EDUCATION at a DISTANCE

USDLA Journal

A REFEREED JOURNAL OF THE UNITED STATES DISTANCE LEARNING ASSOCIATION

November 2002 | ISSN 1537-5080 | Vol. 16 : No. 11

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Podium

The Business of Training and Education

Donald G. Perrin Ph.D., Journal Editor

I was shocked when one of my online students said that “downtime was a problem with elearning.” I asked for an explanation, and then went into a research mode. This is what I found.

Our educational systems that existed for so long with handwritten teacher notes, spirit duplicators, and hand-me-down technology have leaped into the future with cable video and networked computers. Some schools and colleges still use 20-year-old television equipment, but their computers are closer to state-of-the-art. Some institutions pride themselves with providing seamless service, while others still work nine-to-five and hope nothing goes down on nights and weekends. The internet is available 7 x 24 x 365. Outages even for a few minutes are featured in the national news because of the severity of the economic impact on business.

Schools and colleges tolerate system problems that are unacceptable in the business world. Obsolete equipment is less and less a reason, which redirects the focus to management, operations, and how to cater better to the needs of instructors and learners. As electronic technologies break down the walls of the classroom to make the entire community a learning environment, they extend the learning organization into a 24 x 7 x 365 environment.

Training organizations in high-tech industries, along with larger and more experienced online universities, have adopted the new performance standards. Who then are the transgressors that have so much down-time?

My immediate research found the majority of complaints came from persons using modems on POTS – Plain Old Telephone Service. As you move away from the large cities there is a lot of older telephone equipment still in use. The technology is inferior to DSL and Cable modems, or the T1, T3 or OC-12 connections used by providers of online learning.

As a persons who has worked in large cities and in the Silicon Valley, I forget what 33K and 56K modems are like until I stay in an older hotel in a not so major city. I connect my laptop to the telephone, and suddenly downtime is no longer an issue. The problem is uptime - how to get a connection that works!

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Editor's Note: This paper researches and demonstrates a constructivist model for synchronous online learning. It follows a sequence of presentation, interpretation and concept development that stimulates discussion and peer learning, and results in greater uniformity and depth of analysis, synthesis, and evaluation of both content and the learning experience.

The Teaching Moment: a learning metaphor

Mia Lobel, Michael Neubauer, Randy Swedburg

Abstract

A learning segment from a synchronous, online, 3 credits University level course entitled "AHSC/298 Computer Mediated Interpersonal Communications" is presented primarily to make transparent the process of constructing knowledge in the eClassroom. The story of "The Stone Soup" is used as a metaphor to contextualize both the content of the learning segment and the thrust of this description. In the eClassroom, the Instructor's contribution, or 'stone', is a pictographic ambiguity image, while the students provide the ingredients of their perceptions to create a soup that is rich in synergy. The discussion is practitioner oriented and includes comments about the instructional design, a brief diagnosis of the group's dynamics at the time, and a short analysis of participants' interaction patterns during the learning segment presented.

The Unwrapped Interaction Diagram, based on the research conducted by the Instructor and her team, describes the parallel nature of online real-time communication, as contrasted with the serial nature of face-to-face communication. It is hoped that this expository account will be as a 'stone' placed into the distance education cauldron, in order to encourage other synchronous online educators to join into the process and add their own unique ingredients.

Introduction

The Internet is saturated with distance education claims about learning environments, effective pedagogies, teaching modules, skill training techniques and community building models. Typing into Google: "online teaching training distance education" nets one 265,000 hits. Typically, efforts

to deliver educational content and to construct knowledge online seem to be asynchronous. The synchronous teaching 'engagements', either attempt to incorporate high tech features like sound and/or video into their delivery method, while others seem to use Java based synchronous chat modules which only allow interacting in simple ASCII text. In general, one presumes that at least some portion of the teaching effectiveness claimed by this vast community of practitioners is predicated on long-term preparation, research, and experience. However, what this preparation may involve, on what specific data the opinions are based, or what the actual teaching really looks like, remains largely unclear.

"The Stone Soup" is an Eastern European folk tale. At the end of the war, a group of bedraggled soldiers come upon a devastated village. The inhabitants, having hidden the little bit of food they still had left, watched as one soldier made a fire, another fetched water in a cauldron, while another removed an ordinary looking stone from his pouch and placed it into the boiling water. Having accomplished this task, the soldiers settled around their campsite and began talking enthusiastically about their anticipated meal. The first soldier said: "Yes, stone soup is my favorite, but once I had it with cabbage, and that was delicious!" Hearing this, the bravest of the villagers, approached the cauldron and threw in his cabbage. The second soldier said: "Ah, yes, but when you add a bit of beef, well…" Next, it was the village butcher who added a piece of meat he has been hoarding to the soup. Eventually, everyone sat down together to partake of the best soup the villagers have ever had. Before they left, the soldiers gave the magic stone to the villagers, reminding them that the stone's power is actually in their cooperation.

Like in the children's folk tale "The Stone Soup," there seems to be a famine of empirical information about how learning actually takes place in the synchronous distance education village. Everyone seems to agree that knowledge is being delivered and the practitioners have found the delivery methods that serve them. The content of the knowledge being delivered is largely known, and often, grounded in theory. What seems to be missing is twofold: what are participants saying and how are they saying it? How is the learning task accomplished, and how are the group's dynamics facilitated to allow the learning to unfold? This paper is an attempt to make transparent the process of experientially constructing knowledge in a real-time eClassroom, which has been described in Lobel, Neubauer, & Swedburg (2002).

The following account may be viewed as offering that which is invited: namely, other practitioners with whom to dialogue, and share the ingredients involved in creating the content and process of facilitating online real-time learning. The particular 'teaching moment' offered here seems apt in several ways. It demonstrates how people with different points of view, sharing their perspectives, can and do create a common pool of knowledge, where the lowest common denominator is raised to the highest one. The learning segment presented in this paper includes and makes visible the elements sought above: namely, the preparation, the research and the experience used to design, deliver and process a learning sequence. Like in the story, the Instructor provides a "stone" by posting a pictographic ambiguous image. As each villager brings her own unique contribution to the interaction, the resulting synergy-rich "soup" belongs to everyone. Could not any community, including one of teachers and learners, dialoguing in this manner produce the same result?

Essentially, teaching begins with the belief that "**The way of the teacher is a practice in trust**" (Arrien, 1998). The trust involved in this case study is supported by decades of observing the learning process, and is anchored by theories of learning and of group development to active practice and risky experimentation. "Trust the process" and "Be open to outcome," accurately describe the value-base of the primary Instructor's teaching approach. In keeping with "the Stone Soup" metaphor, the teacher brings the cauldron, builds the fire, puts the "magic" stone into the boiling water and trusts that eventually the audience will engage enough to bring their own hidden ingredients to the process.

WHAT

eAHSC/298ZG *Computer Mediated Interpersonal Communications* is a new 3 credits, on-site course, given as part of the Cree Family Life Education (FLE) Certificate (FLEC) awarded by the Applied Human Science Department (AHSC) at Concordia University, in Montreal. The course had four components and objectives and combined two settings (i.e. Face-to-Face (F2F) and in the online eClassroom) with the emphasis shifting from one learning venue to the other, depending on the particular component under study.

The overall mandate of the course and the learning spaces to be used are described in the Course Outline:

1. Facilitate your written English skills. (F2F)

2. Increase your basic computer and Internet skills (F2F & eClassroom)

3. Clarify your understanding of AHSC/230 'Interpersonal Communications and Relationships,' specifically as it relates to online interactions. (eClassroom & F2F)

4. Demonstrate how to co-create and maintain a safe and productive online community to meet your learning and social needs in the future. (eClassroom)

The 9:00 to 17:00 schedule for this five-day intensive course that began on July 27th/2002 and ended on July 31st/2002 was broken up into English (9:00 to 12:00), Computer Skills (13:00 to 14:30), Review (15:00 to 16:30) and Journaling Time (16:30 to 17:30). A second course, entitled AHSC/298 'Computer Mediated Task Groups', which includes the same components, but with emphasis on online facilitation, is scheduled for another five days in October 2002.

At the end of each day, students responded to a questionnaire on a number of measures, which will be analyzed and presented by the authors, in a separate article.

The particular Learning Module on Perception described in this paper was delivered on July 29th/2002, which was the 3rd day of the course. The Activity1 section of the Perception Learning Module under discussion lasted from 13:51 to 14:20, a total of 31 minutes.

WHERE

The course took place in several locations. The venue, for the Review component of the AHSC/298 'Computer Mediated Interpersonal Communications' course, was the computer lab at the Concordia University's Arts and Science Learning Center facilities. The high tech room is equipped with a "Smart Board," over-head screens and rows of computer booths along with comfortable rolling chairs. There was enough space at the front of the room for students to eventually "roll" themselves into a F2F circle to receive instructions and process the eClass.

WHO

The participants in the course are ten students registered into the current FLEC Program and two Cree Teaching Associates, graduates of the FLEC Program and a BA in AHSC, who accompany and assist the students through all the courses in their program. The participants, all female, came from disparate northern Quebec Cree communities to take a five-day intensive course at Concordia University campus, located in downtown Montreal. All the students are employed by the Cree School Board as Student Affairs Technicians and are completing the FLEC to improve their work skills. Their job mandate is to liaison with teachers, parents, and students in crisis situations, and in

general, to assist students and their families with ongoing life skills, such as problem solving and conflict resolution.

As seen in Table1, the age range is between 28 and 53years, the average age being 38 years. Some of the women had to drive for eight hours to reach an airport to fly south, while others were already in Montreal, pursuing other studies. Most students arrived alone, but some had children and/or spouses accompanying them.

All the women have access to computers and the Internet at their workplace. Half of the women have access at home, and all have had some experience with online interaction, in the form of email and chatting. Three of the twelve students**,** who rated themselves less than comfortable with computers, are the oldest ones in the class, and they are also the women who do not own home computers.

Age	Ethnicity	Level of Education	Current Program
46	Cree	College Special Ed. & McGill Cree-literacy program	Family Life Education
43	Cree	Secondary Diploma	Native F.L.E.
29	Cree	Sec V	McGill University (teacher trainee), Concordia U
39	Cree	N/I	N/I
44	Cree	Sec V	General Education
32	Cree	Sec V	N/I
30	Cree	CEGEP (College)	Cree FLE
36	Native	Sec V	Cree FLE
28	Native American	N/I	Cree FLE
53	Cree	B.A.	N/I
43	Native/ Cree	B.A.	N/I

Table I. Participants Statistics (N/I=no information)

The students' mother tongue is Cree and English is their second language. Perhaps because theirs is an oral culture, in general, the students' verbal skill levels are higher than their writing skills. The range of written English skills, within the group, is highly varied. Some were able to produce university level academic work, while others struggled with syntax, grammar and punctuation. Similarly, students' computer skills ranged from "technical expert in school" to "needing practice with the mouse."

The teaching team included a primary Instructor (Mia), a co-Instructor (Shirls), an English Guest-Instructor (Judith), a Data Manager (Susan), and a Web Master (Mike).

HOW: The Process

"Inclusion," defined as seeking and committing to membership in the learning process, proved to be problematic for several reasons. The initial introduction to the top-heavy teaching team was formal and didactic, instead of personal and sharing. Like in "the Stone Soup" story, the villagers initially seemed unwilling to contribute to the visitor's soup. Students, however, were at ease with the co-Instructor (Shirls), who had already met, taught and formed friendship ties with group

members on their own “turf,” and who was also the only channel of communication available to the students, prior to their arrival. Throughout the course, the co-Instructor was also learning, along with the students some of the computer skills presented, as well as familiarizing herself with the rhythm and culture of eClassroom interactions.

The primary Instructor (Mia) had no indication of the students’ levels of competency in English or in computer skills, until the first class session. The fact that the skill levels were extremely varied amongst the participants did not initially facilitate the general learning process, yet inadvertently, it served as an opportunity for the participants to engage in collaborative learning and experience first hand the inherent value of sharing knowledge. In this aspect, the villagers freely shared their various expertises with each other, and everyone benefited as a result.

The Review Section of the course took place online, although the students and the teaching team were together in the same computer lab. For the first two days, the transition from the F2F to the online “teaching space” was difficult to manage. For example, students either vocalized with their neighbors in the computer-room, or small talked with each other in the eClassroom, basically ignoring the primary Instructor’s messages.

The third day, the primary Instructor intervened, by inviting the students into a face-to-face circle in order to give everyone an opportunity to pick a rock from a small pile of rocks she has brought to class. To introduce the activity, the primary Instructor described her metaphor for the rock gifts (i.e. ancient, solid, anchors, and “stone soup magic”). She used the Feedback Formula, which was part of the class content, to self disclose (i.e. “When I send you messages in the eClassroom and you do not reply, I feel excluded, frustrated and very impatient, because I am so eager for us to get on with sharing what we know, with each other”). Finally, after participants finished choosing a rock, the Instructor asked only one question from each participant: “Please tell me what is it that I may know about you.”

The ensuing affective data flow and the primary Instructor’s responses transformed the emotional climate and led to new inclusive behaviors. As participants unburdened themselves of fears and joys they were holding, the atmosphere warmed up, a palpable sense of solidarity emerged, and communication lines were rearranged to include the primary Instructor, who was gratefully “knitted” into the fabric of the group.

The second intervention related to the transition between the learning spaces mentioned above (F2F & eClassroom). Towards this end, it was decided to begin each segment of the course by leaving the computer stations and gathering into a face-to-face circle in order to receive concrete instructions as to what will be done next and what is expected from each student for that upcoming activity. This new norm served to reduce students’ “conceptual anxiety” and increase their sense of trust and control during the activities and processing discussions. The Perception Activity presented in this paper took place after this first circle was completed.

HOW: The Task

As stated in the course outline, the overall Objectives for the Perception Learning Module were:

· To explore issues in “Perception” and to demonstrate the impact diverse “phenomenological realities” may have on interpersonal communications.

· To illustrate the value of learning/understanding/accepting the diverse perceptions individuals bring to the learning process.

· To increase students’ awareness of the “natural” tendency humans have to make interpretations and assumptions, and react “as if” these interpretations were the only absolute facts.

· To illustrate the benefits of diversity for building and maintaining an online learning

community.

Because the experiential model requires both Concrete Experience and Active Experimentation (Kolb, 1984), besides the theoretical Lecturette, there are typically two Activities and two Discussion Sessions built into each Learning Module. As a rule, the first activity is short and it is meant to be a lead-in for the second one. In the case of the “Perception” Learning Module, it seemed applicable to introduce the topic with a simple image that could be interpreted in different ways. As mentioned, the decision to use an image instead of a story-text was based on the information that the Cree culture is basically an oral vs. a written culture. The pictographic ambiguity images used in the past for similar purposes did not seem culturally appropriate and it was fortuitous to have found the head/figure image, as shown in Figure.1 (Eskimo-Indian, 1996)

Figure 1. “The stone”

The Classroom Picture Manager uploads the image to the server from either the Participant’s computer or from anywhere on the Internet, in two easy Browse/Upload steps. Any image with a URL can then be posted into the eClassroom. (Lobel, et. al. 2002)

The AHSC/298 Stone Soup

There were 171 messages posted into the eClassroom during this 31 minute learning segment, an average of 5.5 messages per minute. The posts shown below are screen shots of the original posts. On the upper left corner of each post are: the number, the date, and the time of the post and the name of the participant.

And now, this is what transpired:

Instruction to students:

178 Mon, Jul 29 1:51pm – **Mia**:
Mia

What do you see in this picture?

Reactions varied. Over all, a few saw only a face, a few saw only a parka clad figure with its back turned, while most saw both images.

Examples of participants seeing only one image:

187 Mon, Jul 29 1:52pm – Susan **Susan**

i also see an inuit's face… i know there is something else there but I can't see it just yet…

192 Mon, Jul 29 1:52pm – Brenda**Brenda**

Mai, I see a mans **face. He looks Proud.**

Examples of students seeing both images

181 Mon, Jul 29 1:51pm **Bessie**
– Bessie

Mia. I see a inuit's back and a face

182 Mon, Jul 29 1:51pm **Christine**
– Christine

mia I see a man and I also see a face

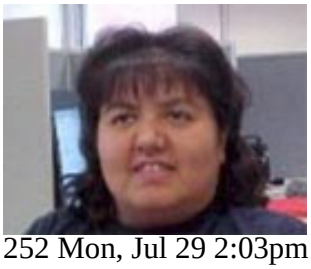
195 Mon, Jul 29 1:53pm **Nellie**
– Nellie

mia…I see both as well

198 Mon, Jul 29 1:53pm **Shirls**
– Shirls

I see a native face and an Inuit back in a big parka

203 Mon, Jul 29 1:54pm **Angela Mia**
– Angela



I see a face and an eskimo is that right?

252 Mon, Jul 29 2:03pm **Christine**
– Christine

mia when I looked at the pictures saw two images right away

In either case, for those who initially see only one point of view and struggle to see the other, once the alternative is named, they all immediately connect to the other image as well. For example:

191 Mon, Jul 29 1:52pm **Daisy**
–Daisy

Mia I only saw a large face looking to one side. I only saw the back of the person when I read what Bessie wrote

216 Mon, Jul 29 1:56pm –Susan **Susan**

I finally saw the man… Bessie and Shirley helped me see the picture differently – thanks

266 Mon, Jul 29 2:06pm –Shirley **Shirley**

Mia, it was only when Bessie mentioned about the Intuit, that's the only time I saw it, the first time I looked at it I only saw the Indian Head

266 Mon, Jul 29 2:066pm –Brenda **Brenda**

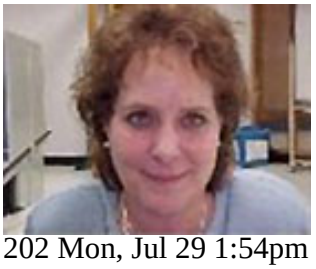
Mai, thanks I saw the to images now

288 Mon, Jul 29 2:11pm –Margaret **Margaret**

mai, now I see the inuit and the Indian head.

As far as the primary Instructor (Mia) was concerned the point of the activity has been made and it was time to discuss and process the expected conceptual learning outcome. For example:

196 Mon, Jul 29 1:53pm –Mia **Mia**



Bessie imagine if you only saw the face and I only saw the figure. What kind of a discussion do you imagine we would have?

202 Mon, Jul 29 1:54pm –Mia **Mia**

daisy, aha, so then sharing is what i see helps others to see my point of view and makes them richer in perception?

205 Mon, Jul 29 1:54pm –Mia **Mia**

Nellie so imagine you only saw the face, I only saw the figure how would we get along?

209 Mon, Jul 29 1:55pm **Daisy**
–Daisy

Very tru Mia. I really tried hard to see if there was anything else in the picture but I really couldn't find anything until I read Bessie's

210 Mon, Jul 29 1:55pm **Shirls**
–Shirls

Mia…when you do not see what I see and I am determined that you must before we can agree…I would probably get into convincing you that what you see is WRONG!

211 Mon, Jul 29 1:55pm **Mia**
–Mia

yes angela both images are there and you see both points of view this helps us discuss our reality. Should that not be, then what would we do? How can I make you see the face if it is not evident for you?

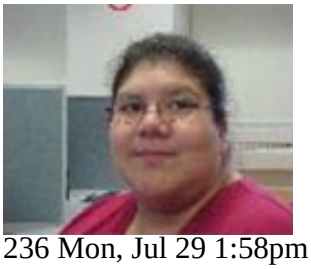
220 Mon, Jul 29 1:56pm **Mia**
–Mia

yes Shirley and then we would have a win'lose situation because in fact, everyone's perception is simply their reality?

223 Mon, Jul 29 1:57pm **Shirls**
–Shirls

I have taken a few AHSC courses along the way and so I am learning to step back and try to see what you see…it has taken some time to get here though!

230 Mon, Jul 29 1:58pm **Brenda**
–Brenda



Mai, you have to convince and show me as a friend.

236 Mon, Jul 29 1:58pm **Shirls**
–Shirls

Thank you for the support Bessie. Our perceptions are our only reality…that is why other people's perceptions are so difficult to accept.

237 Mon, Jul 29 1:59pm **Mia**
–Mia

Do you think this is a good example of what often happens in real life, in the family, at work or with friends? One sees one face and the other sees the body and neither will see the others' point of view, if not wanting to see it?

242 Mon, Jul 29 2:01pm **Bessie**
–Bessie

Mia, how true!

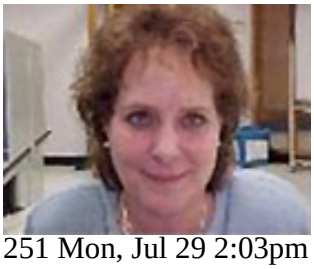
245 Mon, Jul 29 2:01pm **Shirls**
–Shirls

Bessie, Thanks for bringing up those expectations. I read once (and I think that I shared this with the class) that expectations can be silent killers. They set us up.

249 Mon, Jul 29 2:02pm **Daisy**
– Daisy

Mia, I didn't even think of it that way until you said it and it is true, we sometimes do not accept or see the other's point of view because we don't see what they see.

250 Mon, Jul 29 2:02pm **Mia**
– Mia



My favorite definition of expectations is that they are premeditated disappointments…when I expect nothing, everything is gift…is that so?

251 Mon, Jul 29 2:03pm **Bessie**
– Bessie

Or we don't want to see…

At this point, just as the primary Instructor deems the stage set to move on to the next activity, the Universe provides THE Teaching Moment. As seen, in Post# 258, Rose, the Permanent TA, who has not contributed to the class narrative until that moment, adds two new aspects of the image to the "soup", by posting the following message:

258 Mon, Jul 29 2:04pm **Rose**
–Daisy

Mia, in this picture, I see an Intuit with his back to me, I see a Native Chief's face, three wolves howling and a tiny person or an old woman picking cherries or climbing a hillside.

The new data provided by one participant move the group's process through the learning cycle again: participants' interest is refocused on the image because there is something new to see; frustration with the "learning curve" is expressed followed by excited new "aha moments" when the perceptual pieces fall into place. For example:

264 Mon, Jul 29 2:05pm **Mia**
– Mia

Wowowowow rose…now there we have it…I am peering at the pic to see what you saw

270 Mon, Jul 29 2:07pm **Bessie**
– Bessie

Rose, what picture are you looking at? You have quite an imagination…

273 Mon, Jul 29 2:08pm **Mia**
– Mia

Rose…here's the image again…show me what you see, so we are looking at the same thing?

274 Mon, Jul 29 2:08pm **Shirls**
– Shirls

Rose. Wow! Do you have great eyes! I have often been impressed by your wisdom and your perceptions

Meanwhile, Shirls, the co-Instructor wonders:
334 Mon, Jul 29 2:19pm **Shirls**
– Shirls

I am curious. How can Rose show you her point of view on line? Without pointing it out to you, that is.

Rose's second post of the session illustrates:
321 Mon, Jul 29 2:18pm **Rose**
– Rose

Mia, the Inuit's mittens is an old woman climbing a hill or picking berries. The three howling wolves are under his right arm. The native chief's face is easy to spot.

After several "aha, I see" moments, another "learning bolt" is retightened, clearly bringing home the lesson again: when one person sees something new or different and risks voicing it, that information will enhance everyone:
336 Mon, Jul 29 2:20pm **Mia**
– Mia

Shirls…she just did it…i see what she sees now

394 Mon, Jul 29 2:29pm **Margomianscum**
– Margo

Rose, I saw the inuit back turning and the Indian facing me. I saw the lady climbing to reach for the berries and the three wolves on the right side of the inuit's arm

The most extreme student response, and perhaps the most gratifying one, went from seeing nothing at all and losing interest in the activity, to seeing it all, plus more!

234 Mon, Jul 29 1:59pm – Margo **Margomianscum**

Mia, could you show the picture again. I was in my won little world for awhile. Thanks.

254 Mon, Jul 29 2:03pm – Margo **Margomianscum**

I still can't see what everyone else sees on the picture.

283 Mon, Jul 29 2:10pm – Margo **Margomianscum**

Mia, I am still help.

349 Mon, Jul 29 2:19pm – Margo **Margomianscum**

Alright, I see the inuit turning back and the Indian facing me. Wow!!!!! I am still looking for what Rose saw.

334 Mon, Jul 29 2:22pm – Margo **Margomianscum**

I finally see what Rose saw. WoW!!!

At this point the Instructor's objectives for the learning activity is met, the illustration is deemed effective, and the process continues with a summary statement to provide the bridge for the next activity:

3084 Mon, Jul 29 2:14pm – Mia **Mia**

So here is what happened…I showed you a pic that I that had 2 meanings…those who only saw one were helped by others sharing their perceptions as well…rose saw 2 more…now I need to help her to see her point of view…and so it goes

DISCUSSION

Each colored square in The Unwrapped Interaction Diagram (Figure 2) extended along the time axis indicates the time when each participant posted a message. The students are represented by gray squares; the primary Instructor (Mia), the co-Instructor (Shirls) and the Data Manager (Susan) are represented by red, orange and green squares, respectively.

If there is no line connected to a color square, the individual's communication was addressed to the group as a whole. If there is a line connected to a color square, the interaction is meant to either initiate an exchange or respond to a previous posting by whomever the arrow indicates.

The Unwrapped Interaction Diagram makes the parallel nature of the communication patterns in the eClassroom apparent at a glance. The eClassroom instantaneously collects the data, updates, and displays the Unwrapped Interaction Diagram, as it unfolds. The metric measures of the participant's Attention Rates and Participation are also collected and displayed in real-time (Lobel, et.al. 2002a)

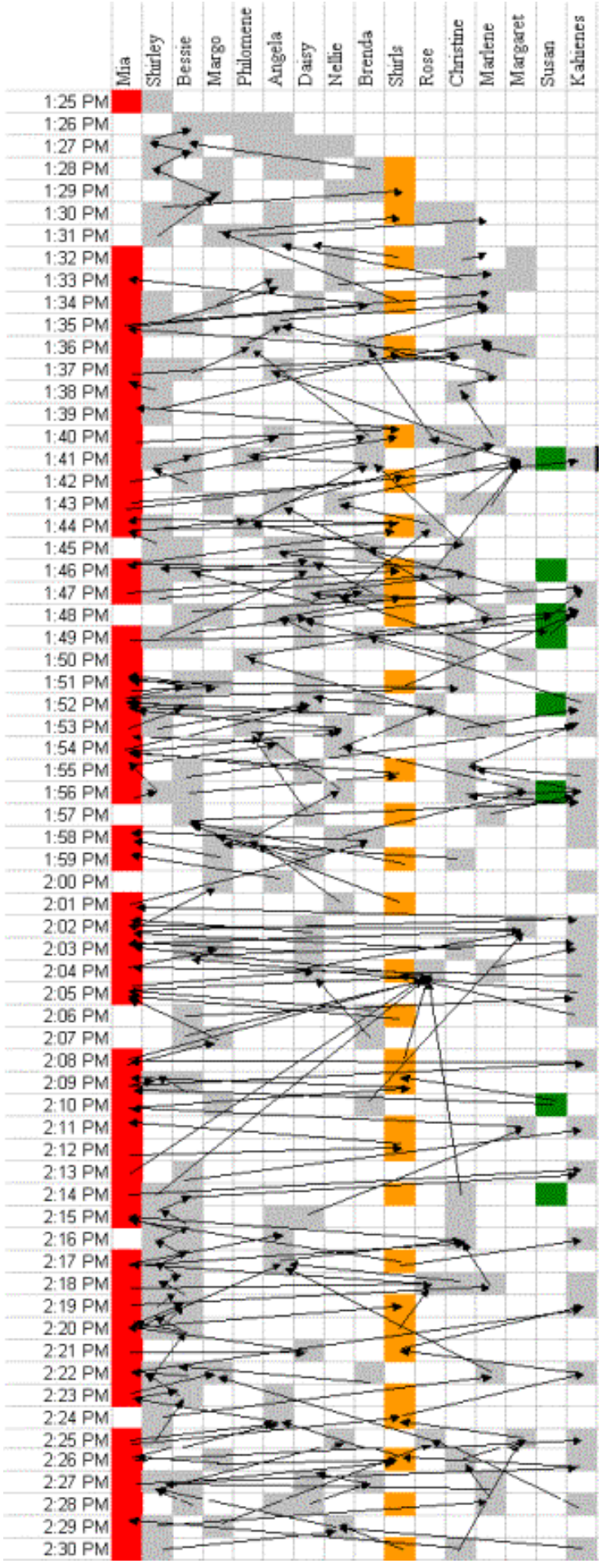


Figure 2. The Unwrapped Interaction Diagram

Similar to previous online synchronous groups studied in the eClassroom, the Greeting and Gathering Stages discussed by Lobel, et. al. 2002 lasted about twenty minutes (13:25-13:51). The arrows indicate a lively interaction among the students as they enter the classroom and re-include themselves into the group, by discussing their adventures during lunch.

At 13:51, the primary Instructor, taking advantage of a conversational lull, gets the students' attention by posting the ambiguous figure-ground perception image (Fig.1) into the eClassroom. Prior to this time, as the arrows indicate, the students are interacting among themselves, but after the picture is posted Student-to-Instructor interactions increase. Note that during this time frame the arrows representing communications become more horizontal, which speaks to the parallel nature of the synchronous interaction.

As can be seen, at 14:05 Rose shares what she sees in the image posted by the primary Instructor. From that moment on, the absence of messages posted describes how students shift from the discussion to reviewing the image, wanting to see what Rose saw. At 14:18 Rose clearly describes what she sees and by 14:20 everyone sees four pictures in the image posted by the primary Instructor.

It seems clear from the interactions presented that participants learned, through exchanging personal perspectives, to see what they could not see before. The Instructor addressed the group's process and posted an image into the eClassroom to solicit people's points of view. Congruent with the metaphor used, this is seen as providing the cauldron and the "stone." The participants took the risk and added their own unique perceptual ingredients to create the final "soup," which was more nourishing than "soup" individuals would have made on their own.

CONCLUSION

Adult learners from disparate locations, with varying levels of competency in written English and in computer skills participated in the synchronous, online eClassroom, and constructed lasting knowledge by using only words, emoticons and one image. The parallel nature of the interactions allowed students to conduct multiple conversations and to benefit from every other participant's point of view.

The design of the teaching segment presented is seemingly simple. To locate culturally appropriate teaching materials was time consuming, but the "core work" was in building trust in people and in the growth process, so that learning can unfold. The ambiguous figure-ground image used was the stone that the instructor put into the cauldron, trusting that people interacting *will* produce some knowledge.

It seems safe to conclude that the synergy created by students' contributions enlarged everyone's knowledge base, and the "soup" that was concocted was far richer than most would have been able to make on their own. The learning segment presented makes transparent the actual "soup to nuts" process of teaching in the eClassroom. It is hoped that this account will serve as one "stone" for a much needed "information soup" to be co-created by synchronous distance learners and educators.

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Editor's Note: Extensive research on Interactive Video Distance Education Classroom Design is highlighted by a culminating diagram of the classroom design. This research is worth reading, particularly for newcomers to Distance Education.

Perceptions of Instructors and Students Toward Interactive Video Distance Education Classroom Design in Higher Education

Chien Chih Lee and Connie M. Forde

ABSTRACT

The purpose of this descriptive study was to determine the perceptions of instructors and students toward interactive video distance education classroom design. Subjects were the college students who were enrolled and instructors who taught in interactive video distance education classes at two higher education institutions during the fall 2000 semester. A total of 610 responses were received for an overall response rate of 81.8%. Descriptive statistics, analysis of variance (ANOVA), and the Tukey multiple comparison method were performed for analyzing the responses. The results indicated that most on-site students, remote site students, and instructors were satisfied with the room design. While there was agreement, they also had points of disagreement. There were several significant differences concerning satisfaction with the interactive video distance education classroom design among the different participant groups. The findings of this study pointed out that the size/location/quality of the TV monitors was the item with which instructors perceived most dissatisfaction in regard to the equipment arrangement. The desks and chairs were the physical features that instructors perceived as most dissatisfying while students perceived room temperature the most dissatisfying physical feature. An interactive video distance education classroom design model was recommended that would satisfy the different needs of instructors and students and provide guidance for various situations.

Introduction

Interactive compressed video is an effective technology in a distance education setting, but its usefulness is directly related to the instructors' and students' understanding of its benefits, limitations, and utilization strategies (Willis, 1996). Armstrong, et al. (1998) noted that from the viewpoint of the motivation of instructors and students, the cornerstone of education is the learning environment that is reflected in the design and overall layout of the educational facility. Students have a fundamental right to a classroom learning environment that allows them to see anything

presented visually, to hear any audible presentation free from other noises and distortions, and to be physically comfortable (lighting, temperature, furniture, etc.) regardless of the method of instruction (Dickens & Tanza, 2000). Two major problems exist for instructors and students in interactive video distance education design: (a) the constraints of instruction and learning caused by the interactive video distance classroom equipment arrangement, and (b) the dissatisfaction of instructors and students with the physical features (Lee, 2001).

The first major problem regarding the interactive video distance education classroom is that the equipment arrangement constrains instruction and learning. Rao and Dietrich (1996) asserted that the technological set-up restricted instructor movement and makes it difficult to conduct small group discussions. These classrooms equipped with educational technology are not typically designed based on instructor input (Anderson & Cichocki, 1993; Carter, 1996) . In addition, Tiene (1997) found that instructors needed time to become comfortable with the equipment arrangement. Allen, et al. (1996) observed that the use of electronic technology in the classroom must be as user friendly as possible.

The second major problem regarding the interactive video distance education classroom is that the physical features limits interaction between instructors and students. Based on the results of this research, Lee (1998) observed that most instructors were not satisfied with the current classroom. In 1979, Farrenkopf examined a study of physical dimensions of regular college classrooms and found the environmental dimensions were in need of improvement. Available for manipulation were esthetics, furniture, use of space, use of color, decorations, fabrics, and carpeting. Approximately 80 to 95% of students' attitudes towards these dimensions were negative. Actually, students were especially sensitive to their physical environment and were very impressionable. Classroom design should utilize color, spatial organization, and form to provide a comfortable and stimulating learning environment (Armstrong, et al., 1998). According to Kirby (1999), another important issue that students dealt with was insufficient air circulation.

Need and Purpose of the Study

Few studies were found in the literature search that examined perceptions of instructors and students concerning interactive video distance education classroom design. Thus, the purpose of the study was to determine whether there are significant differences among on-site students, remote site students, and instructors in perceptions toward interactive video distance education classroom design in higher education. In addition, differences in perceptions among institutions, gender, class standing, major fields of study, and teaching experiences were examined. The study determined perceptions of on-site students, remote site students, and instructors concerning major distractions of teaching and learning when using interactive video distance education equipment and addressed the main issues of the physical features concerning the interactive video distance education classroom.

Method

This section discusses the pilot study, participants, research instruments, procedure and data analysis used in the study.

Pilot Study

A pilot test was conducted of 19 students and five instructors who had been enrolled or had taught in one or more interactive video distance education classes at one of the higher education institutions. This pilot test permitted a preliminary testing of the hypothesis, which gave some indication of its tenability and suggested whether further refinement of the questionnaire was needed. The feedback from these participants had received helpful comments to adjust the contents

of the instruments and increase a reliability of the instruments.

Participants

The participants consisted of the 742 college students (710) and instructors (32) involved in two-way interactive compressed video classes at Mississippi State University (MSU) and University of Mississippi (UM) during the 2000 fall semester. The entire population was used as the participants in the study. Students were asked to complete one instrument if they were enrolled in more than one interactive compressed class while instructors were asked to complete a survey for each classroom in which they taught. Thirty-six surveys were returned by instructors, and 574 surveys were returned by students; 46.3% of the students were from MSU and 53.7% of the students were from UM. A total of 610 responses were received for an overall response of 81.8%, including 55.7% on-site students and 44.3% remote site students. Also, 45.5% of the students were male while 54.5% were female. In addition, 54.5% of the students were undergraduate students, and 45.5% were graduate students. Student participants included business majors (n= 212, 36.9%), education majors (n=206, 35.9%), engineering majors (n=82, 14.3%), accounting majors (n=36, 6.3%), paralegal majors (n=15, 2.6%) and other (n=19, 3.3%). Over half of the instructors (n=20, 55.6%) and students (368, 64.1%) indicated that the fall 2000 semester class was their first academic experience in an interactive video distance education. Approximately 35% (n=16) of the instructors and 36% (n=180) of students indicated that they had had more than two academic experiences in an interactive video education classroom including the fall 2000 semester (see Table 1).

Table 1

Number and Percentage of Instructors and Students in the Study by Institution, Site, Gender, Classification, Major and Experience with Interactive Video Distance Education Classes

I	Instructor		Student	
	No.	%	No.	%
Institution				
MSU	18	50	266	46.3
UM	18	50	308	53.7
Site				
On-site			320	55.7
Remote site			254	44.3
Gender				
Male	23	63.8	261	45.5
Female	13	36.2	310	54
Not reported			3	0.5
Classification				
Undergraduate			313	54.5
Graduate			261	45.5
Major				
Business			212	36.9
Communication			4	.7
Education			206	35.9
Engineering			82	14.3
Paralegal			15	2.6
Accounting			36	6.3
Others			19	3.3
Experience of Classes				

One	20	55.6	368	64.1
More than one	16	44.4	180	31.4
Not reported			26	0.45

Instruments

Two researcher-designed questionnaires concerning (1) the perceptions of instructors and (2) the perceptions of students toward equipment arrangement and physical features of the interactive video distance education classroom were used to survey the population. The questionnaires consisted of five parts. Part I consisted of the issues dealing with the interactive video distance education classroom equipment arrangement such as audio and video systems, document camera, camera location, microphone, etc. Part II included issues concerning the physical features of the interactive video distance education classrooms such as room location and size, access, noise, lighting, acoustics, and flooring, etc. Part III allowed participants to choose the preferred styles of instructional workspace and student learning space. Part IV was an open-ended question about improvement for the room design, and Part V was demographic information including the institution attended, gender, class standing, major field of study, and teaching experiences in interactive video distance education. Participants were asked to rate their level of satisfaction perception on a scale from 1 to 6 with 1 being the level of least satisfaction and 6 being the level of most satisfaction. According to SPSS reliability analysis, alpha of the content of equipment arrangement was .97 and alpha of the content of physical features was .94 in this study—a very high reliability.

Procedures

During the fall 2000 semester, all instructors were mailed a letter inviting their participation and their students' participation in this research study. Confidentiality was assured. The instructors were asked to complete a study participation form that allowed the researcher to schedule a class time to administer the student and instructor instruments. Class facilitators were mailed a letter outlining their responsibilities in administering the instruments. If there were no facilitator at a remote site, the researcher mailed the packages directly to the remote site students. On the scheduled date, the researcher administered the questionnaires to the instructor, the on-site students, and the remote site students. The remote site students received instruction from the researcher via compressed video.

Data Analysis

Descriptive statistics were utilized for data analysis. This study contained one dependent variable—satisfaction score of interactive video distance education classroom design. The independent variables were the status of participants (instructor, on-site student, and remote student), gender of students, student status (undergraduate or graduate student), student major, instructors' teaching experiences in interactive video distance education classrooms, and institution (MSU or UM). The process of statistical analysis in the study contained analysis of variance, data analysis procedures and evaluation of validity and reliability. Descriptive statistics, one-way analysis of variance (ANOVA), and the Tukey multiple comparison method were used to analyze the data.

The total participation for this study was 610. The medium effect size of .25 was used for the F test. Therefore, according to the Power of the F test table, the statistical power of the research was over .99, a very high power.

Results and Discussion

The following is a summary results and discussion of this study, organized using the research questions which guided this study.

Research question 1 asked "What are the perceptions of on-site students, remote site students, and instructors toward the equipment arrangement and the physical features of interactive video distance education classrooms?" Overall, the results of this analysis indicated that students and instructors were satisfied with the equipment arrangement and the physical features of the interactive video distance education. However, a majority of on-site students (n= 59, 57.3%) and remote site students (n=58, 58%) indicated the lowest level of satisfaction with the number of student computers in the classroom while 61.5% (n= 8) of the instructors had low satisfaction about the location of the fax machine. Regarding the physical features, the majority of the on-site students (n= 95, 57.9%) was very dissatisfied with the number of windows in the classroom and had low satisfaction for window location, size, and covering. Therefore, while there was agreement among on-site students and remote site students and instructors, they also had points of disagreement (see Table 2).

Table 2

Number and Percentage of On-Site Students', Remote Site Students', and Instructors' Perceptions Regarding Interactive Video Distance Classroom Design Including Equipment Arrangement (EQ) and Physical Features (EQ)

					Instructors	
	No.	%	No.	%	No.	%
Over All						
Dissatisfied	30	10.1	45	18.4	3	8.8
Satisfied	267	89.9	199	81.6	31	91.2
Fax location (EQ)						
Dissatisfied	13	12.4	24	17.8	5	38.5
Satisfied	92	87.6	111	82.2	8	61.5
Student computer number (EQ)						
Dissatisfied	44	42.7	42	42.0	6	40.0
Satisfied	59	57.3	58	58.0	9	60.0
Window number (PF)						
Dissatisfied	95	57.9	46	30.5	6	40.0
Satisfied	69	42.1	105	69.5	9	60.0
Window location (PF)						
Dissatisfied	64	48.9	44	30.5	1	11.1
Satisfied	67	51.1	102	69.5	8	88.9
Window size (PF)						
Dissatisfied	61	47.7	36	25.2	1	11.1
Satisfied	67	52.3	107	74.8	8	88.9
Window covering (PF)						
Dissatisfied	58	46.4	37	26.8	2	22.2
Satisfied	67	53.6	101	73.2	7	77.8

Research question 2 asked "Are perceptions of on-site students, remote site students, and instructors different toward the equipment arrangement and the physical features of interactive video distance education classrooms?" A statistical procedure using one-way ANOVA was conducted to make a comparison among these three groups regarding significant and

non-significant items and features. Students and remote site students were more satisfied than instructors regarding the location of the instructor TV. Also, on-site students were more satisfied than instructors concerning the location of the white board. Remote site students were more satisfied than on-site students regarding the physical features of handicap access, the number of windows, window location, size, and covering, and the location of doors. On-site students were not satisfied with the number of windows, window location, size, and covering (see Table 3).

Table 3

Means of On-Site Students, Remote Site Students, and Instructors Toward Equipment Arrangement (EQ)and Physical Features (PF) Found to be Significantly Different

Item	On-Site Students			Remote Site Students			Instructors		
	No.	Mean	SD	No.	Mean	SD	No.	Mean	SD
Instructor TV location (EQ)	299	4.88	.92	242	4.79	1.11	36	4.28	1.32
White board location (EQ)	183	4.92	.98	151	4.75	1.13	19	4.16	1.68
Handicap access (PF)	191	4.27	1.54	182	4.77	1.23	31	4.52	1.52
Window number (PF)	164	3.02	1.84	151	4.16	1.71	15	4.07	1.71
Window location (PF)	131	3.29	1.85	146	4.16	1.68	9	4.67	1.58
Window size (PF)	128	3.37	1.88	143	4.26	1.68	9	4.67	1.58
Window covering (PF)	125	3.42	1.91	138	4.25	1.69	9	4.56	1.88
Door location (PF)	314	4.78	.96	245	5.07	.75	35	5.00	.84

Research question 3 asked, “Do male students’ and female students’ perceptions differ toward the equipment arrangement and the physical features of interactive video distance education classrooms?” The results of the survey indicated that there was no significant difference between male students and female students toward the equipment arrangement. Female students were more satisfied with the physical features of location of the student desks, the location of the student chairs, the number of windows, window location, size, and covering, the location of the doors, wall color and texture, floor covering, and ceiling (see Table 4). However, neither male nor female students were satisfied with the number of windows. Based on the feedback of the open-ended question, students preferred having windows in an interactive video distance education classroom. Window issues were an important concern for both female and male students.

Table 4

Means of Male and Female Students Toward Those Physical Features Found to be Significantly Different

Feature	Male Students			Female Students		
	No.	Mean	SD	No.	Mean	SD
Desk	260	4.72	1.21	300	5.00	1.03
Chair	259	4.64	1.31	302	5.02	1.06
Window number	147	3.25	1.87	167	3.86	1.81
Window location	128	3.41	1.84	148	4.07	1.73
Window size	126	3.54	1.89	144	4.12	1.72
Window covering	122	3.57	1.92	140	4.13	1.72
Door location	255	4.77	.93	303	5.02	.83
Wall color	253	4.81	1.05	304	5.03	.85
Wall texture	248	4.79	1.10	301	5.06	.75

Floor covering	256	4.93	.91	309	5.17	.72
Ceiling	256	4.93	.96	308	5.13	.74
Room temperature	259	4.44	1.45	309	3.83	1.64

Research question 4 asked, “Do undergraduate students’ and graduate students’ perceptions differ toward the equipment arrangement and the physical features of interactive video distance education classrooms? ”Undergraduate students were more satisfied than graduate students with the equipment arrangement items, number of microphones and electrical outlets (see Table 5). When graduate students study in an interactive video distance education classroom, they may focus on interaction with other site students and the instructor. They expect to have friendlier equipment arrangements including more microphones and electrical outlets. However, undergraduate students were dissatisfied concerning the location of student computers. Although the students were not asked to and did not indicate which location they preferred for student computers, they perhaps expect to have a convenient computer lab in an interactive video distance education classroom to increase effective learning results.

Table 5

Means of Undergraduate and Graduate Students Toward Equipment Arrangement (EQ) and Physical Features (PF) Found to be Significantly Different

Item	Undergraduate Students			Graduate Students		
	No.	Mean	SD	No.	Mean	SD
Microphone number (EQ)	303	5.09	.99	248	4.88	1.03
Student computer location (EQ)	78	3.73	1.88	92	4.32	1.49
Electrical outlets (EQ)	198	5.00	1.06	181	4.66	1.17
Room location (PF)	308	5.15	.90	257	4.85	1.15
Room size (PF)	295	5.05	1.08	256	4.82	1.13
Handicap access (PF)	207	4.65	1.35	166	4.35	1.49
Desk (PF)	308	5.04	1.05	255	4.67	1.19
Window size (PF)	129	3.60	1.90	142	4.06	1.73

Research question 5 asked, “Do perceptions of students majoring in different fields of study differ toward the equipment arrangement and the physical features of interactive video distance education classrooms?” Generally, students majoring in education were more satisfied than other students regarding the equipment arrangement and the physical features; the one exception was the ventilation. Students majoring in business and accounting were less satisfied than students in different majors regarding the equipment arrangement and the physical features. More particularly, students majoring in business were not satisfied with the computers. They preferred having student computers in the room. Students majoring in accounting were not satisfied with the instructor’s camera arrangement. An important finding would be students majoring in different field have a significant different perception of an interactive video distance education classroom. Therefore, it is necessary to consider the needs of students from different departments when designing an interactive video distance education classroom. This information is needed for instructors to be aware of the students’ different concerns and is helpful in designing an interactive distance education classroom in different academic departments. Students majoring in education were more satisfied than other students regarding the equipment arrangement and the physical features. Students majoring in business have more expectation of using instructional technology in classroom.

Research question 6 asked, “Do perceptions of instructors and students in different institutions differ toward the equipment arrangement and the physical features of interactive video distance

education classrooms?" Overall, MSU instructors and students were more satisfied than UM instructors and students regarding the equipment arrangement items and the physical features while UM instructors and students were more satisfied with chairs in interactive video distance education classrooms than MSU instructors and students were (see Tables 6 and 7). The subjects at MSU included more students majoring in education. The subjects of UM included more students majoring in business. This difference could explain the results of this research question according to above findings. Although institutions may choose different designs of interactive video distance education classrooms, there is a need for interactive video distance education classroom design guidance to satisfy the needs of instructors and students on-site and at remote sites.

Table 6

Means of Instructors and Students at MSU and UM Regarding Those Equipment Arrangement Found to be Significantly Different

Item	MSU			UM		
	No.	Mean	SD	No.	Mean	SD
ELMO location	272	5.01	.87	312	4.83	1.01
Camera number	277	4.99	.89	316	4.84	.91
Student camera arrangement	242	4.86	1.06	293	4.55	1.23
TV size	284	5.07	.98	312	4.26	1.45
TV quality	271	4.90	1.11	302	4.56	1.23
TV number	272	5.09	.90	301	4.57	1.22
Instructor TV location	271	5.00	.92	306	4.63	1.10
Student TV location	265	4.96	1.04	301	4.52	1.18
Instructional computer location	201	4.90	.93	183	4.69	1.08
AMX Panel location	148	4.97	.98	153	4.74	1.02
Phone location	173	4.88	1.06	136	4.55	1.13

Table 7

Means of Instructors and Students at MSU and UM Regarding Those Physical Features Found to be Significantly Different

Feature	MSU			UM		
	No.	Mean	SD	N	Mean	SD
Walk space	279	4.80	1.17	323	4.57	1.22
Noise level	283	4.83	1.05	322	4.52	1.29
Lighting	280	5.08	.88	322	4.89	.98
Acoustics	280	4.87	.98	324	4.69	1.19
Chair	279	4.70	1.22	318	4.98	1.15
Window number	174	4.11	1.65	156	3.01	1.90
Window location	165	4.25	1.55	121	3.14	1.95
Window size	163	4.34	1.52	117	3.21	2.00
Window covering	161	4.39	1.56	111	3.14	1.98
Room temperature	282	4.41	1.38	324	3.91	1.70
Ventilation	280	4.60	1.24	322	4.12	1.58

Cleanliness	283	5.22	.75	322	5.04	.93

Research question 7 asked, "Do perceptions of instructors in different teaching experiences differ toward the equipment arrangement and the physical features of interactive video distance classrooms?" Instructors who had taught more than two interactive video distance education classes were more satisfied regarding the equipment arrangement such as size of TV monitors and number of TV monitors than instructors who had taught one interactive video distance education class. Instructors who had taught more than two interactive video distance education classes were less satisfied regarding the VTel Pen Pal Graphics Tablet than instructors who had taught one interactive video distance education class (see Table 8). However, there was no significant difference concerning satisfaction with the physical features with the classrooms between the two groups of instructors. Responding to instructors with more experiences in interactive distance education classes is important—especially regarding equipment arrangement.

Table 8

Means of Instructors Who Had Taught One Interactive Video Distance Education Class and Who Had Taught More Than Two Interactive Video Distance Education Classes Toward Those Equipment Arrangement Found to be Significantly Different

Item	Instructors Who Had Taught One Class			Instructors Who Had Taught More than Two Classes		
	No.	Mean	SD	No.	Mean	SD
TV size	20	4.30	1.53	16	5.19	.54
TV number	20	4.85	.75	15	5.33	.62
VTel Tablet location	11	5.27	.65	6	3.67	1.75

Research question 8 asked "What do instructors perceive as major items that affect instructors' satisfaction and dissatisfaction regarding the equipment arrangement when teaching in an interactive video distance education classroom?" The results reported that the location of the Elmo was the item with which instructors perceived most satisfaction in regard to equipment arrangement. The location of the TV monitors (size/location/quality) was the item with which instructors perceived most dissatisfaction in regard to the equipment arrangement. Regarding improvement of the equipment arrangement, the quality of TV monitors needed to be improved (see Table 9).

Table 9

Number and Percentage of Equipment Arrangement Items that Instructors Identified as Causing the Most Satisfaction and the Most Dissatisfaction with Interactive Video Distance Education Classrooms

Feature	No.	%
Satisfaction		
Audio system/quality	1	5.0
TV monitors	3	14.2
Elmo	9	42.8

Camera	3	14.2
Instructor computer	5	23.8
Dissatisfaction		
None	4	12.9
Audio system/quality	5	16.2
TV monitors (size/location/quality)	10	32.4
Elmo	2	6.4
Camera (view coverage/location)	4	12.9
Instructor computer	1	3.2
Fax	1	3.2
White board	1	3.2
Security (authorized access)	1	3.2
Equipment reliability	1	3.2
Arrangement of instructor work station	1	3.2

Research question 9 asked, "What do instructors perceive as major features that affect their satisfaction and dissatisfaction regarding the physical features when teaching in an interactive video distance education classroom?" Seating arrangement was the feature which instructors perceived most satisfaction in regard to the physical features. The desks and chairs were the feature with which instructors were most dissatisfied in regard to the physical features. Regarding improvement of the physical features, respondents indicated that students' chairs need to have pads, and each student should have a clear line of sight to the instructor. Seating arrangement was the physical feature with which instructors and students had the most satisfaction. The desks and chairs were the physical features which instructors perceived as most dissatisfying while students perceived room temperature the most dissatisfying physical feature (see Table 10).

Table 10

Number and Percentage of Physical Features that Instructors Identified as Causing the Most Satisfaction and Dissatisfaction with Interactive Video Distance Education Classrooms

Feature	No.	%
Satisfaction		
None	2	6.5
Instructor placement	1	3.2
Classroom size	2	6.5
Walk space	2	6.5
Room layout/set up	4	12.9
Light	3	9.7
Seating arrangement	7	22.5
Windows	2	6.5
Floor covering	1	3.2
Room temperature	1	3.2
Instructional workplace	4	12.9
Control room location	1	3.2
Cleanliness of the room	1	3.2
Dissatisfaction		
None	6	31.6
Walk space	2	10.5
Handicap access	1	5.2

Desks and chairs for instructors and students	8	42.2
No windows	2	10.5

Research question 10 asked, “What do students perceive as major items that affect their satisfaction and dissatisfaction regarding the equipment arrangement when learning in an interactive video distance education classroom?” Students were most satisfied with the location of the TV monitors (n=254, 63.5%) in regard to the equipment arrangement. Monitors (location/size/quality) (n=147, 33.6%) were the most unsatisfactory equipment arrangement item. Regarding improvement of the equipment arrangement, respondents indicated video equipment arrangement was the most needed improvement of the equipment arrangement. Since the TV monitor is such an important element in an interactive video distance education classroom, there is a need to enhance the functionality of TV monitors by adjusting the height, updating the resolution, and expanding the size. It is important for instructors to identify these major items that affect students’ satisfaction and dissatisfaction regarding equipment arrangement (see Tables 11 and 12).

Table 11

Number and Percentage of Equipment Arrangement Items that Students Identified as Causing the Most Satisfaction with Interactive Video Distance Education Classrooms

Item	No.	%
Satisfaction		
Audio equipment arrangement	64	16.0
Microphone	36	9.0
Audio Speaker	28	7.0
Video equipment arrangement	254	63.5
Elmo	30	7.5
Cameras	26	6.5
Monitors (location/size/quality)	198	49.5
Instructional workspace arrangement	33	8.3
Instructor computer	9	2.3
The Vtel Pin Pal Graphics Table	4	1.0
The AMX Touch Control	2	.5
Phone	1	.3
White board/ chalkboard	5	1.3
Overhead projector/Screen	9	2.3
Instructor workstation	3	.8
Computer setting	7	1.8
Student computer	6	1.5
Network connections	1	.3
Other	42	10.5
None	25	6.3
Everything	7	1.8
Technology	1	.3
Outlets	9	2.3

Total	400	100.0

Table 12

Number and Percentage of Equipment Arrangement Items that Students Identified as Causing the Dissatisfaction with Interactive Video Distance Education Classrooms

Item	No.	%
Audio equipment arrangement	89	20.3
Microphone (numbers/functionality)	38	8.6
Audio Speaker	18	4.1
Audio quality/echo	33	7.5
Video equipment arrangement	147	33.6
Elmo (size/ location)	12	2.7
Instructor is not in view of the Elmo	2	.5
Cameras (placement/view coverage)	22	5
Monitors (location/size/quality)	106	24.2
Cannot see other campus students	4	.9
Camera + TV to be very closer	1	.2
Instructional workspace arrangement	32	73.1
The Vtel Pin Pal Graphics Table	4	.9
The AMX Touch Control	1	.2
Phone	6	1.4
VCR	2	.5
Fax	11	2.5
White board/ chalkboard	6	1.4
Overhead projector/Screen	2	.5
Computer setting	38	8.7
Student computer (numbers)	27	6.2
Location of computer	8	1.8
Network connection	3	.7
Technology	19	4.3
Reality of connection	6	1.4
Problems with video/audio signals	13	3
Other	113	25.8
None	102	23.3
Everything	2	.5
Outlets	2	.5
Clock	3	.7
Static	1	.2
Student workstation	2	.5
To many devices	1	.2
Total	438	100.0

Research question 11 asked, “What do students perceive as major features that affect their

satisfaction and dissatisfaction regarding the physical features when learning in an interactive video distance education classroom?" The results revealed that the most satisfying physical feature was the seating arrangement (n=192, 47%,). Room temperature was the most dissatisfying physical feature (n=79, 22.2%). Seating arrangement, including desks and chairs, was the most needed improvement of the physical features (see Tables 13 and 14).

Table 13

Number and Percentage of Physical Features that Students Identified as Causing the Most Satisfaction with Interactive Video Distance Education Classrooms

Feature	No.	%
Room location, size, and access	56	13.7
Room location	8	2.0
Room size	26	6.4
Room style/layout	21	5.2
Control room location	1	.2
Noise level and acoustics	6	14.7
Noise	2	.5
Acoustics	4	1.0
Lighting	29	7.1
Light	29	7.1
Seating arrangement	192	47.0
Desk/chair	192	47.0
Temperature and ventilation	10	2.5
Room temperature	9	2.2
Ventilation	1	.2
Window and covering	3	.7
Window	1	.2
Window covering (blinds, curtains)	2	.5
Walls and doors	19	4.7
Wall	7	1.7
Wall color	7	1.7
Doors	5	1.2
Flooring and ceiling	13	3.2
Flooring	9	2.2
Ceiling (height, material)	4	1.0
Room cleanliness	18	4.4
Cleanliness of the room	18	4.4
Other	63	15.4
None	32	7.9
Everything	12	2.9
Clock	1	.2
Color of the room	12	2.9
Design arrangement	3	.7
Wood cabinet	1	.2
The idiot box	1	.2

Less students	1	.2
Total	409	100.0

Table 14

Number and Percentage of Physical Features that Students Identified as Causing the Most Dissatisfaction with Interactive Video Distance Education Classrooms

Feature	No.	%
Room location, size, and access	13	3.7
Room location	2	.6
Room size	7	1.9
Room style/layout	3	.8
Control room location	1	.3
Noise level and acoustics	11	3.1
Noise	7	1.9
Acoustics	4	1.1
Lighting	6	1.7
Light	4	1.1
Lights put glare on TV	1	.3
Lack of nature light	1	.3
Seating arrangement	75	21.2
Desk/chair	48	13.5
Work space	25	7
Handicap access	2	.6
Temperature and ventilation	79	22.2
Room temperature	71	20
Ventilation	8	2.2
Window and covering	47	13.2
Window (no window)	46	12.9
Window covering (blinds, curtains)	1	.3
Walls and doors	14	3.9
Wall	6	1.7
Wall color	7	1.9
Doors	1	.3
Flooring and ceiling	6	1.7
Flooring	2	.6
Ceiling (height, material)	3	.8
Flooring color	1	.3
Room cleanliness	7	2.0
Cleanliness of the room	3	.8
Wires exposed	4	1.1
Other	98	27.5
None	80	22.5
Everything	2	.6
Clock	1	.3

Color of the room	4	1.1
Elevator	1	.3
TV block view	1	.3
The idiot box	1	.3
Not being get out	1	.3
Area between student table and instructor podium	3	.8
Student workstation	1	.3
The distance learning	2	.6
Instructor workspace	1	.3
Total	356	100.0

Research questions 12 and 13 asked "What is the instructor's/ student's preferred workspace for an interactive video distance education classroom?" Both students and instructors preferred a classroom design that gives a good view of everything. The monitor is positioned in the front of the room where it can be closer to the camera. The camera vision and instructor can capture all aspects of the room efficiently, and there is no difficulty in hearing. The most preferred instructors' workspace design style by students and instructors was a circular shaped table with adequate space for other items. In addition, the most preferred chair design style by students and instructors was a height adjustable, roller chair with armrest. These findings can be used when designing an interactive video distance education classroom.

Conclusions

The findings of this study revealed that the size/location/quality of the TV monitors was the item with which instructors perceived most dissatisfaction in regard to the equipment arrangement. Additional, instructors were less satisfied than on-site students and remote site students with the location of the instructor TV. The results showed that the location of the Elmo was the item with which instructors perceived most satisfaction in regard to equipment arrangement.

Overall, most on-site students and remote site students and instructors were satisfied with the equipment arrangement and the physical features in this study. However, based on the feedback of students concerning improvement of physical features, they prefer having windows in interactive video classrooms. Another important issue that students dealt with, according to Kirby (1999), was insufficient air circulation. In this study, the desks and chairs were the physical features that instructors perceived as most dissatisfying while students perceived room temperature the most dissatisfying physical feature.

The literature confirms this study's findings of instructors and students of physical features (Klesiu et al., 1997; Farrenkopf, 1979). However, the findings of this study provide specific needs of instructors and students in an interactive video distance education classroom. From findings a model design was created.

Recommendations

In order to enhance students' learning and instructors' teaching in an interactive video distance education classroom, the following recommendations are made based on the results of this study.

1. Few studies were found in the literature that examined perceptions of instructors and students concerning interactive video distance education classroom design. To improve existing and future classroom design, there is a need for universities to receive regular feedback from the users of

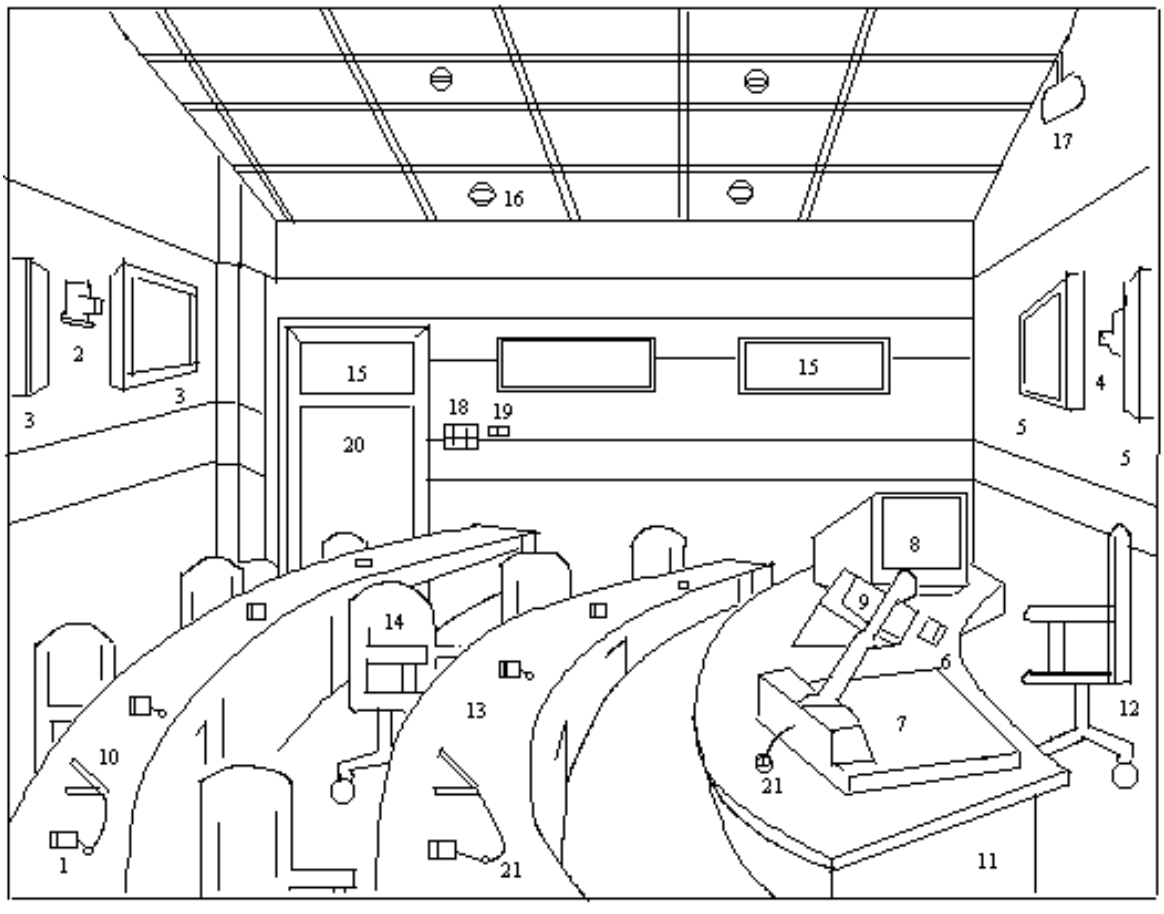
interactive video distance education classrooms.

2. It is also important to identify the major items that affect instructors' and students' satisfaction and dissatisfaction regarding equipment arrangement. More study is needed in order to improve the equipment arrangement in an interactive video distance education classroom, specifically, in such areas as the TV monitors, the white boards, and the fax machine—items with which instructors were less satisfied. Because many students were dissatisfied with the computer arrangements and instructor camera arrangement, these items need to be addressed for further research as well.

3. Universities need to identify the physical features such as room temperature, desks and chairs, window size, location, and covering that affect students' ability to learn and conduct further research regarding the physical features of interactive video distance education classrooms.

4. Because equipment arrangement and physical features are such an important part of classroom design, there is a need for an interactive video distance education classroom design model. This model would satisfy the different needs of instructors and students and provide guidance for modifying the model to various situations.

Figure 1 is an interactive distance education classroom design developed from the findings of this study.



1 Student microphone 2 Instructor camera 3 Instructor TV monitor 4 Student camera
5 Student TV monitor 6 Instructor microphone 7 Elmo 8 Instructor computer
9 Preview TV monitor 10 Laptop pug-in device 11 Instructor desk 12 Instructor chair
13 Student desk 14 Student chair 15 Window 16 Light 17 Instructor workspace light
18 Light control 19 Room temperature control 20 Door 21 A device for organizing cables

Figure 1. An Interactive Video Distance Education Classroom Design Model

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Editor's Note: Teachers need to develop class structures and online teaching styles that encourage creativity, reflective thinking, and self-directed learning. Today's online classes rely heavily on print, verbal skills, and critical thinking. This can be greatly enhanced by rich media environments, simulations, and curriculum that offers multiple perspectives. Online discussion supports development of critical thinking skills. Mature and self-directed students are more likely to be successful in online environments. Higher yields are possible through application of instructional design and cognative learning psychology.

Integrating Critical Thinking into Online Classes

Brent Muirhead D. Min., Ph.D.

Introduction

The integration of critical thinking skills into the online curriculum is an essential to providing intellectually challenging and relevant learning experiences for students. The paper will offer a basic description of critical thinking and discuss how to engage students in higher order thinking skills.

Nature of Critical Thinking

Distance education literature contains frequent references to the importance of critical thinking and teachers are encouraged to cultivate reflective thought in their students. Yet, even veteran teachers will admit that integrating critical thinking instruction into their classes is one of their most difficult tasks. Teachers who want to enhance the teaching and learning process realize that fostering critical thinking skills will require extra work to effectively communicate complex ideas to their students. Bullen's research (1998) reveals that a student's ability to demonstrate critical thinking skills during online discussions is influenced by four major factors:

- cognitive maturity
- teaching style of instructor
- student's prior learning experiences
- degree of understanding the critical thinking process

The list of factors reveals that students will vary in their understanding of critical thinking skills and cognitive abilities. Therefore, teachers will need to develop a set of strategies that will help them to meet a diversity of student needs. A good starting point is to examine the literature on critical thinking to create an educational philosophy that reflects the latest research studies and teaching ideas.

Teaching to Enhance Critical Thinking

A review of critical thinking research can be somewhat confusing at times due to writers discussing various aspects of thinking. Sormunen and Chalupa (1994) bring some clarity to this problem by stressing that educational models classify critical thinking as both a product and process that combines psychological (i.e metacognition) and philosophical (i.e constructivist reasoning) elements. The good news is that there are a growing number of research studies that highlight how teachers can help their students improve their thinking skills.

Contemporary teachers face the reality that most of their instruction tends to focus on content knowledge and not on the process of learning transferable reflective skills Halpern (1998) relates, "despite all of the gains that cognitive psychologists have made in understanding what happens when people learn, most teachers do not apply their knowledge of cognitive psychology (paragraph 11)." In contrast to this report, the author has been encouraged by his observations of veteran teachers at the University of Phoenix. The author conducts peer reviews of faculty members and has noted that distance educators are devoting more instructional time to cultivating critical thinking skills.

Halpern (1998) stresses the dispositional aspect of thinking refers to whether individuals have developed reflective habits. Critical thinking requires mental effort and the personal discipline to work with complex problems. Individuals with a critical spirit are often inquisitive about the mysteries of life and strive to find the most reliable information. Facione (1998) notes, "critical thinking is about how you approach problems, questions, issues. It is the best way we know to get to the truth (paragraph 26)."

Teaching Strategies

Teachers will need to develop a class structure and online teaching style that encourages creativity, reflective thinking, and self-directed learning. It is important that teachers enable students to have the freedom to ask questions and take intellectual risks in their written assignments and discussion groups. Teachers can provide valuable guidance by keeping dialogues focused, relevant and probing deeper into issues. This will require moderating discussions and creating a list of key ideas, references and student contributions. Distance educators can pose a diversity of questions to foster reflective comments. Collision, Elbaum, Havvind & Tinker (2000) have created five types of questions to encourage richer student responses that are called full-spectrum questions:

· Questions that probe the "so what!" response- relevance, interest level, urgency and context

· Questions that clarify meaning or conceptual vocabulary- ambiguity or vagueness and common concepts

· Questions that explore assumptions, sources and rationale- qualities assumed and study evidence

· Questions that seek to identify causes and effects or outcomes-primary or secondary and causes, internal or external factors

· Questions that consider appropriate action- weigh different courses of action (p. 143).

Teachers should view the full-spectrum questions as tool for enhancing dialog. The choice of questions can be used to guide the discussion and help energize online interaction. It is wise not to overuse a question approach because students will the discussion become too predictable. Therefore, try to use pictures, cartoons, simulations or graphics instead of questions at different times during the course. Currently, the University of Phoenix is using more computer simulations in their business courses to promote realistic decision-making scenarios. Students enjoy learning activities that bring a slice of reality into the class that relates to their professional work environment.

According to Brookfield (1987), a major problem in our society has involved placing a placed a greater value on action oriented activities. He states "thinking is not seen as action, despite the fact

that thinking is one of the most tiring activities in which we engage on a daily basis (p. 229)." Distance educators need to create relevant assignments that help students practice their critical thinking skills. The author teaches an online doctoral class on the philosophy of knowledge. Lectures are designed to help students to creatively apply philosophical ideas to contemporary social issues. The following brief mini-lecture will reveal how teachers can use popular culture to teach critical thinking skills. Students will learn some of the ways that a philosopher or historian of intellectual history might look at the television world and specifically at portion of the Star Trek television series.

Using Star Trek to Cultivate Critical Thinking Skills (Muirhead

The television industry is continually promoting its own views of reality that need to be challenged and examined by the American public. Reflective thinking enables people to be thoughtful citizens who resist simplistic answers to complex social problems.

Guiness (1994) notes that television shows contain four major kinds bias that influence it messages:

1. It has bias against understanding because it stresses images and emotions but it often lacks context and meaning that creates an illusion of knowledge.

2. Television conversations have a bias against responsibility by having a rapid approach that packages news into segments of intense images of dramatic events.

3. Programs have a bias against historical events because news reports are focused on today as being far more important than the past.

4. Television shows have a bias against rationality because attention is on performance by high profile individuals who prefer drama over reflective thought.

The popular Star Trek television series can be viewed as an interesting slice of American intellectual history. The following notes on Star Trek will highlight how various cast members from several different shows represent a certain perspective on understanding knowledge and truth.

Star Trek

Spock- completely rational solves problems with reasoning skills and represents the ideal Enlightenment man. Often, he resolves difficult problems for the crew members of the Enterprise.

Mission Goal- objective knowledge of the entire universe "the final frontier" and humans pursue the goal alone.

Star Trek: The Next Generation

Data - replaces Spock and he is an android who works with other crew members to find solutions to their problems.

Counselor Troy - uses her intuition to perceive human feelings and truthfulness.

Q - a divine being who is all knowing but morally ambiguous who displays a combination of cynicism, benevolence and self-gratification.

Mission Goal - to go where no man has gone before. Man needs the help of androids and other life forms to discover knowledge. Life is more complicated for people because appearances can be deceiving and truth is considered relative and incomplete.

Observation - the Star Trek series portray an optimistic technological future, but one filled with constant conflicts as the crew travels on their odyssey through space. The show sometimes diminishes the role of human reason and the possibility of objective knowledge. The Voyager series includes a first officer who is a Native American. He is a spirit guide that utilizes a combination of science and mysticism to help manage crisis situations. Ironically, the greatest threat is not being

lost in some distant quadrant of space, but it is the loss of personal inner stability.

After sharing highlights from the Star Trek programs, teachers can discuss how the television series reflects different perspectives on truth, knowledge, ethics and intellectual trends. Students might notice that human reason is less important and there greater emphasis on relativism. What is a basic definition of the term? Barzun (2000) relates "it means flexible, adaptable, a sliding scale that gives a different reading in similar situations (p. 761)." Relativism appears to make few distinctions between moral codes, cultures and religions. They each reside in a certain time and place in history that should be respected and tolerated. Yet, Barzun argues that a civilized society often utilizes relative standards for applying the law to individual criminal cases. He maintains that the anti-relativists who embrace moral absolutes cannot effectively answer the question "Whose Absolute are we to adopt and impose? (Barzun 2000, p. 762)." This brief example reveals that popular culture can offer numerous instructional opportunities to help students refine their thinking skills through reading and reflective dialog.

Evaluating Critical Thinking Skills

Contemporary testing methods often fail to provide teachers with information on how students arrive at their responses to test items. Quantitative and qualitative assessment procedures can be useful but it is vital that "….the assessment must be sensitive enough to identify changes that have occurred in students' thinking skills (paragraph 14)." Critical thinking assessment instruments can include commercially designed tests, teacher made tests, check lists, open-ended questions, problem-solving scenarios or simulations. For instance, check lists can be used to evaluate a variety of student work such as gathering information on student online comments or portfolios. Check lists are useful tools to document evidence of student problem solving and decision making skills (Sormunen & Chalupa, 1994).

Teachers can integrate critical thinking into their classes by presenting information from a diversity of perspectives that involve both the cognitive and affective learning domains. The author has found that students really enjoy reading nonfiction short stories about individuals and their personal learning adventures. Teachers can share interesting and informative stories that offer insights into concepts such as perseverance in problem solving. Short stories can be included in lectures and handouts that stress descriptive information on critical thinking. Stories bring a human element into the online class environment that makes learning new ideas much more meaningful. Also, students should be given examples of creative thinking such as published journal and magazine articles. The following chart is an effective way to help students understand the multidimensional aspects of critical thinking.

Essential Critical Thinking Skills (Woolfolk, 1990, p. 278)

Defining and Clarifying the Problem

- Identify central issues or problems.
- Compare similarities and differences.
- Determine which information is relevant.
- Formulate appropriate questions.

Judge Information Related to the Problem

- Distinguish between fact, opinion and reasoned judgment.
- Check consistency.
- Identify unstated assumptions.
- Recognize stereotypes and clichés.
- Recognize bias, emotional factors, propaganda and semantic slanting.

· Recognize different value systems and ideologies.

Solving Problems/Drawing Conclusions

· Recognize the adequacy of data.

· Predict probable consequences.

Online Instructional Challenges

The affective and psychological dimensions of distance education are important aspects of the teaching and learning process. Distance educators face the dilemma of how to foster critical thinking with students who vary in their need for academic guidance. Often, this problem is portrayed as teacher-directed versus student self-directed learning models. In reality, the online teacher will have to adapt his/her teaching style to meet the needs of their students. Berge (1999) relates that interaction in education "involves a continuum from teacher-centered to student-centered approaches" (p. 9).

Distance educators are challenged by using a text-driven form of education. Today's online classes rely heavily on printed materials and teacher created lectures and handouts. Therefore, the use of language becomes a focal point for teachers and students because the entire communication process is closely linked to thinking. Kirby & Goodpaster (2002) note "language works intimately with all aspects of our thinking …sensing, feeling, remembering, creating, organizing, reasoning, evaluating, deciding, persuading, and acting. As we become more aware of the strengths and weaknesses of language, and as we increase and refine our own language, we will think better (p. 98).

Conclusion

A major adult education goal is helping students become self-directed learners who learn to monitor and improve their thinking skills. Distance educators need to integrate meaningful instructional activities into their classes that promote internalization of critical thinking skills and knowledge. It is one of the unique challenges of teaching online but it is essential to fostering classes and degree programs that prepare students for leadership roles in our society.

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Editor's Note: Anywhere-anytime learning has created a need for responsive and reliable systems to support teachers, learners, administrators, and support personnel (such as admissions and records, instructional designers, librarians, and tutoring services). These systems operate on a 24 X 7 X 365 basis and enhace the management of education and training programs. They handle logistics such as admissions and records, counseling and enrollment, sequencing and scheduling, interactive delivery and data collection, test administration and scoring, review and remediation, grades and graduation. Some systems do a few of these; others are comprehesive. The challenge is to make the systems transparent and simple to use, yet provide flexibility to fit many different kinds of organizations.

USDLA Editor at Large, Stephen Downes, makes some observations about the state-of-the-art and where all this is going.

Peder Jacobsen Looks at the Crystal Ball - August 2002

Stephen Downes

What does the future (that is, the next eighteen months) hold for learning management systems (LMSs) and learning content management systems (LCMSs)? "It's past lunch time," said Logicbay's Peder Jacobsen, "but it's not dinner time." The companies, he predicts, will begin to eat each other once again.

Pederson was speaking at Online Learning 2002 in Anaheim and divided his predictions into several major categories:

Learning Management Systems: LMS products and ERP products are both about managing people; the former are directed toward learning while the latter are directed toward human resource management. As LMSs expanded, they began to talk about human capital management. But on the ERP side, companies like PeopleSoft, Siebel and MySAP began to look at learning. The major theme for LMS companies, therefore, is one fraught with danger as these "gorillas in the mist" begin to move more aggressively in their field. The only hope for LMS companies is to establish relationships with LCMS companies (relationships, because LMS companies are unable to fund LCMS development).

Learning Content Management Systems: LCMS products and CMS products are both about managing content. This has led to some companies attempting e-learning content management with stand-alone content management systems such as Plateau or Documenter. But most companies, said Jacobsen, want an LCMS because they want features like testing and interaction. The big question for LCMS vendors is whether they need the "learning" part of the equation. As content becomes more granular, it becomes more generic. And so the difference between the LCMS and the CMS begins to evaporate. LCMS vendors, he said, have to focus on personalization to stay competitive against CMSs.

What we will not see, argues Pedersen, is a single, massive engine that handles everything from

human resource management to learning management to content management. Companies are looking for a smorgasbord, not a stew, he said. They want a combination of "best of breed" solutions. This trend points toward more alignments between companies as they try to co-brand themselves. It is also accelerated by standards development as products from different companies work increasingly well together.

Technology: Technology, argues Pedersen, will move backward from "e" to "old" as more and more companies demand things like print and blended learning. This trend will accelerate as companies move beyond the wired centers to offer learning in remote regions and around the world. LMS companies without an LCMS component or alliance will be hurt. LCMS companies without an LMS component will do just fine as they can export content into various LMSs. CMS companies will try to do learning content and will fail.

Competencies, said Pedersen, will still be talked about... and still not done.

Clients: The client base will be global, said Pederson, and as U.S. companies learn that there is life beyond their borders they will respond drawn by "any currency that can be converted into a dollar." Clients will demand an integrated solution, but not the sort of piecemeal content procurement they face today. And while an integrated system is a given, integrated processes will be a concern: companies will want to make one telephone call when problems occur (and will not care whether they have called the correct vendor).

As we are beginning to see already, there will be increased tension between vendors who want to sell stand-along learning objects and clients who want to deliver customized e-learning. "They (clients) are going to have to learn," said Pedersen.

Finally, people will look for informal learning solutions. Asking the audience how many people learning something recently from an online course, Pedersen saw only a handful of hands. But when he asked how many people had learned something useful from the web, almost the entire room responded.

Specifications and Standards: "We need to ask good questions," said Pedersen. What are the good questions? Those that center around the verbs. Look at it this way: We have mastered adjectives with metadata that describes learning objects, and we have made good progress with nouns with data models, but we need to address verbs through the integration of business models The people behind SCORM, he said, understand this. They have a 20-year plan in motion, a plan that involves deeper interactions. We should look to future versions of SCORM for things like sequencing, adaptive services and intelligent tutors, user agents and integration with the semantic web.

Comment: According to Pedersen, ninety percent of all learning is informal. Structured courses such as those that are offered through LMSs compose only ten percent of the total.

It seems off, then, that while he knows this, the bulk of his talk was devoted to the ten percent of learning that is formalized.

It seems to me that the important developments that occur in the e-learning sphere will be based around informal e-learning, and that many of these developments will drive the LMS and LCMS market in unexpected directions. When personal e-learning becomes a reality, everything else will become moot.

While LMS and LCMS systems move toward increasing complexity and increasing functionality, people will demand less complex applications in their day to day lives. They will demand quick and effective learning, not structured and formal classes (that is not to say there is no room for the latter; it is merely to say that ninety percent overwhelms ten percent every time).

Pedersen talked about how there will be a great demand for tracking and assessing informal learning. This is true, from the educational and corporate side of the house. But from the point of view of the client, the demand in this area will be for reporting and receiving credit. Clients will

also demand (while managers will resist) increased privacy and control over their personal information.

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EDUCATION ed AT A DISTANCE

USDLA Journal

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Editor's Note: This comprehensive well-integrated article provides an excellent platform for both seasoned and novice online instructors. We recommend this article for inclusion in the handouts provided to distance-learning faculty to provide insights and a checklist for "covering the territory."

Developing an Interactive Web-Based Classroom

Mary Hricko

Abstract

Creating a successful interactive web-based learning environment can be a challenging task. There are many issues to consider in the design, development, and delivery of a web-based course. Instructors must rethink the way that they teach to create an interactive learning environment in a web-based format. Suggestions on how to address classroom management, technical difficulties, and course evaluation are given. Ideas to promote interactivity in online instruction are offered.

Introduction

With the expansion of distance education programming, more and more instructors are considering the possibilities of online instruction as an alternative to their traditional classroom practice. Instructors who are novices in online instruction often assume that all they have to do is transfer the content of their traditional course into a few web documents, post it on a server, and then a web-based course is created. Although some educators will argue that a great deal of online instruction lends itself to this process, it is important to recognize that this practice, in itself, does not lead to quality instruction. Effective web-based instruction is much more complicated. It takes time, patience, and a willingness to be innovative.

Design

When instructors come to discuss their plans for creating a web-based course, I immediately ask them why they want to do this. Quite frankly, most novice web-based instructors do not understand the amount of work it takes to design and maintain an interactive web-based course. Instructors need to know how to use the technology to manage their course effectively and how to adapt their content to the technology they will be using. Instructors new to distributed learning may first want to develop their web-based skills in a hybrid course format. A hybrid course involves the use of distributed instruction as a supplement or element in a traditional based course. For example, an

English instructor may wish to use a bulletin board feature of a web-based courseware project for collaborative editing and review of papers. Students can post commentary on each other's writing in this format for easier access even though their class is held on campus. Hybrid course designs often serve as better transitions from a traditional environments to distributed formats (particularly web-based platforms) because instructors can pace their understanding of how to integrate technology into their instruction.

However, if the instructor is determined to engage in the development of a web-based course, it is important that the instructor is thoroughly prepared for the development of the course. Rather than rushing out to develop new material for the web-based platform, it is first recommended to review the content from a parallel traditional course to determine if it can be easily modified for the web-based environment. By examining existing materials, it is easier to determine what additional content may be needed or further developed for online instruction. It is also a good idea to check if the material has already been presented in other web-based courses. This practice allows instructors to review how their content has been presented in this format. Instructors are strongly encouraged to look up web courses in their discipline. One useful site that offers a good sampling of web-based courses is the World Lecture Hall (http://www.utexas.edu/world/lecture/). Examining other web-based courses enables instructors to familiarize themselves with different models of design. This review is important because it allows instructors to recognize how variances in design can accommodate to their teaching style. Instructors also can obtain ideas for assignments, presentation of materials, and class activities.

After gathering suitable content for the course materials, it is best to create a detailed outline that addresses the characteristics of the audience, the objectives of the course, and the instructional goals of the course. If the instructor plans on working with an IT person to develop the course, this outline will establish the foundation for building the course. A course outline also gives the instructor greater control over the design of the course. This aspect proves important in meeting the overall objectives of the course. Instructors should also take time to review current research that outlines the strategies for teaching and learning in a distributed learning format. There are many web sites such as the Distance Education Clearinghouse http://www.uwex.edu/disted/resources.html that provide a number of useful resources on topics related to distance education instruction. In addition, it is highly recommended that instructors sign-on to a listserv related to distributed learning teaching. Listservs such as DEOS-L and WEB-TOLL are two very useful resources that generate discussion of a variety of useful topics related to distance education practice.

In addition to creating a course outline, it is also important to gather all the material possible that will be used to convey information about the course. According to Michael Zaccaria (2000) in "Criteria for an Effective Instructional Web Site," the general content of an instructional web site should include the following information:

1. Instructor information, virtual office hours, announcements
2. Course description, course outlines, syllabi, and assignments
3. Lecture outlines, class notes, and web bibliographies
4. Testing and grading information, sample tests or test questions
5. Course management policies, means for submission of assignments
6. Interactive activities such as bulletin board, email links to classmates
7. Academic services support links such as the campus library and tutoring center
8. Links appropriate to lecture to assist students with review of material
9. Grade postings and/or a site by which students can check assignments
10. Password protection for pages with personal student content.

Instructors should gather most of the information they plan to use in their lessons prior to the development of the course. Problems may arise for those instructors that attempt to create content as they teach the course. These individuals need to realize that last minute additions of notes or slides from presentations can confuse students. In addition, technical support may not be readily available to make the changes as needed. The delay in posting the revised material may lead to additional problems for class management. If instructors need to make such amendments during the course, then it is important to alert the students in a formal manner so students can respond appropriately to the changes. One suggestion is to include a section on the first page of the course entitled “Important Updates” to list changes or important announcements such as rescheduling of assignment or project deadlines. Instructors should also be aware of technical staff policies regarding the revision of course material. Continuous last minute changes in a course design may not be feasible for a technical staff assigned to support all the distributed learning courses for a university. In addition, such actions demonstrate to students in the class that the instructor is not really prepared for the course.

Instructors should always be wary of creating web documents loaded with text from lecture notes or PowerPoint presentations. Although these methods are considered to be the easiest way of presenting information to online learners, Rick Ells (1999) notes: “Just making content available is not education. Learning requires action, interaction, and application.” Instructors need to provide students with “examples that relate the content to a context understood by the students.” (Willis 2001) Breaking text into instructional units (smaller parts) can enhance learning. Using links is much more easier for students to follow than sequencing pages of text. Several studies have shown that reading information from a screen can be as much as 30% slower than reading it from a paper. Pages that are entirely text-based can be difficult to read and extremely boring.

Instructors need to review the layout of their materials from a student’s perspective. It is important to be clear and concise. Students should not have to spend hours at a time to locate information on a course page. Tutorials, online exercises, and other activities that promote the self-direction of a learner will make the content of a web-based course much more interesting to students. When students are required to understand course material and then use it to accomplish a meaningful task, learning takes place.

In addition, instructors should never assume that students enrolled in a distributed learning course possess fluency in information technology or information literacy. At the beginning of the course, require students to initiate contact with one another through electronic mail. Have them send test messages. Have them send file attachments. If a courseware product is being used, ask students to engage in activities that make use of the features of the courseware product. The objective is to create activities that provide students with opportunities for developing their online competencies. Some activities may include: 1) requiring students to sign on to a listserv or newsgroup related to class content, 2) actively posting and responding to messages in a forum discussion, 3) evaluating and writing reviews of web sites related to topics being discussed in the course, 4) producing web bibliographies on a given topic, 5) preparing an online lesson for the rest of the class, and 6) developing additional course pages for the class.

Just as it is important to teach students the content of the course, it is important to build the students’ confidence in using the technologies in a distributed course. It is also important to assess the students’ skills in information literacy. Take note of which students fail to interact and encourage them to take a more active role in forum discussions. Spend time interacting with students that seem hesitant to participate in the chat rooms. Find ways to show your students how to locate information for class assignments. Introducing your students to online scholarly journals, quality web sites, and electronic resources is a good way to improve their skills in evaluating electronic information. The campus library staff may also have a web-based bibliographic instruction lesson or electronic reference guides that can be included in the instructor’s course as a lesson for doing research on the Internet. All web-based courses should not only have a link to the campus library, but an email link to the reference librarian who is the subject specialist for the

discipline. Instructors can also invite guests to participate in the class discussion. Colleagues, students from other courses, and students enrolled in the traditional format of the class can be invited to participate in class activities. The goal is to give remote access students the same feeling of a campus community that their on-campus peers receive. This element can prove very significant in the retention of distributed learning students.

Instructors are also encouraged to continuously evaluate the content of the course. Instructors who use the same materials over and over again limit not only themselves, but also their students. If there are online papers or web sites that have related course information, put the URL in the content and introduce your students to “quality surfing”. Keep abreast of the latest information by having students subscribe to listservs related to the discipline. For example, students can sign on to lists related to the course topics or subject material. It is also important to talk to campus instructors who have already taught in the institution’s distance education program, particularly those who have presented their course in a web-based environment. As web-based veterans, these individuals will identify the strengths and weaknesses of administrative, technical, and academic support for web-based instruction at your institution. They also can recommend instructional sites to assist with locating free web tools for online instruction. This information can prove to be very helpful for saving time in course development.

Development

Once instructors determine the content they will use for their web-based course, the next phase in the process is development. Some instructors opt to create their courses using software applications such as FrontPage, Dreamweaver, and Authorware. Others rely on using system software such as WebCT or Blackboard. Whatever method is adopted, it is crucial that instructors know in detail how to use and troubleshoot the potential problems that may arise in using the program. Not knowing the ins and outs about the potential technical limitations of the software and hardware will be problematic when trying to transform traditional learning activities into a web-based format. Also, if technical support is not readily available, how will instructors assist students with technical questions?

Some development considerations include the following questions:

1. **How will course information be conveyed to the students?**

Novice instructors often want to use a wide range of graphics to enhance the presentation of the course. The inclusion of graphics should relate to the text displayed. When using images, it is important to determine if the graphic is essential to enhance the content. Dynamic moving graphics should be used sparingly to avoid distraction. Graphics should always serve an instructional purpose. Pages that are filled with multimedia take much longer to download. This set-up can be extremely frustrating for students with slower modems. Graphic files should be kept as small as possible. The use of large graphic menus, banners, and progressive graphics can make a student wait 2 or 3 minutes to transfer and display the file. Instructors should consider using JPEG or GIF compression to reduce transfer time. Instructors need to realize that some graphics may not load properly with certain browsers. It is recommended that instructors examine their pages from different browsers to see what possible problems can occur. All graphics should include an “ALT-tag” description to ensure that students who cannot access the graphic can at least retrieve information on the graphic. It is also important to provide accessible materials for all students. The use of graphics can be extremely problematic for those students who have text-only browsers.

If instructors intend to use hyperlinks, it is necessary to check their availability. Links from journal articles or special reports may be archived into a site database and may not be able to access from the listed URL. Hyperlinks should only be included if they serve a direct purpose to the text. Links should be clearly labeled to give learners a better sense of organization of the site. Students should not be given series or lists of links without some form of description of the purpose of these materials. If the list is a selected bibliography of web-based readings, then the instructors should

make certain that they have copyright privileges to post the materials on their sites. Links to full text articles, book excerpts, and other materials may need approval prior to inclusion in a course. It is best to check with the university's copyright policy for electronic resources before adding them to a course.

Information for the course should always be presented in a clear and concise manner. It is recommended that the home page of the course reflect the most important information regarding the course. Changes in the schedule, new information regarding assignments, virtual office hours, contact information, and other important course information should be listed on the first page students see when they log into the course. The course syllabus should outline all rules, guidelines, standards and policies in detail to avoid conflicts. A detailed description of what constitutes online academic misconduct should be listed as well as the institution's policy regarding cheating and plagiarism. Once these standards are listed, **it is imperative that instructors uphold them.**

2. **How will assignments, quizzes, and exams be given and collected?**

Some instructors make use of automated grade books that restrict access to students enrolled in the course. Students are then able to retrieve assignments, submit quiz or test answers, and obtain ongoing assessment for their work thus far. Other instructors enlist proctors at the remote sites to distribute and collect assignments and test materials. Some instructors even decide to forgo testing altogether, relying more so on the grading of online group projects and collaborative activities. For whichever method is adopted, a contingency plan for making up assignments and exams must be established prior to the start of the course. Students need to know what happens when they are unable to email assignments due to technical malfunctions? What back-up plan is offered for email attachments that are mysteriously lost in cyberspace? What exactly is expected of students in meeting course deadlines? What are the course deadlines? An instructor should have all of these questions answered prior to the actual instruction. It may be wise to include such information in a class FAQ or other section that lists course information. The more thorough the details of the course's policies, the less likely problems will occur when students have concerns regarding the course.

3. **What type of electronic interactions will be needed to facilitate class activities and lessons?**

Relying simply on email can create a host of problems for instructors who are not prepared for "email-overload". Students tend to miss the instant feedback from their professors and often post messages several times a day because the instructor fails to respond in a prompt fashion. Hara and Kling (2000) found that students' frustrations with web-based courses originated from "minimal and not timely feedback from the instructor and ambiguous instructions on the web site as well as through email." Kember (1987) found that variables such as the "frequency and nature of contacts [and] the speed of response to student initiated contacts" influenced the students' evaluation of online instruction.

Graham (2001) recommends that instructors should "establish policies describing the types of communication that should take place over different channels. Examples are: "Do not send technical support questions to the instructor; send them to tech support@university.edu." Or "The public discussion forum is to be used for all communication except grade related questions." Graham also notes that instructors "set clear standards for instructors' timelines for responding to messages."

4. **How will the course be "humanized?"**

By having students enrolled in the course provide web biographies and in some cases, photos of themselves, they gain a sense of who is in the class. Biographies can contain information about their interests, studies, work experiences, location, educational experience, and reasons for taking the class. Instructors can also include a general web form template that enables students to create and add a personal web page for the class. Activities such as encouraging students to share their "coolest web sites" or "site of the week" gives the class a sense of community. Research by Kanuka and Anderson (1998) indicates that the greatest value of online interactions for students

was a means of sharing and receiving information and to network with others. Hence, by establishing a sense of community in the web-based classroom, instructors may be able to illicit more active participation among students. Instructors can create electronic journals for students to write entries on course topics and discussions. Chat room activities through the use of bulletin boards or listservs can also foster a learning community. Chat rooms can be used for a number of traditional activities such as review and exam preparation, brainstorming sessions, group projects, and collaborative assessment. Willis (2001) also recommends that instructors make use of pre-class study questions to encourage critical thinking and informed participation.

5. **Is the course accessible?**

In January 1995, the U.S. Department of Commerce's Bureau of the Census reported that 1 in 5 Americans have some kind of disability. In response, the American Disabilities Act was modified to include web accessibility for people with disabilities. Section 508 of the Rehabilitation Act also states that all public entities must provide equal access to electronic resources and information technology. Hence, as instructors begin to develop their web documents, they should adhere to universal design and web accessibility guidelines. The Web Accessibility Initiative offers guidelines to ensure the creation of accessible documents: http://www.w3.org/WAI. Even if instructors plan to use dynamic elements in the web-based course, it is important to evaluate their page from the perspective of students with disabilities. There are several web resources and organizations that provide information on adaptive technology and web accessibility workshops. Instructors must realize that web accessibility is important for all students. Different browsers, slower modems, and traffic on the network all influence accessibility of web documents. To check accessibility of a web tool called "Bobby" (http://www.cast.org/bobby) serves as a validation device to check the accessibility limitations on a given site. It is highly recommended that instructors run this diagnostic on their course pages to see what type of material students with disabilities may not be able to access.

6. **What academic support services will be available for online students?**

Novice web-based instructors are sometimes so preoccupied with the facets of creating their course that they fail to examine how their remote access students will receive academic support in the virtual setting. It is important that instructors take time to examine the availability of online tutoring, the campus library's electronic resources, and other online student services. Providing links to resources such as the web version of the online newspaper or academic department web site offers students a connection to the college. Instructors should also see what other collegiate electronic resources are available for students. Online clubs and other electronic communities can also be recommended to the students. Some campuses even create a virtual student center for their web-based participants. Students should also be encouraged to participate in online academic conferences. Instructors should look for conferences related to the course subject. Fees for such activities are usually less than the cost of a course textbook.

Students can gain a great deal of information from the experience and participate in the forums at the conference. Some students may even be encouraged to present papers at these conferences.

Delivery

The delivery of a course is important because students unfamiliar with the online learning environment may need additional assistance to accommodate to all the features of the course. Stokes (2000) found that "preparing students to take online interactive courses involves more than teaching technical skills. Abilities related to time management, self-discipline, independent learning, active information seeking, and constructing must exist." Instructors may wish to give their students self-assessments to determine the level of skills and competencies students possess. This information is helpful to gather prior to the start of the course to make modifications if necessary for students who may need additional assistance. With this information, instructors can then provide an orientation for the students. This orientation may be in person or online, but it will

help students understand how to navigate through the course pages. In addition, some instructors may wish to mail students introductory packets that include the course syllabus, description of hardware and software requirements for the course, and information regarding technical and academic support. All instructors should provide an individualized orientation to their course regardless of what type of orientation the university provides for remote access students.

Prior to the start of the course, it is highly recommended to test the delivery. Perhaps the best way to test the delivery of a web-based course is to become the end user. Be the student who will access the course materials with the wrong hardware. See what happens. Certainly the instructor is aware of the hardware requirements for the course, but have the students been informed? Review how well the audio and video clips function within the framework of the course. Read instructions for assignments. Do they make sense? Note how long it takes to download or retrieve information. Navigate through the course from the perspective of a student. Try to send an assignment following the instructions listed on the site. Try to access the grade book, the hyperlinks, and other files in the course. If it is too difficult to remain objective in this evaluation of the course, enlist colleagues to review and evaluate the layout of the course.

Evaluation

Throughout the creation of a course, it is important to evaluate the process of design, development, and delivery. Even before the course is presented to the students, it is recommended that instructors determine how they will evaluate the success of the course. Evaluation should be done in a multi-level format. All too often distance education instructors rely on only summative evaluations to determine the success of their course.

Willis (2001) suggests that instructors should conduct formative evaluations that examine the outcomes of individual lessons. “These mini-evaluations might focus on course strengths and weaknesses, technical or delivery concerns, and content areas in need of further coverage.” Willis also suggests that instructors conduct summative evaluations after the instruction is completed. This type of evaluation is similar to the traditional course evaluation instructors ask students to complete at the end of a semester.

Quantitative and qualitative evaluation should also be conducted because both forms rely on responses from students regarding the design, development, and delivery of the course. Asking students to discuss concerns they had about the course often generates the best information regarding flaws with the effectiveness of the course. Instructors can ask students to journal their concerns throughout the course and share the notes with others. Sometimes students are reluctant to criticize instructional practice and offering them a forum to do so may help in improving the delivery of content.

Instructors should also engage in self-evaluation. Self-assessment is often overlooked in distance education. Instructors should keep a log of their email interactions with students and examine the ways in which information could have been communicated better. Instructors should also examine the number of questions students had relating to content areas to determine if additional clarification is necessary to improve the presentation of information. Projects such as the Flashlight project (http://204.131.208.3/flshlght.htm) develop tools for evaluation for educational uses of technology.

Once instructors review the evaluation data, it is important to revise the course. There is always room for improvement in every form of instruction. Instructors willing to revise and improve their course development tend to build confidence in future presentations of the course. Major revisions in the course should always be tested prior to implementation of the course, particularly if these revisions include incorporating new technologies such as streaming audio or video. All course revisions should be documented for future reference to share with colleagues who may be considering developing web-based courses.

Conclusion

Developing successful interactive web-based courses takes time, but the benefits far outweigh the challenges. Web-based instruction enables educators to expand access to learning. The variety of techniques and methods of delivery enhance the quality of instruction to support different learning styles much more readily than in the traditional classroom setting. Students must take a more active role in their learning and in the process, develop their skills in information technology and information literacy. Instructors should realize the importance of establishing good practices in the design, development, and delivery of their web-based courses. The success of distributed learning depends upon it.

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EDUCATION ed AT A DISTANCE

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E-mail comments to the Editor

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Editor's Note: Eductors worldwide face many of the same problems. This study from the University of North London examines diversified support and relevance to improve instruction and reduce dropout rates for multicultural students.

Evaluation of the Information, Communication and Technology Capabilities and e-Learning

Ezendu Ariwa

This is a comparative study of curriculum evaluation of Information Systems related undergraduate module in the Business School, University of North London

Rationale/Aims

The concern for dropout rates and lack of adequate diversified mode of support and problem based systems driven learning for multicultural students in the United Kingdom gave birth to this project.

This project provides opportunity for evaluation of the curriculum effectiveness and relevance in Information Systems [IS] driven module with respect to delivering, relevance and appropriateness.

The cultural composition of students in the University of North London and its reflection within Business School fulfills the University mission statement in terms of distinctiveness and wider academic provisions. The University mission statement and the Business School mission statement. The composition of business school students ratio to the entire University in terms of population is one is to three [1:3] and this represents approximately thirty-six percent [36%]

The population of students contact within this project is one is to sixteen [1:16] and this represents approximately six percent [6%].

Furthermore, the University of North London recognizes the importance of information and communication technology (ICT) by having their own facilities tailored towards effective delivery of teaching and learning.

In the module examined for this project information and communication technology [ICT] is used to communicate with students for providing support and aid the development of web, multimedia and hypermedia as tools for addressing information design and network communications issues and producing appropriate solutions.

Virtual Integration Of The Curriculum

The pressing issue of integration and use of virtual application in to the business information

systems module provides opportunities for curriculum evaluation and progression.

It can be said that in the module's curriculum at present, provides basic understanding of computer hardware and software. This implies that there is an adequate awareness of techo-business logic and procedures in place. The introductory sessions were geared towards traditional concept of content definition and the science of technology. Engineering valuation is neglected, such as knowledge techniques and techno-dimension, tools and machines and the basic system dynamics of machines but advance relational concepts in terms of e-applications and assignment were integrated into the curriculum design and enhancement.

In summary, Kolb considered that no individual learning style is viewed as being better or worse than any other (Kolb 1984). The key to effective learning is the ability to be flexible and competent in each learning style when it is appropriate. However, Tennant (1987) in his critique of cognitive style theories points out that within society at large, analytical thinking (characterized by the interpersonal domains such as the technology based application, business modeling techniques and mathematics) appears to be valid more highly than abilities within the personal domains requiring techno-social skills.

The computer-supported assignment was geared towards evidence-based learning and confidence development as well as alternative to face-to-face mode of delivering learning and teaching. It is important to ensure that quality of the learning does not decline. Ashmount, 1992; argued that most lecturers use traditional approach in delivering teaching and learning rather than adapting to available technology and mini styles. It is necessary to summarize his argument as medium oriented approach, and comparison based on average, rather than optimized use of computer based applications.

Info-Mediation and e-Learning: Benchmark for Monitoring Performance

Willm (2000): examined whether the achievement of learning outcomes changes over time and there was emphasis to determine whether there is inequalities in achievement amongst students with differing ethnic and socio-economic backgrounds. The use e-learning will enrich the gap in the above examination and online-based assignment as it will provide collaborative virtual learning environment and better relationship that may result in improving students' confidence and self-esteem.

Coleman et al, 1966; Fairstone et al, 1998; examined the issue of Equality of Educational Opportunities and the associated differences associated with attendance and commitment. Schenck & Beckstorm, 1993; Wong and Meyer 1998; in their contributions on accountability and assessment process to reflect the teaching strategies supported this. Springfield et al, 1997; and Williams, 1992; sees teaching as a service provision to customers (students).

In order to provide the necessary support in enhancing competence in terms of manual dexterity using application based software – online mechanism, it is necessary to understand whether students differ in ability is due ethnic diversity, socio-economic background and gender based. Gray, 1988; Willms, 1986; Brookover et al., 1979; argued that virtual support models add values to teaching and learning. Values in terms of effect of attendance associated with students' performance and achievement, which are outcome, related.

Techno-Problems in Virtual Application

A balance virtual assignment and programme links should equip students with some essential informatics skills associated with certain levels of cognitive, affective and psychomotor competencies for successful completion of the module. There are research evidence to justify the

above claimed and Kazana et al, 1ed979; Wilson, 1976; Burns, 1976; focused on the link relations in terms of competence.

Methodolody

I was involved with the students during the Easter and Christmas holidays using the available online assignment mechanism and electronic forum to deal with different problems associated with their learning, problem solving competence and time management skills. Otten (1994) in describing information technology and associated electronic communication classified their benefit over the traditional systems.

Questionnaire, interview and online applications were used as efficient tools for developing this system. The information and data gathered was used to analyse the requirement of expected design in future module. The analysis was used in building a constructive student network driven and ICT Model such as workshop e-provision and e-forum classes.

Results

In summary, there is research evidence that in students improved in their performance through this support. This is evidenced by the following results from the three modules taken during the semester and students' performance and comments as well as outcome.

This made the students improve their confidence and self esteem as well as competitive in terms of service provision within academic framework.

Web Sites

The use of network driven systems, into the acquisition and transfer of knowledge, using resources from the World Wide Web was of great importance. The result showed that out of the 150 students, that 149 provided evidence of using the web site, a representation of 99.33%. In addition, only one student did not have access to web site due to lack of time at work, as this showed a representation of 0.67%.

Lecturer's Office Hours and ICT Studio Workshop

There was evidence that the lots of students used this traditional facility and resources. While majority preferred the workshop based office hours at the IT studio as it provided opportunity to address problems on the screen and helped students to remember in visual perspectives.

There was evidence that actively involved in terms of resource usage and lecturer's time provided additional opportunity through soft coaching and one-to-one training made available for development of basic ICT skills through this scheme within the faculty.

Module – ZENOE 3H12:

The performance of students in the module and the distribution of grades is a representation of the performance of the students in the Module ZENOE 3H12.

Summarising the trend as shown above: Three (13%) students achieved A grade compared to Six (35.3%) students in the year 2000. Thirteen (56.5%) students achieved B grade compared to one (5.9%) student the previous year. This is a positive indication in terms of the more students scoring 60% and below 70%. Four (17.4%) students achieved C grade as compared to Two (11.8%) in the previous year; and Two (8.7%) students achieved D grade as compared to Eight (47%) students in the previous year. Only one (4.3%) student failed and this were due to lack of attendance and inability to complete the coursework as required.

Module – ZENQMH110

The performance of the students is a representation of the performance of students in the Module ZENQMH110

Summarising the trends as shown above:

Seven (30.4%) students achieved A grade; Twelve (52.2%) students achieved B grades

Three (13.0%) students achieved C grades and One (4.3%) student achieved D grade.

This is very good performance and can be attributed to the hardworking and attendance on the part of the students, coupled with extended support mechanism in place.

Conclusion and Recommendation

The results of the study revealed that students have great interest in participating in any online support programme geared towards improving their skills.

Some of the components of the module were broken into meaningful stages covering the stated objectives of the module. The focus of e-dimension and network driven application started with the introduction of basic technology awareness, creativity, self-reliance and foundation building on use of electronic learning devices.

Student's perception revealed that the problems of inadequate support for technology and mathematical based courses, equipment and facilities in the learning of electronic applications were responsible for their lack of confidence and self esteem.

· Ways to overcome the identified problems are as follows:

· Use of extended learning mechanism and

· Students learning accounts in the learning centre to update lack of knowledge in fundamental principles.

In addition the provision of enough workshop space, equipment and emphasis on practical and hands-on activities. There was emphasis on the competence and mathematical knowledge for developing business models.

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STATE AND INTERNATIONAL EXCHANGE

STATE AND INTERNATIONAL EXCHANGE

Endorsing the Digital Millennium Consumer's Rights Act (DMCRA)

On October 16, the following letter was distributed on Capitol Hill in support of revisions to the DMCRA. The Boucher-Doolittle bill has been endorsed by the Digital Future Coalition (DFC) and a number of constituent DFC organizations

Dear Representative:

We are strongly in support of the passage of HR 5544, the Digital Media Consumers' Rights Act, recently introduced on a bi-partisan basis by Rick Boucher (D-VA) and John Doolittle (R-CA). We are writing to urge the co-sponsorship of this measure by all Members of the House. HR 5544 will assure a proper balance in copyright law between the rights of copyright users and the rights of copyright owners.

Thank you.

AMERICAN ASSOCIATION OF LAW LIBRARIES
AMERICAN FEDERATION FOR THE BLIND
AMERICAN LIBRARY ASSOCIATION
ASSOCIATION OF AMERICAN UNIVERSITIES
ASSOCIATION OF RESEARCH LIBRARIES
COMPUTER & COMMUNICATIONS INDUSTRY ASSOCIATION
COMPUTER PROFESSIONALS FOR SOCIAL RESPONSIBILITY
COMPUTER RESEARCH ASSOCIATION
CONSUMER ELECTRONICS ASSOCIATION
CONSUMER PROJECT ON TECHNOLOGY
CONSUMERS UNION
DIGITAL FUTURE COALITION
ELECTRONIC FRONTIER FOUNDATION
GATEWAY, INC.
HOME RECORDING RIGHTS COALITION
INTEL CORPORATION

MEDICAL LIBRARY ASSOCIATION
NATIONAL HUMANITIES ALLIANCE
NATIONAL WRITERS UNION
PHILLIPS ELECTRONICS NORTH AMERICA CORPORATION
PUBLIC KNOWLEDGE
SPECIAL LIBRARIES ASSOCIATION
SUN MICROSYSTEMS, INC.
UNITED AUTO WORKERS LOCAL 1981
USACM
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STATE AND INTERNATIONAL EXCHANGE

10th International Conference on Telecommunications ICT'2003

February 23 - March 1, 2003
Tahiti, Papeete - French Polynesia

URL: http://conf.uha.fr/ICT2003.htm

"Telecommunications + Education" Workshop (supported by the IEEE Learning Technology Task Force) URL: http://iutsun1.colmar.uha.fr/Education.html

MAIN TOPICS:

1) Applications of Telecommunications in Education and Training
2) Academia-Industry Collaboration in "Telecommunications + Education" Area
3) Design and Development of Telecommunications Curricula
4) National and International Projects in "Telecommunications + Education" Area
5) Teaching of Telecommunications Courses in Colleges and Universities: Best Practices

IMPORTANT DATES FOR THE "TELECOMMUNICATIONS + EDUCATION" WORKSHOP

October 24, 2002 - Deadline for electronic submission of 500-word abstract

November 4, 2002 - Notification of acceptance

November 15, 2002 - Deadline for full-length camera-ready version

March 1, 2003 - "Telecommunications + Education" Workshop

Visit http://iutsun1.colmar.uha.fr/Education.html for details

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Pacific Telecommunications Council 25th Annual Conference

19-23 January 2003
Hilton Hawaiian Village
Honolulu Hawaii

This conference reports growth of the Internet and broadband, both wireline and wireless. Nowhere is Internet growth more robust than in Asia. Asia-Pacific will be at the forefront of growth in telecommunications and information technology in this decade.

The annual conference of the Pacific Telecommunications Council provides a bridge between different regions of Asia-Pacific in the telecommunication sector, between traditional and convergent telecommunications industries, and between technologies and markets. You can only benefit it you take advantage of that bridge. Now is the time for you to participate actively to help assure that its foundations are made even stronger.

This world-renowned conference with unparalleled opportunities for human networking, updates on the latest business strategies and technologies and a broad overview of everything important to the convergent communications industry in Asia-Pacific. Join with thousands of industry leaders and experts at PTC2003 to.

· Discover the critical issues facing the future of telecommunications

· Learn the latest applications and services developments

· Exchange ideas and information with colleagues

· Network with industry leaders and experts

· Maintain your competitive edge

Conference topics include:

· The Development Imperative: Encouraging Investment and the Potential to Leapfrog – Is there a model that works? Can the success of some countries, such as China, be replicated elsewhere? Will large-scale public sector “digital divide” initiatives be necessary?

· What is the potential for broadband growth in regions such as Latin America, the Pacific islands, China and India?

· The Broadband Home and the End of the Office - Are we finally seeing the emergence of a single broadband pipe into the home with a residential “gateway?” What are the implications? Who will be the residential provider of the future?

· Is global access to education on the horizon?

· How Internet applications are likely to evolve across the spectrum of data, video and voice with the availability of broadband access?

· The future of the undersea communications industry.

· Next Generation Networks: Transcending the Layers of the Internet and Determining the Future of Broadband

· Wireless Standards: 3G versus 4G or 802.11b?

· What happens next for the satellite industry?

· Is the "Digital Divide" debate premature, when true broadband remains relatively rare even amongst the affluent?

· Is Internet governance an oxymoron?

· Universal Services Confronts the Broadband Era

· Is it possible for bandwidth capacity providers to return to profitability?

· Will Asian broadband demand drive a global recovery?

· Will broadband follow the automotive or consumer electronics business models and evolve into a handful of giants?

· Mitigating Business Risk in Dangerous Times

For additional information, go to www.ptc.org/ptc2003

Five easy ways to register:

Phone: 1 808 941-3789 Fax: 1 909 944-4874

Email: ptc2003@ptc.org Web: www.ptc.org/ptc2003

Mail: Pacific Telecommunications Council
2454 S. Beretania Street
Honolulu, HI 96826-1596 USA

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TECHNOLOGY EXCHANGE

General Physics Chooses Oracle iLearning over other major LMS Vendors

Establishing our portal with Oracle iLearning expands our ability to deliver over 1,400 technical training lessons to energy companies of all sizes. Web-based courses are extremely popular because they can be accessed quickly and easily, and are a cost-effective approach for training a dispersed workforce."

--Russ Garrity, Director of GP Energy Services

A subsidiary of GP Strategies Corporation, General Physics is one of the world's largest workforce development companies, with more than 1,600 professionals. As a global leader in technical and soft skills training, GP develops training programs for the specific needs of clients by focusing on people, processes, and technology. By objectively analyzing production and business processes, GP can determine where the opportunities for workforce development reside and how best to achieve measurable improvement in an organization's performance, cost management and compliance objectives

General Physics has teamed up with Oracle iLearning to provide a web- based training portal for power plant personnel of all energy companies. This effective approach enables employees to participate in learning whenever and wherever possible. Oracle iLearning, a learning management system (LMS) that offers Internet-based learning solutions, provides the platform and the portal, while General Physics provides the technical content. Over 1,400 lessons have been integrated into this one training portal from which personnel can access any or every lesson, while supervisors manage and track their success.

This outsourced "portal" solution makes top quality training courses available to power generation facilities of every type and size. The portal enables administrators to assign, evaluate, and track both "knowledge-based" and "hands-on'" qualification tasks, while permitting supervisors to easily manage and track the success of their employees. Courses cover the subject areas of Plant Operations, Mechanical Maintenance, I&C, Electrical Maintenance, Combined Cycle Fundamentals, OSHA, and Environmental Compliance.

- Remove administration system and course content from servers at client sites
- Create a portal for access to training material, where upgrades are made directly on the portal system, allowing customers to access information immediately
- Make on-line chat rooms and forums available for personnel to interact with peers and mentors
- Solution must be compatible with any operating system, and all content must be accessible through a web browser
- Company must have the option to customize their training site with its own "look and feel"

Why Oracle?

"We were looking to train a dispersed workforce, and were having some difficulties with sending CBT upgrades to our customers, as well as dealing with operating system compatibility problems," stated Russ Garrity, Director of GP Energy Services. "We had developed an in-house LMS where we let clients customize their own environment, then one day you wake up and realize that you've got thousands of users all over the world using your product and it's very difficult to maintain that business. We needed to find a product that would help us deal with upgrades and multiple operating systems in the field, as well as provide a consolidated solution to our customer base."

"Another big benefit was the pricing model for Oracle iLearning. Most competitors wanted an up-front fee, where the Oracle pricing was a per-person deal. Oracle University consulting services did an excellent job of proactively trying to solve our business problems without telling us we needed to buy a piece of software for $50,000 or $100,000. The pricing model, consulting services, and hosted component made Oracle iLearning the top choice over other major LMS vendors."

After the first phase is completed, General Physics plans to expand the portal to serve all power industry customers, adding 10,000 new learners. Longer-term, they will continue to grow the total number of learners by converting customers in other market sectors, such as environmental, financial, manufacturing and process industries.

For more information on this project and for Oracle iLearning:

http://www.oracle.com/customers/profiles/PROFILE8214.HTML

http://www.oracle.com/applications/human_resources/index.html?learning.html

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TECHNOLOGY EXCHANGE

KnowledgeNet helps Train Cisco on Cisco

THE CISCO CHALLENGE

Cisco Systems® needed to arm more than 300,000 channel partner employees and 40,000 Cisco employees with complete knowledge of all Cisco networking products. And they needed to get started quickly – in weeks, not months or years.

Cisco had been relying on traditional classroom-based training, and was searching for a blended e-learning solution that would allow their employees and partners to train "anytime, anywhere," reduce training costs, and eliminate unwanted travel expenses. They also needed a solution that offered unlimited seating, live and self-paced delivery options, and a fast time to market for new product training.

CISCO Shifts to KnowledgeNet e-Learning

In November 1999, Cisco announced a large-scale initiative to shift its training strategy to an e-learning model. To accomplish this-and help validate that e-learning is a viable, scalable training solution - Cisco joined forces with KnowledgeNet to launch a blended e-learning pilot program.

Cisco selected KnowledgeNet, an authorized Cisco Learning Solutions Partner, for the pilot, after an exhaustive study of the e-learning marketplace. According to Tom Kelly, Vice President, Internet Learning Solutions Group, Cisco Systems, "What impressed us about KnowledgeNet was their custom development and their understanding and attention to serving unique learning styles."

KnowledgeNet offerings range from live training. instructor-led and self-paced e-learning, to Increased productivity, revenue, and customer loyalty. mentors and hands-on labs.

The Customer: Cisco Systems (www.cisco.com) is the worldwide leader in networking for the Internet, with nearly 40,000 employees working in 430 offices in 60 countries. Cisco is a true global leader – holding the number one or two market share in virtually every market segment in which it competes. Since going public in 1990, Cisco annual revenues have increased from $69 million to $18.9 billion in fiscal 2000.

The Challenge: Cisco needed to find an effective way to train more than 300,000 channel partner employees and 40,000 Cisco employees on Cisco networking products.

The Solution: Cisco moved towards a blended e-learning solution that includes KnowledgeNet LIVE (instructor-led) and KnowledgeNet INTERACTIVE (self-paced) courses.

The Results:

· Effective training, scalable to a worldwide audience:

- Reduced costs by $4,000 per student.
- Certification pass rates of 94 percent.
- Faster time to market for new product
- Increased productivity, revenue, and customer loyalty

"Knowledge Net's e-learning solutions enable Cisco channel partners and employees to stay ahead of rapidly changing technology. The courses have helped us reduce costs, increase productivity, and improve customer satisfaction
Kevin Richie

THE CISCO BLENDED E-LEARNING SOLUTION

The Cisco seven-week pilot program was designed to train approximately 100 primarily non-technical Cisco employees on Cisco networking and the core knowledge necessary to achieve CCNA® (Cisco Certified Network Associate) certification.

KnowledgeNet worked with Cisco to provide content creation, as well as both live, instructor-led e-learning and interactive self-paced courses over the Web. Cisco then added several components to he learning experience. These included a virtual campus, practice testing environment, study groups, mentoring, peer review sessions, additional live e-learning review events, virtual labs, and qualitative and quantitative assessments.

THE CISCO RESULTS

This blended e-learning approach was well received by participants. Seventy-two percent said it was a useful way to learn, and 74 percent reported that they were satisfied with the blended learning method of conveying course content. In addition, five of the non-technical participants took and passed the CCNA exam.

Cisco further concluded that cost savings leveraged through this blended learning solution were $207,164, or $4,000 per student compared to ILT. The program's results were significant enough to lead Cisco to pursue a transition plan to help all of its authorized Cisco Learning Partners consider more e-learning and blended learning courses.

According to Kevin MacRitchie, Vice President, Worldwide Channel Technical Operations, Cisco Systems, "KnowledgeNet's e-learning solutions enable Cisco channel partners and employees to stay ahead of rapidly changing technology. The courses have helped us reduce costs, increase productivity, and improve customer satisfaction."

ONGOING BENEFITS

Today, KnowledgeNet's e-learning solutions are providing Cisco employees and partners with several advantages they did not have with traditional classroom-based training including unlimited seating capacity, multiple learning formats, reduced training costs, and improved retention. In fact, 94 percent of KnowledgeNet e-learning students seeking Cisco certification pass their exams the first time.

In addition, KnowledgeNet e-learning courses are helping Cisco deliver just-in-time training on newly developed Cisco products to their worldwide audience. This faster time to market is translating into increased productivity, customer loyalty, and revenue. According to MacRitchie, "We have also found that the more we educate our customers and partners about our products, the more likely they are to remain loyal to Cisco. e-Learning helps us achieve this objective quickly and effectively."

CISCO SYSTEMS BOTTOM-LINE RESULTS

"KnowledgeNet exemplifies the best-of-breed in the online training world. Our goal in working with e-learning partners is to ensure that the students have the best possible learning path for turning the

change brought about by the Internet revolution into a competitive advantage.

For additional information call or write:

1-(888) 577-5779
www.knowledgenet.com
14624 N. Scottsdale Rd,
Scottsdale, AZ 85254

http://www.knowledgenet.com/corporateinformation/casestudies/Case%20Study%20-%20Cisco.PDF

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TECHNOLOGY EXCHANGE

NEW SUN ENTERPRISE LEARNING SOLUTION TO IMPROVE PERFORMANCE

Globalized Learning Technologies Build on Sun's International Training Expertise to Deliver Enterprise Solutions Worldwide

SANTA CLARA, Calif.-October 2, 2002 -- Building on its experience as one of the top IT training companies in the world and a leading provider of organizational learning, Sun Microsystems, Inc., announced today the rollout of its new worldwide enterprise learning solutions, anchored by its globalized Sun(tm) Enterprise Learning Platform. The globalized platform combines with Sun's worldwide education consulting services and continually expanding learning content and delivery options to provide richer learning experiences to globally diverse student populations. For the enterprise, this can mean reduced training costs, better managed skill development for a more competitive workforce, improved organizational performance, and a more effective way to help meet regulatory requirements and deploy new products and services. Furthermore, the new enterprise learning solution will prove even more valuable to multinational organizations in delivering training to employees in different countries.

The new Sun Enterprise Learning Platform now provides significantly greater functionality for French, German, Korean, Japanese and simplified Chinese language users who can now enter data using their specific language and cultural conventions. Key features for the globalized learning platform will allow for greater localization of data, messages and system labels, for example, and customers will be better able to meet organizational, professional, and cultural requirements, promoting ease of use and a more satisfying learning experience.

This new globalized technology platform will be backed up by Sun's worldwide education consulting staff with its years of experience in working with the training needs of organizations around the globe. Education consultants help companies plan, deploy and manage learning solutions by starting with an organization's business goals, and focusing on learning strategy, learning management and learning content as appropriate.

Sun also has been constantly expanding its learning curriculum to meet enterprise customers' needs. It has complemented its own extensive IT technology training with other business curriculums including subjects such as soft skills, sales training and technology content from other providers.

Furthermore, Sun is already delivering this rich content through the Web and in classrooms at over 400 Sun and authorized locations in over 60 countries.

As an important part of Sun's enterprise learning solutions strategy, Sun works with other providers of learning technologies and curriculum content to provide a best-in-class approach in helping

companies effectively manage their organizational talent. This collaboration allows Sun to fully exploit open learning standards-based solutions for its customers.

"With its worldwide infrastructure, presence, learning methodologies, and consulting services, coupled with the new globalized platform, Sun has created a truly unique capability for meeting international enterprise learning needs," said Terry Erdle, vice president of Sun Educational Services, the Sun Services training group. "This enhancement gives Sun's enterprise learning solutions an edge in an increasingly global marketplace."

Please visit www.sun.com/training and click on the country of choice for more information on learning solutions for each location.

About Sun Microsystems, Inc.
Since its inception in 1982, a singular vision-"The Network Is The Computer[tm]"-has propelled Sun Microsystems, Inc. (Nasdaq: SUNW) to its position as a leading provider of industrial-strength hardware, software and services that make the Net work. Sun can be found in more than 170 countries and on the World Wide Web at http://sun.com.

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December	USDLA FISCAL YEAR 2002 ACCOMPLISHMENTS & FORECAST	November 18	December 4

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EDUCATION ed AT A DISTANCE

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