Interactivity in Distance Education

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The recent proliferation of distance education among higher education institutions, as a valid educational alternative, has been tremendous. Distance education has grown significantly over the past few years, and this has in turn expanded the possibilities of both teaching and learning. It was estimated that by 2004, there were more than 1.5 million students taking Web-based courses in the United States (Everhart, 2000). Distance education is among the fastest-growing markets in the education industry today. It is also a method employed in other noneducational industries from the private sector to government agencies and professional associations. However, the proliferation of distance education has brought with it concerns regarding student achievement and motivation. Of specific concern is the level of interactivity that is offered by Web-based versus traditional face-to-face instruction. This article is a brief review that addresses the following questions about interactivity in distance education:

1. Is there a clear definition for interactivity?
2. Why is interactivity important in distance learning?
3. How does interactivity relate to students' self-directness?
4. Is there a relationship between interactivity and students' satisfaction with distance learning?
5. Is there a relationship between interactivity and students' motivation and success?
6. Is interactivity also important in e-learning?
7. How can interactivity be incorporated into Web-based courses?

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Is There a Clear Definition for Interactivity?

Interactivity usually refers to the level of communication and participation as well as feedback between learners and instructors. Interactivity, as described by Gilbert and Moore (1998), requires that there be an exchange between the technology employed and the learner. Wagner (1994,

1997) further expanded the definition of interaction as: "reciprocal events requiring two objects and two actions" (p. 20). Interactivity has been an on-going challenge for instructors that teach via the Web. Instructors need to be cognizant of incorporating a significant amount of interactivity into their courses. There are many ways in which a Web-based course can be interactive. For instance, Moore (1980) identified three specific kinds of interactions: interaction with content, interaction with instructors, and interaction among peers. Hillman, Willis, and Gunawardena (1994) identified a fourth type of interaction which they called learner-interface interaction, and defined as "the interaction that takes place between a student and the technology used to mediate a particular distance education process" (p. 31) Thus, interactivity can be incorporated at different levels within a course.

Why is Interactivity Important in Distance Learning?

Visser and Keller (1990) correctly identified the lack of empirical research focusing on the relationship between interactivity, student success, and motivation. The research that has been conducted has demonstrated a strong relationship among these three factors. Some of the research studies include the work by Roblyer and Ekhaml (2000). They concluded that the degree of interaction was a primary factor in students' perception of the course's quality. Gao and Lehman (2003) examined various levels of interactivity in Web-based courses and found that interactivity had a positive effect in student motivation and success. The many advantages offered by interactive courses are mentioned throughout the literature. Simonson (2001) listed as one of many advantages of interactivity, that less-social students may find the distance education environment a positive experience that would allow them to interact more than they would in a face-to-face course. Fischer and Scharff (1998) concluded that interactivity is essential in all technology-mediated environments. Burge (1994) conducted a study in which she employed two Web-based graduate courses. Students in these courses expressed the need for more interaction not only with instructors but with other class participants. Communication is an interactive component that needs to be given serious consideration in distance learning. Muirhead (2001) pointed out that adequate feedback from instructors is necessary to reinforce students' concerns as to whether they have acquired accurate knowledge from Web-based courses, and Burge (1994) stated that distance educators must provide support to their students by "giving fast and relevant assistance by sending timely and individualized messages and providing appropriate feedback to students" (p. 30). Other studies on interactivity have found that students have a need to connect not only with their instructors but also with other course participants (Muirhead, 1999). Distance education faces the challenge of facilitating this interaction among instructors and students. Simonson (2001) stated the importance of interactivity as: "There is something visceral about communication with someone you can see that is missing when that person or group of people is not in sight" (p. 5).

How Does Interactivity Relate to Students' Self-Directness?

Self-directness is an essential quality to be developed by students in Web-based courses. Milheim (1993) stated that a primary goal of adult education is to promote self-directness. The level of interactivity may play a lesser role with students who are more independent and self-directed; however, this does not minimize its importance for these students.

Is There a Relationship Between Interactivity and Students' Satisfaction With Distance Learning?

It is important to also consider the overall satisfaction of students with their distance learning experience. Satisfaction will ultimately lead to motivation, learning, and successful outcomes. Irons, Jung, and Keel (2002) focused their research on access and interactivity, and offered a conceptual model to assess perceived satisfaction with distance learning classes. Their research found that students liked the interactivity offered by virtual classes that included a Web component as long as they could have easy access to the Web. In a study conducted by Davie (1988), students in two graduate level distance courses at the University of Toronto reported a high level of satisfaction with the courses due primarily to the level of interactivity. Thurmond's (2003) research focused on specific perceptions of interactions that could potentially predict student satisfaction as well as students' willingness to enroll in future Web-based courses. The results showed that the most significant predictor was students' perceptions of interaction. Cornell (1999) identified various problems with student motivation and satisfaction in Web-based courses, among which was the level of interaction. Therefore, as Kennedy (2004) stated, "interactivity can increase intrinsic motivation and produce better learning outcomes" (p. 43).

Is There a Relationship Between Interactivity and Students' Motivation and Success?

A concern as a result of the proliferation of distance education concerns its effectiveness, including the level of student learning as well as students' motivational factors towards the learning experience. Many theories and empirical research have shown a direct relationship between motivation and learning, and it has been suggested that interactivity is directly related to learners' motivation, which subsequently leads to positive outcomes. The literature indicates that motivation can positively affect performance. Zirkin and Sumler (1995) examined the effects of interactivity and learning. Their research found a positive relationship between the level of interaction and student learning: "The weight of evidence from the research reviewed was that increased student involvement by immediate interaction resulted in increased learning as reflected by test performance, grades, and student satisfaction" (p. 101). Helmke (1987) found cognitive motivation to be responsible for a variance of 12% on academic learning. Other studies have confirmed that motivation is an important factor in the dropout rates of distance learners (Berge, 2001; Perraton, 2000). Gao and Lehman's (2003) study found a positive effect between various levels of interactivity on student achievement in college Web-based courses. Their findings supported their hypothesis that students who participated in courses that employed higher levels of interactive learning materials outperformed those who participated in courses that employed less interactive and more static components.

Is Interactivity Also Important in E-Learning?

Distance learning in the private and government sectors, often referred to as e-learning, also requires a level of interactivity to be effective. Kaupula and Nycz (2001) described some basic steps to keep e-learning engaging and provide various levels of interaction which include software simulation and scenario based questions. Angehrn, Nabeth and Roda (2001) stated that many e-learning programs are made to resemble traditional face-to-face instruction. They mention some major problems with e-learning programs, such

as poor support for individuals and lack of interactivity, and introduce a system to help designers of e-learning programs incorporate the missing components. Thomas (2001) introduced a concept that examines the issues involved in integrating interactivity into Web-based learning and maximizing the potential of employing the Internet called e-Sim: an online shareable, customisable, re-usable, interactive simulation. Bruk (2005) stated that research conducted by his organization has shown that interactive e-learning training programs have a significantly higher level of retention. Thus, the literature also supports the importance of interactivity in e-learning programs employed in the private sector.

How can Interactivity be Incorporated Into Web-Based Courses?

There are many suggestions offered in industry publications. Sherry and Yamashita (2004) described 10 strategies that they developed for their online courses. These strategies are divided into interactive categories that include: learner to instructor, instructor to learner, learner to learner, learner to content, and learner to technology. Artino (2004) provided a model for cooperative learning that offers various suggestions for incorporating interactivity into a Web-based course. Gao and Lehman (2003) went further to describe two levels of interactive activities that can increase students' outcomes and motivation. These and other studies provide general and specific examples and techniques that can increase interactivity in a Web-based medium of instruction.

Conclusion

Interactivity is a primary component of any distance education and e-learning program. This includes educational programs offered by higher educational institutions, as well as training and other programs in the government and private sectors. It is not possible to mention all the factors involved in interactivity and distance education. This artlicle's intent is only to provide an awareness of the great importance of interactivity in distance education and distance learning. As technology expands, it is necessary for instructional technologists, instructional designers, and educators to keep up with advances in the field and to maintain a high level of interactivity to provide a successful distance learning experience.

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