THE IMPACT OF INHERENT INSTRUCTIONAL DESIGN IN ONLINE COURSEWARE

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INTRODUCTION

The explosion of online higher education programs has created a market for courseware solutions for developing and delivering online learning via the World-Wide Web (Web) (Blumenstyk, 1999). These courseware tools are primarily server-based and integrate the design of the course structures, presentation of course content, implementation of instructional strategies, communication between students and instructors, and course management functions. In essence these products appear designed to simulate the typical functioning of the face-to-face classroom environment. These features include items such as syllabi, lectures, discussions, and grading (Harrison & Bergen, 2000). This is achieved largely through the use of courseware-provided templates and tools that allow quick creation of course components by faculty. The popularity of these online courseware packages (Firdyiwek, 1999) suggests that many institutions see courseware as a preferred method for designing and implementing online courses.

While the efficiency of this method of developing online courses seems clear, there is some question as to how effective such a template-based approach is for learning online. Such a "one size fits all" approach appears antithetical to the premise of instructional design, which holds that careful analysis of the critical aspects of the instructional environment (learners, content, and resources) should inform design decisions. For example, an analysis may dictate a departure from traditional face-to-face classroom instruction. This possible contradiction is therefore an impetus for taking a critical view of these server-based software solutions and determining whether their underlying design philosophies enhance and/or impede effective instructional design of online courses.

This article will therefore focus upon examining how the use of server-based courseware development solutions affects the instructional design process when creating online distance education. The assumption from which the critique will develop will be that these solutions have an inherent instructional design philoso-

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phy that biases the decisions of course designers and developers. It will be argued that this inherent design is evident in the software-provided templates and tools, and in the structure of the software. The implications, positive and negative, will be the primary outcome of the critique.

BACKGROUND

Online courseware has been developed to meet the perceived needs of higher education to develop Web-based versions of their courses (McCullom, 1997). This phenomenon has led to such packages as WebCT, Blackboard, and a host of other server-based solutions for online course development. These allow institutions to provide and manage many online courses via one system. These systems allow for integration of all aspects of the online course process, from design of course structures and materials, to registration and tracking of students, to delivering courses, and assessing student learning. The apparent marketing approach of the companies involved in providing these packages is that integration of these various components allows for the rapid and efficient deployment of online courses and programs (McCullom, 1997).

This high level of efficiency is achieved by use of software-provided tools and templates that automate the most common structural aspects of higher education courses. For example, tools for creating multiple-choice quizzes or templates for course syllabi and discussion groups are generic to the majority of such software. The assumption that apparently drives the inclusion of these tools and templates is the belief that faculty come to online teaching with existing content and structures from face-to-face versions of their courses that they wish to approximate online (Buhmann, 2000). These templates and tools provide for this transition of structure such that the amount of time and effort is reduced for training and start-up operation (Kaplan, 1998), thus increasing the efficiency with which institutions can offer online courses.

The thrust of the use of templates is to create a pad between the course developer/faculty member and the intricacies of the technical creation and delivery of the course (Buhmann, 2000). Rather than forcing the developer to do complicated programming or create all elements of the course using different tools (Web editors, graphics programs, etc.), these courseware packages have built-in tools that allow a step-by-step approach in which the developer makes choices and the courseware generates the materials, including Web pages, quizzes, and discussion boards. The assumption is that this frees the developer from the mundane work of setting up the administration and structure of the course. This, in turn, reduces the costs in terms of time and human effort, lending to a greater efficiency in terms of course development.

Anecdotal evidence suggests that such reductions seem to be of interest to some faculty (Cole, 2000; Partow-Navid & Slusky, 1999; Stith, 2000), and even more so for administration (Barnard, 1997). The driving force for use of online courseware appears to be the creation of a higher education climate that feels pressured to use the Web for instruction in order to obtain or maintain credibility for the institution (Harmon & Jones, 1999). In turn that causes faculty and course designers to strive to achieve similar academic quality levels for online courses as for face-to-face courses, but without spending undue amounts of time on the technical work of developing online courses. This is in part due to the desire of administrators to obtain reasonable cost/benefit ratios for distance education (Jung & Rha, 2000). Unfortunately, the economic and pedagogical interests are not necessarily harmonious (Harmon & Jones, 1999).

Evidence of this comes from the academic backlash to the creation of so-called "virtual universities." Critics suggest that the proliferation of online courses is motivated by a consumer-based approach to education at the expense of the quality of learning and academic work in higher education. Noble (1998) has suggested that this approach reduces edu-

cation to a consumer commodity, and leads to a woeful lack of quality due to the disenfranchising of the teaching faculty from their courses. McWilliam and Taylor (1998) have added that the movement toward student-centered design, especially online learning, disembodies the teacher and reduces the traditional role to one of content deliverer as opposed to instructor. They further suggest that the types of face-to-face interaction in regular classes are fundamentally depreciated when approximated via online technologies.

Despite such arguments against widespread adoption of online learning, there appears to have been little negative impact upon the decision-making of higher education administrations in regard to the movement toward online courses (Feenberg, 1999). However, the criticisms serve to establish the dichotomy between the efficiency and effectiveness of online courseware. That dichotomy is that the perceived benefits of shortened development times via use of templates are in direct contrast to the effectiveness of the instruction which is predicated on adapting the course to the instructional context, the learners, and other factors.

The remainder of this article will explore the impact of this dichotomy on the instructional design process for designing and developing online courses. This will be done by seeking to answer three questions based upon the available literature:

1. Do these online courseware tools provide for a single pedagogical approach, or multiple pedagogical approaches?
2. Do the online courseware tools affect the visual design of online courses, such that the design is enhanced or compromised?
3. Are the interaction mechanisms (email, bulletin boards, chats) built-in to online courseware truly equal to the types of interactions in the face-to-face courses these mechanisms are supposed to simulate?

At the conclusion of the article there will be an attempt to draw from the answers some thoughts on what online courseware means to the use of instructional design processes in the future of distance education.

PEDAGOGICAL IMPLICATIONS OF ONLINE COURSEWARE

Online courseware companies seem to have asserted that their products have no bias toward a particular pedagogy (Firdyiwek, 1999). In fact, the assumption is that in online courseware designers are free to configure a course that has the desired instructional methods and course structures (Huang, 2000). However, there is reason to question the validity of this assumption, and the claim that there is no built-in pedagogy to online courseware.

Oliver (1999) suggests that online courses tend to suffer from a "lack of informed design" as an expense for expedient development and offering of courses. Kearsley (1997) notes the abundance of options as a weakness in online learning courseware, such that the resulting courses impede learning. In seeking to provide for many possible combinations of components, the courseware inevitably confuses users by overwhelming them with too many choices, which produces instructional designs that do not match the needs of the course. It stands to reason then that what these users choose are those components most obvious in their function and easily accessed within the courseware options.

This phenomena causes the relegation of the teaching methods to a secondary consideration, behind the technical components of the course (Gillette, 1999). In essence, the pedagogical options are driven by the technical capabilities of the courseware. The tendency is to use those options provided by the templates and tools or the decision wizards within the courseware. For example, most courseware interfaces make it easy to create the following course structure (Harrison & Bergen, 2000):

1. Welcome and announcements.
2. Syllabus and outline.
3. Weekly modules.
4. Discussion board organized by topic, assignment, or weeks.
5. Testing and assessment.

This structure essentially mimics a traditional face-to-face course structure that is familiar to faculty. Therefore, while not explicitly espousing a specific pedagogy, there is an implicit pedagogical philosophy evident in the course structures that are most conveniently provided for by the courseware (Firdyiwek, 1999). This philosophy supports the prevalent attitude that learning at the higher education level is most often teacher-centered, with structured delivery of information to the learner, followed by either independent or group activity, followed by practice (either project or quiz), feedback (via e-mail or automatic correction of quizzes) and an assessment. Essentially, the online structures are electronic forms of the same learning opportunities available in the face-to-face structures (Collis, 1997).

The possible reason for why the implicit pedagogical model of a face-to-face classroom is in place has to do with general faculty characteristics relative to distance learning. Berge (1997) has found that in most distance learning situations, faculty members will select those technical options that appear to be consistent with the traditional modes of teaching with which the individual is comfortable. It is therefore understandable that courseware developers will create tools that provide for the characteristics of the majority of their intended market (Blumenstyk, 1999). In other words, if the purchasers of the courseware find the traditional classroom structure most familiar, then making that structure readily available helps in selling the courseware product.

To its credit, courseware developed with faculty characteristics in mind does have some positive impact. This traditional classroom model appears to be a very efficient way to expose faculty to online teaching because it allows the teacher to become accustomed to the technology without changing his or her pedagogical beliefs (Zhao, 1998). This may allow the faculty member to be more comfortable with teaching in the online environment, a concern for administrative support personnel charged with assisting in online course development (Carnevale, 2000). Some writers have suggested that it is important to view the adaptation to online teaching as an ongoing process, rather than a proposition that requires full-scale change of teaching methods during the initial exposure of the instructor (Eastmond, Nickel, du Plessis, & Smith, 2000). The familiarity of the structure certainly seems to support new online teachers coming from traditional lecture-based formats, perhaps lessening apprehension and confusion associated with online teaching.

However, the proliferation of courses using this built-in structure is worrisome in light of current views regarding the true potential of online learning environments. Many authors on the subject have suggested that online learning that is simply the traditional classroom environment transposed is insufficient to take advantage of the power of Web-based instruction (Carr-Chellman & Duchastel, 2000). Instead, the advantage is perceived to be the opportunity to transfer from teacher-centered to learner-centered models (Oliver, 1999).

This change entails enabling certain components in Web-based environments. These may include allowing for collaborative learning (Brush, 1998); providing for multiple perspectives and representations of the contents (Rossner-Merrill, Parker, Mamchur, & Chu, 1998); building of learning communities (Marshall, 2000; Moller, 1998); and authentic examples and experiences (Duchastel, 1997). Most important, the learner must be given more control over the nature of the learning experience as opposed to the instructor (Oliver, 1999).

This is not to suggest that courseware cannot allow for such designs. Dabbagh and Schmitt (1998) reported having successfully

redesigned an undergraduate computer science course, taught in an instructivist face-to-face mode, into a more constructivist, learner-centered online course using WebCT courseware. Comparison of courseware shows that most products allow for creating teams necessary for collaborative learning activities (FutureU, 1999). However, the course templates and their structures appear to make implementing these constructivist components more difficult than the instructivist components. In order to provide authentic environments, multiple modalities and perspectives, and truly build learning communities, the designer of the course will need to build supplemental pages and programs into the course.

In order to effect the kind of redesigning that is needed to move from instructivist to constructivist course environments, it seems it is necessary to avoid the templates provided by the courseware, either in part or in whole. Unfortunately, failure to utilize the templates makes course development more time-consuming and requires increased effort. The implications of this for instructional design of courses are profound, since reduction of time in order to reduce costs often creates less-effective instruction (Myers, 1999).

Typically, one hopes that, before choosing how to develop a course, that analysis of the learner, content, and instructional context are considered (Passerini & Granger, 1999). Defining what is to be learned, learner characteristics, and matching learning objectives and assessment methods, are touted as critical for successful, effective online courses (Berge, 1997). Only after such analysis should instructional methodologies be chosen. Yet, it seems as if the courseware templates are capable of biasing the decision-making process within course development by limiting the methodologies available, or at least appearing to promote certain methods by featuring them in the menu options. In other words, the technology, rather than the pedagogy, drives the decisions (Gillette, 1999).

The outcome of this emphasis on technical capabilities is that it fosters an overemphasis on appearances and simplified presentation of materials when making design decisions (Gros, Elen, Kerres, Merrienboer, & Spector, 1997). Coupled with the notion that the value of the courseware lies in its ability to circumvent the time-consuming process of technically building course structures, this sets up a less-than-ideal design environment. Faculty and/or designers make critical decisions based upon courseware features as opposed to course content or needs (Byun, Hallett, & Essex, 2000). The resulting courses are then so similar in appearances, activities, and structure that the content and pedagogies appear to be based in technical capabilities as opposed to differences between courses.

To conclude this section, we would summarize that while online courseware does appear to be nonprescriptive of a specific pedagogy, it does, by the nature of the options it makes available and the templates provided, have some implicit pedagogical biases. This results in difficulties in customizing courses according to designer specifications (O'Sullivan, 1999). Despite the obvious efficiencies of design time and implementation readiness, the current emphasis of courseware toward the traditional face-to-face classroom framework seems to impede realization of more learner-centered, constructivist course designs. Therefore, it seems that the online courseware products engender a certain type of instructional structure, and are not as flexible when supporting other possible approaches.

VISUAL INTERFACE IMPLICATIONS OF ONLINE COURSEWARE

Visual design is an integral part of the effective use of computer-based instruction (Lynch, 1994). The same is true for Web page design (Lynch & Horton, 1999). Within online courseware, templates provide for a consistency of look and navigation by developing a standard visual interface for courses (O'Sullivan, 1999). Visual interface is defined as the visual layout of content and interactive con-

trols that lets the user interact with the program (Graham, 1999). The primary goal of visual interface design is to create an environment that provides the user with explicit visual and functional content and controls.

A common consideration in Web page design is the selection of icons, graphics, and colors to display these content and controls aesthetically. In addition, where and how to place them within one page or within one site (course) should be carefully considered for effective visual interface. Without visual design consideration, the Web course site may be as unappealing as an unorganized classroom.

It is not easy to build a visually pleasant and intuitively organized virtual classroom, and there are few experimentally derived design guidelines for the computer-based graphical interface design (Galitz, 1997). As a result, unlike real-world classrooms that look mostly alike, virtual classrooms on the Web have a variety of forms. As the first factor of the lack of experimentally derived design, Galitz (1997) argues that the builders of graphic-user interface (GUI) packages will not publish their study results to maintain a competitive advantage. Whether it is true or not, Web courseware templates developed by different companies indeed have different visual interfaces (O'Sullivan, 1999). The following sections will address two visual design issues related to instructional design, and how the courseware templates impact the design of a course from a visual perspective.

Visual Metaphor

Courseware templates provide visual interface to the developer as well as tools. The instructor can quickly build a rather professional-looking classrooms by choosing the icons and buttons provided by a template. The template visual interface follows basic design principles to structure information. As Jones and Farquhar (1997) suggest for the interface design of WBI, the template has a consistent placement and style of titles, icons and buttons. Through this consistency and familiarity, the user easily predicts the function of buttons or icons and interacts with the content.

In addition, most templates employ visual icons. Visual icons catch students' attention faster than text-based buttons (Galitz, 1997). In addition, by using a metaphor, the icon assists students to understand the function of the button. For example, a calendar icon is used to represent a course calendar in which the instructor posts test dates or assignment deadlines. Kaplan (1990) pointed out that the user would gain insight about an unfamiliar object's purpose or actions though the metaphorical presentation. His argument implies that the use of metaphorical icons can help students' understanding of contents or control of the site.

While the metaphorical icon provides certain advantages, it also can create problems when it is not carefully designed. First, a metaphor can confuse the students when it does not meet students' expectation of the icon's operation. For example, as a lesson module icon, an image of a backpack is used in WebCT. Some countries or cultures may not use a backpack to carry books, or have some other uses associated with backpacks, such as hiking. In this case, students need to remember the function of the icon. Successful metaphorical icons do not require students to learn and remember the function.

The more serious problem is that the metaphor could give students a misconception of the purpose of the activity with which the icon is associated. For example, an image of a pin is the default icon for discussion links in WebCT and Blackboard. Discussion areas are the place students share their opinions, and perhaps more importantly, listen to different opinions. Eventually, all voices will be integrated and developed to create better ideas. However, from the picture of a pin, students may think this is a place to *post*, like on a real-world bulletin board, not a place to *discuss*. Their attitude to the discussion could be self-centered, or they may think their responsibility is just to post the number of messages they have been

assigned, not to read all the messages posted by classmates.

Icons are visual vocabularies (Fleming, 1998). Restroom, restaurant, and gas station icons that can be found on a travel map are examples of conventional visual vocabularies. Web page designers have developed many visual icons and these have contributed to building conventional Web vocabularies for use on the Web. *Home*, *next*, or *back* icons are examples of items in the visual vocabulary of the Web. When designers develop icons, they try to adopt simplified visuals that represent a function of the content and also look attractive to viewers. However, it appears that Web designers usually fail to consider the impact of the icons from the instructional perspective. Furthermore, the resulting misunderstanding can overpower the original idea and alter the original concept. In this case, there is a danger that the concept of discussion—"sharing ideas together"—could change to just "posting what I think." Icons provided by courseware template should be carefully designed to meet certain instructional purposes. The icons should not only be attractive to catch students' interest, but also employ sound educational principles.

Third, the visual icon or visual layout should appear pleasing to the student. If the visual icon does not interest the student, it may negatively affect learning. Szabo and Kanuka (1998) studied the effects of screen design on learning and concluded that if subjects perceived that graphics were not good, they had a tendency to believe that the instruction would lack quality and not be worthy of serious attention. In critiquing online courseware, the default icons provided by the courseware templates may not hold visual appeal for the target student. For instance, a student in a freshmen class may not prefer the same icons a graduate student would find appealing. It is critical to analyze the demographics of the target students to develop icons that will be part of a successful visual interface.

Most important, the visual interface represents the instructional design. Visuals should be carefully designed, based on the purpose of the activity and target audience. However, little attention appears to have been given matching the design of visual interface with sound instructional design principles in online courseware. Rather, the Web visual interface and the instructional design appear to have been treated as two separate issues.

Navigation Layout

Visual interface is not just about buttons, icons, or background colors. It also serves to assist the student in navigating the online course. This guidance helps users understand how to search, find, link, chat, and so on. Primarily, navigation supports users in achieving their goals (Fleming, 1998). There are several ways in which courseware affects navigational choices for online course designers.

As previously mentioned, if a developer follows a courseware template and accepts all the default features the template provides, he or she can, in a few minutes, create a professional-looking Web course that includes threaded discussion, chat room, personal homepage, and lecture pages. Using frames, consistently placed navigation options throughout a course allows students to easily navigate the course features. However, the pitfall is that each feature has its own link, and the links are not interrelated in a single space. Each link takes the student to a separate space, such as a lecture page, a discussion room, a chat room, etc. In this kind of structure, students must go to each space to perform specific tasks. For example, in an online course, students view the lecture on one series of pages, then in order to discuss a certain topic, they must leave the lecture space and follow a link to a separate item for discussion. Following this structure, in order to complete one lesson including a lecture, discussion, and test, students need to go through at least three spaces.

This is not the same as a face-to-face classroom, in which the discussion and lecture, as well as other instructional interactions, occur together in the same space. Therefore, if the instructor desires to recreate the same interac-

tions as in the face-to-face version of a class, there may be a distinctive qualitative difference in how the structure of the learning space mediates the experience of each student in the class.

Such differences may be a limitation of the online environment that is considered necessary for the sake of convenience. It might be efficient for the developer or instructor to put lectures in one space and discussion topics in another space. Once the lecture notes are posted on the Web, the developer or instructor can develop and post discussion topics in the pages reserved for use as discussion space without changing the lecture pages.

Unfortunately, what is convenient for the developer may be inconvenient for the student. While moving from page to page, students might lose their focus or interest on the topic. Further, the interaction may not occur the way the instructor or developer planned. For example, instead of following instruction and going directly to the assignment page or space after reading the lecture notes for a particular topic, some students might stay in the lecture section and finish the reading for the next topic as well, prior to going to the discussion space or assignment pages. Because the instructional interaction between students and content did not occur in the order designed, due to the default navigation layout, the instruction may not have been maximized; although students completed all the activities, they may have done so out of the intended order.

Zhang and Fulford (1994), in a study of students' perception of interaction in a distance classroom, showed that perceived interactivity was psychological. As in the example from the previous paragraph, even though students themselves control the sequence of the interactions, they may think the interaction was not of high quality. Yacci (2000) argues that interactivity in instruction must occur from the student's point of view. The navigation layout provided by the courseware templates are apparently designed from the instructor's point of view rather than student's point of view, and seems to be quite different from the interactions of a face-to-face classroom model.

Combining discussion or any kind of activity into a lecture like a real classroom situation is supposedly available with the tools provided by the courseware. However, by merely following the template, it is not possible to embed these activities inside of the lecture in the same manner as in a face-to-face situation. This limits the ability of the faculty member/course designer to fully coordinate the visual interface with the pedagogical structures they wish to implement.

This section focused on how online courseware can develop a consistent look and feel for the online course, but one that is divorced from the instructional design of the course. The visual metaphors and navigational options of the templates are inconsistent with some of the considerations of learner and course structure that are considered essential to good instructional design. As with the pedagogical considerations, the efficiency of using the templates and other courseware tools seems at odds with the effectiveness of developing the course through use of the instructional design process.

INTERACTION IMPLICATIONS OF ONLINE COURSEWARE

As mentioned in the previous section, there are some reasons to question whether or not the interactions, such as discussions, in online courses are as similar to face-to-face courses as many appear to believe. In fact, if the template course structures mimic those of the face-to-face classroom, then the ramification of online interaction being qualitatively different would be to call into question the effectiveness of the templates in providing an experience equivalent to the face-to-face experience. Answering that question involves examining what is meant by interaction, particularly as it relates to learning. Berge's (1999) definition of interaction as "two-way communication among two or more people within a learning

context" is sufficient and acceptable. Flottemesch (2000) voices the common belief that this type of interactivity is assumed to be a primary component of face-to-face classroom instruction, and notes that research has shown positive connections between interactions and learning and affective outcomes. It is seen as a common goal of distance education to provide for this same sort of interaction in courses that are not delivered face-to-face.

In the online environment, this interaction may be synchronous or asynchronous, though asynchronous formats (such as e-mail, bulletin boards, or listservs) appear to be the most prevalent in online courses. The belief appears to be that such interactions can provide the same opportunities for discussion as a face-to-face classroom, or perhaps even allow more opportunities.

However, if these interactions are designed to simulate the types of face-to-face interactions occurring in traditional classrooms, then we need to look at whether they are qualitatively the same as face-to-face interactions. Tolmie and Boyle (2000), in reviewing the literature on computer-mediated communications, state that it is commonly held that asynchronous tools promote active discussion and dialogue by allowing for reflection by participants and creating a less discriminatory discussion space. Yet, what form these interactions take seems to be somewhat different than what happens in face-to-face instruction.

For example, Tolmie and Boyle (2000) further note that asynchronous communication can promote quality interactions—interactions that allow for reflection, learning from conflict, and discourse. Yet they state that they found that to date this ability to improve discussion to be more a "potential" of asynchronous communication rather than a true benefit. In fact, they cite evidence that the resulting exchanges tend to be linear "chaining" of remarks as opposed to true dialogue.

The phenomena of linearity may be, as suggested in the previous section of this article, a result of the metaphors used to connote online discussion. For instance, bulletin boards denote a non-immediate type of one-way communication, in which one posts a message without knowing if a response will be received. Linear messaging may also be a reflection of how the asynchronous environment structures the format and context of the discussion. Shotsberger (2000) suggests that, while synchronous dialogue is informal and spontaneous, asynchronous dialogue is rather rigid and formal. He also argues that the person posting a message does not know when others will be actively engaged in the discussion. All this creates a context in which the interactions are fundamentally unlike face-to-face interactions.

Shotsberger (2000) holds that the convenience of asynchronous discussion is overemphasized in designing online courses. This may be reworked to say that the efficiency of asynchronous communication is in its convenience for the student. However, it appears that the effectiveness of asynchronous discussion to provide for the same kind of spontaneous dialogue that occurs in a face-to-face course is compromised. That is not to say that asynchronous interactions may not have some positive effects for online instruction as compared to face-to-face instruction. It is quite possible that asynchronous discussions provide for a more learner-centered environment (Berge & Muilenburg, 2000) and fosters a sense of community that may overcome feelings of isolation in online students (Moller, 1998).

Yet such positive impact exacts a price in terms of the increased complexity added to the design process (Liaw & Huang, 2000). Moller (1998) suggests that within the instructional design process, special care must be taken in order to develop an environment supportive of community building. Berge and Muilenberg (2000) put forth the need for carefully designing questions for use in prompting discussion. It seems clear that the key to effective use of online communication is related to how well the tasks in which the student engages promote quality interactions (Tolmie & Boyle, 2000).

It would appear that online instruction is not exactly the same as face-to-face instruction (Kilian, 1997). While it is not fair to suggest that it is the responsibility of courseware products to effect good online discussion and facilitation skills, it is important to question whether the premise of the courseware templates is flawed. If the templates are meant to enable migration of a course from face-to-face to online delivery, then it appears that there is genuine reason to question whether it is possible to provide the equivalent of face-to-face interactions via online communication forms. Furthermore, in order to take full advantage of the potential for positive interactions in asynchronous environments, it seems necessary to spend time analyzing and designing for the interactions and the environment in which they take place. This may or may not use the room- or topic-based discussion-board structures set up by most online courseware templates.

INSTRUCTIONAL DESIGN IMPLICATIONS OF ONLINE COURSEWARE

To summarize, there is a trade-off between the efficiency of developing online courses using online courseware and the effectiveness of those courses in light of instructional design premises. The courseware templates are designed to minimize time and effort by automating the decision process for certain characteristics of the course design, including navigation, visual interface, and common course structures such as syllabi, discussions, and lectures. However, because these features are integrally tied to the pedagogical design of the course, the templates appear to drive pedagogical decisions by the nature of the choices they automate on behalf of the course developer. This is in opposition to commonly held understandings in the instructional design field that the pedagogical considerations must drive the technological decisions.

If we accept this understanding of the impact of courseware templates as accurate, what then are the solutions for those who must design online courses using these tools, but for whom the instructional design process is given priority in design decisions?

Given the fact that unless the market for these products voices a desire for change, and the courseware will remain essentially unaltered, then course designers will have to find a way to avoid using the templates, or at least rework the templates for their own purposes. This could involve creating Web pages or sites that exist outside the courseware. While such an approach will be inefficient, it may be the only way to ensure that the quality of the instruction is maintained when the templates are unable to accommodate the pedagogical methods and structures determined via application of the full instructional design process.

Most courseware developers are interested in keeping customers, in light of the intense competition in the distance education market. It is possible that voicing concerns regarding the impact of templates could result in companies changing the templates and courseware interfaces to accommodate more diverse methodologies.

Developers may then combine the first two approaches and essentially create their own design templates, thus overcoming the deficiencies of the templates, providing examples for the courseware companies to model, and making subsequent uses of similar course structures more efficient. Unfortunately, these approaches require that the efficiency of designing online courses will be compromised, at least in the short-term, in order to ensure the effectiveness of the instruction. Faced with the overwhelming demand for online courses, it may be difficult to convince administrators that the need to promote quality exceeds the need for course quantities.

CONCLUSION

In the final analysis, the authors wish to reiterate that the criticisms offered are not an indictment of the online courseware industry or the desire of higher education institutions to develop online education. However, in consid-

ering the implications of the design of the courseware and the environment in which online course design is conducted, it seems that the instructional design process is being compromised by the desire for efficiency.

The authors would agree with the conclusion of Firdyiwek (1999) that courseware developers need to be aware that when designing their products they avoid "implicitly encouraging pedagogically suspect practices" by their design. Until courseware is changed, course designers, be they faculty or instructional designers, must make the conscious effort to overcome the temptation to utilize courseware templates when they are inadequate for the pedagogical methods required for the course. Otherwise, online courses may become more prevalent, but lack the quality necessary to make online learning truly excellent.

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