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An instructor's viewpoint: incorporating interaction in web-based training

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An instructor's viewpoint: Incorporating interaction in web-based training

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ABSTRACT

The purpose of this study was to identify the role an instructor's pedagogical philosophy has on the development of online courses. Of specific interest was the inclusion of interaction, as interaction is generally perceived to influence the learning experience. The development and maintenance of an online course is a substantial task. Institutions take different approaches to providing support for the development of online courses. This study also explored how the level of institutional support impacted the instructor's design process.

Educational research has endorsed the benefits of using interaction in face-to-face and web-based settings. Results from this study indicated that the instructor's pedagogical philosophy influences the types of interaction included in a web-based class. The institution also impacts the instructor's decision to include interaction. The institution's support of course site development, the institution's objective for offering web-based courses, and the overall institutional mission statement influences the amount of interaction included.

Past research has focused on the outcomes of interaction in a web-based setting rather than the factors that influence inclusion of interaction. Consistent with past research, this study concluded that course design can be a laborious process. Among the recommendations is providing instructors with knowledge about different types of interaction that can be integrated into a web-based course and suggestions for technologically supporting the interaction design. Instructors and institutions share in the responsibility of creating web-based classes that have aspects of sound educational practice.

CHAPTER 1. INTRODUCTION

College attendance has been increasing steadily among adults and traditional college-age students. To meet ongoing student needs, colleges and universities strive to keep abreast of new technologies that embrace alternative learning paths. A rapidly growing trend has been to offer web-based courses.

The enrollment of students in distance education and students who take online courses has increased yearly. According to Allen (2002, as cited in Duffy & Kirkley, 2000a), "...at the University of Maryland, University College, distance education enrollments have grown from 4% of total enrollments in 1997 to 64% in 2002 and now stands at over 26,000" (p. 3). In the State University of New York system, distance education has grown from 8 courses and 119 students in 1995-1996 to more than 1,500 courses and 38,000 students in 2000-2001 (Fredericksen, Pickett, Shea, & Pelz, 2000; Shea, Fredericksen, Pickett, Shea, & Pelz, 2000, as cited in Duffy & Kirkley, 2004a, p. 3). "The rate of growth of online courses at University of Phoenix online appears to be exceeding the record growth of its face-based programs, with the distance courses expanding to 49,000 online students in just 3 years" (Duffy & Kirkley, 2004a, p. 3). The University of Central Florida has enrolled approximately 4,000 students each semester in their courses taught fully through the Web (Dziuban & Moskal, 2001, as cited in Duffy & Kirkley, 2004a, p. 4).

According to a national study by Carnavale (2000; National Center for Education Statistics, 1999, as cited in Duffy & Kirkley, 2004b), "Currently, more than 50,000 university courses are taught online, and more than 1,000 universities are developing and offering these courses" (p. 107).

In addition to the influx of web-based instruction at the college level, corporations are incorporating more web-based instruction. "From 1996 to 1998, the proportion of companies using their intranet for training increased from 3.5% to 33.2%" (ASTD Career Center, 2001, as cited in Duffy & Kirkley, 2004b, p. 107). "Nearly all of the Fortune 100 companies already offer some form of online computer-based training" (Herther, 1997, as cited in Duffy & Kirkley, 2004b, p. 107).

Despite the continued growth of online courses by colleges and corporations, questions continue to arise around the viability, substantiality, and quality of distance education. Stein (2001) noted that venture capital for distance education has dried up:

> After pouring billions of dollars into e-learning startups over the past two years, venture capitalists are now pulling back. Many of the companies they funded face excessive competition, layoffs, and bankruptcy. Even the relatively successful startups in the sector have very little hope of going public, at least for the time being.

Meanwhile, researchers, educators, and instructional designers continue facing the task of developing an online environment that meets cognitive, pedagogical, motivational, and social goals (Schlager, 2004). Schlager noted that the U.S. Department of Education program, Learning Anytime, Anywhere, suggests two overall goals of web-based education: (a) overcoming temporal and/or geographical constraints; and (b) using online technology to enhance the learning experience and outcomes.

Researchers have studied the effectiveness of web-based training. Studies have concluded web-based classes can be effective learning forums. Authors have published guides for designing effective web pages and entire online courses (Berry, 2000; Lee & Owens, 2000; White & Weight, 2000.) The impact specific tools, such as electronic bulletin

boards, interactive television, and collaborative computer technology, have on the learning experience has also been researched (Bozik & Tracey, 2002; Brunson & Moore, 2002; Chadwick & Russo, 2002; Cox & Junkin III, 2000).

Bozik and Tracey (2002) explored the impact of using an electronic bulletin board with a group of first-year students who were taking a general education cluster course that met four afternoons a week. Instructors incorporated the electronic bulletin board on the premise that computer-mediated communication supplemented interaction between the professor and the learners while fostering the development of shared interpretations. Findings suggested that students actively read and posted comments to the bulletin board. The researchers concluded that, as a result of the student's interaction with the medium, the bulletin board contributed to group cohesiveness. Among comments provided on the end-of-course surveys was the fact that the electronic medium provided another means for communication with the professor and other students.

Brunson and Moore (2002) researched the impact of collaboration and the use of interactive television to supplement a traditional face-to-face class. Students from two campuses were taking separate courses that shared similar aspects; therefore, the students met in their separate classes as well as class joined via interactive television to share overlapping thoughts. The instructors determined the course met the objective of sharing ideas, opinions, and perspectives, despite issues that occurred with the technology.

Chadwick and Russo (2002) highlighted the benefits of utilizing a virtual visiting professor (VVP), a subject matter expert who shares knowledge with the class in a synchronous or asynchronous environment. Benefits included exposing learners to new ideas

in a learner-focused way. It was concluded that a VVP could be used in a face-to-face or online learning environment via different technology.

Cox and Junkin III (2002) studied the impact of requiring students to answer questions via networked computers in the laboratory component of an introductory physics course. The instructors could view student responses and, based on the student responses, the instructors encouraged lab partners to share responses with other lab partners. Compared to a typical lab environment, in which the instructor receives student responses at the end of lab period, the researchers concluded that encouraging interaction among lab partners during the lab session promoted deeper learning as measured via pre-and post-tests. Further, engaging in conversation prompted future discussion among students and development of critical thinking skills.

Concurrent to the growth of online course offerings, general educational research continues to tout the benefits of interaction. There is increased emphasis on the benefits of constructivism or a learner-centered environment. The general premise associated with a learner-centered classroom is that the learner and instructor partner to create a learning environment.

Numerous case studies document the insight that colleges and universities have gained from offering web-based classes. The impetus of the current study was derived from experiencing a web-based course that was essentially a correspondence class facilitated by email. This experience was in strong contrast to a web-based course that incorporated interaction with the instructor and other students. This difference in classroom experience led to asking the question: How does each instructor determine the elements that are used to

meet class objectives? Furthermore, evaluating the use and results obtained from corporate web-based training, both synchronous and asynchronous, raised further questions.

In addition to personal experience, the results of a small pilot study also influenced the direction of this study. The pilot study results indicated the instructor is responsible for managing a web-based course, including stimulating interaction. Furthermore, results from the pilot study suggested the instructor's pedagogical philosophy influenced the type of interaction integrated in the web-based class. The importance of connecting a learner's experience and facilitating social interaction is not limited to face-to-face classrooms. Distance learning, specifically web-based learning, must also include aspects of good educational practice.

Purpose of the Study

The purpose of this study was to explore instructor considerations for the inclusion of interaction in online courses. How do the instructor's pedagogical considerations impact the course requirements and course website? The online environment is different from the traditional face-to-face teaching environment; therefore, simply carrying over traditional instructional design models of pedagogy to the online environment will not work (Duffy & Kirkley, 2004b; Gunawardena, 2004). The preparation to offer an online course is also crucial. Therefore, a related topic to explore was the nature of training and support that is available for online instructors.

Need for the Study

The continued increase in the number of web-based courses offered suggests web-based instruction has far-reaching potential: "While most agree that Web-based

instruction can be cost-effective and convenient, few academicians and practitioners have examined the efficacy of Web-based learning in terms of constructivism, the most widely accepted model of learning in education today" (Morphew, 2002).

Researchers have continued focusing on the benefits of creating an active learning environment: "There is a strong movement in education today away from a predominantly didactic model of instruction and toward a learner-centered model where the learning activities involve student in inquiry and problem solving, typically in a collaborative framework" (Duffy, Dueber, & Hawley, 1998).

Educational research has examined the benefits of incorporating interaction and the shift to a learner-centered environment. Duffy et al. (1998) reported findings of a 1996 study by Nunn, who examined 20 faculty members teaching upper-level courses comprised of 15 to 44 students. Faculty members were selected based on high student ratings and reputation for a quality teaching environment. "However, Nunn found that, averaged across all classes, student discussion took only 2% of class time, and the discussion that did occur tended to be almost entirely teacher directed rather than learner centered" (Duffy et al., 1998, p. 52).

A teacher-directed classroom implied that students were answering the instructor's questions. In other words, the teacher served as the guiding force to the learning that transpired. As instructors move from facilitating learning in the classroom to a web-based environment, this is not often the case:

> Much of the developmental work in creating technology-based course delivery rests, quite properly, on content issues. The content, after all, provides the dominant rationale for its existence. Unfortunately, many an educator has labored long only to learn that institutional capabilities supporting technology are limited or in other ways pose impediments that

> compromise the instructor's intentions and goals. (Burow-Flack, Kocher, & Reiser, 2000, p. 59).

Institutions offer online courses to increase student enrollment despite obstacles related to the place and time courses are offered. In some institutions, web-based technology supplements include face-to-face instruction. In addition to having different reasons for using web-based technology, institutions offer various levels of training and support for instructors who facilitate online courses. Better understanding the instructional design process to develop an online course is prompted by the ongoing use of technological tools within the learning environment along, however, merely carrying over traditional instructional design models to the online environment does not work (Duffy & Kirkley, 2004b; Gunawardena, 2004).

In summary, increased usage of the internet for instructional purposes warrants development of appropriate instructional design processes related to the subject matter and level of desired participation between the instructor(s) and students as well as among the students, themselves. The current study focused on exploring the instructor's role in determining the learning process and activities used to meet course objectives. The instructor is the guiding force in determining the course requirements; therefore, there is a need to understand how the instructor's pedagogical philosophy impacts the course format. Closely related to pedagogical philosophy are the institution's mission and technological support, and the influence these factors have on the instructor's decisions.

Research Questions

Three research questions guided the study:

1. What are the preferences of the participants in pedagogy of instruction, i.e., lecturing or interactive conversation?
2. What types of interaction are facilitated in a web-based class? Are specific outcomes tied to the interaction included?
3. What support do the participants' institutions provide to facilitators of online courses?

Limitations

The primary limitation of the study was the selection of instructors. First, the researcher identified three institutions located in close proximity to the Des Moines area. Each institution had a different mission and offered online classes. To identify potential participants, the researcher accessed the course schedule from each institution in early Spring. Course offerings may differ by semester; therefore, so this may have further limited the instructors considered for participation. The final limitation of the study was identifying only instructors who facilitated higher-level courses requiring a pre-requisite, so that all learners would have a similar college standing of junior/seniors or graduate students who exhibiting learning styles more closely aligned with those of adult learners. Adult learning theory indicates that these students have learning characteristics aligned to take advantage of the benefits of web-based learning. These constructs may have limited the pool of instructors considered for participation.

Definition of Terms

The following terms were defined for use in the study:

Asynchronous web-based training: Learning is facilitator-directed, not in a real-time environment, meaning learners participate at different times, when it's convenient for them.

Blended class: A course that combines web-based learning and face-to-face class time.

Instructor: The individual responsible for facilitating the online course; also called a professor or teacher.

Learner: The person participating in the course; also called a student.

Learner-centered classroom: Learning occurs as a result of a partnership between the instructor and the learner; in this model, learners are input into the tools used to contribute to their creation of knowledge.

Pedagogical philosophy: The instructor's overriding focus toward activities used to meet learning objectives, for example lecture or discussion; also referred to as an instructor's educational philosophy.

Synchronous web-based training: Learning is instructor-facilitated over the web to extend the classroom in a real time environment, without a time delay.

Teacher-centered classroom: Learning is directed by the instructor. A lecture is typically used to transmit knowledge to the learners.

Web-based learning: Instruction delivered over the Internet or an institutional Intranet to learners using a web browser such as Microsoft Internet Explorer or Netscape.

CHAPTER 2. LITERATURE REVIEW

The purpose of this study was to explore instructor considerations for the inclusion of interaction in online courses. Three aspects of the literature were reviewed related to web-based training: (1) reasons for using web-based learning; (2) drawbacks for implementing web-based learning; and (3) educational philosophies around the inclusion of interaction in education and associated outcomes.

Rationale for Using Web-Based Learning

Why is there a need for technology in the classroom? Three factors were identified that support the use of technology and web-based learning:

1. Learning styles of traditional-aged college students;
2. Learning styles of adult students; and
3. Increasing demand for flexible learning environment.

Traditional-aged college students have different learning styles. Technology enables the instructor to meet the needs of some college students. Knowledge and expectations among college students is changing, due in part to the proliferation of computers and use of the Internet (Fidishun, 2000). As a result, instructors may need to consider different approaches in the classroom.

> ...as students literate in Internet communication grow increasingly independent in charting both cognitive and hypertextual connections between bodies of knowledge, they may also resist facets of 'traditional' instruction: information in long units; texts without navigational aids (such as icons and frequent paragraph breaks); and pedagogical styles that allow others to control the pace, such as lecture and the Socratic method. (Burow-Flak et al., 2000, pp. 57-58)

Web-based instruction meets these needs, enabling students to have more control over the pace of their learning and access to technological tools.

The second factor supporting further integration of technology is the increasing number of adult college students returning to complete bachelor's and advanced degrees (Fidishun, 2000). Adults have different learning needs. Three primary characteristics of adult learners include preference: (a) for self-directed learning; (b) to control the pace of learning; and (c) to draw on personal experiences.

Knowles' (1980, 1990) andragogical model of adult learning proposed adults are self-directed, motivated, and ready to learn, especially as it pertains to topics they find interesting. Zemke and Zemke (1991) stressed that, "adults prefer self-directed and self-designed learning projects 7 to 1 over group-learning experiences led by a professional" (p. 119). Adults' increased motivational level contributes to their preference for self-directed learning.

Control over the pace of a course and the start/stop time also contribute to an adult's preference for self-directed learning (Zemke & Zemke, 1991). Adult students learn at different rates (Weston & Barker, 2001). Typically, web-based learners are able to control the amount of time spent on each subject. Depending on prior experiences and interests, learners can vary the amount of time spent on different subjects. Learners may also access topics in a sequence that makes sense to them, rather than in a sequence imposed by the instructor. Generally, asynchronous web-based classes give students the most control, while synchronous instruction provides slightly more structure.

Adults also are likely to draw on their personal experiences (Knowles, 1980). Tools such as chat rooms and threaded discussions enable students to share their experiences with their peers. These tools require students to be more responsible for what is shared and

learned, which, according to Brookfield (1986), is consistent with how adults feel they learn best.

In addition to using technology to meet the learning needs of the "typical" college student and of adult students, web-based classes can also fit into students' lifestyles and obligations (Berge, Collins, & Dougherty, 2000). Aggarwal and Bento (2000) noted that, as more universities strive to provide lifelong learning to as many students as possible without time, place, and economic status barriers, the emphasis is moving away from the focus on traditional classrooms to an emphasis on offering instruction via different media, including the web. Weston and Barker (2001) added that enabling learners to access instructional materials from a distance is a key benefit of web-based classes. Learners can access materials on the Internet at their convenience, 24 hours a day, enabling them to access materials at their peak learning time and schedule learning around other activities. Olsen and Schihl (2002) described how the Dean of Regents University argued for the need to provide distance education to meet the needs of applicants who had demands from families and careers. In addition to overcoming time or geographical constraints, online learning can be used to enhance a face-to-face class (although this study focused on classes offered completely online) (Schlager, 2004).

Potential Drawbacks to Using Web-Based Instruction

While there are several benefits to using web-based instruction, there also are some potential drawbacks:

- *High up-front developmental cost for course design and technology.* Developing a well-designed website can take a lot of time (Yang, 2002). Byington (2002) described the

need for thorough communication when collaborating to develop an English course. Online instruction requires extensive written communication and does not afford the instructor the shortcuts of oral communication. In addition to a more extensive development process, Byington found monitoring the online classroom to be more labor intensive than monitoring the traditional classroom. Furthermore, purchasing software and training to develop the site can be expensive (Weston & Barker, 2001). Olsen and Schihl (2002) described Regent University's adaptations, such as installing phone lines in instructor's homes and buying needed software, to enable professors to participate in distance education classes beginning in 1994. Even with the technological adaptations, instructors may not have enough computer proficiency to develop web-based educational materials (Yang, 2002).

- *Lack of interaction.* As indicated previously, my personal experience with web-based instruction that excluded interaction was less engaging than a web-based class that encouraged interaction. Wagner (1997) stated, "interaction is a necessary ingredient for a quality learning experience" (p. 25). Instructors who are experienced classroom facilitators may find it challenging to incorporate interaction, especially since to incorporate interaction probably requires more extensive technological development.
- *Learners focus on technology rather than course content* (Ross, 1996). When learners rely on technology to satisfy course requirements, they may spend more time focused on the technology than course content. Byington (2002) observed students use of technology and reported the most successful students started the semester with strong technical and interpersonal skills, and utilized all aspects of the course website. Other students learned the technology during the semester and were reminded to participate in

all class activities. Finally, there were students who were described as really struggling, as they failed to reach a comfort with the technology and their communication skills were weaker. These students either barely passed or dropped out of the course.

The aforementioned drawbacks may contribute to lower completion rates in distance learning institutions compared with on-campus institutions (Paul, 1998). The motivation to complete an online class largely occurs within the student (Canada, 2000). While some learners are motivated and ready to learn, not all learners thrive with the flexibility provided by a web-based class. The flexible learning environment, especially an asynchronous one, can lead to higher attrition rates. Additionally, learners' needs related to interaction and technological experience can also contribute to lower completion rates of distance learning courses. To mitigate the potential drawbacks of web-based education, one can combine general instructional design concepts with the general attributes of web-based technology to maximize the learning opportunity (El-Tigi & Branch, 1997).

Interaction in Education

Interaction is a recurring theme within the educational arena. Several researchers concluded that interaction is an important component of learning (Dewey, 1938; Vgotsky, 1978; Wagner, 1997). The inclusion of interaction in an online learning class helps prevent learners from feeling isolated and anonymous, factors that result in dissatisfaction, poor performance, and dropping out (Hirumi & Ley, 2000). Moallem (2002) suggested interaction separates a course from being an independent, self-directed correspondence course to an engaging learning experience. Interaction also aids in moving distance

education from being teacher-directed to being learner-directed, more directly and actively engaging the learner in the learning process.

When considering interaction in online learning, one should distinguish between interaction and interactivity. Wagner (1994) defined interaction as an event with two objects and actions that mutually influence each other. Interactivity is comprised of connections that occur with technology. Too often, web-based learning focuses on interactivity, or the learner's use of technology, rather than interaction, the learner's interaction with other learners and the course content.

Moore (1989) distinguished between three types of interaction: learner-content, learner-teacher, and learner-learner. Hillman, Willis, and Gunawardena (1994) included learner-interface interaction which refers to the learner's interaction with technology, or what Wagner (1994) called interactivity.

Learner-Content

In each learning situation, learners interact with the content of the course. The benefit of web-based learning for self-directed adult learners is that they can have more control over the amount of time spent on different aspects of the course content, especially with asynchronous online learning. Since instructors can include links to additional information available on other websites, learners frequently have access to the most current information. This expands the learner's interaction with course-related content.

Learner-Learner

Learner-learner interaction refers to the face-to-face or online dialogue that occurs among learners. In online education, purposeful interaction is defined as providing

meaningful and substantive contributions to online discussions and group work. One cautionary note, however, is that in a blended course format the online discussion may be lessened due to the interaction that occurs when learners meet face-to-face (Vrasidas & McIsaac, 1999). Thus, when considering the amount and type of interaction desired, it is important to consider whether a blended course format is being used.

Teacher-Learner

Research indicates online interaction increased when learners received feedback. Vrasidas and McIsaac (1999) found instructor feedback served as a stimulus to participation, perhaps most importantly in an asynchronous course. Interaction between the teacher and learner provided the learner with motivation, feedback, and clarification of the instructor's expectations (Hirumi & Ley, 2000). Furthermore, connecting with online students brings a human touch to a non-interactive environment; encouraging active engagement of the learner (Canada, 2000).

Overall, instructor-learner interaction serves a worthwhile role. Polin (2004) suggested that when instructors incorporate discussion in an online class, novice instructors sometimes get too involved in the discussion. The instructor needs to monitor the discussion, but should allow the students to primarily control the pace of the course. Byington (2002) referred to monitoring discussions as cheerleading, or encouraging ongoing participation.

In addition to employing a course design that requires learners to interact with the instructor, a broad range of motives may affect the nature of interaction that transpires between the learner and the instructor. Martin, Myers, and Mottet (2002) identified five motives:

1. *Relational communication* primarily occurs when students want to get to know their instructors on a more personal level, focusing on common interests rather than on course content. This type of communication usually occurs before or after class. Such communication would be organized differently in a web-based course, and might rely on the instructor being proactive about providing such information, rather than waiting to be asked.
2. *Functional communication* occurs when students need information about the course that will factor into their success with the course. Because some learners are unfamiliar with the format and technology of a web-based course, functional communication may play a larger role in web-based classes than blended learning or face-to-face learning environments. Functional communication may also increase in a web-based learning environment because written communication is one-way, prompting students to initiate contact to clarify the instructor's expectations.
3. *Excuse-making communication* occurs when students use excuses to tell instructors why they cannot meet a course requirement. Students utilizing this form of communication seldom utilize functional communication. Some students will always use excuses for explaining incomplete work. In online learning, challenges with technology may increase the incidence of this type of communication.
4. *Participatory communication* can result from students wanting to be actively involved in the class, demonstrating knowledge of material, and sharing their opinions with the instructor and other students. Participation can also result from instructor requirements. Course requirements, as well as student motives and motivation, can greatly affect the amount of participation that transpires.

5. *Sycophancy communication* transpires because students want the teacher to like them and make a good impression. This type of communication may occur in all types of learning environments.

Many factors influence the amount and type of communication that transpires between students and instructors. In a study focusing on classroom-based instruction, Martin et al. (2002) found that: "students are more communicatively active when they like the course and the instructor. Students also feel they are learning more when they are participating (i.e., communicating) more in class" (p. 40). Conversely, students may avoid interacting with the instructor simply because they are afraid of talking to someone who has higher status or more power; they lack affect or motivation to interact; they do not like the course or instructor; or they want to avoid being considered a teacher's pet (Martin et al.).

Some students indicated they do not interact with instructors because they do not have time due to other classes or inconvenient office hours. Other students suggested they do not perceive additional interaction with the instructor to be necessary (Martin et al., 2002). In a web-based environment, students may be less motivated to contact their instructor because they may just want to complete their course work. On the other hand, if the course does not have specific meeting times, students may feel like they have more time to contact the instructor.

According to the theory of interaction adaptation, teachers and instructors adapt to each other's behaviors and are mutually responsible for relational outcomes (Mottet & Richmond, 2002). Communication transactions have three components: (a) requirements (needs); (b) expectations (anticipated); and (c) desires (preferred). When classroom behaviors are inconsistent with an instructor's requirements, expectations, and desires, the

instructor can adapt his or her communication to encourage learners to change their behaviors. Likewise, learners may provide feedback to indicate the class is not meeting needs that can also lead to the instructor making changes.

Several motives affect the amount of and types of interaction between students and instructors. Instructors can develop online learning classes to encourage interaction. Just as in traditional face-to-face learning situations, the instructor may need to adapt the class structure for interaction to occur at an appropriate level.

Learner-Technology

When learners primarily rely on using the Internet to complete course requirements, their general computer skills and knowledge of the Internet will affect their learning experience. Learners who are unfamiliar with technology may not interact as frequently as those who are familiar (Ross, 1996). Learners who are new to technology have to focus on learning how to use the technology, before they can complete course work and focus on content (Ross). As learners become more comfortable with the technology, they will interact more often (Byington, 2002; Tsui & Ki, 1996).

As the media available for use in distance learning increases, instructional opportunities expand. Taking advantage of technology available can make distance learning a positive experience (Wagner, 1994). According to Hirumi and Ley (2000), building interactivity or the use of different technological tools into a web-based class is the key to avoiding the correspondence course mentality. Tools such as chat rooms and video conferencing enable learners to use technology to interact with learners or instructors in synchronous or asynchronous web-based learning courses. Of course, the success of the

technology is dependent on learner self-directedness to take advantage of the tools; success is also dependent on the instructor's ability and willingness to facilitate conversations online.

Outcomes

Rather than simply focusing on encouraging interaction, the instructor should encourage interaction to achieve learning outcomes. There are generally two purposes of interaction: changing the learner, and helping the learner meet goals (Wagner, 1994). Wagner suggested building different types of interaction into learning. As it relates to online learning, interaction can be included in learning situations to produce the following outcomes:

1. *Interaction to increase participation* – Learning represents discovering and constructing meaning from information and experience is dependent on the learner being engaged in the process (McCombs, 1992). Participation and interacting with others contributes to being engaged in the learning process.
2. *Interaction to develop communication* – Communication references the learner's ability to share information and thoughts freely, similarly to what might transpire in a face-to-face educational setting.
3. *Interaction to receive feedback* – Feedback provides reinforcement of performance or seeks to correct performance. It also enables learners to know how the instructor feels about their work. Ultimately, feedback contributes to the learning experience.
4. *Interaction to enhance elaboration and retention* – At times the interaction can be used to clarify the information provided so that it is more meaningful.

5. *Interaction to increase motivation* – Successful adult online learners are likely to enjoy learning and appreciate the opportunity to clarify material. Interaction can increase the learner's motivation to succeed.
6. *Interaction for discovery* – When learners share ideas and new perspectives regarding course content, it is likely that learners will share new interpretations of the information. Reflection and action are related to discovery. Within the context of adult education, collaborative inquiry references learners constructing meaning by exploring and reflecting on the meaning of a question (Kasl & Yorks, 2002). Collaborative inquiry can serve as a facilitative structure for learning.
7. *Interaction for closure* – While online learners may be more self-directed, they need feedback during the course to reassure them that they are meeting expectations. Thus, dialogue or online interaction is needed to accomplish this goal.

Learner-Centered Focus

Related to the concept of interaction is the shift in learning theory to constructivism. Constructivism refers to the shift from a teacher-centered environment to a learner-centered environment, where the focus of learning moves from knowledge transmission to knowledge creation. Phillips (2000) suggested that, in a constructivist environment, knowledge is made rather than acquired. Knowledge creation evolves when learners interact with the teacher and with other learners. There is a strong movement toward using a learner-centered model where the learning activities involve students in inquiry and problem solving (Duffy et al., 1998; Kumar, Kumar, & Basu, 2002; Morphew, 2002).

In a constructivist environment, learners take responsibility for developing and following a learning path (Herring, 1997). In a learner-centered learning environment all participants are treated as learners, with the environment constructed and customized to meet learner needs, abilities, interests and goals (McCombs, 2005). McCombs added that the goal of the environment is to move learners from novices to experts. Knowlton (2000) added that learners also should take responsibility for interpreting what they've learned. To encourage learners to take responsibility, the instructor can integrate activities that require a deeper understanding of information (Hacker & Niederhauser, 2000). In other words, activities should encourage students to build their critical thinking skills and verbalize opinions in their own words. McCombs (2005) summarized the focus of the learner-centered framework:

> (1) The Learner and each learner's perceptions, needs, and motivation; (2) Learning Opportunities and the types of teaching and learning experiences that can meet learner needs for success, belonging, and autonomy; (3) Learning Outcomes that include affective, cognitive, social, and performance domain; and (4) The Learning Context or climate for learning, including expectations, teacher and technology support, time structure for collaboration, learning partnerships and mentoring relationships, and adaptability to student needs. (p. 2)

In a web-based class, technology takes instructors and learners outside the confines of a traditional classroom. A website can enable learners to select the amount of information they access and how much time they spend learning about differing viewpoints (Herring, 1997). The flexible design enables learners to construct knowledge and meet their personal learning objectives. The self-directed format of the online environment means the instructor and learners often share the responsibility for identifying the "things" that should be used for learning (Knowlton, 2000).

Knowlton (2000) argued that online learning needs to be learner-centered for learning to occur. In other words, learners should have input into the path and tools used to contribute to their learning. Those who agree with Knowlton suggest new pedagogies are needed. Others reject this thought in favor of the efficient teacher-centered classroom, assuming the instructor can email lectures to students or provide learners with a specific learning path to follow. Furthermore, in a teacher-centered classroom, learners show mastery of learning by reciting information on a test.

Another construct within educational theory is collaborative learning. Comeaux (2002) noted that collaborative learning: "emphasizes the interdependence of the learners and the communal nature of the process as knowledge is negotiated and constructed through dialogue, problem solving, and authentic experiences" (p. xxvii). Collaborative learning requires learners to search and evaluate differing viewpoints. Utilizing a collaborative learning approach enables learners to have more control for their learning and avoid the pitfalls of having a web-based class emulate a correspondence course. Furthermore, collaborative learning capitalizes on the benefits of learner-learner interaction. In summary, web-based, learner-centered instruction can meet many educational objectives by providing flexibility and convenience while requiring students to be responsible and highly motivated to achieve their learning objectives (Aggarwal & Bento, 2000).

CHAPTER 3. METHODOLOGY

Qualitative Research Design

A qualitative research design was used in this study to gain the instructors' perspectives of the learning environments they aim to create for their students. Open-ended interviews provided an opportunity not only to extract information from instructors, but also gain insight into the issues and problems instructors face as they define them. Naturalistic inquiry, conducting research in a natural setting, is one characteristic of qualitative research (Patton, 1980). An effective way of conducting naturalistic inquiry is to use open-ended interviews to collect data. Drawing from a phenomenological perspective, in which reality is viewed as constructed by individuals as they interact with and think about their environment, means the researcher wants to do more than merely ask questions (Patton; Taylor & Bogdan, 1998). The researcher focuses on having a conversation with the respondents. In the current study, the conversations were about the respondents' educational practices and approaches to web-based learning, with the hope of constructing a shared vision of best practices. Following is description of the methodology related to this philosophical orientation.

Human Subjects Approval

From previous experience conducting a pilot study, I found that instructors are willing to share their experiences. My personal experience with this study was that most instructors were willing to share their experiences with me. Prior to conducting the study, the use of human subjects to conduct this study was approved by Iowa State's Institutional Research Board prior to contacting each instructor to participate in the study.

Population and Sample

After reviewing the websites of area colleges/universities, three schools that offered online courses were selected on the basis that each had a different mission. One institution was public and research oriented; another was a private liberal arts university; and the final institution was a public institution offering two-year degree programs. The diversity of the institutions contributed to identifying how the institutional mission, culture, and resources factored into the design and implementation of web-based education. Each institution's online schedule was then assessed to identify instructors who were teaching online courses. Instructors at a similar point in their educational career who taught classes requiring a pre-requisite were contacted based on theoretical sampling (Taylor & Bogdan, 1998). The interviews occurred over approximately fourteen months. Consistent with theoretical sampling, data collection and analysis occurred simultaneously. After conversations started, additional instructors joined the study. New instructors were identified by ongoing review of course offerings. The researcher focused on identifying more than one instructor from each institution. Two of the instructors suggested the researcher meet with the TAs that supported their courses. Therefore, snowballing led to the identification of the TAs included in the research. Of the instructors contacted, seven instructors and two teaching assistants (TAs) agreed to participate.

Data Collection

Data collection focused on in-depth interviewing or "repeated face-to-face encounters between the researcher and the informants, and was directed toward understanding informants' perspectives on their lives, experiences, or situations as expressed in their own

words" (Taylor & Bogdan, 1998, p. 88). Three hours were spent collaborating with each instructor about his or her experiences. In addition to interviewing each instructor, many of the instructors' websites were reviewed.

Franklin (1997) described three interviewing models: (a) information extraction; (b) shared understanding; and (c) discourse. After assessing the different models, a blended approach was selected.

Interviewing models

Information extraction

According to Franklin (1997), the information extraction model is the most common interviewing model. The model recognizes the interview as a social interaction between two people and it focuses on the researcher obtaining reliable information and minimizing the distortion of that information (Gorden, 1987, as cited in Holstein & Gubrium, 1995). The interviewer is responsible for extracting information from the respondents, who are referred to as "passive vessels of answers" (Holstein & Gubrium). Within this model, the interviewer is responsible for asking the right questions so the respondent can provide the desired information (Holstein & Gubrium). Perhaps the most important aspect of asking the right questions is maintaining neutrality and avoiding bias. Merton and Kendall (1946) suggested interviewers watch for "leader effect" that can occur if the interviewer expresses personal opinions or inhibits discussion. Thus, when a respondent asks a question, the interviewer should respond with a question (Merton & Kendall).

According to Oakley (1981), the interviewing model is a masculine paradigm of how to do research. Minister (1991) suggested, "the male sociocommunication subculture is

assumed to be the norm in social science interviewing" (p. 31). Male norms suggest the interviewer must control the interview with questions, ensure that only one person speaks at a time, and respondents must use appropriate language within the boundaries of specific topics (Minister). Oakley (1981) provided examples of challenges experienced with the male-dominated interview style when interviewing women transitioning to motherhood. Frequently, the women asked Oakley questions that she decided to answer. While this violated caution provided in interviewing textbooks, answering the women's questions enabled Oakley to bond with the respondents and gain rapport.

Shared understanding and discourse

In recent years, criticism of the information extraction model has led to the introduction of other models. Franklin (1997) termed one such model, the shared understanding interview. This model suggests the interview is an interpersonal situation in which the interviewer attempts to understand the respondent's perspectives. Shared understanding interviews tend to utilize a semi-structured style, meaning the interviewer not only can have questions available, but can also pursue topics of interest to the respondent. However, the interviewer should use the questions only as a guide. Over-reliance on the guide may prevent the interviewer from asking follow-up questions or enabling respondents to talk about topics they find important (Merton & Kendall, 1946). The interviewer may ask for clarification from the respondent or arrange for follow-up discussions to review the interviewer's interpretation of the respondent's perspectives.

Closely related to the shared understanding model is the discourse interviewing model that conceptualizes the interview as a speech event (Franklin, 1997). Ideas central to

the discourse model are: (a) using a conversational mode; (b) answering questions and sometimes providing one's own perspective; (c) exploring new themes during the interview; and (d) establishing collaborative relationships (Franklin). Mishler (1986) suggested that a conversational mode implied general conversational patterns would transpire. Cicourel (1982) added the interviewer is expected to respond to statements and information provided. In this model, the interviewer and respondent are active contributors to the interview. Interviewers may influence the dialogue and spirit of the interview (Franklin, 1997).

In the discourse model, the active interviewer is responsible for provoking responses, by indicating, even suggesting, narrative positions for the respondent to engage in when addressing research questions (Holstein & Gubrium, 1995). "It is the active interviewer's job to direct and harness the respondent's constructive storytelling to the research task at hand" (Holstein & Gubrium, 1997, p. 125). Holstein and Gubrium (1995, 1997) described that active interviewing includes the "hows" of interviewing, referencing how meaning unfolds during the interview and the "whats" of interviewing, referencing the questions asked and information conveyed.

Thus, an active interview focuses on the hows and whats included in the interview. When an interview takes a conversational mode, the interviewer has the ability to guide and even suggest linkages between the respondent's experiences, which are part of the whats of interviewing. This is another indication that the active interview does not focus on neutrally asking the respondent questions.

In the shared understanding and discourse models, viewing the respondent as a participant provides a different perspective than the information extraction model which views the respondent as an information source. The latter two models address some of the

concerns feminists cited with the information extraction model. Feminist researchers who prescribe to a "phenomenological interviewing approach" support the interviewer gaining an in-depth understanding of the respondent's viewpoints, having prepared questions available, and collaborating on interpretation (Franklin, 1997). Unlike the information extraction model, the latter two models capitalize on the construction of knowledge during the interview process, subscribing to the tenants of postmodernism.

After selecting a blended approach, general questions or topics were prepared for the interview. However, each interview was regarded as more of a conversation than a quest to complete questions on a pre-determined list. Several aspects of the blended interviewing style will be addressed. The impact the interviewer-respondent relationship or power has on the interview will also be reviewed.

Interviewing Techniques

Listening

Interviewers need to refrain from talking and listen to their respondents. Dilley (2000) suggested that interviewers should talk 20% of the time and listen 80% of the time. It not only takes confidence on the part the interviewer to listen to the respondent, but it is also important for the interviewer to give the respondent time to answer questions (Gillham, 2000). Listening sends a signal to the respondent that his or her contributions are important and that talking is the respondent's job. According to Gillham, most interviewers talk too much. Thus, interviewers need to be skilled listeners and not put words into the respondent's mouth.

Respondents are more likely to talk about topics they find important. Therefore, it is important that interviewers give respondents the opportunity to talk about topics they find interesting, rather than focusing on the end result of the research (Anderson & Jack, 1991). Knapp (1997) illustrated the importance of leaving room to talk about topics of importance to the respondent. Knapp was interested in a young boy's thoughts about reading, but the boy was more interested in looking at *Where's Waldo*, a picture book. When analyzing the interview, Knapp was surprised to find out how much learning transpired about the boy's idea of reading when they were looking at the Waldo books compared to the learning that occurred during the traditional interview/observation periods. In addition to learning the importance of enabling the respondents to talk about topics they found important, Knapp discovered answers to questions that would not have been asked.

After reading the article about Knapp's (1997) experiences, I had the opportunity to interview a very energetic peer who had many ideas she wanted to share. Having conducted two interviews about the same topic with less energetic respondents, I was challenged initially because her agenda included topics that were quite different from what the other respondents had shared. Shortly after the interview, I remember feeling like I had failed to gather the necessary information. However, when analyzing the data, new themes emerged. My experience was similar to Knapp's in that I discovered new information that I probably would not have asked. This helped me understand the importance of listening.

Responsiveness

Listening is an important precursor to paying attention and being responsive toward respondents. Interviewers can respond verbally and nonverbally to respondents. As an

interactive research instrument, the interviewer's verbal responses can be a major source of encouragement to the respondent (Gillham, 2000). Thus, interviewers need to think about the words and tone used when conversing with respondents.

Non-verbal responses are another component of responding to a respondent. Gillham (2000) suggested non-verbal cues may include:

- Facial expressions that indicate the interviewer is listening and responding to the respondent;
- Eye contact that appropriately recognizes the respondent;
- Head nods that can encourage the respondent to continue talking;
- Physical contact and proximity that signals interest but does not invade personal space; and
- A posture of slightly leaning forward indicates interest in the respondent whereas leaning backward may indicate a lack of interest.

Therefore, during an interview, the interviewer needs to compare the way he or she responds to someone in a traditional conversation with the way he responds to the participant. During an interview, the interviewer must be cautious regarding verbal responses. The interviewer must listen first and select words carefully so as not to deter comments from the respondents. Furthermore, non-verbal cues are important in helping the respondent feel comfortable to continue sharing personal information.

Probing and asking questions

The merits of listening and being responsive to the respondent have been discussed previously. While interviewers need to enable respondents to talk about topics they find

important, it is also important that interviewers ask questions and probe for additional information. Interviewers need to get past the unwritten rules of conversation, especially the rule, "don't pry" (Anderson & Jack, 1991). By clarifying what was said, the interviewer optimizes the amount of knowledge gained from the respondent. The interviewer also has the opportunity to further explore atypical responses (Guba & Lincoln, 1981).

During a conversation, participants may assume words have certain meanings. Researchers should not take meanings for granted. Rather, the researcher should continually clarify what the other person means. Gubrium and Holstein (1998) used the term "narrative slippage" to describe the difference between the respondent's definition of a word and the culturally shared meaning of a word. By asking clarifying questions, interviewers ensure they understand the respondent's story.

A key advantage of an interview is the interaction that occurs between the respondent and the researcher. The ability to clarify what the respondent says helps the researcher better understand the respondent's perspectives. Furthermore, interviewers can use probing and clarifying questions to ensure the respondent's main arguments are captured accurately.

Adaptability

While the goal is to have a conversation with the respondent, an interview guide can be helpful when used sparingly. An interview guide can be especially helpful if there is a lull in the conversation. As the researcher interacts with the respondent during the interview, the researcher must adapt to the situation, listening and asking modifying questions to meet the tone of the conversation (Guba & Lincoln, 1981). Remaining flexible and adapting the pace

of the conversation is a key benefit of using an interview to gain insight about a specific topic.

Holistic Perspective

Another advantage of serving as the research instrument is the researcher's ability to see the respondent as a whole person (Guba & Lincoln, 1981). The interviewer gains an understanding of the respondent's real world including the tone, climate, pace, and feelings that result from the interview. A good example of using interviews to gain a full perspective of a situation is portrayed in a study conducted by Vrasidas and McIsaac (1999). They used interviews as well as observation to interpret the interaction that occurred in an online course. One of the researchers' conclusions was that, if they had only used observation, they might have concluded that online courses do not stimulate interaction. The interviews helped the researchers understand that, because the course also integrated face-to-face classroom interaction, learners did not interact as frequently online. The interviews provided the researchers with a more complete picture of the factors influencing interaction in the course.

The premise of qualitative research is gathering data rich in depth and detail (Patton, 1980). Interviewers have the opportunity to gather this information using a holistic perspective by considering their own personal characteristics regarding: listening, responsiveness, probing and asking questions, and adaptability. When applying a blended model of shared understanding and discourse interviewing, it is important for the interviewer to listen to the respondent with an open mind. Furthermore, the interviewer needs to respond both verbally and non-verbally to the respondent to show ongoing interest in the conversation. The interviewer should clarify and ask questions of the respondent to ensure

main topics are gathered correctly. Underlying the interview process is the ability to adapt to the situation. Each interview is different and requires the interviewer to interact differently with the respondent.

Interviewer-Respondent relationship

Power is inherent in relationships and influences each interviewing situation differently. Initially, interviewers desire to obtain information from respondents. Typically, the interviewer asks the questions and the respondent answers. After obtaining the information, the interviewer must interpret the information and draw conclusions. This results in an imbalance of power (Mishler, 1986). In many cases, discussion centers on researchers "exploiting" research participants. Ethical research processes, such as maintaining confidentiality and obtaining signed consent forms are designed to ensure respondents are treated ethically, indicating that without these procedures, researchers may exude influence over respondents. Lips (1999) provided a different perspective on power in an interviewer-respondent relationship and noted that interviewers are less powerful because they are dependent upon and ultimately at the mercy of the respondent for information.

There are several factors that influence where the power lies in an interview. Studies conducted by researchers such as Oakley (1981) bring to light the influence personal characteristics, such as gender and life experiences, have on interviewing. Additionally, previous conversations, class association, employment classification, and age may impact the distribution of power. From experience conducting a pilot study, each interview had different dynamics. However, for the most part, I perceived I was on equal ground with the

instructors interviewed. This may be due to the fact that the respondents and I had similar socioeconomic, age, and occupational status.

Power may shift between the interviewer and the respondent based on the personal characteristics of the people involved. Factors such as previous conversations, class association, employment classification, and age are some of the characteristics that may impact the distribution of power. Therefore, interviewers need to determine where the power rests and adapt to the situation.

Power may also influence the use of member cross-checks. In a traditional interviewing situation, researchers independently analyze the information obtained from respondents. Respondents do not provide comments about the interviewer's interpretation of the material that takes away the respondent's ability to restate their views (Mishler, 1986). Using member checks enables the researcher to review findings with the respondent, but ultimately the researcher determines how the research is interpreted (Mishler).

Collaboration between the interviewer and respondent is an important aspect of the discourse interviewing model. This model focuses on the construction of meaning through joint efforts of the interviewer and respondent. Mishler (1986) noted that, although there are only a few examples of collaborative research efforts, the results suggest collaboration yields positive results. Member checks were used in the current study to gain consensus about findings with the respondents and enhance the validity of the conclusions drawn.

In addition to using member checks, building trust and rapport are also important to establishing a sense of collaboration. Fontana and Frey (2000) suggested that trust and rapport help the respondent feel comfortable sharing personal stories. Using a conversational approach as opposed to a strict interview guide helps establish trust and rapport between the

interviewer and the respondent. Building a relationship with the respondent can impact one's ability to be objective about the research (Fontana & Frey).

Unlike the traditional interviewing model that empowers the interviewer or the respondent, the shared understanding and discourse models focus on collaboration. Interviewers and respondents play active roles in building a conversation. Through member checks, respondents have a voice in interpreting the findings. Viewing the interviewer and respondent as active and collaborative participants in the interview dramatically changes the distribution of power.

In the current study, prior to focusing on having a conversation with each respondent, the researcher obtained permission to tape the session. Taping the conversations enabled the researcher to focus on what the respondent was saying rather than taking notes. The tape recorder did not seem to intimidate the respondents.

Following transcription of each conversation, conversations were analyzed for emerging themes using the constant comparative method of data analysis. This method entails continually reviewing the data, refining concepts, and exploring relationships to develop a coherent theory (Taylor & Bogdan, 1998). Emergent themes came into focus regarding the development process for each instructor's course website as well as the institutions' technological support. After reviewing the data and identifying major themes, member checks were completed to review themes.

Institutional Descriptions

Institution 1

One institution was a public institution offering two-year degree and certification programs. The institution's website touted its role in career instruction and contributions to economic growth. The institution did not offer technological support for the development and maintenance of instructor's course sites. Instructors fulfilled roles of instructional designer, website developer, technical support, and instructor.

Institution 2

The second institution was a private university that offered only web-based courses during the summer. This institution's mission was focused on providing students with an exceptional learning environment that was distinguished by collaborative learning among students, faculty, and staff. Classes tended to be smaller, with more learner-centered activities. Similarly to the public institution, this institution did not offer training or technological support for facilitators of online courses. Rather, the instructor was responsible for the instructional design and development of the course.

Institution 3

The third institution was a large, public university with a lengthy mission statement. Much of its mission was oriented toward research and contribution to the community. One sentence symbolized its emphasis on educational techniques: "Through the use of a variety of educational opportunities, advanced instructional design technologies, and student services, the University supports the development of both traditional and non-traditional students, preparing them for citizenship and life-long learning in a rapidly changing world." This

institution offered technological support, some specific to the department or program, and other support that was generally available to the university community.

Individual Participants

Instructor 1

The first instructor, Paul, taught courses at the public university. He had worked in the public service sector for many years prior to teaching. The institution has experienced increased demand for courses in Paul's discipline causing administrators to ask Paul to facilitate several sections of the course in the online format. His classes were generally larger, meaning they may have over 100 students. Paul viewed motivating and encouraging students as part of his role as an instructor. He did not require students to complete assignments within a defined time frame, as he wanted to simulate the work place where timelines are negotiated and self-monitored. Paul indicated the typical student taking his class had many responsibilities outside the classroom that may include families or jobs.

Instructor 2

The second instructor, Bob, also taught courses at the public institution. Bob emphasized the use of book content and objective assignments in his online and face-to-face classes. He viewed his role as guiding the learner through the linear progression of book chapters. Bob required students to complete assignments by specific due dates and was not particularly flexible regarding due dates. Bob referenced that he had some traditional age learners as well as some non-traditional age learners. In contrast to Paul, Bob's class size was much smaller. With a couple classes, the institution decided to only offer courses in the

online format. At times the class was listed as a face-to-face and online format, yet due to enrollment, the face-to-face class was cancelled.

Instructor 3

The third instructor, Lucy, had taught online science classes at the private university for six years. The institution did not offer technological support for instructors. She described the daunting task of adding content to the course site. In the online course, Lucy served as a facilitator, answering questions from students as they developed. She allowed students to complete course requirements on their own time frame. Lucy described her typical student as being a junior in a science type program, perhaps a pre-med or pharmacy program.

Instructor 4

The fourth instructor, Mike, had taught online operations courses at the private university for several years. Mike recognized that his course content was more quantitative and not as conducive to discussion. He indicated that his students were juniors, typically looking for the geographic and temporal flexibility of a web-based course. Mike used his technological knowledge to build content on his course site.

Additionally, Mike had served as a technological advisor to other professors. In this role, he found that instructors teaching different topics had different perspectives on instructional elements needed within the course. For example, an instructor teaching a history course may perceive notes and multiple choice questions adequately cover the course content. Meanwhile, an English professor may expect students to post written papers to a discussion board so the material can be discussed and critiqued.

Instructor 5

The fifth instructor, Barbara, was an adjunct faculty member at the large public university. When she first started teaching online classes, her director told her that developing the online course should not be a lot of work. Barbara taught two courses, one more oriented toward freshman/sophomores and another, an upper-level undergraduate/graduate course. Barbara had a strong instructional design emphasis in each course. She included activities to meet specific learning objectives and sought technological support as needed.

Instructor 6

The sixth instructor, Todd, taught a survey-oriented class, uniting learners from various backgrounds. The course was part of a program designed to help keep learners up-to-date on the subject area. The survey oriented nature of the course encouraged Todd to include experiential learning activities. Todd wanted students to control their learning environment and he liked including activities that contributed to a constructivist learning environment. Todd was enthused by this kind of learning and he got the impression that his students liked projects that involved doing things too. He wanted to use a performance based or cooperative learning instructional design model.

Todd collaborated with undergraduate students who coordinated site development. Most courses were originally offered in a face-to-face format and were converted to an online format; meaning the text and audio contained within a lecture were loaded to the website. The collaborative partnership with the developers enabled Todd to concentrate on

instructional design. In addition to materials meeting visual and auditory learning styles, Todd incorporated tactile activities.

TA 1

The first TA, Jake, worked with Todd. Jake managed the day-to-day aspects of the course by answering student questions and grading assignments.

Instructor 7

The seventh instructor who participated was Larry. He participated in a master's degree program developed by a team of people. Larry explained that a donor left a large sum of money to be used specifically for an off-campus master's program. The money enabled a group of people to come together to develop the course, enabling Larry to focus on being an instructor for the course.

TA 2

The second TA, David, led the development effort for the master's program. His team plugged the content into the site and ensured each course within the program had a similar design. In addition to managing the course design, David provided technical and advisory support to learners.

CHAPTER 4. RESULTS

The purpose of this study was to explore instructor considerations for the inclusion of interaction. A secondary purpose was to better understand an instructor's pedagogical considerations when developing course requirements and designing a website. Part of the conversation with each instructor was about the type and amount of institutional support provided for instructors who facilitate online courses. Qualitative methods were used to gain insight about web-based courses from the instructor's viewpoint. The three research questions were developed prior to starting the interviews; however, during each interview, the researcher focused on having a conversation with each instructor so there was flexibility in the discussion flow (see Appendix).

Research question 1: What are the preferences of the participants in pedagogy of instruction, i.e., lecturing or interactive conversation?

Discussion regarding how the instructor's pedagogy of instruction impacted the development of the online course, led to dialogue about the institution's philosophy and the level of support provided. After reviewing the development, design, and maintenance process employed for each instructor's website, the various processes were plotted on a continuum (Figure 1). Two primary factors delineated the differences: (a) the instructor's

Textbook publisher developed site	Links to syllabus and lecture notes	Links to some documents and other sites	Links to documents, creation of activities
(Minor development)	(Instructor links materials)	(Instructor does minor development)	(Team develops site)

Figure 1. Development, design, and maintenance process employed for each instructor's website

pedagogical philosophy about instructional design that included determining if interaction and collaboration would be part of the course design; and (b) the institution's educational philosophy and level of support provided for instructor's facilitating online courses. On one end of the continuum is an instructor who primarily tapped into the commercially developed site by the textbook manufacturer requiring minimal development by the instructor. On the other end of the continuum is a site developed by a team, with the instructor primarily being responsible for content and instructional design while collaborating with a team of individuals who focused on developing the site and answering ongoing questions.

Traditional Instructional Design Model

The traditional instructional design model uses technology to facilitate getting information to learners, enabling learners to complete course requirements from a distance and at their own pace. One instructor noted that he used the same syllabus for his online and face-to-face courses. He commented that his pedagogical philosophy rested on the learner reading the book and completing assignments and tests to show the mastery of learning the content. In the online environment, Bob indicated he used a simple site design that contained announcements, a syllabus, and a link to lecture slides. In Bob's words, he used the site:

> *...basically as a delivery method more so than anything. Mine, more or less, is independent study, using the internet as a delivery method.*

Meanwhile, another instructor cited the institution had increased demand for courses in his discipline. The online format made it easier for the institution to offer additional sections of a course. Last semester, the instructor taught 100 and 200-level courses to 400 students. He linked students to the manufacturer's website, added a syllabus with course expectations, and considered the course site developed. In face-to-face classes, Paul included

videos and guest speakers. He has not attempted to integrate these activities into the online course format. Overall, Paul perceived his online course design to mirror how he taught his face-to-face class.

In addition to the simple site design, Paul primarily used quizzes and tests to assess a learner's knowledge over each chapter. Paul commented:

> *They'll answer between 30 to 50 questions so they spend a little bit of time with the material.*

The testing reviewed major concepts, issues, and theories. Since his students were freshmen and sophomores, Paul indicated that he used objective questions, either multiple choice or true/false. Paul admitted that, as much as he hated the idea of *"multiple choice donaldization,"* consistency, including the use of objective and standardized questions, was expected by the students. Paul relied on the computer to grade the quizzes and tests.

Comments from Bob and Paul indicated they used a traditional instructional design model. This model divides instruction into small units of knowledge taught outside of the context in which the knowledge will be used (Grabinger, 2004). Coldwell (2003) described the traditional model or the instructivist model as a static model of learning. Grabinger (2004) suggested characteristics of the traditional instructional design model: (a) teachers give information to learners; (b) learners make few decisions about what to learn and which resources to use; (c) learning is an individual activity; and (d) evaluation focuses on grading as reflected in a test score.

Three factors contributed to the instructor's use of a traditional instructional design model: (a) this model was consistent with the instructor's pedagogical philosophy of providing students with limited information, requiring students to read the text and take tests

over material; (b) the public institution did not offer technological support for the development and maintenance of course websites, so instructors fulfilled the roles of instructional designer, website developer, and technical support; and (c) the instructors supported their institution's mission and objective to deliver the course content using the efficient online environment.

Anchored Instructional Design Model

Moving along the continuum are instructors who place a larger emphasis on using technology to meet course objectives. The anchored instructional model utilizes technology to support the learning process (Coldwell, 2003). Bransford, Sherwood, Hasselbring, Kinzer, and Williams (1990) noted that, traditionally, educators focused on sharing content with students. This led to knowledge of concepts and theories without helping students solve problems or identify theories to apply to unique situations; whereas, an anchored instructional design approach suggests that students will apply their knowledge to situations. Instructors focus on more than objective measures by including assignments that are more subjective, requiring use of critical thinking skills.

Two instructors incorporated elements synonymous with the anchored instructional design process. The instructors discussed their process of determining the content they needed to share with students and then considered how they could use technology to present the information. Their instructional pedagogy focused on providing a more learner-centered environment. Learners used case studies and activities to exercise problem solving and critical thinking skills. Over time, each instructor added technological elements to their course site.

One instructor taught an online science class that was largely content driven. Lucy used the same basic content in her face-to-face and online class sections and shared that:

> *...what's different, of course, is on the web you don't hear it. And in class, everybody's lockstepped together, where on the web, people can go fast when they already know it and slow down when they're more interested, you know.*

Using a self-directed approach, learners spent as much time as they wanted exploring content on the site, including links to related sites. Learners demonstrated their knowledge by completing take-home essay tests. Lucy indicated she used this format because she wanted students to use their critical thinking skills.

Another instructor shared that his content was more quantitative dissuading him from incorporating a lot of discussion in his face-to-face or online sections of a class. In the classroom, he explained how to use mathematical techniques to perform calculations. Initially, he used a text heavy course site with explanations on how to solve mathematical problems. Over time, the instructor integrated more video and audio, although cautiously, to avoid challenges with bandwidth. The instructor also added simulations to the site.

Brian used technology to enrich the learner's experience, indicative of his use of an anchored instructional design approach. He remarked:

> *I try to have something that I would, like a discovery exercise every week where they have to and most of those they interact with something on the computer. But other times, I ask them to go out to the work place and look for something and make some observations and come back and summarize it or make some comments so that's apart from some type of mathematical assignment. That's more of something designed to pull out some concept.*

This instructor incorporated learning activities within the website that were engaging and required student interaction. Learners controlled dimensions of the simulation, learning how their decisions impacted results. When asked why he used this approach, Brian said:

I think I am trying to make the computer more than a glorified page turner. So it's somehow doing something that computers are capable of doing.

Brian also used some of the online simulations in his face-to-face classes.

Brian's instructional pedagogy guided him to develop online simulations, despite the lack of institutional technological support. He appreciated that he had the technological knowledge to develop the simulations and course site. Brian suggested that a lack of institutional support might prevent other instructors from utilizing the benefits of technology in an online class.

Collaboration

At the furthest end of the continuum are instructors who collaborated with others to design, develop, and maintain their website. Three instructors and two TAs used a collaborative process to design their course. The instructors played different roles within the collaborative development process. One instructor did some of the site development and managed the course. This instructor utilized services of web developers when she needed something complex developed. The other instructors had a TA heading the development process. One instructor continued to guide the instructional design philosophy, while another collaborated with other instructors and the development team. All of the instructors taught at the same university that offered some general technological support to all instructors; and some departments and programs offered additional technological support.

Barbara headed the development and instructional design philosophy for her course. She collaborated with technical resources within her department; and for large development projects, she worked with a university resource. Barbara appreciated the development support she received:

You've got to have good technical help or you're dead in the water.

She said that without good technical help, she could not facilitate online classes.

Barbara provided some specific examples of the collaborative partnership. She received duplicative emails from the over 100 students taking her 1-credit course. After tracking the questions and standard answers she was emailing her students, she turned over the word documents to her technological partner who designed a graphically pleasing page: "*Ask Mrs. Tate.*" The information was written based on how students spoke, making it more usable by her students. The FAQ page gave her students immediate access to the information they needed and allowed Barbara to focus on answering the non-standard questions.

To complete more complicated projects, Barbara worked with the technological resources that supported university projects. For example, Barbara asked institutional resources personnel to convert an old set of slides and accompanying audio that had been developed 20 – 25 years ago by a professional association, to short segments that students could view online. As a result, students viewed slides in 7 – 10 minute segments using Real 1 player technology. Barbara said the solution worked great. She provided another example of a technological solution. Her technological resources converted 5 1–hour videos to 2 CD-ROMS that students purchase from the book store as part of a course packet.

Todd and Jake said the collaborative partnership enabled each party to focus on a specific role: (1) the instructor focused on identifying the right content; (2) the student developers added narration to the slides, synchronized, and edited the materials; and (3) the TA managed the day-to-day aspects of the course by answering student's questions and grading assignments and tests.

The third instructor, Larry, said lessons in the course he taught were written by four or five instructors, each with a different writing style. The different writing styles caused some confusion for students. Larry said the team handled all the technical questions and that it really worked better, as he did not have the technical knowledge about the website to answer the questions.

David, the TA, led the program's development team. Professors worked with David's team to develop tools or activities. David remarked:

Interactive is hard. Text and simple graphics are easy.

The development team used several software programs to design and create the tools, activities, and simulations. The partnership between the development team and instructor was supplemented by additional partnerships.

At the onset of the program, collaborative partnerships included: (a) the Curriculum and Instruction Department, (b) College of Education, (c) Continuing Education and Community Services, and (d) Advisory Panel. David said the collaboration with the Curriculum and Instruction Department and the College of Education yielded important considerations regarding design, the amount of interaction, and communication because these departments understood learning theory. David commented that he thought most of these considerations were logical, but the collaboration proved helpful in determining the initial design. Following initial implementation, the partnership focused on evaluation.

The partnership with Continuing Education and Community Service provided marketing support for distance education programs. This department also tracked registration, fees, and textbooks. The final partner in the team was an advisory panel of industry representatives. The development team and professors continued to meet with the

industry representatives once a year to review curriculum and classes needed and to critique and refine content.

In addition to managing development of the course website, David also provided technical support for the program. Students experienced few technical challenges. David pointed out that on the end of course survey, students ranked technical problems experienced a 1, meaning students strongly disagreed that they experienced technical challenges. He said company firewalls were the primary cause of technical challenges.

Larry summarized the collaborative efforts:

> *If I had to put it [the course] online, I would never have even agreed to become involved, it's just too hard.*

Interpretations and implications

Paul and Bob, the two instructors who used a traditional instructional design methodology, used a similar class format for online and face-to-face classes. Their decision is supported by Knowlton (2000), who proposed instructors should use the same pedagogical approach for face-to-face and online classes because the approach is already working in the classroom. The institution's goal was to provide learners with access to the course content. Opening sections of an online course enabled the institution to meet its' goal in an efficient manner.

The instructors' views toward teaching were congruent with the objectives of the traditional instructional design method. The instructors focused on giving learners information and limiting decisions regarding resources used for learning. Paul and Bob did this by pointing learners toward a syllabus with assignments from the book. Each instructor expected learners to work individually and assessment primarily stemmed from objective

tests. The primary difference between the two designs was the use of interaction which will be discussed in more detail, later in this chapter.

The other instructors interviewed placed more emphasis on creating a learner-centered environment. While the instructors accomplished their goals in different ways, they tended to place more emphasis on the learner creating knowledge. The instructors' pedagogical philosophy influenced their use of interaction. The instructors echoed that developing materials to create a learner-centered environment was time consuming. The instructors who used collaborative partnerships to develop course content agreed with Nixon and Leftwich (2002), who noted:

> *Clearly, however, the need for collaboration and communication among faculty, staff, and administration on the university campus is essential in the process of creating and maintaining successful distance learning environments.*

Shedletsky and Aitken (2002) described the advantages they encountered while team teaching: (1) helping each other deal with technical difficulties; (2) venting frustrations about teaching online and brainstorming possible solutions; (3) sharing responsibility for maintaining online discussion; and (4) extending the range of instructional materials available on website.

Collaboration can also be challenging. One professor described his experience developing a science course with four educators:

> *That it was, indeed, a complex and difficult task to develop a coherent, pedagogically sound, and viable course among four educators. I knew that the four of us would not only have to enjoy working together but to work equally and have similar values and goals toward teaching.* (Huber, 2002)

The professor described that the four educators had different professional backgrounds and experience that contributed to different instructional approaches. Larry indicated a similar

challenge, as the instructors contributing to the course had different backgrounds that influenced their contributions and perspectives. The overall lesson learned was the need for open communication between collaborators.

Use of Interaction

Research question 2: What types of interaction are facilitated in a web-based class? Are specific outcomes tied to the interaction included?

In addition to focusing on the instructor's pedagogy of instruction, instructors provided insight regarding their use of interaction. Four categories of interaction were explored with each instructor and TA. Inter-related to understanding the types of interaction incorporated was understanding the goals and outcomes associated with the interaction.

Learner-Content interaction

To fulfill course objectives, learners needed to interact with content. The two instructors who used the traditional instructional design method commented they primarily required learners to complete assignments from the book. Bob shared: "*with me, it's 90 percent or more comes straight out of the book.*" Weekly, he expected students to read a chapter from the book and complete an assignment. Likewise, Paul resorted to book content for two reasons: (1) he considered asking subject matter experts who participated in his face-to-face classes to participate in his online class, but synchronous chats were not well attended, so he decided to stop using them; and (2) while some publisher's sites contain different activities and links for learners to explore, he determined that he wanted to limit the content students were required to explore, so he focused on book content.

Lucy took a different approach by providing learners with more opportunities to explore content. Content on Lucy's site came from three sources:

1. She developed content organized around a story line, which was her family history with variations.
2. She had students complete worksheets based on assignments from the book to ensure students understood key concepts. After finishing the worksheets for a unit, the student completed a take-home essay test.
3. She included links to other sites, so students could explore topics in more detail.

Lucy described her course design as:

> *So you bounce back and forth between the text, the worksheets, and the story until you reach the end of a unit and then you take the test.*

Lucy said she used take-home essay tests so students had an opportunity to write and analyze things; in other words, Lucy wanted them to use their critical thinking skills to reflect on the content. The breadth of content available on her course site contributed to the learner's ability to explore content and utilize critical thinking skills.

Todd used a similar approach to learner-content interaction. Like Lucy, much of the course content was organized around a case study. Todd and Jake were making the case study more "humanized," meaning asking students to make decisions based on the information contained within the case study. In addition to the case study, Todd included: (a) Power Point slides with narration; (b) links to other websites; and (c) assignments and tests containing quantitative and qualitative questions. Todd said students earned about half their course grade by completing experiential activities and the other half of their grade came from objective testing.

Brian focused on incorporating simulations and activities to help students recognize key concepts or ideas. Many activities focused on technologically developed simulations. He remarked:

> *I try to have something that I would, like a discovery exercise every week where they have to and most of those they interact with something on the computer. But other times, I ask them to go out to the work place and look for something and make some observations and come back and summarize it or make some comments so that's apart from some type of mathematical assignment. That's more of something designed to pull out some concept.*

Larry discussed the use of four different types of activities to interact with class content: (1) try-this activities or simulations; (2) weekly assignments; (3) tests; and (4) group discussion questions. Learners could try the "try-this" activities as often as they wanted to experiment with the content. Immediate feedback was provided, but the activities were not graded.

Individually graded components included weekly assignments and tests. Weekly assignments included quantitative questions and personal reflections. Answering quantitative questions ensured the learners interacted with the content and the personal reflections about what the student learned, contributed to building critical thinking skills. Finally, students completed a midterm and final. Larry discussed that the tests were open-note and open-book because he wanted to experience his student's thinking skills.

Barbara used a different approach. She primarily stressed the importance of encouraging students to question assumptions. In the undergraduate course, Barbara used optional survey questions to encourage students to think about the content. She suggested students reflect on the topic when they were driving or walking across campus. The questions were fun and were designed to encourage students to respond, using their critical

thinking skills. Throughout the week, she periodically gave updates about the number of students who had responded. Barbara said a nice thing about the web format was it calculated the responses for her.

Barbara also used weekly discussion questions with her higher-level course. She determined discussion questions were more effective than having each individual write summaries of the activity. Posting thoughts on a discussion board supported her objective of having students build critical thinking skills. Barbara's experience teaching online contributed to her ability to review the objective for the assignment and determine the most effective way for students to interact with the material.

Interpretations and implications

Learner-content interaction is the cornerstone of the online learning environment. When an instructor's pedagogical philosophy supports a teacher-centered environment focused on objective measurement of key facts, content was minimally provided via a textbook. The course objective was met because learners could satisfy course requirements when it was convenient for them. A challenge with only emphasizing interaction between the learner and course content is that learners could feel isolated (Hirumi & Ley, 2000).

The experience was dramatically different when the instructor's pedagogical philosophy centered on providing a more learner-centered environment. These instructors focused on including activities that encouraged learners to experience or construct knowledge. Often, learners had more control over the content accessed and time spent on material.

Lucy and Todd gave students the opportunity to explore content centered around a case study and they could explore related websites. After exploring the content, learners synthesized their thoughts by answering open-ended questions. These activities required students to become active participants. Learning was grounded by examples and answering open-ended questions supported building deeper thinking. Hacker and Niederhauser (2000) suggested activities like these promote deep and durable learning. Moallem (2002) referred to this approach as problem-based learning, because the problem or case served as a starting point. In Lucy's class, students constructed knowledge by completing a series of independent activities while Todd required students to complete individual and group projects to construct knowledge. From an assessment perspective, each instructor determined that learning transpired. In fact, when Todd compared pre-test and post-test scores, he found learners had a range of knowledge on the pre-test, but the post-test scores indicated all students had learning key content.

Larry and Brian also created a learner-centered environment. Each included simulations and activities that encouraged learners to construct knowledge. Learners could interact with the activities and receive immediate feedback. Larry also used discussion questions and open-ended tests to encourage critical thinking. Barbara also used discussion questions to create a learner-centered environment focused on strengthening critical thinking skills.

Learner-Technology interaction

For some instructors, learner-content interaction was heavily dependent on technology. Learners in Paul's and Bob's classes primarily interacted with technology to

access the syllabus and turn in assignments. In addition to the syllabus, Bob linked announcements and slides with his lecture content to the site. Paul and Bob had limited learner-technology interaction.

In contrast, the other instructors used technology for various aspects of their course. For example, Lucy and Brian focused on building additional content on their course sites. Lucy said that after six years, she's more familiar with the process of adding content. She continued by saying:

> *But you know, at first, it was pretty daunting cause I hadn't ever done it before and to put it all in a different format was a lot of work.*

As mentioned previously, Lucy expected learners to peruse the case study information and explore related sites.

Brian viewed learner-technology interaction as a key component of his online class. He admitted that developing technological activities was time consuming so he was sometimes limited in the number of simulations he could develop. Brian acknowledged that, in his opinion, due to a lack of time or knowledge, many instructors used tools developed by textbook publishers. He noted that from his perspective:

> *There are some [textbook designed resources]. The things that are available with the text are usually not what I am looking for.*

Brian also expressed his frustration with using the Blackboard program. In fact, he discontinued developing materials in Blackboard and started developing materials in FrontPage. He added that he perceived technological challenges with editing and posting files to Blackboard could limit instructors physically and psychologically.

Larry also incorporated technological simulations. Unlike Brian, he relied on the development team for technological assistance and did not experience the frustration of using the technology. Barbara and Todd also collaborated with technological resources.

Barbara shared the experience of having her departmental technological resource assist in developing an FAQ page. Barbara primarily collaborated with technological resources on the development of multimedia presentations. In addition to the multimedia presentations, Barbara used technology to disseminate discussion/survey questions and online quizzes. She used an introductory survey question to encourage students to get used to the technology, as she did not want the technology to be scary. Barbara also required students to take weekly online quizzes. She indicated students could take the quiz any time during the week and there was no time limit. Barbara established these parameters based on her undesirable personal experience taking a timed online test.

Todd collaborated with a team of undergraduate developers to add content to the site. Todd and Jake wanted students to use technology to meet course objectives. They realized students entered the class or program with different knowledge levels related to technology. For the first assignment:

> *At the beginning, what we've done, what we've done with the bio tech course is we have something called assignment 1. And that assignment is to, really to just sort of get them to use some of the technology that they're going to use the rest of the semester. Right, so they have to submit an email message, they have to put something on the discussion forum, they do something, they take a survey which is analogous to taking a quiz.*

Todd indicated he wanted to help learners prepare to use technology in a non-threatening way.

In the future, Todd wants to include more technological simulations on the site, to further develop the learner's critical thinking skills. Examples of planned technological enhancements include adding footage of a genetic testing lab so students can watch and observe each step of the process; adding interactive questions for students to answer while observing the process; and adding activities that will enable the learner to manipulate different parts of the process.

Interpretations and implications

Four of the instructors did not have access to technological assistance. Two of the instructor's pedagogical philosophies did not lead to a strong use of learner-technology interaction. Two of the instructors focused on using technology by spending time learning to build a course site. The lack of institutional support required the instructor to fulfill the role of technological developer.

One of the instructors that collaborated with developers used technology to support course content and interaction between learners. Barbara learned to post discussion questions to the site, but she did not spend a lot of time learning how to technologically support a course site. Todd and Larry also included learner-technology interaction to support course goals. The difference is they developed the idea and one of their partners implemented the solution.

The inclusion of learner-technology interaction was impacted by institutional support. A lack of support, either through instructor training or dedicated technological support, requires instructors to allocate time to learning about technology. On the other hand, in the

case of instructors who support a traditional instructional design approach, the instructor may decide to use a simple site design.

Learner – Instructor interaction

One instructor commented that instructor-learner interaction was the primary form of interaction students had in the class. Paul received numerous emails from his students for three reasons: (1) functional; (2) participatory; and (3) sycophancy communication. Paul clarified that functional communication transpired primarily when students were asked to develop a PowerPoint presentation. While there were some parameters around the assignment, students had to select a topic to focus on. The open-ended nature of the assignment generated a lot of questions from students. Paul attributed the increased number of questions to the fact that his students were more comfortable with more clearly defined projects.

The remainder of Paul's interaction with was related to participatory or sycophancy communication. For example, learners who took online quizzes occasionally found errors in the computer generated questions or responses. Some learners were quick to contact Paul and point out the error.

> *I had one student, who wrote, and it was a good student, and I really love these comments. On this page, this was the response from the text. Web CT counted it wrong and he checked and he says only 19% of the students in the class got this question right. And I'm thinking to myself, I love this kind of student, this is terrific and I wrote him back and I said yes and you are one of three students who brought it to my attention ... which makes you an excellent student.*

The expression on Paul's face showed he really appreciated learners who spent enough time with the quizzes to point out this kind of error. It appeared the student's motive

was to ensure Paul knew he/she was paying attention to the quiz material and the student was potentially trying to make a good impression on the teacher by pointing out the computer's error.

Interaction with his students was important to Paul. Paul noted that he:

> *would rather have them contact me directly. This way they don't feel like they're not getting a professor with an online course.*

Listening to Paul talk revealed that he cared about his students' performance and success. He clarified:

> *I'd rather have them ask me than stumble through, get frustrated, get depressed, increase their level of anxiety and then do poorly.*

Responding to emails was one way Paul motivated his students to continue learning. Paul answered email at the end of each day, seven days a week. He said he was a workaholic. Paul summarized his role:

> *Now one of the things I would say and I've had this talk with the department chair over there actually. If I was a tenure track professor at Iowa State, this would be the last thing that I would do. It takes way too much time. You know I'm answering stuff, 7 days a week, on average 2 hours a day. So, it's just, there's no way. First of all, how would you ever do any research? By the time you get done answering all those questions, you want to get as far away from that computer as you possibly can. You're tired, you're down, and then try and think of something to write, try and write up your findings, you're exhausted, mentally exhausted.*

Regardless of the time it takes, Paul answered the student's questions. His approachable demeanor encouraged students to ask questions, even if they may not have raised their hands in class.

Another instructor approached interaction with his learners much differently. Bob said he encouraged students to post questions on a discussion board. He used the analogy with his students: if their question was something for which they would raise their hand and

ask, they should post it on the discussion board so it was viewable to others. Bob said that three to five people used the discussion board.

Bob also shared that he had previously offered online office hours and synchronous chats, but only one person showed up. The student finally called Bob and they talked for 10 minutes. Due to the lack of participation, Bob no longer offered online office hours. Learner-instructor interaction played a minimal role in his class.

The other instructors interacted with students on an "as needed" basis, falling in between practices used by Paul and Bob. Lucy remarked:

> *They can, they email me, they stop by the office, they call and you know whatever works. Yah, I mean sometimes people are here in town and they tend to just stop by.*

Most students contacted Lucy for a functional purpose, with questions about the content. She also said:

> *You know it's odd, that ah, like the students who are not from [this institution], some of them are from places where their science classes are huge and so they feel very little connection to the instructors in those classes...where we email each other frequently and they almost start to feel like they know be better because we're conversing one on one so frequently. So it's a different kind of conversation and getting to know each other.*

Brian said about 20% of the students asked him 80% of the questions. He clarified:

> *You interact with the people that are struggling more online, because they're asking questions.*

Most questions were functional in nature about an assignment.

Learner-instructor interaction played a role in Barbara's class. Barbara primarily received email questions from her class. Some questions were functional in nature, about course content or site access, and other questions could be classified as excuse-making.

When she sensed one student was totally frustrated, she called the student. Students were usually surprised to hear from her.

> *This one student...she was emailing me totally, totally lost with, she couldn't get this to work, she couldn't get that to work, and this is the second, first week of class, I mean she couldn't get the videos to run, she couldn't get...And she wasn't going to do anything to make it better. She just, I would email her, and would say, tell me what you're working with and I can try to identify help...So I finally thought, I'm going to call her, and I called her. She was somewhere in Huxley, Ia. I mean she was, she hated the computer. She didn't want to take an online course.*

Barbara continued talking to the student about some options for gaining access to the course site. Finally, Barbara said:

> *Honey, you're just going to have to take responsibility for your own university education.*

As it pertained to excuse-making communication, Barbara was contacted by one student who asked to change deadlines to accommodate his personal work schedule. Due to his proactive approach, Barbara gladly accommodated his needs. On the other hand, Barbara had an experience with two students who failed to participate in class for a couple of weeks and she was not so lenient in allowing them to make-up missed work, as they had not proactively contacted her for arrangements.

Larry used a similar approach as Barbara. Most of his contact with students was through email. He said that, if he had 30 students, he probably received emails from 10 of them in a week. Most questions were functional in nature about course content. Larry explained that some of the questions would be minimized if he had designed the entire course. The collaborative effort meant that every philosophy was incorporated from someone who had just finished his doctorate to a retired individual and this led to differences in content throughout the course.

Larry said about 40% of the emails were from students asking for more time. He always said yes, as he wanted students to demonstrate their knowledge and did not think timing necessarily impacted a student's ability to learn. Larry said he only received a few questions about technology, as most of these questions went to David and the development team. Meanwhile, David received many duplicative email questions. Like Barbara, he developed an FAQ page.

Todd and Jake also had some interaction with students. Todd said he had more interaction with learners at the beginning of the semester. Later in the semester, students contacted Jake for questions related to assignments. While Jake offered online office hours, few students utilized the hours. Most students emailed him questions. Jake posted answers to repeatedly asked questions on the public discussion board.

Interpretations and implications

Paul used interaction to motivate and give feedback to learners (Hirumi & Ley, 2000), whereas Bob used interaction for a more utilitarian purpose. Paul appreciated his interaction with the learners. At one point in our conversation, Bob said instructors should encourage whatever kind of interaction the learner needs. Later, Bob spoke of a three-strike rule, meaning he answered three "public questions" by email before he told the student that he would be happy to answer the question when it was posted on the course site. Bob perceived questions from his learners as more of something he had to deal with. He did not seem to want to encourage contact with his learners and did not think of his role as guiding the learners down a path of completing their education.

In a sense, the theory of interaction adoption proposed by Mottet and Richmond (2002) applied to the learner-teacher interaction that occurred. In Paul's class, learners found the instructor responsive and a source of encouragement; whereas in Bob's class learners had to adapt to Bob's expectation of posting "public" questions on the board or face the fact that he may not respond to their question.

Bob was the only instructor that required students to post questions on a public discussion board. In fact, many instructors specifically said they did not require learners to post their questions, as they assumed this may have deterred learners from asking questions. Rather, the other instructors responded to questions when received, primarily through email. Larry indicated that his support in answering individual questions from students made the course more challenging [for himself], and it was one of his frustrations with teaching an online course. Barbara shared that she did not respond to emails when she was tired, as her response may not come across the way she intended.

Brian and Jake had little success with online office hours. Brian mentioned that he had one student who logged in to the chat room and asked, "Who's out there?" None of the other students responded. Brian determined that most students did not use the chat room as they took the class to learn, not chat. They preferred interacting and asking questions as topics arose, rather than participating in chats to build a relationship.

Most online instructors recognized interaction with learners was part of the support required in an online course. The primary goal associated with the interaction was for the learner to clarify questions about course content. Instructors who recognized they were working with older students or adult learners who had other commitments, were more likely to grant the requested additional time to complete assignments.

Learner – Learner interaction

Learner-learner interaction was the final aspect of interaction explored. Due to the profile of his typical student, Paul did not assign students to work together. He clarified:

> *I don't typically assign students to work together. A lot of these students work 1 or 2 jobs. A lot of them are raising families. Some of them are coming from abusive situations and they just don't have time or they can't coordinate their lives with anybody else's. I feel like it would be penalizing them to require them to do that.*

Bob determined he would not use group projects in the online classes because he did not think students would want the hassle. He added a couple activities, such as introductions to encourage interaction, but they were not graded components. Lucy and Brian did not require learner-learner interaction, as they focused on learners interacting with the content via technology. Both indicated that they knew learners periodically worked on assignments together and were supportive of this occurring.

Three instructors incorporated learner-learner interaction. Barbara broke her large 1-credit course into groups of six students. She managed 24 groups of 6 students. Barbara used small group discussion to encourage students to use their critical thinking skills. She said that, even with the large class size, students frequently posted similar comments. Although she encouraged students to use a practical problem-solving approach built on the premise of questioning assumptions, she recognized that young students were not accustomed to questioning assumptions about topics such as child abuse.

Barbara also used discussion questions with her upper-level course. Weekly, Barbara loaded discussion questions and students quickly started posting their thoughts. After a couple semesters, she used the discussion board more and had students write fewer papers. She explained:

> *When I first taught it, I had them write a summary for every video, so I would get anywhere from a page and a half to four or five page papers, five times from each student. And I'm grading these assignments and I'm grading pretty similar stuff and I'm thinking there must have been a point to this somewhere. The point was I wanted them to watch it. And I wanted them to think about it. But I don't need to be reading it.*

By having students post thoughts on the discussion board, she required students to dialogue with their peers and develop their critical thinking skills. She still required a paper that contributed toward the writing rubric.

Todd also required learners to interact in teams of 3 to 4 students to complete assignments using a structured decision making process. Jake and Todd encouraged students to interact online. Todd described two places on the website for learners to share their work. The first was a student presentation area where teams could exchange files, download reports, and edit files. There was also a private discussion area, only viewable to specific group members.

Jake periodically heard from students frustrated with their groups. He encouraged group members to work through their frustrations, trying to determine specifically what was causing frustration, and negotiating a compromise. The instructors agreed that it was very time consuming to build a community in an online classroom setting.

Larry included learner-learner interaction. Like Barbara, Larry required small groups of 7 – 9 students to discuss questions. Following group discussion, students submitted individual answers. To encourage further collaboration among students, Larry planned to have the group submit one answer in the future. Another planned change was making questions more conducive to group discussion. Larry and David both indicated that, as a result of the collaborative course development, some topics were too quantitative and did not

lead to much discussion. David suggested that more discussable questions would lead to more threading and more postings to the discussion board. According to David, these students had personal experiences to share with others in the course.

Interpretations and implications

Group work can be hard. In addition to being difficult in the online environment; it is also hard to work in groups in face-to-face settings. Because of the challenges of group work, Todd said the students worked together when forced, but he did not think they would work together if it had not been required. Todd rationalized the minimal participation on the fact that students were motivated to take an online class because they could work at their own pace.

Creating a discussion component provides learners with the opportunity/requirement to interact without having to complete a project. Consistent with Polin's (2004) recommendation, Barbara started the class with a discussion, monitored it, and jumped in only when someone was totally off-topic. Over the semesters she had taught the course, she discovered high-achieving students like to share their experiences with each other. Jake and David echoed the belief that students liked sharing their experiences. These instructors' observations were consistent with Knowles' (1980) philosophy about adult learners and their desire to share personal experiences.

Althauser and Matuga (1998) described scaffolding as a process in which learners become more knowledgeable by working with other learners or the instructors via online conferencing. The instructors who required small teams to discuss questions by sharing personal thoughts with each other were essentially using scaffolding. Scaffolding also

contributed to a learner-centered environment, where students are encouraged to utilize critical thinking skills.

Teacher involvement or monitoring is an important aspect of learner-learner interaction. As part of the monitoring process, Barbara and Jake contacted students who did not participate for a period of time. These instructors modeled cheerleading that Byington (2002) suggested was important in motivating students to participate in learner-learner interaction or online discussion. The monitoring ensured the discussion or scaffolding contributed to learners being actively engaged in the class.

Although group learning presented challenges, incorporating group work fostered community and prevented students from feeling like they were working alone. Larry considered the class to be very successful in terms of community learning objectives. He attributed part of the success to the technological tools. From time to time, individual learners dropped out of a discussion and it could be problematic if several learners got out of sync at the same time. Building a learning community is supported because learners liked sharing and hearing from other learners.

Institutional Support

Research question 3: What support do the participants' institutions provide to facilitators of online courses?

Results for the final research question have been organized by institution, as the instructors from each institution shared similar comments about the level of support provided. Many of the results for each instructor were previously summarized under the learner-technology section.

Institution 1

The public institution offering two-year degree and certification programs did not provide technological support for the development and maintenance of the website. Instructors fulfilled roles of instructional designer, website developer, technical support, and instructor. Bob summarized the institution's support:

> *Now for the teachers that just taught English or non-technical courses, that didn't use the computer too much or didn't even do a PowerPoint too much before, to develop an online course would be really more a traumatic thing for them, so they gave us some money to develop online courses. And I think this semester, if it went through, they're supposed to pay us more for an online course under the theory that you spend more time on the online course.*

Meanwhile, Paul focused on providing learners access to the course information by using the publisher's website. During an initial conversation, he referred to the positive and negative aspects of the course program. In the course of a member check, Paul shared:

> *Too much demand for this web ct stuff, and the online teaching, yah too much demand...and I look at it, I mean it benefits the student by offering more classes. You know, I could develop 1 course, but what would that get them. One course they could take, and that would be it. We have so many students that are in such a hurry to graduate, and this is such a great opportunity, why not offer as many courses as possible.*

Paul was comfortable using the publisher's website, as it allowed him to support the institution's goal. He did not see a need for additional technological support.

Institution 2

The private institution did not offer training or technological support for facilitators of online courses. Unlike the first institution, the instructors did not allude to receiving additional compensation either. Fortunately, each instructor had taught the course multiple times and had learned how to technologically complete site development.

Mike shared his thoughts about the complexity of using different programs like Blackboard to build a course site. He shared that challenges with using the program:

> *...it puts some limits on you [the instructor] both physically and psychologically, you say I don't want to do that.*

Mike continued by talking about the potentially substantial set-up costs. He shared that if he wanted to use different media, there was no administrative support available to help him with tasks like videotaping a lecture. Mike's technological background enabled him to speak more specifically about the technological support required to teach online courses.

Perspectives from Lucy, the other instructor from this institution, were previously shared with respect to her perspective on adding content to the website. She was not as vocal about the potential technological support an institution could provide to online instructors. Rather, as the instructor, she took responsibility for maintaining the content available.

Institution 3

The third institution is a large, public university with a lengthy mission statement. The institution offers technological support, some is specific to the department or program, and other forms of support are generally available to the university community. Barbara coordinated course development with the resources available through the institution. When Barbara discussed her collaborative efforts related to technological development, she stressed her need for technological support provided by the institution.

Meanwhile, Larry and Todd worked with their TA to develop their course websites. A member of their collaborative partnership managed the technological course design. Both instructors alluded to their appreciation for the collaboration that occurred around technology. The partnership yielded the instructor the opportunity to focus on being an

instructional designer, while someone else managed the development and maintenance of the course website. Overall, instructors at this institution recognized and appreciated the support provided.

Interpretations and implications

One institution provided no support for instructors teaching online courses; one institution provided monetary compensation for instructors teaching online; and the third institution provided support resources for instructors. The instructors had different perspectives on the level of support that was and should be provided. All the instructors from the third institution collaborated on the course design and spoke highly of having technological support. Having access to the technological support enabled the instructors to spend more time on instructional design. The instructors incorporated a variety of activities and interaction.

Meanwhile, the instructors at the first two institutions seemed to be split on the usefulness or need for technological support. The two instructors who were more technologically knowledgeable spoke of the need for institutions to provide online instructors with support. Meanwhile, the other two instructors found solutions for providing learners with access to course content. One used the publisher's site and the other learned to develop the content herself. Overall, these instructors gave learners access to the content in a format they were able to support.

One of the largest drawbacks to web-based instruction is the development cost. Yang (2002) reported that developing a website can be a time consuming task. Murnane (2003) reviewed the work associated with creating and maintaining two online postgraduate courses.

Each course used a low-level of technology with a substantial number of pages dedicated to what would be considered lecture content and assignment explanations. It was determined that one course site contained 63,400 words and the other contained 95,500 words. Maintaining and updating a course site of this size is a huge feat, especially during initial site development.

CHAPTER 5. CONCLUSION AND RECOMMENDATIONS

Conclusion

Interaction is generally viewed as contributing to the educational experience. The impact specific technological tools have on the level of interaction has been studied. This study reviewed the influence the instructor's pedagogical philosophy has on the interaction incorporated within the classroom. Three themes were identified as a result of this study:

1. The instructor's pedagogical philosophy influenced the type of interaction incorporated. Instructors who were predisposed to a teacher-centered classroom transferred this focus to the online classroom. Teacher-centered courses primarily relied on learner-content interaction. Meanwhile, instructors who created a learner-centered classroom transferred this focus to the online classroom. In addition to learner-content interaction, these instructors were more likely to include learner-technology and learner-learner interaction.
2. Institutional support impacted the development of the course website. The instructors involved in collaborative partnerships had resources to focus on the website design. These course websites were more fully developed. Furthermore, a collaborative design process afforded the instructor more time to spend on instructional design.
3. The institution's mission and objective for offering the course impacted the course design. Instructors teaching at institutions offering courses to give learners access to content used online instruction as a delivery mechanism whereas instructors teaching classes integrated with majors or degree programs were more focused on how the course met learning objectives. Essentially, each instructor met the institution's goal.

One would expect instructors to incorporate interaction, as interaction is generally accepted to contribute to a positive educational experience. This study indicated the instructor's pedagogical philosophy influenced the amount and types of interaction included. The pilot study yielded similar results. Instructors who are supportive of creating a learner-centered classroom are more likely to integrate more types of interaction. The institution's educational mission influences the instructors' pedagogical philosophy, as does the institution's objective for offering the course in a web-based format. Finally, this study supports the finding that the level of technological support available impacts the amount and type of interaction available.

Limitations

As this study was qualitative in nature, the sample of instructors was small. Instructors from each institution had similar pedagogical dispositions to the other instructor(s) from the institution. While the institution's mission may impact the core teaching philosophies of the instructors who teach there, the sample was too small to generalize the findings to the institution. A larger sample of instructors from each institution or a larger sample of institutions may impact the direction of the findings.

A related limitation is the impact of the learner profile. For the most part, the learners were of a junior standing or higher. The pedagogical philosophy of instructors who predominantly work with adult students may not be generalizable to instructors who teach a younger or more diverse student population. Finally, the student profile was generalized, as the web-based format meant that most instructors never saw their learner. Rather, the

instructor predicted the profile based on interactions from the student, pre-requisites, or general institutional data that described the typical student.

Finally, conversations occurred only with the instructor. Conversations with institutional administrators may yield different results. Furthermore, colleges and departments within the institution may have differing viewpoints. Therefore, broadening the sample to include additional stakeholders may yield different conclusions.

Recommendations

The following recommendations for practice are based on the conclusion of this study:

1. Instructors need to feel comfortable seeking the training or support needed to accommodate course goals. Research and information about considerations for developing an online course could be available when instructors initially agree to facilitate an online course.
2. Institutions need to consider the correlation between technological support and the level of interaction incorporated.
3. In conjunction with reviewing the student profile and objective for taking courses, institutions need to consider its objective in offering online courses. Clarifying objectives should impact the support available to instructors.

While many of these recommendations are directed toward the institution, it may more beneficial at large institutions for departments and colleges to implement each recommendation. As stated previously, the institution plays an important role, because many instructors use a teacher-centered approach in face-to-face classes. In the online

environment, this pedagogical philosophy may contribute to learners feeling isolated and in turn, not succeeding.

The following recommendations for future research stem from the conclusion of this research study:

1. Research participants indicated students generally allot a certain number of hours to completing course work. As instructors determine the type of interaction to incorporate within the course design, they need to consider the amount of time each activity requires. Future research could focus more specifically on the outcomes and learning objectives associated with different types of interaction.
2. A related topic is assessing the learning that occurred in comparison to overall course objectives, especially when the instructor relied on interaction between learners to meet course goals. One instructor mentioned having had a former TA who tried to develop an objective way to measure performance. The TA looked for specific words and a specific number of postings. The instructor commented that assessing subjective discussion boards was like analyzing qualitative research, meaning one could not apply an objective, quantitative measurement to assess what transpired.
3. To assess the effectiveness of different types of interaction, consistent course structures could be used with different levels of students. For example, an introductory science course and capstone science course could each contain the same percentage of each interaction type. This would allow researchers to measure the generalizability of different interaction types to different student groups.
4. A topic that seemed to be of great importance to a couple instructors was integrity. About half the instructors that utilized quantitative assignments and/or testing had

concerns over knowing who was completing the work. Instructors who incorporated more learner-centered activities and qualitative, discussion oriented activities were less likely to have these concerns, but it still surfaced. Knowing who is participating and earning the grade may be an important research topic in order to preserve the validity of web-based courses.

APPENDIX. INTERVIEW QUESTIONS

Each conversation transpired differently to enable the researcher to focus on having a conversation with each instructor and to provide flexibility in the discussion flow. Three consistent topical questions were explored:

1. What are the preferences of the participants in pedagogy of instruction, i.e., lecturing or interactive conversation?
2. What types of interaction are facilitated in a web-based class? Are specific outcomes tied to the interaction included?
3. What support do the participants' institutions provide to facilitators of online courses?

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