Teaching Instructional Design Online: Opportunities and Obstacles to Collaborative Learning

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Abstract

Instructional design is one of the most fundamental course topics taught by most instructional

technology departments. The pedagogical approach used by most instructors is highly

interactive and activity-based. Offering such a course totally online presents many challenges.

In this session, a case study of teaching this course totally online is presented

(http://it.coe.uga.edu/~lrieber/edit6170). An assortment of online technologies was used, but two

dominated: HorizonLive, a virtual, synchronous classroom, and a custom-built instructional

design activity workspace offering peer-collaboration. Results showed that students were able to

learn and apply the content effectively. Students also reported favorable experiences with most

of the technologies integrated into the course. Students reported the most difficulties when

taking the course in a short summer session lasting only 4 weeks (as compared to 16 weeks).

There is a long history of teaching instructional design at the graduate level. It's considered a core, fundamental class on which much of the entire instructional technology curriculum rests. Likewise, instructional design is an essential skill for most professionals in the field of instructional technology. Like many other topics in higher education, there is move towards teaching instructional design online. Consequently, there is a need to re-design highly interactive graduate courses, such as instructional design, for an online format. The task more often than not falls upon regular instructors possessing little, if any, training in online teaching and education. A goal of this study is to document one story of these design efforts. Online teaching and learning is at a very formative time in its evolution. By sharing these design stories, we might be able to identify the flaws and misconceptions of such efforts as well as early examples of successful implementations.

Online learning is a best considered a subset of distance learning in that instruction and learning take place at a distance, but all planned instruction takes place using computer-mediated technologies made possible via the Internet. What is the technology of online learning? There are a multitude of technologies that can be used in online learning. Some use relatively standard technologies, such as static web pages or web-compatible files (such as files created with Microsoft Word or PowerPoint), asynchronous discussion forums, online chat rooms, and email. Most university instructors teaching online do so with course management packages such as WebCT and Blackboard, purchased for their use by their respective universities. However, other technologies are new and evolving, such as synchronous "virtual classrooms" which allow for live instruction using two-way audio and video (though the video is usually constrained due to bandwidth limitations).

Instructional design is a topic that is best taught and learned in highly interactive ways. It is difficult to learn solely through textbook reading or instructor-led lectures. Instructional design is a dynamic process where later phases build on the outcomes or earlier phases. Instructional designers also need to be trained to make revisions or adjustments to any element while the instructional design process unfolds. Not surprisingly, the dynamic, iterative nature of instructional design is difficult for novice instructional designers to understand. Consequently, instructional design is frequently taught in a project-based approach — learning instructional design is best accomplished by doing instructional design. A typical course activity for learning and evaluating students' understanding of instructional design is a project that includes some or all of the instructional design process, although usually completed with a variety of concessions. For example, the scope of the needs assessment, course design, lesson design, and formative evaluation is usually limited. Also, there is usually not enough time to make revisions based on the initial formative evaluation. Summative evaluation is also usually not expected. It is also typical for these instructional design projects to be completed in teams, mirroring more closely how instructional design is usually practiced in the work place.

Although it is very difficult at first to imagine teaching any course online that has a long and successful history in a face-to-face (f2f) format, the project-based approach to learning instructional design makes such a conversion even more challenging. Most experienced instructors have strategies and styles that have been honed over time. When converting an f2f course to an online delivery, the temptation is to either remove the interactions proven successful in an f2f format, or to translate these activities into an online format using the limited set of online tools commonly available to instructors. Given the immaturity of online learning, the relative inexperience of instructors to teach online, and the limited resources and training

available to instructors, documenting these design decisions should help future implementation efforts.

The purpose of this paper is to describe my own experience of designing and then implementing a graduate course on instructional design delivered totally online. I had taught this course many times since the mid-1980s. The challenge of having to teach it totally online without any face-to-face meetings was daunting. The highly interactive, activity based approach I had refined over the years made the thought of teaching this online akin to the idea of teaching driver education at a distance. I couldn't see how I could achieve the same learning experience as in an f2f class. Fortunately, I had two things going for me. I had the experience of teaching another predominately activity-based class totally online: Introduction to computer-based education. There I learned of the importance of understanding that online learning forces the instructor out of the mode of comparing the online course to its face-to-face counterpart, thus resulting in a very different design plus advising (and educating) students even before the course begins about how the course works and whether their learning styles and needs would be served well by an online experience. Second, it had been about 4 years since I had last taught the instructional design course, so I was approaching this topic relatively fresh.

The research method used in this study is best characterized as a design experiment (Barab & Kirshner, 2001; Brown, 1992; Collins, 1999; Richey & Nelson, 1996; van den Akker, 1999). This research methodology is designed to document an innovation as it is implemented. The goal is not just to document the outcomes, but also the decisions, changes, and revisions that are made enroute.

Methods

Participants

Participants consisted of graduate students enrolled in two separate sections of EDIT 6170 Introduction to Instructional Design at the University of Georgia: 20 students participated in the Spring, 2003 semester (lasting 16 weeks) and 23 students participated in the Summer I, 2003 semester (lasting 4 weeks). Of these, 16 students from the spring and 20 students from the summer chose to complete the end-of-course survey.

Materials

The course, EDIT 6170 Instruction to Instructional Design, is taught every semester at the University of Georgia. It is a required course by all students pursuing their Masters degree in Instructional Technology. The course structure, topics, activities, assignments, and evaluation are considered similar to other introductory instructional design courses taught at other universities. A list of the course requirements is contained in Table 1. The instructional design portfolio, the main element of which consists of a final report of an instructional design project implemented by the team, is the principal means by which participants are evaluated. The Instructional Design Activities (IDAs) are the main set of activities by which students learn the concepts and principles of instructional design. (A copy of the course syllabus can be found at http://it.coe.uga.edu/~lrieber/edit6170/syllabus.html.)

Table 1

Course Requirements

Element	Percent of Final Grade
Class Participation	15%
Informal Activity - WWILD Team	10%
Informal Activity - Learning from Media	10%
Instructional Design Activities (IDAs)	15%
Buddy Feedback on Instructional Design Activities (IDAs)	5%
Instructional Design Portfolio (team based)	40%
e-Poster Presentation	5%

A variety of technologies were used in the course. Most were electronic, such as email and web resources, and a few were print-based, such as the selected course textbook. Table 2 lists each along with each element's purpose statement. Interestingly, WebCT was used, but only to a small extent. Instead, two specific online technologies dominated the experience. The first is a commercially available virtual classroom called HorizonLive (http://www.horizonlive.com/).

The HorizonLive virtual classroom is a synchronous environment consisting of the following capabilities: 1) two-way audio between the instructor and students (everyone can hear everyone else); 2) a presentation window in which PowerPoint presentations can be imported and used in real time, a whiteboard, and other presentation tools; 3) text messaging between all

participants during the presentation (Figure 1 illustrates the HorizonLive presentation window

and audio panel); 4) real-time question and answer polling (see Figure 2); 5) "pushing" web

pages to users; and 6) live sharing of a separate instructor window with students, useful when the

instructor wants to demonstrate software applications. Separate "break-out" rooms can also be

set up for participants that include all of the HorizonLive features, allowing participants to go

and meet online in real-time to complete activities determined by them or the instructor. A

virtual classroom such as this gives the instructor opportunities that are not available in a face-to-

face experience. A good example is the simple question and answer polling tool of HorizonLive.

This tool allows the instructor to pose a multiple choice question to the entire group. The

students' responses to the question are automatically tabulated on the fly with the results

immediately available to the entire group. In this way, the instructor can quickly gauge the

understanding, opinion, or perspective of the entire class, leading to very interesting follow-up

discussions and activities. This feature becomes an amazingly powerful tool for the instructor

clever enough to exploit its opportunities. Once used effectively, the instructor feels at a loss

when teaching without it face-to-face. At the risk of over-generalizing, another main point is

that preparing to teach with the virtual classroom is not more time-consuming than preparing to

teach face-to-face, due to the fact that PowerPoint is the principal design tool. However, the

instructor needs to think differently about lesson planning to take advantage of the interactive
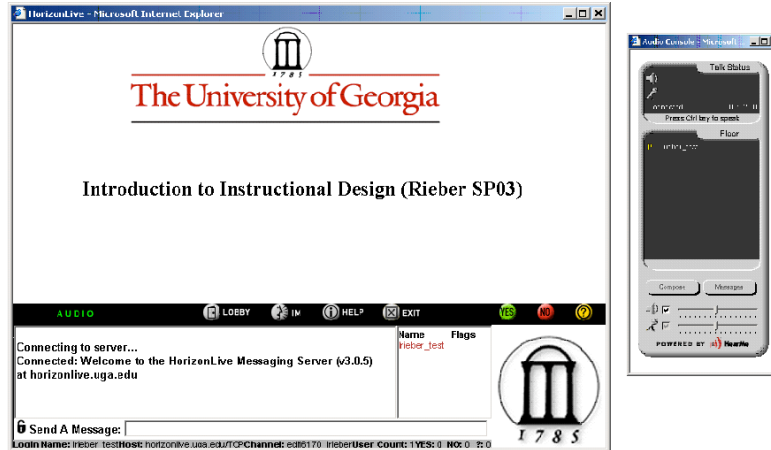
affordances of the virtual classroom.

Figure 1

A screen snapshot of the HorizonLive presentation window (left) and audio panel (right). Using the presentation window, the instructor can display PowerPoint slides in the top portion of the screen. A chat window is available in the bottom left side of the screen where participants can "send a message" to everyone in the class as well as "instant messages" to individuals. Three "flags" can be triggered by students – Y, N, and ? – by pressing the green "yes" button, the red "no" button, or the yellow "?" button, respectively. Each are pressed according to whatever conventions are established in the class (e.g. answering yes/no questions during class or pressing "?" when the student has a question).

The second dominant online tool used to teach instructional design in this online course is called the "Online IDA Workspace." This asynchronous workspace consists of a series of instructional design activities (IDAs) completed by students in the first half of the course with the purpose of acquiring an initial understanding of the fundamental instructional design concepts and principles, such as needs assessment, course design, lesson design, media analysis, and formative evaluation, etc. In brief, in each IDA the student is expected to apply the respective instructional design concept in a hypothetical situation of their own choosing, even making up data, in order to demonstrate their understanding. The student's response is then assessed by the instructor with the main goal to provide feedback to the student (students never fail an IDA, assuming they earnestly try to complete it, instead they just redo the IDA if they are really off track). I had developed the IDA approach over the years and even had colleagues
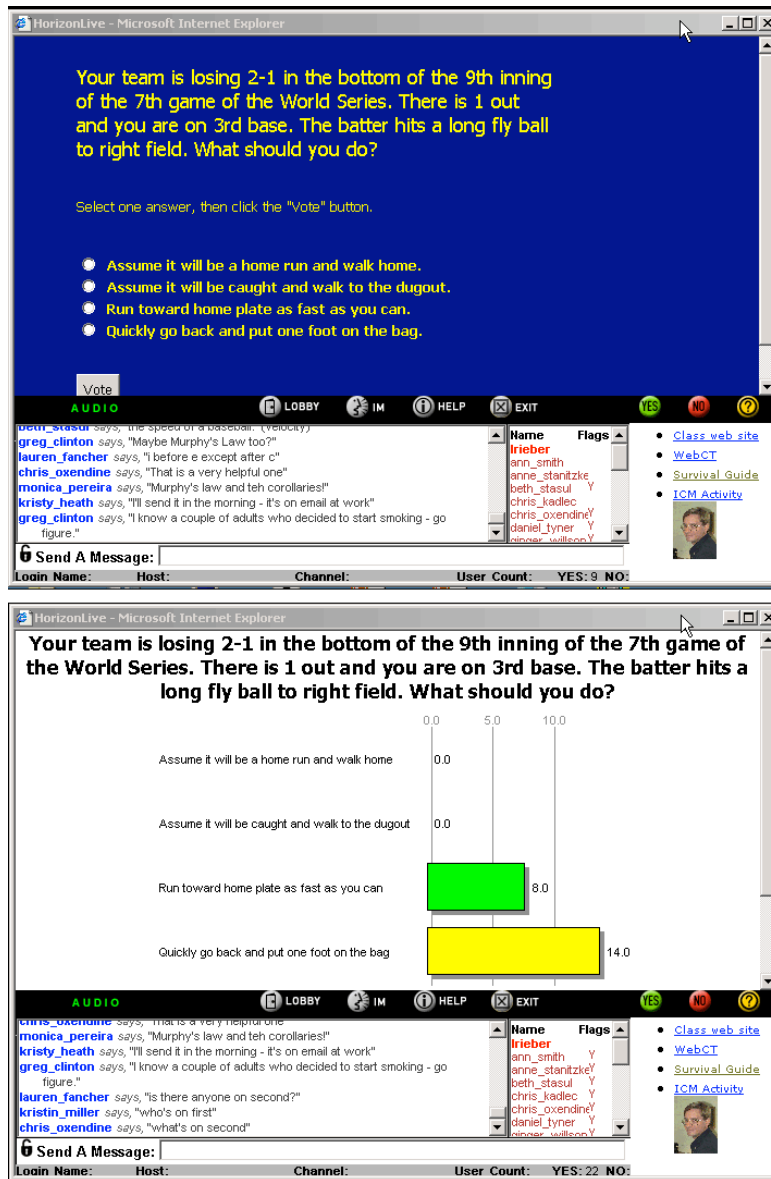
Figure 2

An example of polling, using a multiple-choice question format. Questions such as this can be presented to students during class (top) with the results automatically scored and presented back to students in real-time (bottom).

adopt the approach. In fact, one of my colleagues added the clever idea of "buddy feedback",

that is, sharing the first draft of the IDA with a peer (buddy) with the opportunity to revise the

response before giving it to the instructor for evaluation. Giving and getting such buddy feedback is extremely beneficial for students. In a face-to-face course, each IDA is presented in a 2-3 page handout. Buddies just swap their IDAs, giving feedback in a red pen and handing it back to the designer before the end of class. The IDAs become a valuable scaffold for students, acting as their main model or template for completing an instructional design project in groups during the second half of the course with a client and an intended audience (i.e. they design, develop, and implement a small number of lessons with actual learners and report the results in their final report). I viewed the IDAs as a core means of helping novices learn instructional design, so the task of how to create an online analog of the IDA experience was a significant challenge. No existing commercially available online resource was available to meet the design goals of the IDAs, so, I decided to create my own online version by programming it myself using the database connectivity tools of Dreamweaver.

I also created a series of short videos introducing participants to the course and to the 4 major phases of the course: Needs Assessment, Course and Unit Design, Lesson Design, and Formative Evaluation. I created these in the hope of helping students to learn not only about the course, but also to learn about me and my personality. I wanted to make these informal and light-hearted, so I filmed these at my farm in rural Georgia. Each of these videos can be viewed on the course home page. Figure 3 shows screen snapshots of each of the videos. I also recorded the interactive class sessions conducted in the virtual classroom.

Again, there were many other online technologies used in this course beyond the HorizonLive virtual classroom and the online IDA workspace. But, a spotlight on these two technologies — one commercial and one homemade — provides a useful lens for understanding the implementation of this course.

Welcome	Needs Assessment	Course & Unit Design	Lesson Design	Formative Evaluation

Figure 3

Screen snapshots of five brief videos designed to introduce participants to the 5 main sections of the course. These were filmed at my farm in rural Georgia and were designed to be informal and mildly humorous in order to give participants a light-hearted introduction to the course as well as a sense of the instructor's personality.

Table 2
Course Elements of the Online Instructional Design Course (included are the respective purpose statements as explained to the course participants)

Lloyd's Nowhere Road Orientation Videos
 Purpose: To provide a friendly introduction and orientation to each of the major course topics in a way that helped to connect students to the instructor.

Class Presentations
 Purpose: To provide a systematic overview of the weekly course topic, emphasizing the most critical aspects based on the instructor's experience; each was also based on the assumption that each student read the respective chapter prior to class.

Recordings of Lloyd's Class Presentations
 Purpose: To give each participant the opportunity review any or all of the respective class presentations, to review the topic addressed during that particular class, and to address the technical problems that occasionally arose (i.e. difficulty in logging in, audio problems, etc.)

Instructional Design Activities (IDAs)
 Purpose: To give each participant the opportunity to individually practice the particular instructional design skill being introduced and discussed at that time; each IDA was focused on understanding the process of the particular skill.

Buddy Feedback for each IDA
 Purpose: To give each participant initial feedback from one of the classmates with the opportunity to revise their IDA response prior to the instructor's assessment; also, to give

each person an opportunity to learn from another classmate's attempt to complete the IDA.

Course Web Site

Purpose: To act as the "headquarters" for the course, a place for participants to go to find all relevant information necessary to stay informed and be successful in the course.

Participant Pages (accessed using individual usernames and passwords)

Purpose: 1) To systematically manage important and confidential information throughout the course in a personalized and user-controlled manner: 2) To collect and manage vital information at the beginning of the course (e.g. location, learning focus) to facilitate team organization; 3) To give each participant a way to "connect" to each other (via personal information, photos, etc.);4) To act as a easy-to-navigate gateway to the IDAs and team project activities.

WWILD Team Submissions and Reviews (Informal Activity)

Purpose: To use and contribute to a specialized online educational learning community focused on exploiting experiential activities for learning; To recognize the scope and diversity of online educational materials in order to reflect on the role of media-based resources for learning.

Learning from Media (Informal Activity)

Purpose: To experience first-hand what it feels like to learn exclusively from educational media on a topic of the participant's choice; To reflect on the role and value of media-based resources for learning.

Group Project

Purpose: To practice all of the instructional design skills and techniques in an authentic project; To gain initial experience in working in a team

ePoster

Purpose: To share your team's work via a PowerPoint presentation with other classmates, future EDIT 6170 students, and visitors to the course web site; in addition, special time was dedicated on the last night of class for each group to briefly present their project and be available to answer questions in an informal setting (similar to a "design fair").

Dick, Dick, & Carey Textbook

Purpose: To provide each participant with a thorough account of the instructional design process; assumes that the participant read each chapter when assigned and applied each chapter to the instructional design skill/topic being covered at the time.

Data Sources

Several data sources were used in this study: Student performance data on the

Instructional Design Activities (completed individually) and Instructional Design projects

(completed in teams); student surveys; and instructor observations. The most systematic source

of data came from an extensive survey completed by all participants anonymously at the end of

the semester asking their opinion of whether or not each of the course elements, as shown in

Table 2, served its purpose. The survey consisted of a total of 18 multiple-choice questions and 6

open-ended questions surveyed participants opinions of the online course delivery methods, all

of the specific course elements, and the team project. The final data sources used were instructor

observations and notes kept in a "teaching journal".

Results

The results reported here are presented in five distinct phases: 1) Learning how to teach

online with a virtual classroom; 2) Preparing to teach instructional design online; 3) Teaching the

course in the spring, 2003 semester; 4) End-of-course survey; and 5) Teaching the course online

again in the summer, 2003.

Phase 1: Learning how to teach online with a virtual classroom

This was not my first venture into the world of online teaching. I had taught another

graduate course online: Introduction to Computer-Based Education. This course was also highly

interactive and the computer skill development aspects of the course made its teaching very

challenging. Like instructional design, I had taught the educational computing class for many

years face-to-face. My teaching style was best characterized as constructivist as I mainly

facilitated students' learning through projects. Of course, some course content was presented, though such instructor-led presentations were relatively brief. My first experience teaching the educational computing course online was as a co-instructor with a colleague who had taught the online section from its inception. A unique aspect of this course was its use of a virtual classroom, using the PlaceWare technology, in which presentations and online question/answer polling could be done along with Internet audio in real time. The purpose of my involvement was to be mentored in online teaching by this colleague. So, I decided not to question any aspects of the course structure or pedagogy, but rather to try to learn "how to do it" with my colleague's guidance.

The educational computing course was very "instructivist" in nature. Each class began with a brief administrative session where reminders and course updates were presented. Then, the weekly course topic was presented, though in a very interactive way fully using all of the interactive tools of the virtual classroom. Generally, every third presentation slide was either a live poll or an open-ended question in which students would answer. This, in turn, would spark more discussion. The course divided its time relatively evenly between students learning computer skills, such as PowerPoint, spreadsheets, and web page/site development, and technology integration models. The main course project was an online web portfolio, but smaller projects were also completed during the course, such as a brief PowerPoint presentation. The course was well-received by students.

Despite the overly instructivist nature of the course, I kept to this pedagogy the first time I taught the course solo and I've continued to do since. Some lessons learned from this experience was that the students needed to be strongly encouraged to come to the first class on campus in order to be given a face-to-face demonstration of the technology and also a good

thorough introduction to the course. As the only f2f class session, this is also an important opportunity to have students meet and interact with their peers. Everyone has their photograph taken to be shared online (with the students' permission). The second class, held online, presents no new content from the first class, but is devoted to helping people learn and master the online technology of the virtual classroom. Since students know that no new content is being presented, this reduces the stress of their first online experience.

As I taught additional sections of this course, I also learned how important it was to orient people to the nature of the course <u>prior</u> to the first class. Many people equate online learning with asynchronous technology (i.e. anytime and anywhere) and as a result, many become irritated to learn of the virtual classroom where everyone is expected to be online <u>at the same time</u> each week. Also, the virtual classroom has certain system requirements and the installation of several plug-ins. I learned that the more students who tried out their system prior to the first class, the less stress and problems occurred after the first class. Consequently, my course web site contained a special page with "notes for prospective students". A special note was included in the university's registration system to go to the class web site to learn more about the course. At this time I also programmed a database-driven class profile page. Here students could create a log-in account and provide some general information about themselves, including the opportunity to include a favorite quote. The purpose of the class profile page was to engender a sense of community among the students. After the first night of class, I added the students' photo to their respective profiles.

Phase 2: Preparing to teach instructional design online

My first step in preparing to teach instructional design online was to reflect on my experience teaching the educational computing course online. The instructional design course had been taught online previously, but only with WebCT in an asynchronous fashion. The virtual classroom had never been used for this course. A few months prior to the start of the course, I learned that I had a choice of using the HorizonLive virtual classroom or the PlaceWare classroom. The contract with the PlaceWare technology was likely not going to be renewed whereas the HorizonLive technology had just been purchased. I decided to teach the course using HorizonLive. Not only did this seem a prudent move based on future availability, but I was eager to compare the PlaceWare classroom to the HorizonLive classroom.

After learning the rudiments of the HorizonLive classroom, I created a web page to orient prospective students to the course (similar to the educational computing course) and also to highly encourage them to run a system check of the virtual classroom on their computers (the installation of several plug-ins are also required). I also adapted the class profile page for use with this course. I also decided to strongly encourage everyone to come to campus for a face-to-face meeting on the first class. During the second class, my intention was not to present any new content, but to use the second class to orient people to the technology.

My second step in planning the online delivery of this course was the decision to keep the pedagogy of the course simple. (This decision turned ironic, as will be seen shortly.) From my experience teaching the educational computing course, I felt it was important to have a simple course structure that appeared to students as highly organized and clear. So, similar to the educational computing course, I organized the course schedule with one instructional design topic introduced per week. I used the well-known textbook by Dick, Carey, and Carey, and I

followed their recommended similar structure contained in their preface to instructors. I decided that the main project of the course, and the main source of student evaluation, would be a team instructional design project. The question of how best to facilitate a team project in an online environment troubled me. This has since become a main focus of how to improve the course. In speaking with another instructor who taught the course online using WebCT, it seemed that three factors were important in forming teams: 1) Professional focus (i.e. teaching, corporate, school library media, etc.); 2) Topic and audience interest (i.e. math, computing, etc. with children, young adults, adults, etc.): and 3) Geographic location (i.e. proximity of participants to one another). Using this information, I added these three questions to the class profile. This proved very useful because during the first class I was able to distribute information about the class participants according to all three factors.

The third step was consideration of the learning community. While teaching educational computing online, it was clear to me that the lack of face-to-face human interaction made it difficult for the students and me to get to know one another. I had an idea. I had wanted to learn more about digital video, so I thought I would make a series of short videos about the course. I also had the idea that these could be filmed at my home in rural Georgia. My wife and I own about 8 acres on which my wife operates a small farm. I had no graduate assistants, so the videos I made were very amateurish. I made the first video about a month prior to the first day of the course so that prospective students could view this video. The production was very simple. I wrote a script lasting about 2 minutes. I set up a miniDV digital camera and filmed myself reading the script while sitting on a bench in my backyard. (As an example of how "low budget" this first production was, I had forgotten to check out a tripod for the camera. So, I just set the camera on a piece of lumber laid across a wheelbarrow.) I produced the remaining four videos

while the course was underway, again writing a short script that made an attempt to connect the

course topic to some humorous farmyard example. The result was hokey, but effective. All

students seemed to enjoy the videos.

There was still one remaining aspect of the course's design that troubled me: How to

have students initially learn the important instructional design skills in preparation to do their

group project. In the past, I had created a series of short worksheets that I used in teaching the

class face-to-face, called Instructional Design Activities (IDAs). Although I could have just

shared these Word documents with students and then have had them turn them in using the

Assignments Tool of WebCT, this didn't seem sufficient (although that is basically what my

colleague who had taught the course using WebCT had done). In teaching the course face-to-

face, my colleague had instituted the idea of "buddy feedback". That is, each class participant

found a "design buddy" with whom they shared their initial responses to each of the IDAs for

feedback. This feedback could then be used to revise the IDA before being graded by the

instructor. I wanted to capture the collaborative spirit of the buddy feedback, while also finding a

good technological approach to facilitating the completion of the IDAs. Given my limited

experience in creating database-driven tools for the web, I decided that I could program my own.

So, although not yet developed, I added the "online IDA workspace" as a requirement of the

course.

I also added two informal activities. In this course, I want participants to understand the

issues in using media for instruction. One informal activity was for each participant to learn

about some topic of interest to them solely through media, such as a book, a video, or a web site.

The only requirement was that each participant had to write a short reflection about the

experience. It was easy to add this reflection field to each participant's class profile, hence

making the reflection public. The second informal activity acquainted students with interactive "learning objectives" available on the Internet. I had previously created an online tool called the WWILD Team ("World Wide Interactive Learning Design" Team; http://it.coe.uga.edu/wwild). Students were required to become members and contribute to the effort.

So, while I initially decided to keep the design of this course as simple as possible, the actual design was somewhat more elaborative and included all the elements shown in Table 2.

Phase 3: Teaching the course in the Spring, 2003 semester

I taught the course in the spring, 2003 semester, staying one step ahead of the students in the development of all of the course materials. I filmed each short video introduction only a week or so before the topic was addressed in class. This actually worked well because it seemed that students were looking forward to my next hokey attempt. I also managed to program the online IDA workspace for use in the course, though I completely underestimated the time and magnitude of its development. (I estimate that approximately 50 hours were initially spent developing the IDA workspace and interface and about 50 more hours to develop and test the individual activities.) But, I greatly enjoy such development efforts, so it was very motivational to work on and complete. As I designed this tool, I invented two bogus students with whom I tested the system. I gave them the personas of Tom Cruise and Jennifer Lopez. I also left their "student" profiles in the system after the course began. I gave students the username and passwords of these two "celebrity students" thinking that this might be a good way for people anxious about how this online tool worked to experiment with it using these accounts. I did not track this usage and only a few people reported to me that they had done so.

Similar to the educational computing class, the decision to insist that people come to campus for a face-to-face meeting for the first class was a good one. People were anxious about the course – the content and its delivery. For many students in the class, this was their very first graduate course after being accepted into the program. I still recall one new graduate student, a middle-aged woman, posing to have her photograph taken on the first night who said, "I just want you to know that I'm scared to death." No student has ever reported in any communication or course evaluation that the idea to hold this first class face-to-face is a bad idea. A significant purpose of this first class was to have people meet each other with the goal of finding a design buddy and to begin to form a team. Students were told that they needed to find a design buddy by the end of the evening, but that they had one additional week to formalize the teams. I felt it was important for people to have some time to learn about each other before finalizing such an important decision. But, I'm still not sure what the right decision on this issue is. In the end, three of the four teams did very well that semester, but on a mid-term course evaluation, students reported not being satisfied with the team formation process. The formation of teams became one of the most important topics of discussion as I prepared to teach the course for the spring.

After the first class, some problems with the HorizonLive classroom quickly surfaced. Apparently, the computer provided by the company as a server for the virtual classroom was very underpowered. Consequently, the server frequently crashed during the first few sessions. This problem did not resolve itself until the company eventually upgraded the server. Another problem was that the contract with HorizonLive only included a total of 25 "seats" in the virtual classroom, including that for the instructor. After that, no one could enter the classroom. Also, early on, it was fairly commonplace for a student to get "booted off" of the system. When this happened, it took the system about 8 minutes to clear the student from the class registry. So, until

that happened, this student's seat was still taken, even thought the student was not, in fact, there.

Counting the instructor, 21 seats were taken and, for the first few classes, a staff member from

the College of Education also attended to provided technical assistance. So, we experienced the

problem where the 25 seats were all "taken", even though other students booted off of the system

were trying to get back in; this all caused because of the time it took the system to clear its

memory of students who were booted off the system.

Based on these early experiences, I created a set of procedures to follow in the case of

problems, which I referred to as the "Online Class Survival Guide." This proved to be a very

important document and helped to alleviate many of these early problems and reduced the stress

of students. For example, one of its procedures each week was for students to first log in to the

course WebCT site and enter a chat room. So, if problems arose in the HorizonLive classroom,

the plan was for everyone to switch their attention to the chat room for information and news.

Other procedures on the survival guide included how to correctly log off and on to the system

and how to refresh audio.

After resolving some of the early problems, mainly with the HorizonLive classroom, the

rest of course seemed to go relatively smoothly, at least to me. The quality of the student

responses to the IDAs was very good. Like its paper-based ancestor, this online tool proved very

useful in helping students to gain a foothold in each of the instructional design phases. I was

able to provide individual feedback to students who had misconceptions, or who had simply not

understood how to do part of an activity. The results of the IDAs were consistent with the paper-

based version of the IDAs from previous semesters: Almost all were at least satisfactory, only a

few were unsatisfactory, and 3-4 needed to be redone. It should be noted that the IDAs were

graded basically as pass/not yet pass, meaning that if students did not do a satisfactory job, they

received feedback and were expected to redo the activity. If necessary, they could continue to complete the activity until they did so appropriately. A grade of "pass" was further broken into categories of "exemplary pass" (i.e. a model answer in almost every way; given out very rarely), "satisfactory pass" (i.e. the participant met the expectations of the assignment), and "marginal pass" (i.e. several issues to consider; the participant is strongly encouraged to read the instructor feedback very carefully). One unexpected issue was with the word "marginal". Students tended to treat this term in an unnecessarily negative way. By and large, the buddy feedback was thoughtful and useful. Despite its lack of graphic design, it seemed to me that students were able to navigate and use the online IDA workspace effectively.

Phase 4: End-of-course survey

In order to substantiate my perception that the course had gone smoothly, I created an online survey for students to complete. The survey was completed anonymously and I made it clear to students that only I would see the results (I assured them that I would not get fired if the results were negative). Students were able to complete the survey up to a few days beyond when my grades were due. This helped to assure that students could complete the survey without fear that their responses might impact my evaluation of the team projects. Although the survey data were available to me during the survey's administration, I chose not to view the results until after I had submitted my grades.

Phase 5: Teaching the course online again in the summer, 2003

Although the next section presents the results of the course project evaluations and the end-of-semester survey, I will briefly address the offering of the course online again in the

summer, 2003 semester. This section was offered in the first of two short summer sessions. The short session lasted approximately 3.5 weeks. A total of 23 students participated in the summer section. Besides the difference in the duration of the course, this course was also different in that 16 of the 23 students were a cohort of teachers just admitted to a newly offered graduate program designed for teachers wanting to become leaders in technology integration. Another difference is that I co-taught the course with two people: a colleague and one of my doctoral students.

The extremely short duration of the term definitely caused tension and stress in the summer section, for both the instructors and the students. In a sense, each day during the summer equals about a week in the regular semester. Not surprisingly, dividing up the teaching among the instructors also created some problems. Neither my colleague nor my doctoral student had ever taught this course before. So, they were not only unfamiliar with the course, but they also were not familiar with my online course design. They took responsibility for grading the online IDAs and I took responsibility for daily class sessions, though each of us contributed where appropriate.

The challenges of teaching any rigorous course in a short summer session are not limited to online delivery. Still, I felt the course proceeded well. I felt the quality of the student responses to the IDAs and the team projects were comparable to that of the spring section.

One of the significant changes, for the better, in the summer section, was the organization of the first class, again held face-to-face on campus. My doctoral students took responsibility for organizing the team formation activity of the class and greatly improved upon what I had done in the spring. During class she explained to participants that the goal of this "ice-breaking" activity was for everyone to learn as much about everyone else taking the class as possible. She placed a series of questions on the board for everyone to consider related to the purpose of the class and

how to form a team. There were two parts to the activity she designed. First, based on the class profiles submitted to the database prior to class, she set up the tables in the room to allow about 4-5 clusters of students to meet at a table. During the first part of this activity, she placed labels on each table corresponding to the different professional foci of the group (e.g. K-12 teacher, corporate, higher education, etc.). Students then moved to the table of interest to them. Students then introduced themselves and then considered the questions on the board. Then, she placed a different label on each table corresponding to the geographical locations of the participants. Again, students walked to the table that was closest to where they lived or worked with the same goal of learning about each other. Finally, there was time for everyone just to roam around the room and talk to each other. This formal activity helped a great deal in forming more coherent teams based on student needs.

Analysis

This section presents my evaluation of the 4 team projects and then an analysis of the end-of-course survey.

As shown in Table 3, of the eight teams (four in the spring, 2003 and four in the summer, 2003), seven produced projects that met the criteria established for the class. One group did not produce a satisfactory project according to the course criteria. These results are similar to projects completed when the class is offered face-to-face.

Table 3
Evaluation of Team Projects

Final Score	Projects

90-100	6
80-90	1
70-80	1

Participants' overall evaluation of the online delivery of the course is shown in Table 4.

Generally, participants had very favorable opinions of the course delivery. Students were also

asked to compare the online delivery of the course to what they would have expected if it were

delivered face-to-face. As shown in Table 5, students' average response in both spring and

summer was that the experience ranged between "somewhat better than face-to-face" to "about

the same as face-to-face". Although the distance learning literature makes it clear that one cannot

fairly compare online to face-to-face learning experiences, this question was asked to learn if

students felt their graduate education was in any way compromised by taking the course online

with the HorizonLive classroom. Clearly, students in this course felt that they were getting a

learning experience that was at least comparable to what they would expect from a face-to-face

class.

Table 4
Participants' overall evaluation of the online delivery of the course

!	Spring	Summer
5- Excellent	6	6
4- Very good	5	6
3- Satisfactory	5	7
2- Less than satisfactory	0	1
1- Very unsatisfactory	0	0
Mean	4.1	3.9

Table 5
Participant responses to the question: "Please compare the online delivery of this course to what you would have expected if it were delivered face-to-face."

!	Spring	Summer
5- Superior to f2f	4	1
4- Somewhat better	5	8
3- About the same-3	4	9
2- Somewhat worse	3	2
1- Much worse	0	0
Mean	3.6	3.4

Results of the end-of-course survey are shown in Table 6. Students reported very positive

perceptions for almost every aspect of the course. The most negative aspect of the course was

the students' overall opinion about the textbook. Open-ended comments were also solicited. The

only significant problem reported was the lack of time to process information effectively by

participants in the short summer session. However, this problem is not directly related to the

online delivery of the course, though it may have been exacerbated by it.

Table 6
Evaluation of Specific Course Elements

Participants were asked to rate the usefulness/value of the following course elements as judged by the purpose of each using the following scale:
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    5: Excellent - definitely achieved its purpose
    4: Very good - achieved its purpose overall
    3: OK - achieved its purpose more or less
    2: Less than adequate - it did not achieve its purpose most of the time
    1: Poor - it did not achieve its purpose at all

Element	Spring Mean	Summer Mean
Nowhere Road Informal Orientation Videos	4.3	3.9

Class Presentations	4.4	3.8
Instructional Design Activities (IDAs)	4.4	4.1
Buddy Feedback to IDAs	4.2	4.5
Course Web Site	4.8	4.8
Participant Pages	4.6	4.6
Informal Activity – WWILD Team	4.3	3.9
Informal Activity – Learning from Media	3.9	4.0
Team Project	4.3	4.2
ePoster Session	4.1	3.8
Dick, Carey, & Carey Textbook	3.0	3.3

Participants were also asked about their connection speeds. Slow connection speeds could have negatively influenced students' perceptions about the course. However, as shown in Table 7, all had sufficiently fast connections with the majority reporting in both classes speeds at least equaling that of a cable modem.

Table 7
Participant responses to the question: "What was your Internet connection speed when you attended class online?"

!	Spring	Summer
High speed (T1)	5	3
DSL	3	8
Cable modem	6	4
56K modem	2	5
28K modem	0	0

Discussion

Though controversial, most experts in distance learning suggest it is best not to try to compare learning in a face-to-face course to one offered online. One is not inherently better than another, but rather they are different experiences. Two critical factors are the teaching style of the instructor and the degree to which the instructor is comfortable using technology to mediate the teaching/learning experience. Another critical factor involves the affordances of the technology and the degree to which the opportunities made available by these affordances are taken. Perkins (1985) refers to this as the "opportunities get taken hypothesis". He originally used this concept to explain whether tools such as word processing might make someone a better writer by the degree to which the person takes advantage of a word processor's many features to support the writing process. However, the opportunities get taken hypothesis seems to apply equally well to instructors using distance learning technologies. Asking the question "What are the opportunities of the online technologies I'm using for enabling and enhancing teaching and learning?" helps an instructor break away from comparing an online course to its traditional face-to-face counterpart.

The "Online IDA Workspace" proved to be very successful. One reason is that it took advantage of the affordances of the technology. The result is a tool I would now use even if I taught the course face-to-face. For example, the first draft of each student's response to the IDA, the buddy's feedback to the first draft, the student's final draft, and the instructor's assessment and feedback are all systematically stored in a database for easy access anytime and anywhere. One significant result was the desire on the part of the students in the spring course to share their IDA final responses (with the instructor feedback but without their names attached) with their classmates and future students. Participants in the summer course overwhelmingly reported the

positive benefits of having access to this IDA library of examples. Similarly, most participants in the summer likewise chose to share their IDAs with future students.

This study provides evidence that collaborative learning is not only possible in an online course, but it can actually be enhanced in important ways with online tools. Certainly, many collaborative aspects taken for granted in a face-to-face course were unavailable to students, such as the opportunity to sit around a table and talk through a problem. However, students here proved to be resilient enough to take advantage of the online conferencing tools (such as real-time internet audio) to mitigate these shortcomings, even though most were new to online learning.

It is interesting that this IDA library is proving to be one of the most significant aspects of the course, especially given that the idea for it came from the students, not the instructor. But again, the affordances of the technology made such a library possible. The online IDA workspace can also be used by other instructors in our department (though it is not yet available to be scaled up to allow instructors at other universities to use it, but this hurdle could easily be overcome down the road).

It is also important <u>not</u> to overstate the success of the online approach used in this course. To be sure, there were and are problems. Yet, as the enterprise of online teaching and learning becomes mainstream, stories of early implementations will be useful for those instructors who take on the challenge for themselves. Telling and documenting these stories, as per the research methodology of design experiments, as they unfold appears well worth the time.

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