

A Model for Faculty Teaching Online: Confirmation of a Dimensional Matrix

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ABSTRACT

As distance education options continue to become available for nursing programs, market competition increases. Nursing faculty are challenged to design online courses based on best practices, and teaching online has implications for faculty role changes. This article presents a Model for Faculty Teaching Online based on faculty wisdom and expertise that evolved inductively from an exploratory study with 18 faculty teaching online. A matrix was developed to explain the dimensions of faculty teaching online. Dimensions of the matrix were confirmed through a follow-up survey to determine their relevance. A national validation study with feedback from 68 faculty teaching online confirmed the major dimensions of the matrix, including antecedent conditions, context, strategies, and outcomes. Implications for educators and for future research are provided.

The experiences of nursing faculty in the design, teaching, and evaluation of online programs are a common theme in the literature (Ali, Hodson-Carlton, & Ryan, 2004; Fulton & Kellinger, 2004; Jairath &

Stair, 2004; Ryan, Hodson-Carlton, & Ali, 1999, 2004). A 2002 survey of 162 programs accredited by the National League for Nursing Accrediting Commission (NLNAC) confirmed this growing trend (Hodson-Carlton, Siktberg, Flowers, & Scheibel, 2003). The findings revealed the heaviest enrollment is in online RN-to-BSN programs (90.73%), where enrollments are 35 times greater than in any other program reported, including master's degree (3.65%), associate degree (2.29%), basic baccalaureate (2.14%), continuing education (0.78%), licensed practical nurse transition (0.36%), and doctorate (0.06%). Nearly all respondents indicated plans to expand current offerings (Hodson-Carlton et al., 2003).

Online education is growing at an unprecedented pace. Information Technology 100 (Info Tech 100), a list designed to provide insight into the dynamics of the technology industry, ranked the University of Phoenix Online, which has more than 67,000 students enrolled, number 17 among the top technology companies in 2003 ("Info Tech 100: Annual Report," 2003). The establishment of criteria for assessment from regional-specific and discipline-specific accrediting agencies parallels this trend in the increase of online programs and commercial entities (Billings, Connors, & Skiba, 2001). Best practices for electronically delivered programs developed by the Commission on Institutions of Higher Education (2001) serve as an assessment framework. The American Association of Colleges of Nursing (1999, 2000) recommended that institutions examine aspects of distance education such as adequate planning, technology infrastructure, faculty development, student support, and evaluation of outcomes. The NLNAC (2000) criteria related to the evaluation of distance education programs includes student support, faculty support, curriculum and instruction, institutional context and commitment, evaluation, and assessment. In addition, the National Organization of Nurse Practitioner Faculties has also published *Guide-*

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lines for Distance Learning in Nurse Practitioner Education (Resick, 2002).

Less prevalent in the literature are theoretical models to guide the continuing development, implementation, teaching, and quality improvement of online education (Gibson, 2003). There is still a lack of researchers who include a theoretical basis in research studies for teaching online (Thurmond, 2002). Thurmond's (2002) review of learning theories, which have been used to guide course development for Internet courses, provides some approaches for the discussion of the application of theories to online education, and this article addresses theoretical approaches for faculty teaching online.

THEORETICAL APPROACHES TO ONLINE EDUCATION

One theoretical model focusing on learning is Constructivism Theory, which evolved from both psychology and philosophy and reflects constructive or discovery learning (Driscoll, 2000). A basic assumption of this model is that knowledge is constructed by learners and not transmitted. Learners construct and retain knowledge by connecting facts and ideas, thus generating new and meaningful information. According to Constructivist Theory, the learning environment that prompts cognitive engagement is one in which learners discover, or work out for themselves, an understanding of a new experience through reflection and critical analysis (Sammons, 2003). In applying this theory, faculty create a supportive environment conducive to learner discovery with opportunities for interactive and engaging reflection, analysis, and evaluation.

Jairath and Stair (2004) designed a framework for the development and implementation of Web-based nursing courses: Nursing Web Framework (NWF). The infrastructure, consisting of structural features and process/procedures, addresses criteria related to adaptability, responsiveness, and necessity. Cost should also be considered. The infrastructure is assessed for technology issues, legal and administrative aspects, and curricular components. Jairath and Stair (2004) believe the effectiveness of Web-based courses is enhanced when ongoing collaborative relationships exist, course components are articulated, and formative and summative evaluations are conducted. The NWF was supported by both the literature and experience.

Another theoretical framework for Web-based courses focuses on the interaction of technology used to offer the courses, the teaching-learning practices in courses, and the outcomes enabled by the technology. Adapting the framework from models developed to study the effects of technology in higher education, Billings (2000) proposed the Framework for Assessing Outcomes and Practices in Web-Based Courses in Nursing. The framework has five major concepts: faculty support, student support, use of technology, educational practices, and outcomes, with associated operational variables. The outcomes are influenced by educational practices, such as time on task, feed-

back, and active learning. Effective teaching and learning are dependent on faculty and student development and support, and technical support. Successful courses require the effective use of technology, such as an accessible and reliable infrastructure. Thurmond (2002) pointed out that the framework proposed by Billings is one way to assess quality in Web-based courses; it is logical and useful in operationalizing the quality of the assessed variables.

Although current models provide structure for the assessment of learning, the learning environment, and the quality of distance education, including Web-based courses, they do not focus on the process of faculty teaching online. Faculty members and administrators may grasp the importance of a system-wide approach to online education, including technologies, content, organizational support, faculty, and learners, but may still ponder how faculty derive optimal teaching from online educational experiences. Based on our grounded theory exploration and a national validation study, a model emerged for faculty teaching online.

BACKGROUND

The development of the Model for Faculty Teaching Online was based on previous research, and emerged through an inductive process (Ryan, Hodson-Carlton, & Ali, 2004). A study was conducted with 18 nursing faculty from eight schools of nursing that offered a master's degree program delivered completely online; approximately 80% of the faculty taught three to six semesters online. Focus group interviews were conducted by teleconference or telephone using an unstructured format. Interview questions were based on Diekelmann, Schuster and Nosek's (1998) work, which investigated faculty's perceptions of pedagogical issues in distance education. Example of questions were:

- What familiar ways of teaching were lost?
- How have you reconstructed conventional teaching strategies?
- How have your relationships with students changed?
- What partnerships have you developed?

Dimensional Analysis

Dimensional analysis with constant comparison of data yielded the components of the matrix (Ryan et al., 2004): redesigning pedagogy and rethinking faculty role for online learning. Dimensional analysis, a methodological approach used in qualitative research, concerns interpretation of data and considers coded qualitative data from different perspectives. A matrix provides the structure for analyzing terms in the perspective of logical sequencing. A complex story can be told from the dimensions of data organized into a sequence. The dimensions are presented in the context of the situation or preexisting circumstances, the conditions under which the events occur, the processes that occur to achieve outcomes, and finally, the consequences or outcomes themselves (Schatzman, 1991).

Dimensionality is a property of human thinking that calls for inquiry into the parts, attributes, context, and implications, and the interrelationship among the dimensions. Consequently, analyzing dimensions goes beyond theme identification to uncovering underlying perspectives of the data. The matrix becomes the centerpiece for structural and procedural analysis (Schatzman, 1991). Dimensions of this exploratory study were linked as antecedent conditions, context, strategies, and consequences (Ryan et al., 2004).

Antecedent Conditions. Antecedent conditions that emerged were dimensions of support systems, using technology to teach, and policies for distance learning. Conditions of support systems were administrative support, technology partnerships, online resources, and faculty teams. Participating faculty believed administrative and technical support are necessary to be successful in online teaching. Policy development often evolves over time (Ryan et al., 2004).

Context. Dimensions of the context involving faculty teaching online were identified as an online curriculum, online environment, and adjusting time frames. For example, faculty examined courses and had to rethink course content and pedagogical issues for delivering courses through a new media and new environment. The issue of time was a prominent and reoccurring theme throughout the study (Ryan et al., 2004).

Strategies. Strategies were conceptualized as methods of bridging the transition from real-time in the classroom to virtual-time online teaching-learning. Collaboration and planning through faculty development and mentoring were strategies used by most faculty. The process of redesign involved rethinking teaching strategies, trying new approaches, and learning from trial and error. New communication techniques needed to be developed that were effective, engaging, and motivating. Strategies were addressed for course preparation, revision, and update, as all course materials need to be prepared upfront. Strategies affected consequences.

Consequences. Consequences of redesign for online teaching resulted in both positive and negative outcomes. What some faculty believed to be a positive, thoughtful, comfortable environment, others believed lacked spontaneity. Delayed responses could be socially isolating. Most respondents thought the faculty role had changed from that of an authority figure in the classroom to an online facilitator or mentor. Faculty often worked in teams.

Rethinking courses also resulted in an increased awareness of course outcomes, design, and content. The opportunity for redesign led to creative thinking and collaborative learning. A prominent outcome of the redesigned environment was the changing relationships among faculty and students. All believed online learning was an effective way to teach, learn, and conduct business (Ryan et al., 2004). The exploratory work confirmed the need for a subsequent study to validate the matrix dimensions that emerged.

PURPOSE

The purpose of this follow-up study was to validate the dimensions of the Matrix for Faculty Teaching Online. The goal of validation was to present a model to guide faculty in the process of redesigning pedagogy and rethinking the faculty role for teaching online.

METHOD

Instruments

A questionnaire, "Redesigning Pedagogy and Rethinking Faculty Role for Online Teaching," was developed to validate the dimensions of the matrix (Ryan et al., 2004). The questionnaire contained 56 items, with 2 to 6 items in each of 15 sections. Each section addressed a dimension of the matrix (antecedent conditions, context, strategies, consequences), and respondents were asked to indicate whether they agreed or disagreed that each item was a true statement that reflected the dimension being addressed. Respondents were also given an opportunity to express additional comments in an open-ended question at the end of the questionnaire. Demographic data were collected related to type and level of course taught, number of semesters teaching online, average number of students in the course, courseware, and positive or unresolved issues in teaching online.

Sample and Procedure

The validation process involved a national survey. Schools of nursing were identified by reviewing schools' Web pages ($N = 55$). Deans or directors were asked to identify faculty who were teaching online. Questionnaires were mailed to schools that responded to the e-mail request and were distributed at the school. Sixty-eight faculty from 28 schools, all of whom taught online in master's degree or RN-to-BSN programs, responded. Approximately 40% had taught for two to four semesters, and more than half had taught for five to six semesters. The pool of faculty from the 55 schools is unknown. Procedures for the protection of human subjects were followed.

Data Analysis

Following a validation study with the 18 faculty who participated in the qualitative interviews, the questionnaire was revised to reflect the findings. Three items were eliminated due to lack of consensus, and seven items were added to reflect comments from participating faculty, resulting in 60 items. Data were analyzed for the 60 items in the 15 categories, calculating the percentage of agreement and disagreement for each item. Using $\geq 60\%$ as a benchmark to indicate agreement with an item and validation of the matrix dimensions, findings from the validation study revealed that responses reflected a consensus on matrix dimensions. Analysis of the items resulted in agreement of $>60\%$ for 54 (90%) of the 60 items. The following items had $<60\%$ agreement:

- Using graduate assistants is a strategy for redesign.

TABLE 1

Antecedent Conditions for Teaching Online

Dimensions/Items	Percentage of Agreement (N = 68)
Support Systems	
Administrative support	100
Online resources	97
Technology partnerships	92
Faculty teams	65
Use of Technology to Teach Online	
Software/hardware	97
Technical skills	97
Course management system	86
Policies for Distance Learning	
Workload	94
Ownership	86
Compensation	85

- The online environment can be socially isolating.
- In the online environment, face-to-face interaction is lost.
- Cultural diversity of students increases in online teaching.
- Not having face-to-face contact is a faculty concern.
- Faculty may know students better in the online environment.

Open-ended comments were reviewed individually and collaboratively by the researchers.

RESULTS

Antecedent Conditions

Four items reflected the antecedent conditions dimension of support systems (Table 1). Faculty strongly supported the need for administrative support (100%), technology partnerships (92%), and online resources (97%). In addition, 65% believed faculty teams are a useful support system. Three items reflected the dimension of antecedent use of technology to teach online. In addition, 97% of the respondents agreed about two items: the need for having software/hardware in place before design or redesign, and for faculty to have technical skills. However, only 86% of respondents agreed on having a course management system in place, such as Blackboard or WebCT (i.e., software for organizing course components). The third dimension of antecedent conditions (three items) was policies for distance learning. Most respondents (94%) agreed that faculty workload policies need to be identified before course design, while 86% agreed that policies on faculty ownership were needed and 85% supported policies on faculty compensation.

TABLE 2

Context of Online Teaching

Dimensions/Items	Percentage of Agreement (N = 68)
Online Curriculum	
Learning new pedagogies	95
Learning new role	91
Requires creativity	91
Requires high energy	90
Online Environment	
Portable	97
Convenient	92
Comfortable	81
Adjusting Time Frames (available 24 hours per day, 7 days per week)	
Expected by students	100
Expected by faculty	97
Requires adjustment by faculty	87

Respondents' written comments regarding antecedent conditions for online education included the importance of administrative support in course advertisement, pre-enrollment and enrollment issues, and successful management of students' learning problems. They also emphasized that course management systems (e.g., Blackboard, WebCT) make the course more user friendly and facilitate communication. Ownership needs to be predetermined, especially when faculty teach courses on a rotating basis. Compared to teaching in the classroom, teaching online is also more time consuming and increases faculty workload.

Conclusions for the dimensions of antecedent conditions were that administrative support, and technology should be in place before course design or redesign. Important policies include ownership, compensation, and faculty workload.

Context

The context of teaching online was manifested in the dimensions of online curriculum, the online environment, and adjusting time frames. Four items strongly supported the online curriculum dimension (Table 2). Teaching online requires faculty to learn new pedagogies (95%), learn a new role (91%), be creative (91%), and have a high energy level (90%). The dimension of online environment was strongly supported through three items. The online environment is an advantage because it is portable (97%), convenient (92%), and comfortable (81%). Adjusting time frames was the final dimension of the context of teaching online (three items). Being available in a timely manner (i.e., within 48 hours) is expected by students (100%) and faculty (97%), and requires adjustment by faculty (87%).

In their open-ended remarks, respondents commented on the context of online environment in that an online curriculum needs to be interactive. Rethinking pedagogies is essential to convert a classroom course into an online course. One of the observations faculty expressed was that some students do not understand their responsibility as online learners and believe the expectations are similar to classroom learning.

Faculty perceived the online environment as either comfortable or uncomfortable. Those who perceived it as comfortable believe it to be technologically efficient in teaching and learning and do not consider it an overwhelming learning environment. However, faculty who have minimal experience in the online environment need time to adjust to it and may feel overwhelmed with the increased amount of communication. Some faculty who missed face-to-face interactions did not consider the online environment comfortable.

Because online teaching and learning requires more time than the traditional classroom, both students and faculty need to adjust their time frames. Comments about adjusting time frames indicated that the course essentially "meets" every day; students often expect the course to be "on" 24 hours per day, 7 days per week; and courses take continuous attention ("care and feeding").

Conclusions for the dimensions of the context of online learning were strongly supported related to faculty's learning new pedagogies and adjusting their role, and the new role requiring high energy levels and creativity. For most respondents, the online environment is portable, convenient, and comfortable. Adjustment by faculty is needed to address the expectations of the "24/7" environment; timely responses are expected.

Strategies

Strategies for teaching online provide the transition process from structure to outcomes (Table 3). Five items addressed strategies for redesigning pedagogy and rethinking the faculty role (Ryan et al., 2004), and three had strong support: using outside experts (99%), using critical thinking skills (98%), and developing test security (84%). Trial and error was used by 62%, and 55% used graduate assistants.

Another dimension of strategies for online teaching was the use of collaboration/planning. Very strong agreement was reported for three items: faculty development (100%), faculty mentoring (100%), and developing faculty teams (91%).

Developing online communication techniques was a dimension addressed with six items. Strong support was evident for three items. Online teaching requires use of engaging web pages (97%), new and effective communication methods (91%), and increased communication with students (90%). Two other items were also supported. Communicating online requires designing media that is motivating (83%) and increased focus on reflective writing (81%). The final item addressed the issue of acceptance of delayed response times, and 75% of respondents agreed.

TABLE 3
Strategies for Online Teaching

Dimensions/Items	Percentage of Agreement (N = 68)
Rethinking Faculty Role/ Redesigning Courses	
Using outside experts	99
Using critical thinking skills	98
Developing test security	84
Using trial and error	62
Using graduate assistants	55
Collaborative/Planning	
Faculty development	100
Faculty mentoring	100
Faculty team development	91
Developing Online Communication Techniques	
Engaging Web pages	97
New and effective communication methods	91
Increased communication with students	90
Designing motivating media	83
Increased focus on reflective writing	81
Acceptance of delayed response time	75
Maintaining/Revising	
Prepare courses ahead of time	95
Update courses regularly	86
Deal with new technology and software changes	86
Revise courses each semester	73

Four items addressed strategies for maintaining/revising courses. Respondents agreed that faculty must prepare courses ahead of time (95%), update courses regularly (86%), deal with new technology and software changes (86%), and revise courses each semester (73%).

Respondents' written comments regarding strategies reported that faculty development is important and has resulted in the formation of online learning communities. Critical thinking, trial and error, using outside experts, and securing tests are all methods used to redesign online courses. Faculty need to identify methods to challenge students to grow and learn with regard to a particular topic. In addition, faculty need to ask, "What are the learning outcomes I hope to achieve?" Electronic communications are usually quicker but lack expression and tone of voice. Hosting onsite didactic meetings twice each semester can

TABLE 4
Consequences of Online Teaching

Dimensions/Item	Percentage of Agreement (N = 68)
Faculty Adjustment	
Flexible	98
Thoughtful responses	96
Delayed responses	73
Socially comfortable	72
Lacks spontaneity	58
Socially isolating	33
Faculty Role Changed	
Increased workload	85
From authority figure to facilitator	85
Partnerships/teams	60
Increased Awareness of Course	
Design	97
New ways to teach and learn	97
Content	91
Outcomes	82
Collaborative Learning	
Increased challenges	100
Promotes responsibility for shared learning	97
Increased geographical diversity of students	94
Effective way of doing business	92
Creates a community of learners	87
Increased cultural diversity of students	40
Changing Relationships with Students	
Take a different form	65
Miss face-to-face contact	58
Know students better	52

give students and faculty an opportunity for face-to-face interactions.

Conclusions for the dimensions of strategies for online learning were that collaborative planning and faculty development, teams, and mentoring are important for rethinking the teaching role and redesigning courses. Although trial and error is used, it is not a preferred strategy. Graduate students may be helpful, if available. Effective communication techniques require development of new and effective ways of motivating and engaging students. Reflective writing develops critical thinking skills. Although online courses need to be developed ahead of time, most faculty believed this was not unique to Web courses.

Consequences

Five dimensions emerged as consequences of online teaching (Table 4). Results of the six items addressing faculty's adjustment to online teaching were both positive and negative. Respondents supported the flexibility of teaching online (98%) and thoughtful student responses (96%) as positive aspects. Seventy-two percent of respondents considered the online environment socially comfortable, and only 33% agreed the environment can be socially isolating. Respondents agreed delayed responses can be a negative aspect of online teaching (73%), and 58% believed spontaneity is lost.

One dimension of consequences addressed how the faculty role had changed (three items). Respondents agreed that faculty workloads increase (85%) and that the role changes from authority figure to facilitator (85%). Only 60% of respondents agreed that working with partnerships or teams is required.

Another dimension, addressed by four items, was increased awareness of the course. Respondents agreed that online teaching results in increased awareness of course design (97%), new ways to teach and learn (97%), course content (91%), and course outcomes (82%).

Collaborative learning was a dimension supported by five of the six items. Strong support existed for online teaching being challenging (100%), promoting responsibility for shared learning (97%), increasing geographical diversity of students (94%). Eighty-seven percent agreed that online learning creates a community of learners; however, only 40% agreed that cultural diversity of students increases. Ninety-two percent of respondents agreed online education is an effective way of doing business.

The dimension of changing relationships with students was addressed with three items. The idea that personal relationships with students take a different form was supported by 65% of respondents. Many respondents missed face-to-face contact (58%), and only 52% agreed that faculty may know students better through online teaching.

Comments from respondents indicated that flexibility is a great asset in online teaching and outweighs the extended time commitment. It is a challenge for faculty to encourage etiquette in e-mail and online discussions. Community-building is a goal of online teaching and learning, but not an automatic outcome. Although some students may resist collaborative learning, it may give faculty the opportunity to learn as much or more from students.

Conclusions for the dimensions of consequences were that there are both positive and negative outcomes for faculty teaching online. Faculty roles change, workloads increase, and partnerships develop. Faculty move from an authoritative role into more participative roles as facilitators and mentors, and collaborative learning is the process that emerges. Relationships with students take a different form. Online teaching is an effective way to teach, learn, and do business.

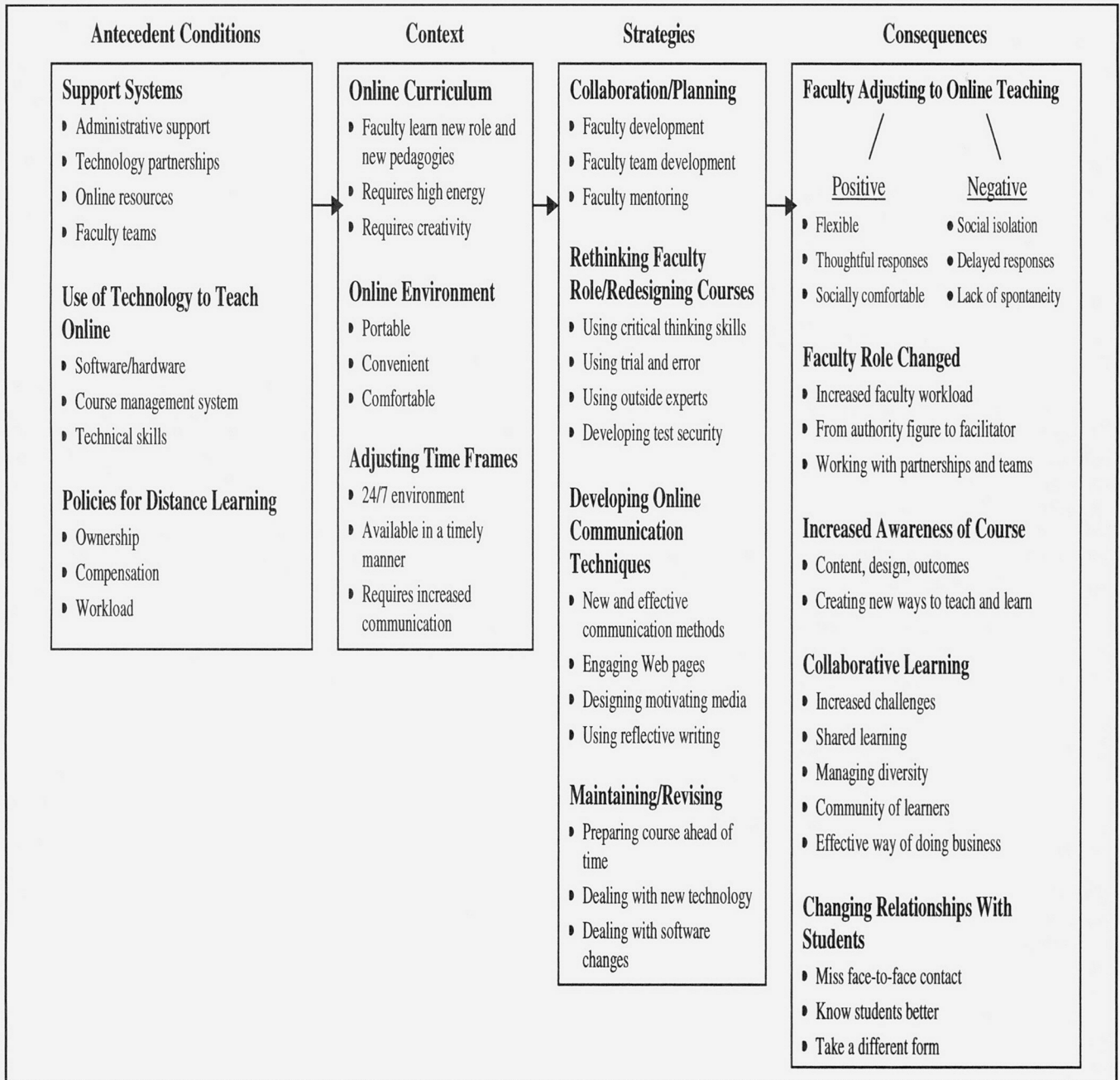


Figure. Model for Faculty Teaching Online.

MODIFICATIONS OF THE MATRIX

Modifications of the matrix that resulted in the model linking antecedent conditions, context, strategies, and consequences of teaching online are displayed in the Figure. The antecedent conditions and context of the online environment were supported. The expectation of a "24/7" response was modified to "timely responses." The dimension of communications was added to the context of the online environment. Descriptions include the frequency and reflective nature of the online environment, which were

strongly supported. The dimension of maintaining/revising courses was modified by deleting two descriptors (updating courses regularly and revising courses each semester). Comments from respondents suggested these were not unique to the online environment; however, courses must be prepared ahead of time.

Consequences of online learning were strongly supported by the validation study. Respondents agreed that faculty have both positive and negative responses to online teaching. While many aspects of the faculty role are unchanged and responsibilities transition from classroom to

the online environment, some aspects are altered. A strong consensus that faculty's teaching workloads increase exists. Analyzing courses for redesign increases awareness of the course content, design, and outcomes. Strong support exists for the development of a collaborative learning community and an increase in geographical and cultural diversity. Most respondents agreed that faculty-student relationships take a different form in the online environment. There was also strong consensus that online courses are an effective way of doing business.

IMPLICATIONS FOR EDUCATION

The Model for Faculty Teaching Online has clear implications for faculty who are designing Web-based courses. Administrative systems should support an infrastructure that includes resources, initial upgrade costs for technology, server and network capabilities, and technological expertise. Network security must be attended to (Institute for Higher Education Policy, 2000). Support for infrastructure was also discussed by Jairath and Stair (2004). Other elements of infrastructure to address for online programs are registration, records, support services, and financial aid. Library resources are also critical to online learning (Jairath & Stair, 2004). Faculty need feedback from the students, which requires online evaluations. These elements were also supported by Mills, Fisher, and Stair (2001).

The curriculum of the school is the focus of the online environment. Redesign is more complex than posting course notes online. Course content should be redesigned to incorporate a variety of teaching approaches. For example, case studies followed by questions to be answered in a discussion board provides an opportunity for students to seek resources on their own that support their presentation. Curriculum in the context of environment is supported in the literature (Cuellar, 2002; Jairath & Stair, 2004; Sternberger, 2002).

Teaching online often necessitates interdepartmental communication, as well as faculty collaboration within a school. Mentoring programs would help novice faculty learn from experts and avoid the trial-and-error method. Jairath and Stair (2004) supported these implications for redesigning courses, as well as online communication guidelines, protocols, etiquette, and security.

Faculty development sessions may also be helpful in bridging the transition between classroom and online teaching. Since some outcomes can be expected, such as changed faculty role and student-faculty relationships, collaboration with other faculty may provide insights into what to expect and tips on how to anticipate changes (Cuellar, 2002).

IMPLICATIONS FOR FURTHER RESEARCH

Future research can test our conclusions by validating interrelationships among dimensions and operationalizing concepts in propositions:

- Proposition 1: Faculty Role Change. Time on task per course is significantly greater related to preparation, individual student contact, group contact, course maintenance, course evaluation, and recordkeeping for faculty teaching online, compared to faculty teaching in the classroom. Therefore, faculty should receive assigned time to manage online courses (e.g., 1 load credit for a 3-credit-hour course).

- Proposition 2: Collaborative Learning. Online courses provide more opportunities for developing a geographically and culturally diverse community of learners than the classroom environment. Methods for addressing diversity should be investigated and incorporated into online courses.

- Proposition 3: Changing Relationships with Students. The face-to-face faculty-student relationship is absent in the online environment; consequently, faculty-student relationships have changed. Faculty may know students better and in a different way in online courses because of the detailed personal postings in discussion boards and the increased one-to-one nature of online courses. Therefore, faculty should incorporate new methods of communicating with student in online courses.

CONCLUSION

Evidence from the validation study confirmed the usefulness of the Model for Faculty Teaching Online to guide the redesigning of courses and the rethinking of the faculty role in online teaching. The study revealed that the process of redesigning courses for online delivery is complex. Faculty can derive optimal teaching outcomes from online courses by applying tested strategies for rethinking, developing, and redesigning courses.

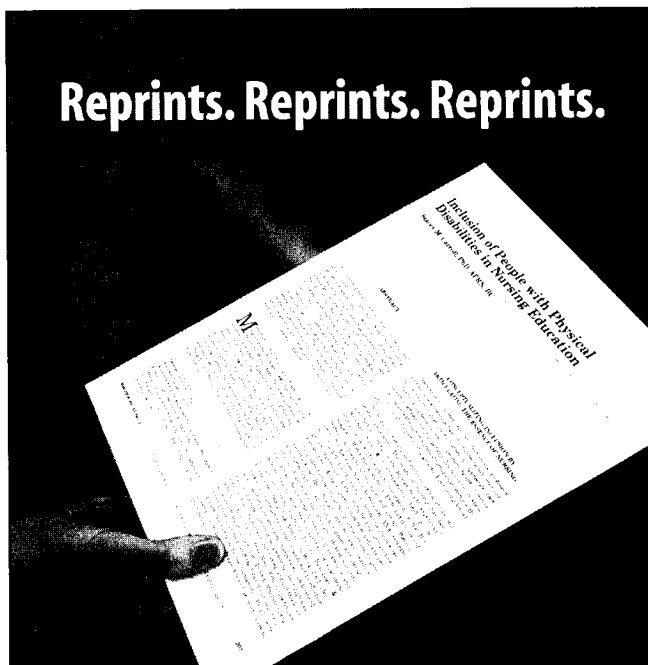
Additional testing of the model is recommended to provide faculty and administrators with further directives for designing courses and teaching online. As Web-based education continues to grow, there is a need to use theory-driven frameworks to drive the continued development and implementation of quality online programs.

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