Table 2

Typical Courses Offered in a Fully Online Format for Supervised Practice Components of Dietetics Education Programs

Course Type	Number of Programs Offering (n=19)*
Supervised Practice Courses	16 (84%)
Nutritional Science Courses	15 (80%)
Foodservice Systems/ Foodservice Management	11 (58%)
Simulated Registration Exam	10 (53%)

* More than one response was permitted for this question.

General education classes such as English composition, history, psychology, and sociology were the next most frequently offered fully online courses. These courses were typically offered in support of general degree requirements across the institution and were required of a majority of students at that institution as part of the institution's educational core requirements.

Less than 50% of survey respondents reported offering foodservice systems or foodservice management courses in a fully online format. Food preparation, food science, and quantity foods were mentioned by only two programs. No didactic courses in food production, food management, experimental foods, or financial management were mentioned.

A small number of dietetics education programs used fully online coursework to support supervised practice components. Only 19 (30%) of the subset of 63 programs using fully online courses reported using a fully online format to deliver supervised practice content. The distribution of these 19 programs by program type were 12 DI programs, 3 CPs (all undergraduate), and 4 DT programs. The supervised practice online course was used to manage supervised practice experiences and introductory nutrition content. Few programs reported using fully online courses to deliver foodservice systems or foodservice management content. Ten of the 19 programs in this category reported that the online technology provided was used as a mechanism to simulate the registration examination for dietetics professionals. Tools already present in course management software made development of simulated exams possible.

Course management software most often reported by program directors to support online course delivery included Blackboard (Blackboard, Inc., Washington, D.C.; 34 responses; 45%) and WebCT (WebCT, Peabody, MA; 30 responses; 40%). These two course management systems predominate in the academic market. Program directors identified specific tools within the course management software that were utilized within the course structure (Table 3). Electronic mail communication and electronic submission of course assignments were most frequently reported. Since both electronic mail and transmission information files through electronic mail are widely used in both academic and business settings, a high preference for electronic mail and submission of assignments was expected. The technology to support both of

these features is more universally available and less expensive to implement and maintain as compared to course management software such as Blackboard and WebCT.

Least used features included: video streaming, chat rooms, calendar systems, and synchronized audio and slide presentations to simulate lectures. These findings are consistent with similar findings reported by Kihato and Bedner (2004) who reported that students rated video streaming of lectures, chat rooms, and telephone communication as “not useful” in their learning experience in a fully online class. These features were the least developed activities reported in this study. Only DI program directors reported synchronized slides and audio tapes as a teaching technique used in online coursework. Development of synchronized slides with audio lecture overlay requires specialized software and technology support. Although instructors may believe students would benefit from a lecture type format that mimics classroom lecture settings, Kihato and Bedner concluded students did not find these approaches useful and investing in the development of these specific features may not be necessary.

Table 3

Software Tools Used to Deliver Fully Online Course Content Reported by Dietetics Education Program Directors

Software Support Tools	Number of Didactic Programs with Fully Online Courses Using Tools (n=53)*	Number of Supervised Practice Programs With Online Coursework Using Tools (n= 19)*
Email communication within the course	49 (92%)	19 (100%)
Electronic submission of coursework assignments	47 (89%)	19 (100%)
Course management tools (such as student tracking features)	46 (87%)	17 (89%)
Links to external web sites	46 (87%)	18 (95%)
Power Point presentations	46 (87%)	18 (95%)
Student accessible grade book	45 (85%)	17 (89%)
Bulletin boards/discussion boards	44 (83%)	17 (89%)
On-line exams or quizzes	44 (83%)	18 (95%)
Electronic grading of coursework assignments	43 (81%)	18 (95%)
Links to web sites within the institution	42 (79%)	19 (100%)
Video streaming (such as short video clips, animated presentations)	29 (55%)	15 (79%)
Chat sessions	28 (53%)	14 (74%)
Software supported calendar systems	24 (45%)	14 (74%)
Student presentation tools	19 (36%)	12 (73%)
Audio lectures synchronized with lecture slides	15 (28%)	10 (53%)

* More than one response was permitted for this question.

Conclusions and Applications

The use of technology and availability of widespread any-time-of-day access to educational offerings is attractive. Improving the availability and accessibility of educational offerings to support entry-level and continuing professional development of dietetics professionals is essential to advancement of the profession. Online educational tools can be useful in meeting competing demands for adult learners' time and financial resources. The learner centered nature of online courses is particularly attractive to 21st century students. An online educational environment will become more important as we explore adopting advanced level degrees for entry level dietetics practice. The online delivery mechanism may be equally attractive to practicing professionals who must balance job and family responsibilities.

High school graduates attending college for the first time as well as adult learners either starting or returning to college will seek efficient and effective education methods to achieve their personal educational goals. Online courses provide the delivery mechanism attractive to both of these populations. Younger technology savvy students will demand additional offerings and those less technology savvy individuals restricted by geography, family, or financial limitations will continue to consider distance courses a suitable alternative. Dietetics education programs do not yet realize the potential of online course delivery to these expanded markets. Only 18% of dietetics education programs in this study offered fully online coursework. Courses are limited in both number and content, particularly in the foodservice systems management area.

The definition of distance learning in dietetics programs as described for accreditation requirements was reported by respondents as confusing to students. The distance learning definition must be refined to clearly and accurately communicate the range of program options available. Student expectations of distance education (van Schaik, Barker, & Beckstrand, 2003) are based on either infrequent or no required face-to-face meetings during the course instructional period. Dietetics educators need to be proactive in developing courses and educational programs that match this student expectation. Didactic course instructional methods need to be developed to support content that is independent of a traditional classroom lecture delivery. Similarly, supervised practice programs or supervised practice coursework components in coordinated programs have not implemented online course delivery mechanisms to any great extent. Infrastructure challenges in non-academic settings and developmental costs may preclude extensive development of fully online courses in these settings. However, partnerships between institutions providing supervised practice settings with academic institutions could provide the needed technology and instructional design support. Such partnerships are already proposed as alternatives to implement proposed changes to entry-level dietetics preparation.

Many dietetics educators have already adopted the use of electronic mail and electronic submission of coursework assignments (Litchefield, Okaland, & Anderson, 2000). Although commendable, these actions are merely keeping pace with what is already occurring in most business environments. A number of opportunities for dietetic program educators are evident. Development of coursework to support foodservice systems and foodservice management content as well as more general management coursework is needed. Creative approaches are necessary to develop foodservice systems assignments and materials suitable for online delivery.

Similarly, expanding the nutritional science and community course offerings is also recommended.

Dietetics educators must consider the use of course management tools, especially presentation tools, quizzes and exams, and discussion boards to enhance student learning and further promote communication among students and between students and instructors. These tools reinforce the student centered learning aspect of the online delivery format. A few programs in this study reported use of the online exam tools to simulate the registration examination for dietitians and dietetic technicians. Both major vendors of course management software, Blackboard and WebCT, include a capability to construct exams. Features within the course management software permit design of exams where questions are delivered in a way that mimics the registration exam for both dietitians and dietetic technicians. This exam delivery feature could be particularly helpful to assess student knowledge and to provide a setting where students can practice computer based test taking skills.

Further research is needed to identify assignments, learning activities, and appropriate methods for content delivery suitable for an online format. Although educators may believe simulating course lectures would be the next logical step in content development, this may not be the best use of limited resources. Closed book examinations common in a face-to-face class setting may not be sufficient to assess individual learning in online courses where students are located worldwide. Research is needed to identify or develop assessment methods to measure student learning. Our colleagues in education and psychology can inform research in this area. Dietetic educators need to develop expertise in adult learning styles or collaborate with instructional design professionals with adult learning expertise to ensure sufficient depth and mastery of the knowledge and skills central to dietetics practice.

A major limitation in this study must be acknowledged. Dietetics education programs were assumed to have adequate access to the technology and infrastructure to deliver fully online courses (Ricci, 2002). This assumption may not be accurate for a number of DIs located in institutions such as hospitals and medical centers. Dietetics education programs require sufficient access to the financial and technology infrastructure necessary to make fully online course delivery feasible. Instructors require significant technical and instructional design support to develop content appropriate for online delivery. Instructors also required sufficient time for course development and management. Not all students or instructors find online delivery suited to their preferred learning or teaching styles. Administrators faced with enrollment requirements and a large number of students requiring coursework may not be supportive of the additional resources required to deliver online courses with smaller enrollments. However, despite these many challenges, a serious examination of online course delivery as a mechanism to develop a diverse dietetic professional base is warranted.

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References:

- Barbrow, E., Jeong, M. & Parks, S. (1996). Computer experiences and attitudes of students and preceptors in distance education. *Journal of the American Dietetic Association*, 96(12), 1280-1281.
- Brown, K. (1999). On track with online education. *Journal of the American Dietetic Association*, 99(9) Suppl., A-10.
- Dillman, D. (2000). *Mail and internet surveys. The tailored design method*. New York: John Wiley & Sons, Inc.
- Gaetke, L., Forsythe, H. & Wesley, M. (2002). Dietetics interns at geographically remote supervised practice sites find a listserv to be a useful information-sharing tool that fosters independent learning. *Journal of the American Dietetic Association*, 102(6), 851-853.
- Kihato, M. & Bednar, C. (2004). Importance of online course components: A survey of instructors and students [Abstract]. *Journal of the American Dietetic Association*, 104, (Suppl. 2), A-40.
- Klevans, D. & Parrett, J. (1990). Continuing professional education needs of clinical dietitians in Pennsylvania. *Journal of the American Dietetic Association*, 90,(2), 282-286.
- Litchfield, R.E., Okaland, J.J., & Anderson, J.A. (2000). Improving dietetics education with interactive communication technology. *Journal of the American Dietetic Association*, 100(10), 1191-1194.
- Manning, C. (2004). WebCT discussions in problem based learning (PBL): Analysis of use by representative groups in an introductory food science course [Abstract]. *Journal of the American Dietetic Association*, 104, (Suppl. 2), A-40.
- Ricci, G.A. (2002). *System infrastructure needs for web course delivery: A survey of online courses in Florida Community Colleges*. Retrieved March 15, 2006 from http://www.eric.ed.gov/ERICDocs/data/ericdocs2/content_storage_01/0000000b/80/28/06/b0.pdf.
- Schrader, M., Gould, R., Lohse, B., & Shanklin, C. (2004). Evaluation of learning style and cognitive behaviors of students enrolled in a distance dietetic program. *Journal of the American Dietetic Association*, 104(8), Suppl 2, A-40.
- van Schaik, P., Barker, P., & Beckstrand S. (2003). *A comparison of on-campus and online course delivery methods in southern Nevada*. Innovations in Education and Teaching International. Retrieved March 14, 2006 from <http://www.tandf.co.uk/journals>.