Effective Online Instructional and Assessment Strategies

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The purpose of this study was to better understand the instructional and assessment strategies that are most effective in the online learning environment. Faculty and students identified several strategies for maintaining instructional quality in the online environment, including the importance of using a variety of instructional methods to appeal to various learning styles and building an interactive and cohesive learning environment that includes group work. Online assessment strategies include having a wide variety of clearly explained assignments on a regular basis and providing meaningful and timely feedback to students regarding the quality of their work. Effective assessment techniques include projects, portfolios, self-assessments, peer evaluations, and weekly assignments with immediate feedback. The role of meaningful feedback cannot be overemphasized.

Much has been written about teaching and learning online. The Illinois Online Network (2005, 1) noted that "effective online instruction depends on learning experiences appropriately designed and facilitated by knowledgeable educators." They recommended the use of a variety of instructional strategies including learning contracts, discussions, lectures, self-directed learning, mentorships, small group work, projects, collaborative learning, case studies, and forums. Each strategy is clearly explained in the paper. They noted that

> online learning can employ any of the strategies discussed here. Much of the power of learning via the Internet lies in its capacity

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to support multiple modes of communication including any combination of student-student, student-faculty, faculty-student, faculty-faculty, student-others, others-students, etc. Taking into account the varied learning styles of learners and providing opportunities for self-directed and collaborative learning, educators can facilitate powerful, effective courses geared to achieve specific learning goals and outcomes using the vast resources and capacities of online learning. (Illinois Online Network 2005, 6)

According to the Online Learning Center (2003) at the University of Houston–Victoria, effective online instruction involves translating the unique benefits of face-to-face interaction to online activities. The center encourages professors teaching online to get students to be actively involved in their learning by designing activities that promote student interactions and build a sense of community among students and faculty.

Perhaps the most comprehensive review of literature related to online learning was conducted by Tallent-Runnels et al. (2006). The review was divided into four major topics: course environment, learners' outcomes, learners' characteristics, and institutional and administrative factors. Online course assessment

is an important issue to consider in online teaching and learning. Managing student assignments, providing feedback to students, and assessing students' learning are all key factors. ... While the online format presents some challenges to instructors, it also may encourage the development of new learning and teaching techniques. (Tallent-Runnels et al. 2006, 103)

Using effective assessment techniques is an essential part of effective teaching and learning in the electronic environment. As educational institutions are increasingly held accountable for student learning (Association of American Colleges and Universities 2004; National Council for Accreditation of Teacher Education 2003), assessment represents an important way to respond to such accountability. However, student assessment conducted solely for accountability reasons does not necessarily lead to learning. Educators must establish the purpose of assessment, the criteria being measured, and the intended outcomes before meaningful assessment methods can be achieved (Gaytan 2002). The main purposes of assessment are to monitor student learning, improve academic programs, and enhance teaching and learning (Corcoran, Dershimer, and Tichenor 2004; Stiggins and Chappuis 2005).

In the relatively new arena of e-learning, the assessment challenges are even greater. Finding effective techniques to assess student learning in online courses has received increased attention but has not yet been thoroughly addressed (Robles and Braathen 2002). Some argue that effective online assessment techniques should be based on the characteristics of outstanding traditional teaching and learning such as challenging students to think, providing a reason to want to step into the classroom, displaying a willingness to give extra help and encouragement, and giving varied and meaningful assignments (Marshall 2003). However, online assessment also requires a more ongoing, systematic approach than that used with traditional instruction (Robles and Braathen 2002). In addition, as the assessment methods must match the level of desired competencies, online assessment requires educators to modify their methods of instruction to make them more innovative than traditional instruction (Liang and Creasy 2004) because it changes human interaction, communication, learning, and assessment methods (Robles and Braathen 2002). As a result, several researchers have found significant challenges when assessing student learning in online courses (Liang and Creasy 2004).

Other researchers have reported benefits for educators and administrators when testing in the online environment (Farmer 2005; Liang and Creasy 2004). Specifically, several researchers (Bartlett, Reynolds, and Alexander 2000; Farmer 2005) have found the following benefits: (a) grades can be entered into the electronic grade book immediately, (b) students have faster access to results, (c) assessment fosters a student-centered learning environment, and (d) it allows for measuring learning more accurately.

Effective online assessment techniques include the (a) development of realistic scenarios for learning, (b) alignment of learning objectives with realistic scenarios, (c) use of software as soon as possible, (d) availability of online mentors, and (e) delivery of on-site, instructor-based training responsive to individual student learning differences (Boyle et al. 2003). More research related to online teaching and learning is needed to identify effective online instructional and assessment techniques.

Purpose of the Study

The purpose of this study was to better understand the instructional and assessment strategies that are most effective in the online learning

environment. To address this purpose, answers were sought to the following five research questions:

1. What are the characteristics of faculty and students engaged in online learning?
2. How is instructional quality maintained in online courses?
3. What strategies are usually used to assess learning in online courses?
4. What types of online assessments are perceived as being effective by students and by faculty?
5. To what extent do e-learners consider the Internet to be an effective instructional environment or merely a convenience?

Method

The descriptive research method was used for this study, which sought to investigate the perceptions held by students and faculty regarding online instructional and assessment techniques. Data were solicited from individuals using a questionnaire survey instrument (Gay, Mills, and Airasian 2006). Online surveys, administered through the Blackboard and WebCT course management systems, were used to gather data.

Population

The population of the study included all faculty teaching online courses, and students enrolled in those courses, at two southern state universities, during the fall 2004 semester. The population included 85 faculty and 1,963 students, with response rates of 34% (29 of 85) for faculty and 17% (332 of 1963) for students.

Survey Instruments

Two instruments were used for data collection: *the faculty survey* and *the student survey*. The survey completed by faculty requested demographic data information; responses to a five-point Likert scale: 1 (*strongly agree*), 2 (*agree*), 3 (*neither agree nor disagree*), 4 (*disagree*), and 5 (*strongly disagree*); as well as open-ended questions.

The Likert scale measured the perceptions held by faculty members teaching online courses regarding the way instructional quality is maintained and the assessment strategies considered effective for online instruction.

The student survey was similar to *the faculty survey*, measuring student perceptions of the Internet as an effective instructional environment and the assessment strategies considered most effective. Both survey instruments were developed by the researchers using current literature. Respondents to both survey instruments were given a unique code (e.g., student number in WebCt and Blackboard) to avoid problems related to having one respondent complete the survey several times. A pilot test of each instrument was conducted prior to the full-scale administration of the survey. The results revealed an internal consistency of .86 for the faculty survey and .89 for the student survey (Cronbach 1951). According to Nunnally (1978), internal consistencies greater than .7 are acceptable for research instruments.

Data Analysis

Descriptive statistics (frequencies and relative frequencies) were used to summarize both faculty and student responses and to measure their overall perceptions of online courses, including instructional quality and effectiveness of online assessments.

Findings and Discussion

The results of the faculty and student surveys are presented in relation to the five research questions.

Question 1: Characteristics of Respondents

As shown in Table 1, 62% of faculty respondents teaching online are female, 76% are at least fifty years of age, and 72% are white. Thirty-eight percent are associate professors, 28% are assistant professors, and 17% are lecturers/instructors. Thirty-eight percent are already tenured. Sixty-nine percent have over five years of teaching experience and 75% have taught online courses for at least three years. The number of courses taught each year range from one to eight. Ninety-three percent of faculty respondents use either Blackboard or WebCT as their course-management system.

Table 2 shows that 73% of student respondents are females, 60% are white and 35% African American, 55% are undergraduates, 42% are education majors, and 22% are business majors. Student respondents classified themselves as full-time students (56%) and full-time employees (57%). Eighty-two percent are taking online courses toward completion of a degree, and 39% were enrolled in their first online course.

Table 1. Demographic Characteristics of Faculty Respondents

Demographic Category	Characteristic	Percentage
Gender	Female	62
	Male	38
Age	50–59	52
	60 and over	24
	30–39	14
	40–49	10
Ethnicity	White, non-Hispanic	72
	African American	24
	Multiracial	4
Academic rank	Associate professor	38
	Assistant professor	28
	Lecturer/Instructor	17
	Other	14
	Professor	3
Tenured	No	62
	Yes	38
Years of experience teaching in higher education	More than 15	38
	0–5	31
	6–10	28
	11–15	3
Years of experience teaching online	3–4	48
	5–6	24
	Less than 1 year	14
	1–2	11
	More than 6	3
Number of online courses taught each year	1 course	28
	4 courses	21
	5 courses	21
	7 courses	14
	2 courses	7
	8 courses	7
Online platform used	WebCt	48
	Blackboard	45
	Learning Space	7

Question 2: Strategies for Maintaining Online Instructional Quality

Table 3 lists the instructional strategies that faculty and student respondents agreed are being used in their courses. The top six identified by the faculty are as follows: requiring continual, immediate, and detailed

Table 2. Demographic Characteristics of Student Respondents

Demographic Category	Characteristic	Percentage
Gender	Female	73
	Male	27
Ethnicity	White, non-Hispanic	60
	African American	35
	Multiracial	3
	Hispanic	2
Classification	Graduate	42
	Junior	20
	Sophomore	14
	Senior	13
	Freshman	8
	Certification	3
School/College	Education	42
	Business	22
	Technology	13
	Liberal Arts/Arts and Sciences	11
Employment status	Full time	57
	Part time	27
	Unemployed	16
Student status	Full time	56
	Part time	44
Age	18–22	33
	23–27	13
	33–37	13
	28–32	12
	43–44	12
	38–42	8
	Over 52	5
	48–52	4
Access to online courses	Home computer	83
	Office computer	7
	University lab	6
	Other	3
	Library	1
Are your online courses part of a degree?	Yes	82
	No	18
This is my first online course	No	61
	Yes	39

(Continued)

Table 2. *(Continued)*

Demographic Category	Characteristic	Percentage
Number of online courses	1	55
taking this semester	2	28
	3	9
	4	4
	5 or more	2
Number of online courses	0	39
completed so far	1	24
	2	15
	3	9
	5 or more	7
	4	6

Table 3. Elements of Quality Instruction in Online Courses

Quality Indicators	Strongly Agree or Agree (%)	
	Faculty (N = 29)	Students (N = 332)
Continual, immediate, and detailed feedback is required regarding student understanding of course materials	86	57
Online courses are at least as rigorous as the conventional courses	83	80
E-mail is used appropriately to aid in the instructional process	76	83
A variety of instructional strategies (e.g., visual, audio, kinesthetic) are being used to address various learning styles of students	72	42
A good rapport and collaboration with students is established	72	67
Thought-provoking questions are used in threaded discussions	62	54
All members of a group must participate in chat room discussions	52	36
Various technologies are used to foster a high quality interaction (e.g., desktop video-conferencing, Web-based resources, online chats, asynchronous discussion boards)	52	45
Chat room interaction is analyzed to determine issues that require attention	48	26
The online learning environment is filled with dynamic interaction	45	52
Chat room interaction is analyzed to determine group cohesiveness	38	37

feedback regarding student understanding of course materials (86%); making online courses at least as rigorous as conventional courses (83%); using e-mail appropriately to aid in the instructional process (76%); using a variety of instructional strategies to address students' learning styles (72%); establishing a good rapport and collaboration with students (72%); and using thought-provoking questions in threaded discussions (62%). The top five identified by students are as follows: e-mail is used appropriately to aid in the instructional process (83%); online courses are at least as rigorous as the conventional courses (80%); the instructor has established a good rapport with the students (67%); thought-provoking questions/issues are used in threaded discussions (53%); and the online environment is filled with dynamic interaction (52%).

These findings support the views of Beer, Slack, and Armitt (2005) as well as Robles and Braathen (2002), who urged online instructors to become proficient in group work dynamics and in engaging their students in both synchronous and asynchronous communication. These findings are also consistent with Bocchi, Eastman, and Swift (2004), whose research found that increased interaction resulted in increased learning as reflected by test performance, grades, and student satisfaction.

Question 3: Online Assessment Strategies

Table 4 shows the assessment techniques that faculty and students agreed were used in their online courses. More than 75% of the faculty respondents agreed that a wide variety of clearly explained assignments are regularly required (93%); student work is evaluated to determine if learning outcomes are being met (93%); continual, immediate, and detailed feedback is required regarding student perceptions of the course (83%); and e-mail is evaluated to ensure student understanding of assignments (76%). More than 50% of the students agreed that instructors evaluate work to determine if learning outcomes are being met (73%); a wide variety of clearly explained assignments are regularly required (69%); instructors provide feedback on discussion board assignments (69%); instructors engage in self-assessments to determine if learning outcomes are being met (59%); a rubric is used to determine if major assignments are completed effectively (58%); and a variety of assessment techniques are used, including portfolios, projects, and simulations (56%). These findings support those of Russell, Elton, Swinglehurst, and Greenhalgh (2006), who underscored the importance of continuous

Table 4. Assessment Strategies for Online Courses

Assessment Strategies	Strongly Agree or Agree (%)	
	Faculty (N = 29)	Students (N = 332)
A wide variety of clearly explained assignments are required on a regular basis	93	69
Student work is evaluated to determine if learning outcomes are being met	93	73
Continual, immediate, and detailed feedback is required regarding student perceptions of the course	83	56
A rubric is used to determine if learning outcomes are being met	66	58
Self-assessments are being used to determine if learning outcomes are being met	66	59
Threaded discussions are used appropriately to ensure understanding of assignments	59	70
A variety of assessment techniques are used (e.g., electronic portfolios)	48	43
Self-tests are reviewed to ensure student understanding of course content	38	21
Students obtain immediate feedback through required peer assessment	28	29
Assignments are made out of student chat room discussions	17	21
Self-tests are required to provide students with immediate and honest feedback on learning and achievement	17	49
A rubric is used to assess the quality of interaction (e.g., analyze depth of postings)	17	43

assessment because it allows instructors to become familiar with students' work and to ensure student understanding, and those of Wilson (2004), who cautioned that frequency of assessments does not automatically lead to learning effectiveness. That is, assessments must be carefully and systematically planned to require students to demonstrate that learning has occurred by completing a specific piece of work at various stages in the course and be given meaningful feedback. Faculty and student survey respondents agreed that a variety of meaningful assessment activities are regularly completed in their online courses.

Fifty-eight percent of student respondents and 66% of faculty respondents reported that a rubric is used to determine if assignments are

completed effectively. The use of rubrics in effective assessments is supported by Christopher, Thomas, and Tallent-Runnels (2004) and MacKinnon (2002), who argued that rubrics must be carefully prepared to assess learning and promote critical thinking.

Table 4 also shows that 56% of student respondents and 48% of faculty respondents reported that a variety of assessment techniques are used, including electronic student portfolios, projects, and simulations. The use of several techniques to assess student learning in online courses is highly recommended (Christopher, Thomas, and Tallent-Runnels 2004; Robles and Braathen 2002). Only 21% of student respondents and 38% of faculty respondents agreed that self-tests are reviewed by instructors to ensure that students understand the content before formal tests are given. Furthermore, 49% of student respondents and 17% of faculty respondents agreed that self-tests provide immediate and honest feedback related to learning and achievement. However, the literature supports the use of these assessments. Robles and Braathen (2002) noted that the use of online, ungraded student self-tests has proven to be an effective assessment tool because these tests provide the students with immediate and honest feedback regarding their own learning and achievement.

Although Table 4 further shows that only 29% of student respondents and 28% of faculty respondents agreed that immediate feedback was provided through required peer assessment, researchers such as Christopher, Thomas, and Tallent-Runnels (2004) argued that peer assessment is highly recommended as students receive immediate feedback from their classmates.

Question 4: Effective Assessments

Faculty teaching online courses were asked to respond to an open-ended question about the types of assessments that they found to be most effective. Twenty-one percent listed projects, rubrics (21%), portfolios (10%), and self-assessment (7%). They also listed peer evaluation (21%), threaded discussions, online chats, timed quizzes (21%), and portfolios (7%). Flexibility (24%), immediate feedback (21%), and reflective thinking (10%) were listed as advantages of online assessments.

Students, responding to a similar open-ended question, listed self-assessments and practice tests (19%), threaded discussions (10%), weekly assignments with immediate feedback (7%), the use of rubrics (7%), and the use of portfolios/projects (7%) as effective assessments. Student respondents offered the following suggestions for improving assessment in online courses: provide meaningful and timely feedback (16%) and use of a variety of assessment techniques (7%).

Question 5: The Internet: Effective Instructional Environment or Merely a Convenience?

Student participants were asked to state the reasons for having enrolled in an online course. Table 5 shows that responses include distance from campus (37%), working full time (26%), irregular work schedule (14%), preference for online learning (8%), and the only way the course was delivered (4%). Ten percent indicated "Other," which included family commitments and the convenience that online learning offers. Respondents were asked to rate their online experience, taking the convenience factor out of the picture, and rated the online experience as excellent (18%), good (17%), and very good (11%). Perhaps the remaining 54% tolerated the online experience because of its convenience.

Conclusions

The following conclusions are drawn from the findings of this study:

1. Online courses are being taught by more females than males and most are regular faculty members (tenured or tenure track), white, and at least fifty years of age. They are well-experienced faculty members, with nearly two-thirds having more than five years of teaching experience and having taught online for at least three years.
2. Considerably more females are enrolling in online courses than males, with slightly more white than others. There are more undergraduates than graduate students or special students (e.g., those completing teacher certification programs), and there are more education majors than others. Regular college students represent approximately one-third of the online students, and some are

Table 5. Reasons for Enrolling in Online Courses

Reasons	Percentages (N = 332)
Distance from campus	37
Works full time	26
Irregular work schedule/convenient	14
Other	10
Prefers online learning	8
Only way it was offered	4

enrolling in online courses though they have no home computer (approximately 17%). Most online students are taking online courses to complete a degree.

3. Strategies for maintaining online instructional quality, as perceived by both faculty and student respondents, include maintaining open communication with students, ensuring that online courses are as rigorous as their traditional counterparts, using a variety of instructional methods to appeal to students' varied learning styles, requiring students to interact with the instructor and with each other to foster group cohesiveness, and using group work to help students build a strong learning community.

4. Effective online assessments should include a wide variety of clearly explained assignments on a regular basis. Feedback is also a critical component on online assessment. It must be meaningful, timely, and should be supported by a well-designed rubric when possible. The assessment value of e-mail messages, chat room conversations, and discussion board postings should not be ignored as they provide opportunities for the instructor to learn whether the students understand the instruction and are correctly interpreting the assessments.

5. Effective assessment techniques, as perceived by faculty and student respondents, include projects, portfolios, self-assessments, peer evaluations, weekly assignments with immediate feedback, timed tests and quizzes, and asynchronous type of communication using the discussion board. The use of rubrics to aid the assessments and to provide meaningful and quick feedback is valued by instructors and students alike.

6. Respondents mainly enrolled in online courses because of convenience factors such as distance from campus, the need to continue working full time while studying, and irregular work schedules. Though students choose online instruction primarily because of convenience, 46% think it is excellent, good, or very good and plan to continue to take online courses.

Recommendations and Implications

The following recommendations are made, based upon the findings and conclusions of this study:

1. Faculty teaching online courses and those planning to do so should carefully review the literature on learning style preferences and

become comfortable with a variety of teaching strategies that are applicable to the courses they teach and to the e-learning environment. It will be helpful to regularly use the chat room and the discussion board features of most course management systems to help build interaction and group cohesiveness in the online environment. Group work should continue to be used, aided by electronic meeting rooms that support both synchronous and asynchronous communication.

2. A variety of online assessments should be used in each course. These might include reviewing students' writing in chat rooms, e-mail messages, and on discussion boards. They should also include exams, quizzes, projects, portfolios, self-tests, peer assessments, and weekly review questions. Every effort should be made to ensure a high level of interaction between students and faculty and among students.

3. Regardless of which assessment techniques are used, it is most important to use a wide variety to provide meaningful and timely feedback. Time and effort should be directed to the development of effective rubrics that will support the assessment activities. Before assignments are posted, they should be carefully checked for clarity, ensuring that students have the details they need to properly interpret them. All major assignments should be accompanied by the grading rubric.

4. As long as students continue to need to balance work, family, and school demands, they will continue to value online learning. Instructors are challenged to develop vibrant learning communities in their online courses, to provide students with a variety of instructional and assessment strategies to meet their varied learning styles, and to make meaningful and timely feedback an important element of their courses.

Online learning and assessment should be viewed as a system for educating students and evaluating student academic achievement. Becoming knowledgeable about online learning and assessment is crucial at a time when there is an increased demand for accountability, growth, and excellence in educational institutions. Online instruction and assessment must balance the requirements of technology, delivery, pedagogy, learning styles, and learning outcomes. Perhaps the discussion presented here will assist business educators and other faculty and administrators in the selection of instructional and assessment techniques that properly address the needs of online learners.

Future Research

Future research studies should be designed to explore more innovative, efficient, and effective instructional and assessment techniques for the online environment.

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