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# Learning from Reflections - Issues in Building Quality Online Courses

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## Abstract

Authorship, implementation, and consumer perspectives should be considered when judging the quality of an online course. This article supports that position with reflections of an adjunct professor, who implemented a doctoral level course, Instruction Delivery Systems, during 2001 at Nova Southeastern University that had been authored by another professor in the School of Computer and Information Sciences. It contains student reflections on their experiences developing and implementing online mini-courses, which was the primary focus of the course. Discussion is enhanced with references to literature on online learning, and should assist educators who wish to develop and teach quality online courses, or smaller modules within hybrid courses. Courseware development recommendations and guidance for first-time online instructors are provided. Recommendations for the future of online learning are noted. The major conclusion is that there is no single checklist by which to design or evaluate quality.

## Introduction

As universities and colleges form partnerships to share faculty resources to develop and implement online courses (Oblinger, Barone, Hawkins, 2001; Southern Regional Education Board, 2001), there is a rising need to share facilitator implementation experiences to shed light on issues of course quality. The development of any complete quality assurance model for web-based learning needs to incorporate perceptions from academic staff and students (Yeung, 2002), however, which this article includes. In this endeavor, reflection plays a key role as the methodology, which according to Burge, Laroque, and Boak (2000) should be encouraged because distance education literature contains little interpersonal reflective writing specifically on experience with web-based practice.

In 2001, this author was a direct instructor of an online course, Instruction Delivery Systems, for students pursuing the doctorate in Computing Technology in Education at Nova Southeastern University (NSU). At that time she had over 25 years experience as an educator and had experienced online learning for three years while completing the doctorate. G. Abramson, Professor in the School of Computer and Information Sciences, authored the course and mentored this author's first experience with online teaching.

The course extended over a five-month period and included two long weekend on-campus meetings. Students experienced the remainder asynchronously using the course web site, NSU's Electronic Student/Electronic Teacher system for submitting assignments, student forums for discussion threads, and e-mail. They read and reported on literature about online teaching and learning, experimented with online course management systems, designed and implemented online mini-courses suitable for post-secondary education, participated as students in mini-courses of their peers, participated in threaded discussions, and reflected upon the experience of online teaching and learning. By way of course closure, the instructor analyzed students' reflections papers, and shared results with them. Their observations, which served as catalyst for this article, proved to be particularly enlightening regarding issues to ensure quality of online courses.

Since that first online teaching experience, this author has reviewed and participated in the development of online courses for other higher education providers and has been asked, "What is it like to teach a course authored by another?" This article addresses that question and other quality issues related to online teaching and course development. It promotes the position that authorship, implementation, and consumer perspectives should be considered when judging the quality of an online course. Courseware development and implementation tips, resources, and guidance are provided, which should assist other educators who wish to teach online and to develop quality online courses, or smaller modules within hybrid courses. A commentary on the future of online learning is included.

## Becoming an Online Teacher

"It takes both technical competence and effective pedagogy to teach in an e-learning environment" (Southern Regional Education Board, 2001, p. 2). In addition, an instructor's attitude, motivation, and true commitment toward instruction delivery via distance education programs affects much of the quality of instruction. An instructor's approach to instruction will depend upon whether he/she views the e-learning environment as one in which technology is used to replicate traditional pedagogical methods or to improve instruction (Valentine, 2002).

Reading the literature (e.g., Collison, Elbaum, Haavind, & Tinker, 2000; Palloff & Pratt, 2001; Salmon, 2000) about the online learning environment is a first step in becoming an online teacher. For example, University of Illinois faculty concluded that online teaching and learning can be done with high quality if faculty use new approaches that compensate for the limitations of technology and make the effort to create and maintain attentiveness to their students. Teaching is time and labor intensive. Students must feel they are members of a learning community. Courses should feature strong professor-student and student-student interactions, in-depth engagement with course materials, and faculty/student technical support. Evidence of academic maturity, such as critical thinking and synthesis of knowledge areas, is present (University of Illinois, 1999). NSU students expressed similar perspectives:

- "Good online teaching encourages student-faculty contact, cooperation among students, active learning, provides prompt feedback, communicates high expectations, and respects diverse talents and learning styles."
- "Online students must take responsibility for their own learning ...Success can be measured by their commitment, ability to write well, and to manage their time. They need to recognize that an online course is not easier than a face-to-face course."

Second, instructors need to be trained to use distance learning technology (Southern Regional Education Board, 2001; Valentine, 2002). Potential online teachers might benefit from experiencing online learning, online course design and implementation, reflection/revision, and experimenting with course management systems. For example, Moloney and Tello (2003) described a four-phase program at UMass-Lowell, similar to the NSU experience. Faculty development for the online program includes participation in a 4-week workshop where they learn to teach online by being online students themselves and experimenting with course management systems. This is followed by a second 4-week seminar in which faculty develop and migrate their course materials to the course management system. The third and fourth phases of the program involve teaching and redesigning their first course to incorporate such teaching strategies as case studies and team projects. Traditional faculty often mentor their colleagues. According to Care and Scanlan (2001), mentoring new faculty is essential to the production of courses for distance delivery.

## Quality Issues

"Measures of learning--and of quality--are elusive and often controversial in higher education" (Oblinger, Barone, Hawkins, 2001, p. 19). Developers of faculty and student programs, as described above, recognize that learning is both social and private, and experiential and that higher order learning requires reflection and knowledge construction, which are key elements for quality assurance in online learning (Alley & Jankar, 2001). The success of an online course is affected by its pedagogical richness, which is the degree to which a course addresses learning styles, use of media, and interactivity with content, testing and feedback, and collaboration. Other success factors include content quality, delivery support functions for instructors, administrators, and students, including those with vision and hearing impairments; pedagogically driven instructional design with well-defined objectives, web site usability factors, and technological factors (Sonwalkar, 2002). Of great interest to this author is that NSU students' reflections papers revealed those same key factors, as well as internal course design elements such as student motivation and involvement and the art of instruction, which Alley and Jankar (2001) say also affect course quality. These issues will be elaborated in the following sections.

## Content Quality

Good content forms a basis for a successful course and is a matter of authorship. The 23 mini-courses that the NSU students developed and implemented for three-weeks each fell into four categories: technical skill mastery (7), improving life skills (9), sharpening professional skills (2), and teaching (5). Representative titles included

Introduction to SmartDraw Software, De-Mystifying Networks, Classical Music Appreciation, Butterfly Gardening, Aphous Ulcers and Oral Herpes Simplex, Home Brewing Fundamentals, Stress Removal using T'ai Chi Chuan, E-mail in Business, and Designing WebQuests.

Students agreed that not all courses translate well to an online format, which faculty at University of Illinois (1999) and Valentine (2002) also noted. Courses involving mastery of physical movements would benefit from video and audio segments, as students voiced after trying to learn T'ai Chi Chuan movements using a series of pictures. Some believed that for safety purposes, the introduction of exercises requires face-to-face instruction from a certified instructor to ensure proper position, to reduce the risk of injury, and to obtain immediate feedback.

Students stated that a sign of good content is when students continue to contribute after a course is over. According to one, "The most obvious feature of the class [butterfly gardening] was the enthusiasm of the students [to see if they actually created gardens that attracted butterflies] and all of the interacting that went on during the three week term and beyond."

Students found that an entire course should be completed before its implementation and pre-tested because once the class starts, course delivery, management, and communication with students might consume more than double the time required for a traditional class, an observation with which this author agrees. Content should be reviewed for its accuracy. A pre-test might reveal problems with realistic completion time of assignments, and navigation and function errors within the instruction delivery system (IDS) of choice. For example, in one mini-course, pre-testing on a computer, other than on the one used for course development, might have determined that the search function was inoperable. To illustrate the on-target nature of these observations, each course at The University of Houston Clear Lake goes through a year production cycle, one semester for design, one for development, and one for testing before it is offered (Southern Regional Education Board, 2001).

### **Selecting and Applying the Instruction Delivery System**

Quality is affected by the choice of IDS and the technology delivery support functions available, the choice of which is sometimes dictated by the providing institution. The technology being used to deliver course content should be based on desired learning-outcomes, not on the availability of existing technology, however (Oblinger, Barone, & Hawkins, 2001; Phipps & Merisotis, 2000). NSU students believed course development and management become more difficult if instructors must select the IDS and help to solve technical problems. They valued the system that supported asynchronous instruction. According to one student:

"As much as I dislike interacting online, it would have been much worse in a synchronous class...One of the nice parts of online teaching and learning is that the typical pressure of many traditional classes is now non-existent. There is no way students could have answered with such complete and thought-out answers had it not been for the asynchronous nature of the class."

According to Tinker and Haavind (1997), the capacity of the software and network strongly influences the quality of interactions and the ability to build functioning virtual communities. Technologies that allow high interactivity seem necessary to allow high interaction (Roblyer & Ekhaml, 2000). Landon, Bruce, and Harby (2003) originally developed a web site to help educators to select and evaluate online delivery software. The present site analysis includes technical specifications, instructional design values, tools and features, ease of use, potential for collaboration, and compliance with standards for over 50 products.

Using multiple instruction delivery systems in a single course might be ill advised. Access to instructional materials should be centrally located. For example, one NSU student developed her mini-course using Blackboard ([www.blackboard.com](http://www.blackboard.com)), NSU's discussion forum, and a GeoCities ([www.geocities.com](http://www.geocities.com)) web site, which somewhat confused a fellow student who could not clearly determine what materials or tools necessary for the course could be found at each location. Supplementing online materials with music on CD-ROM sent by snail mail in a music appreciation mini-course, however, eliminated potential problems associated with slow download time.

Whether one selects to use a commercial product or a self-designed web site, the ideal IDS should enable interaction and be easy to use (Moloney & Tello, 2003). In addition to applying appropriate pedagogy to determine student learning needs, faculty must apply the appropriate delivery format for meeting those needs (Southern Regional Education Board, 2001). Technicians can help orient instructors to equipment, help to minimize participant anxiety, advise instructors on instructional strategies, and thus play a role affecting the success or failure of course delivery (Valentine, 2002). Sufficient orientation time needs to be built into instruction design for students to use the features of the system, as well. This recommendation is supported by Miller, Rainer, and Corley (2003), who found a significant, positive relationship between students' perceived ease of use and usefulness of the delivery mechanism and engagement and participation in the course as measured by time spent in the online learning modules.

### **Instructional Design Elements**

Quality is affected by pedagogically driven instructional design, which is also a matter of authorship. Elements of instructional design include a learning model, selection of objectives that address the highest levels in Bloom's Taxonomy, and application of cognitive and learning theories such as Gagné's conditions of learning. Design also includes a detailed syllabus, assignments that promote interaction and collaboration, assessments that guard against cheating, implementation of strategies to ensure instructor-student and student-student interaction and community building, and provision for course closure. Elaboration of these elements follows.

### **Learning Models for Online Asynchronous Instruction**

Design begins with selection of a learning model, which should be appropriate for the course content. According to Sonwalkar (2001), cognitive-based learning models that can be used for online asynchronous learning include apprenticeship, incidental, inductive, deductive, and discovery. The apprenticeship model is a building-block approach to presenting concepts procedurally. The incidental model is based on presenting events to introduce concepts and provoke questions. An inductive approach introduces concepts using a set of specific examples that pertain to a broader topic area; whereas, a deductive approach encourages learners to identify trends through presentation of broad data. The discovery method is inquiry-based, and was the learning model of choice for the NSU course.

### **Objectives**

Quality assurance benchmarks for distance education (Phipps & Merisotis, 2000) call for students to engage in analysis, synthesis, and evaluation activities as part of course requirements. To reach those levels, designers might structure course objectives with a progression through Bloom's Taxonomy of the Cognitive Domain (Huit, 2000). Huit presented sample action verbs and behaviors at five levels, which help designers to express objectives in measurable terms. For short courses lasting only a few weeks, too many objectives might overwhelm students, however. An NSU student stated that for her three-week mini-course, she "ended up creating fifteen objectives, which in retrospect is a bit of overkill."

### **Gagné's Methodology**

Faculty "[k]nowledge of both cognitive and learning theories are essential to quality instructional design and delivery" (Southern Regional Education Board, 2001, p. 2). According to Alley and Jansak (2001), Gagné's conditions of learning is one active-learning approach to instructional design for experiential learning. Each of this methodology's nine externally observable events of instruction (Gagné, Briggs, & Wager, 1992) is associated with a corresponding internal process, as follows:

External: Internal:

1. Gain attention. Reception.
2. Tell learners the objective. Expectancy.
3. Stimulate recall of prior learning. Retrieval to working memory.
4. Present stimulus with distinctive features. Selective perception.  
that is, tell or show the students what they are to do.
5. Provide learning guidance. Semantic encoding.
6. Elicit performance. Learner responds.
7. Provide feedback. Reinforcement.
8. Assess performance. Retrieval and reinforcement.
9. Enhance retention and transfer of learning. Retrieval and spaced review.

Gagné does not have a hard-and-fast order that events of instruction should follow or how often an event should occur to ensure learning. Events one through four set the instructional stage. Event five keeps learning on track and describes acts that enhance storing and recalling through hints, mnemonics, analogies, or organizing content. Events six through eight form a learning cycle that should ideally recur until an acceptable level of performance is achieved. Events eight and nine determine if learning has occurred and if that learning can be applied to unfamiliar situations. Gagné indicates that practice is a factor affecting retention.

#### Syllabus

A detailed, well-written syllabus will leave no doubt as to instructor intent and student expectations. The syllabus might contain the course description, learning objectives and outcomes, assignments, grading policy/rubrics, university/class policies for academic honesty, course-related resources, and reference materials (Muirhead, 2001). Instructor contact information and virtual office hours with a statement of days on which students can expect responses to e-mail or other instructor feedback enhances communication and might alleviate student frustration regarding response-time turn around.

Students might benefit from statements of prerequisite knowledge expectations with suggested resources to help them fill in knowledge gaps. Additional resources might include a list of supplementary texts and web sites for further exploration of course content. Instructors might recommend hardware and software for viewing course materials and completing assignments.

Assignments should contain due dates, point values or their relationship to the course grading system, and an alternative method for assignment submission for when technology fails. To help organize incoming assignments or e-mail into folders, this author suggested a standard file name format for students to use. According to Alley and Jansak (2001), an instructor can help students stay motivated by offering students time management assistance. An estimated time for completion of assignments might help students to budget time and relieve tension. According to one NSU student, time to complete assignments is affected by the pre-requisite skills learners bring to the course, their prior experience with online course related tools, their computer-platform, and their understanding of assignment requirements. Students might need 1.5 to 3 times the amount of time an instructor needs to complete assignments.

A clear late policy might be included in the course syllabus. NSU students had mixed feelings regarding the need for due dates and penalties to the assignment grade for late work, however, as illustrated by the following comments:

- "Early in the course I started to question placing a point value on lateness. As the course progressed, I knew I would change this feature next time. I would not deduct points for lateness. I felt having such emphasis was unfair to the student."
- "For some reason, it is believed that one must relax all deadlines in an online course in an effort to make it convenient to the learner. I can see now that the opposite is true. Onliners need to be motivated, and deadlines/penalties are quite effective."

Students should be forewarned that unanticipated circumstances or technology problems might dictate need for course changes and web-site adjustments, particularly for courses implemented the first time. One NSU student raised the issue of the need for back up plans in the event of instructor illness.

#### Assignments

Assignments should promote interaction and collaboration because students' perceptions of the degree of interaction is a factor that plays a primary role in determining course quality when using distance technologies (Roblyer & Ekhaml, 2000). Consider collaborative assignments revolving around discussion groups, role-plays, seminars, sharing assignment solutions, collaborative compositions, debates, simulations, case studies, brainstorming, forums, and group projects (Pitt & Clark, 1997). For example, one NSU student used case studies accompanied by effective images in her mini-course to help students diagnose the difference between aphthous ulcers and oral herpes simplex.

Students benefit from examples of how to complete assignments. Instructors might include exemplary student work in a course program book, as was done for the NSU course, and/or post exemplary work online. Neufeld (1997) found posting student work on a web site increased participation in lectures and group tutorials and fostered better performance on assignments.

NSU students appreciated assignments that included peer review and that permitted them to revise work. One stated, "I was very thankful for the revision experience now. Without it I would not have known the amount of difference in the quality of a product a little bit of extra time can make." In critiquing a mini-course design, one student "was displeased with the notion that the presentations were to be sent directly to the [mini-course] instructor via e-mail attachments, rather than posting them on the Web for students to collaboratively review." Authors of assignments that permit revision recognize that learning is spiral, messy, and unique to the individual (Alley & Jansak, 2001).

Alternatives might help students to complete their contribution to group work that depends upon others, who may not submit their contribution on time. Optional assignments for extra credit encourage students to delve deeper into course content, and may assist students to overcome misconceptions of prior learning that can misdirect higher order learning (Alley & Jansak, 2001). According to one NSU student, "...the optional assignments ...gave me a feeling of control that I had not felt in the previous mini courses."

In this author's view, participation is crucial to the class community and overall student success and, therefore, should count as part of the grade. Help ensure that students participate throughout the course by identifying the frequency and due days for student input to class discussions and expectations for their responses to others. Suggest a minimum number of words or length for each posting. Burke (1997) found that lack of participation by members on a regular basis is a key element in failure, and stated when comparing outcomes to traditional classes that differences in assignment outcomes might not have anything to do with incorporation of the Internet, but the use of collaboration in general.

An initial set of questions for online discussion helps start the participation process. Instructors can help students build a course knowledge base from discussion topics by providing a model reply to a discussion question, which illustrates the expected quality of student input. Encourage use of current references to support replies. Depending on capabilities of the course IDS, students might need help using HTML code to list live links to their Web-based references. A few statements of HTML code at the course web site or in a paper-based course program book might be helpful. This author recommended using Microsoft Word, for example, to compose replies that included tables, special text formatting, or other enhancements, which students saved in HTML format. After selecting to view the HTML source code, they would copy and paste the code on the course discussion forum, and then post the reply.

Encourage students to initiate course-related discussion topics. According to one mini-course student, "I found the student initiated discussion element to be the most beneficial and rewarding aspect of the mini-course."

#### Assessments

Faculty from the North Carolina Community College system (Hollands, 2000) suggested 11 online testing anti-cheating precautions. Among those were to publicize content, format, rules, and honor codes to students in advance. Ask questions that require application of knowledge. Only use memory-testing questions to facilitate student progress. Use software with test administration features. Design alternate forms of the test. Learn the writing style of students before testing. Use questions that require personal details from students. Above all, regard every test as open-book and an opportunity to view assessment to not only measure learning, but to serve as part of the learning process.

Although it was not the purpose of the NSU mini-course development assignment that students design for online test security, they did observe that online testing and creating valid assessments are issues affecting quality. One NSU student commented that practice tests/quizzes for online assessments are a good idea to help students know how to respond to test items. She stated, "If I had not taken the practice quiz I would have failed the first quiz given merely because I did not know the correct way to submit my answers!"

#### Strategies for Interaction and Building a Community of Learners

At implementation and consumer perspective levels, online course quality is affected by the degree of instructor-student and student-student interaction that students perceive. Class size will affect quality. Successful online courses have low student/faculty ratios (University of Illinois, 1999). Hiltz (1995) recommends class sizes of 10 to a maximum of 30 because interactions take a great deal of instructor time, which this author's NSU experience confirmed. With fewer than 10 active students, interactions may be insufficient to develop ideas in depth.

Roblyer and Ekhaml (2000) designed a rubric with four dimensions that contribute to a course's level of interaction and interactivity, both of which are necessary and linked. Interaction focuses on people's behaviors and interactivity on the characteristics of the technology system. Dimensions include the social rapport-building activities, the instructional designs for learning created by the instructor, the levels of interactivity of the technology resources, and the impact of interactive qualities as reflected in learner responses.

At the highest level of interactive qualities in their rubric, the instructor has provided for exchanges of personal information and a variety of in-class and outside-class activities designed to increase social rapport among students. Students are required to communicate with the instructor and instructional activities require them to work with one another and outside experts and share results. Technologies allow two-way exchanges of text information. Video or videoconferencing technologies allow synchronous voice and visual communication among participants. By the end of the course, 75% of students in the class are initiating interactions voluntarily (Roblyer & Ekhaml, 2000).

To start building community from week one of a course, instructors might ask students to post their background information and to comment on an introductory issue related to the course. This puts students at ease, provides the instructor and fellow classmates information upon which to begin interactions, and is a quick way for the instructor to determine if all students have access to the course with IDs and passwords that work. Instructors should make their presence known during week one, as well.

Students also need a social-oriented chat thread to assist in building community and to discuss assignments, technical issues, and other group-related concerns, which is apart from threads in which they are expected to participate. According to Alley and Jansak (2001), such a "cyber café" also assuages feelings of isolation, helps to minimize a student's potential frustration, and is an application to help maintain student motivation.

Students expect instructor-student interaction and quickly become aware of the instructor's level of commitment, and relevant and timely feedback. Commenting on motivation, an NSU student stated that "instructional involvement plays a significant role in sustaining the interest of students throughout the online learning experience." Instructor reply to student postings can stimulate dialogue and promote further exploration. However, instructor reply to questions can also be perceived as the final word on a topic, and might stifle or cut off discussion. According to Muilenburg and Berge (2000), if ongoing discussions are going well, the best action for instructors is to take no action to add their comments until conversation is waning, at which time an instructor might summarize key points and ask another prompting question to recharge discussion. Making content summaries takes time and their usefulness in a constructivist context has been questioned, however (Burge, Laroque, & Boak, 2000).

Instructor-student interactions involve more than what is evident at student forums. E-mail involvement is behind the scenes. NSU students appreciated replies to one-on-one concerns, particularly for those who did not want to directly post without first getting input from the instructor on some issues. One advantage of NSU's forum for instructional support is the option for instructors to receive automatic e-mail notification of student entries. This enables instructors to organize student participation into individual electronic folders from which they can monitor who is participating and in what discussion thread, and how often. This also enables instructors to easily respond to quality and completeness of student input, encourage further participation, solicit involvement to weave and summarize discussions, or to ask why some have not been participating.

The expectation for student-student interactions begins with how well an author shapes assignments. When participation is a significant part of the course grade, students will make an effort to contribute, as illustrated by the third assignment in the NSU course design that required students to initiate discussion and respond to others. This assignment enabled students to select the form of content to consume, and recognized that learning is unique to the individual (Alley & Jansak, 2001). A knowledge contribution was to be at least two paragraphs long, and supported with a reference. Web references required a live link. At the end of the course, students submitted a synopsis of their 10 best postings, which required additional reflection to include the significance of each contribution to the development of the overall knowledge base of the course. They needed to demonstrate a balance between topics they initiated, and those to which they responded to others. Students found that this expectation supported online collaboration.

The design of course questions affects the quality of discussion (Muilenburg & Berge, 2000), along with the instructor ability to moderate discussions in the course implementation (Salmon, 2000). Muilenburg and Berge (2000) indicated that experienced online instructors have found that a variety of higher-order expanding or divergent questions used initially, as opposed to centering or convergent questions, and probing follow-up questions tend to produce the richest online discussions. Students who commented on their mini-course experiences noted limited interaction from peers as a cause for disappointment:

- "I posted questions in the hope of attracting attention to and discussion about various ideas or problems, but I ended up with responses that satisfied the course requirements, but nothing else."
- "I was disappointed that neither the [mini-course] instructor, nor the other mini-course students responded to either of my two discussion topic postings."

In critiquing his own mini-course, a NSU student recognized solutions to increasing student-student interaction. Possibilities included community building by weaving and summarizing student discussions, and assignment components such as a grading rubric to assign points for interaction, sharing the role of moderator, group assignments, and expansive questions that might proactively encourage interaction between students. Weaving relates discussion sections from prior weeks to the current week or is used to synthesize multiple responses. According to Alley and Jansak (2001), assigning discussion board threads to student teams for moderation is also a technique to provide students with high levels of feedback without exhausting the instructor. This author found that asking students to summarize a discussion also helped them to analyze and synthesize the body of knowledge presented by their peers.

### **Course Closure**

Students expected course closure. One stated, "Communication and follow-up from the online instructor through the final grade is essential to the development of confidence in and respect for online learning." They expected e-mail with a final grade in each mini-course and details of how the grade was determined. One student regretted that he did not send out a questionnaire to solicit feedback from students in his mini-course after he submitted their grades.

### **Web Usability**

Even with pedagogically driven instructional design, an author's credibility and content might be questioned if web pages are poorly designed and contain errors, or if students have difficulty using the IDS. All of those might affect a consumer's view of quality as illustrated by the observation:

"Although I entered the course with high expectations regarding the utility of course management tools such as WebCT to enhance the online learning environment I left thinking that such tools leave much to be desired. Such issues as slower-than-expected response times, less-than-intuitive layouts and navigation proved to be a small source of irritation and an impediment..."

Good web pages contain highly relevant material, are updated often, require minimal download time, are easy to navigate (Nielson, 1999), and are designed simply (Otto, 2002). Designers might benefit from the comprehensive research-based web design and usability guidelines of the National Cancer Institute ([www.usability.gov/guidelines/](http://www.usability.gov/guidelines/)) and The Web Design Group ([www.htmlhelp.com](http://www.htmlhelp.com)).

A course web site should contain chunked material, which is a metacognitive feature that helps to minimize learners' feelings of being overwhelmed by content (Jones, Farquhar, & Surry, 1995). Consider use of menus, online help and technical assistance features, and user control of audio, volume, and video playback. Resource links might be provided to instructor personal/professional/contact information, frequently asked questions, plug-ins for viewing course content, online libraries/databases, bookstores, supplementary course-related web sites, a page to submit assignments online, and to the online discussion forum. A page of class photos helps students to pair faces with names they see at the discussion forum.

## Media and Technology Factors

Pedagogical richness of a course is enhanced with multimedia, whose design and development will depend on the selection of the learning model. Within each model, media selection provides the cognitive pathways to learning and ranges from simple to complex—text, graphics, audio, video, animation, and simulation (Sonwalkar, 2001).

Consider readability of text for all users, and eye strain for long passages. Thibodeau (1997) found that people read text on a computer screen at a rate 28 percent slower than reading from a book. Some students might print out course materials because they prefer reading text in hard copy form. Online readers might benefit from text that accommodates only the middle 50 percent of the page, as one sees at Florida Gulf Coast University web site (Zhu & McKnight, 2001).

Graphics and visuals should be appropriately sized to be clearly read, relevant for course content, and used wisely to support, explain, and/or clarify content (Zhu & McKnight, 2001). For example, one NSU student designed a home brewing mini-course using pictures to illustrate each stage in the brewing process. He reflected, however, that organizing graphical material differently and reducing the resolution of some pictures would have reduced download time and would have decreased the amount of time needed to complete his course. He also noted that messages for time to download would have helped minimize frustrations that users experienced.

MacGregor (2002) suggested limiting total graphic images to less than 35K per page because that size takes about 15 seconds to download using a 28.8KBPS modem. Save photographs in JPG format and line drawings or images in GIF file formats. Interlaced graphics, used wherever possible, will provide users almost immediate feedback about the nature of the graphic. Pages that require more than a minute to download are unacceptable to the average user, whose attention span for new sites has been measured at about eight seconds. To support universal access to course materials, Florida Gulf Coast University has recommended that web site developers design for download times using 28.8KBPS modems (Zhu & McKnight, 2001).

Finally, Sonwalkar (2002) indicated that the federal government now requires colleges and universities to make access to online course content available to vision and hearing impaired students. Section 508 of the Rehabilitation Act of 1973 ensures that individuals with disabilities, who are seeking information or services from a Federal agency, have access to and use of information and data that is comparable to that provided to individuals without disabilities. Included in that document are technical standards for software and web-based applications, and functional performance criteria ([www.criterion508.com/resources/section508\\_standards.html](http://www.criterion508.com/resources/section508_standards.html)). The Web Accessibility Initiative (W3C) also has extensive resources for web development to ensure universal access ([www.w3.org/WAI/](http://www.w3.org/WAI/)). Bobby Worldwide, a tool developed by the Center for Applied Special Technology ([www.cast.org/bobby/](http://www.cast.org/bobby/)), helps to identify and repair barriers to web page access by individuals with disabilities.

## Teaching a Course Authored by Another

Teaching or facilitating a course authored by another has positive aspects associated with it. The facilitator is not responsible for the design elements associated with creating an online course, and does not have to select the IDS. The facilitator can concentrate on course implementation and e-moderating for its success, which is an art in itself. This art entails filling multiple roles: instructor, social director, program manager, and technical assistant (Hootstein, 2002). It entails moderating to avoid being the verbal center of a student's learning world, and not attempting to block an adult's intrinsic motivating needs to feel competent and connected (Burge, Laroque, & Boak, 2000). Those new to online teaching can get a good feel for course elements that ought to be included, which serves as preparation for the time the facilitator might design his/her own online course or be part of an instructional design team.

However, there are concerns regarding implementation of a post-secondary course designed by another. The facilitator does not have course ownership and must teach the course as it was designed. There might be little or no opportunity for the facilitator to interject his/her own expertise to suggest revisions for a course prior to its implementation, nor might there be incentives to encourage the facilitator to make suggestions for improvement after a course is completed. The question arises as to ownership of any revisions for improvement that a facilitator might suggest, which might be incorporated in successive offerings.

Changes in the role of faculty, faculty ownership of web-based courses, institutional rights for commercialization, and associated intellectual property rights of all parties, in general, are concerns. Such issues are being addressed by institutions and states involved with developing quality distance learning programs (e.g., see Care & Scanlan, 2001; Oblinger, Barone, & Hawkins, 2001; Southern Regional Education board, 2001; Stevens Institute of Technology, 1999).

During implementation, post-secondary students might assume that the facilitator developed the course, as traditionally the professor who teaches a university level course has authored it. Students might unfairly criticize the facilitator, who might face justifying a particular design element to students with which he/she might not agree. When the facilitator and the author are on the same faculty, there might be a tendency for students to place a lesser value on the expertise and judgment of the facilitator, particularly if students recognize that the facilitator is being mentored.

Another drawback to the facilitator is that he/she might not teach the course in the manner that the author intended. One advantage of a mentoring relationship is that the facilitator might meet with the author to discuss his/her implementation ideas and teaching strategies that have proved successful in past. Authors of courses that will be taught by others may need to write suggested implementation plans for when they will not have opportunity to meet with the direct instructor.

## Future of Online Learning

Among recommendations for the future of online learning are instructional design support and guidelines to help instructors get acclimated to this new form of teaching, instructor sharing of resources and expertise, online courseware development partnerships, and new online pedagogical tools that foster student higher-level thinking and collaboration (Bonk, 2002). According to the Southern Regional Education Board (2001), an effective instructional design team will be essential to quality distance learning. Such a team might consist of the instructional designer, the graphic/interface designer, technical support personnel, content expert, direct instructor, information resource personnel, mentors/tutors, and assessor. The direct instructor would remain at the center of the team to guarantee academic integrity, assisted by the other partners.

The future of instruction design offers the exciting possibility of OpenCourseWare and reusable learning objects (Long, 2002; Wiley, 2000). According to Schatz (2000), the web, feedback mechanisms and, most significantly, meta tagged knowledge bits form the basis of this new approach. Instead of starting from scratch every time, this approach will enable customized learning at a specific time, taking into consideration an individual's learning style, experience, knowledge, and learning goals.

## Conclusion

This article supported the premise that authorship, implementation, and consumer perspectives play a role in determining quality in online courses. Online learning is not just about putting course materials on the web. Authorship involves creating a collaborative learning environment that supports knowledge acquisition, inquiry and questioning between faculty and students, individual learning styles, social interactions, and authentic assessment. According to Alley and Jansak (2001), however, there is no single checklist by which to design or evaluate quality. "In the final analysis, the instructor's own personal mastery and sensitivities to the 'art of instruction' also determine course quality" (p. 17). This latter is a matter of course implementation. Finally, "Quality expresses itself...through the viewpoints, values, and needs of the course consumer..." (Alley & Jansak, 2001, p. 3), as noted in student perspectives embedded within this article.

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