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Importance of Learner-Learner Interaction in Distance Education

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Importance of Learner-Learner Interaction in Distance Education

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Abstract

The purpose of this paper is to draw conclusions regarding the importance of learner-learner interaction when compared to learner-content and learner-instructor interaction in distance education. The paper examines current research concerning whether one type of interaction is more important than the other types. It briefly reviews the types of interaction that have been proposed for use in distance education, the importance of designing interaction into distance learning environments, and the frameworks suggested for effective facilitation of interaction. While current research may not be able to ascertain which type of interaction is most important to students in distance education, it is the authors' contention that, until research can further clarify the issue, the quality of distance education *should* improve with renewed focus on incorporating learner-learner interaction.

Keywords: distance education, interaction types, learner-learner interaction, design of interaction

1. Introduction

Much has been written in regard to interaction and a significant amount of research indicates that it is a crucial component to the success of distance learning (Berge, 1999; Hillman, Willis, & Gunawardena, 1994; Moore, 1996; Zheng & Smaldino, 2003). Gunawardena (1999) sums up the importance of interaction stating it "is the essential process of putting together the pieces in the co-creation of knowledge" (p. 6). Despite this belief, the degree to which interaction actually affects learning is somewhat unclear (Jung, Choi, Lim, & Leem, 2002; Kearsley, 1995; Kelsey & D'souza, 2004; Reisetter & Boris, 2004; Sabry & Baldwin, 2003). What seems clear, however, is that interaction does contribute to student satisfaction and to continued interest in distance learning environments (Berge, 1999, 2002; King & Doerfert, 1996; Northrup, 2002).

This begs the questions: What are the types of interaction and is one type of interaction more important than the other types for distance education? The authors will begin with a brief discussion of the various types of interaction, the design of interaction, and proposed frameworks for facilitating effective interaction. Current research studies are presented and conclusions are drawn regarding which type of interaction may be the most vital in regards to enhancing the distance education learning experience.

2. Types of Interaction

Moore (1996) identifies three types of interaction: learner-content, learner-instructor, and learner-learner. The assertion is that distinguishing between these three types of interaction will not only have conceptual benefits, but also practical implications when

determining which media to employ. Learner-content interaction is essential to the educational process. By interacting with the subject matter the overall understanding of the learner changes and personal construction of knowledge is enabled.

The second type of interaction, learner-instructor, is widely considered as essential by educators and students alike. This interaction type includes three tasks to be performed by the instructor: to stimulate interest and motivation; to organize application of student learning; and to counsel, support, and encourage each learner.

The final interaction type, learner-learner, finds its value in the areas of application and evaluation. This occurs as learners share information with their peers and receive feedback. While acknowledging the importance of all three types of interaction in distance education, Moore finds that "the main weakness of many distance education programs is their commitment to a particular communications medium, and when there is only one medium, it is probable that only one kind of interaction is done well" (p. 132).

Due to the implementation of high-technology devices for interaction in distance education, Hillman, Willis, and Gunawardena (1994) propose a fourth type of interaction, learner-interface. Their argument is that the interaction types identified by Moore (1996) do not consider the "the interaction that occurs when a learner must use these intervening technologies to communicate with the content, negotiate meaning, and validate knowledge with the instructor and other learners" (Hillman et al., p. 30-31). Ultimately, if the learner has difficulty interacting with the technological interface, the learner may be unable to interact with the content, the instructor and the other learners. The authors reiterate this point in their conclusion by stating, "the learner must be skilled in using the delivery system in order to interact fully with the content, instructor and other learners" (Hillman et al., p. 40).

In more recent research, Northrup and Rasmussen (2000) advocate the addition of learner-feedback interaction. This involves closing the communications loop. Basically, the learner wants confirmation of receipt and accuracy of what was sent (Northrup, 2001). Sutton (2001) suggests a fifth type of inter-

action labeled *vicarious interaction*. This type of interaction is based on the "principle that enhanced achievement and satisfaction may occur even when all students do not interact directly" (p. 224). The basis for Sutton's argument is that learners can learn vicariously through observing the interaction of other students. The author specifically defines vicarious interaction as taking place "when a student actively observes and processes both sides of a direct interaction between two other students or between another student and the instructor" (Sutton, p. 227).

3. Design of Interaction

Not only is it important to define and distinguish the types of interaction that occur in distance learning, but also it is equally important to carefully design interaction into the learning environment so that all relevant types of interaction are represented (Berge, 2002; Dabbagh, 2004; Gunawardena, 1999; Zheng & Smaldino, 2003). Interaction does not just happen; it must be facilitated by intentional efforts on the part of the designer (Berge, 1999; King & Doerfert, 1996; Northrup, 2001). Careful design can affect both attitudes and performance (Hirumi, 2002). It appears that for several researchers, design, and not technology, is the key issue (Berge, 2002; Cassarino, 2003; Chou, 2003; Dabbagh, 2004; Hirumi, 2002; King & Doerfert, 1996; Northrup, 2001; Zheng & Smaldino, 2003).

In order to properly select strategies and tactics in the design of distance learning environments and to facilitate interaction, Northrup (2001) suggests a framework of "interaction attributes" that can be employed. This framework includes interaction with content, collaboration, conversation, intrapersonal interaction and performance support.

Hirumi (2002), however, argues that although the current types of interactions and frameworks are valuable for gaining insight into the use of interaction in distance learning, "they neither illustrate the relationship between, nor provide practical guidelines for sequencing eLearning interactions to facilitate achievement of specified objectives" (p. 143). Hirumi, therefore, proposes yet another framework for interaction based on three levels.

Interactions at Level I take place within the learner. These include cognitive as well as metacognitive processes. Level II interactions happen between the learner and human and non-human resources. This level encompasses learner-instructor, learner-learner, learner-other human, learner-content, learner-interface, and learner-environment interactions.

Finally, at Level III interactions occur between learner-instruction. Hirumi calls this type of interaction an *eLearning strategy*, whereby the interactions include events designed to assist learners in achieving clearly defined objectives. Level III interactions, therefore, constitute a "meta-level that transcend[s] and serve[s] to organize Level II interactions" (Hirumi, p. 148). See Table 1 for a summary of Hirumi and Northrup's frameworks for the design of interaction:

Table 1: Summary of Frameworks

Author	Framework
Hirumi (2002)	Level I – within the learner Level II – between learner and human/non-human resources Level III – between learner and instruction
Northrup (2001)	1) Interaction with content 2) Collaboration 3) Conversation 4) Intrapersonal interaction 5) Performance support

4. The Importance of Learner-Learner Interaction

The current research overwhelmingly supports the efficacy of collaborative learning. One would have a hard time arguing that cognitive development does not occur in a social context (Glaser, 1990). According to Jonassen (1993), ". . . common understandings regularly result from social negotiation of meaning which is supported by collaborative construction of knowledge" (section 2.2). Learners become active participants in social communities and construct identities that relate to those communities (Hannon & Adkins, 2002). This leads to greater depth of learning.

In terms of interaction, what seems to be missing most from distance education is a sense of community. This sense of community is often taken for granted in face-to-face

classes where social interaction is all but a given. The classroom models of instructional delivery and models of online delivery systems are vastly different. Many of the best computer-based, constructivist-style tools for creating open-ended environments, such as simulations and collaborative scenarios, are passed over in favor of more traditional behaviorist-style tutorials (such as "drill-and-kill") and software catering to more objectivist or linear approaches. Distance classes have to foster a sense of community if one is to exist.

Traditional distance education models have the learner placed in relative isolation (Downs & Moller, 1999; Moore, 1986). Within this framework, the learner can still interact with the content and the instructor, but often, there is little-to-no interaction among learners beyond surface email exchanges, discussion board postings, and the occasional online chat. Traditional education, as well as more traditional distance education, is primarily concerned with the relationship between the learner and the material to be learned. Well-designed feedback and interaction in distance education should concern itself with creating a dialogue or conversation among a community of learners (Huett, Moller, & Young, 2004). Moller (1998) adds ". . . the potential of asynchronous learning can only be realized by designing experiences and environments which facilitate learning beyond the content-learner interaction" (p. 115). This outdated concept of learner isolation is being supplanted by the emergence of learning communities in distance education which Tinto and Russo (1993) state "may be the only viable path to greater student involvement" (¶ 21).

There seems little doubt that collaboration can enhance the learning experience: "Online collaboration, in the form of peer work groups and learning communities, increases engagement in the learning process" (Moller, et al., in press). Cifuentes and Murphy (2000) find that distance education communities can "foster powerful relationships. . ." (p. 81). Online learning communities improve student outcomes, foster higher order thinking and creativity, and enhance student involvement (Schallert & Reed, 2004; Tinto & Russo, 1993; Yakimovicz & Murphy, 1995). Palloff and Pratt (1999) consider collaboration the basis of transfor-

mative learning. Distance learning communities have also been shown to increase student motivation (Moller, et al., in press; Schallert & Reed, 2004). Learning communities have been shown to have a positive effect on student retention, participation and goal accomplishment (Cathcart, Samovar, & Henman, 1996).

From the overwhelming support in the research for learning communities, it seems reasonable to assume that improving learner-learner interaction helps to center the individual in a learning process that is as active and cognitively complex as possible. Of the types of interaction explored in this paper, the research would seem to suggest that enhancing learner-learner interaction *should* have the most sweeping effect in terms of improving the overall learning experience in the distance education environment.

5. Recent Research on Interaction in Distance Education

In a case study conducted by Kelsey and D'souza (2004) of a distance education program offered at a university agricultural college, two main research questions were examined: 1. Did the student-content and student-interface interactions motivate learners to favorable learning outcomes; and 2. Did the learner-learner interactions motivate learners to favorable learning outcomes?

The findings revealed that student-instructor interactions were important to both instructors and students. In regard to student-content interactions, students were found to be successful in using the various technologies to meet their learning needs. It was concluded that learner-learner interactions were considered the least crucial for success and the least important to the students. It was also noted that the faculty similarly did not emphasize or demand learner-learner interaction.

A study conducted by Sabry and Baldwin (2003) sought to evaluate the correlation between learning styles and perceptions of learners in relation to the use of interaction types.

Results showed that learner-information scored highest, learner-tutor scored lowest and learner-learner fell somewhere between the two. In conclusion, the authors asserted

that the participants did have different perceptions of different types of interaction. The study indicates that learner-information has the highest score in terms of frequency of use and perception of usefulness. The authors point out that although all three interaction types had relatively low scores in frequency of use, the students' perception was that their usefulness and importance remained high. This indicated a gap between "actual use" and perception.

In a third study, Jung, Choi, Lim, and Leem (2002) contend that most research into interaction has compared traditional face-to-face classes with online classes. The argument presented is that little research has been conducted to compare the consequences of interaction types in distance learning. The purpose of the study, then, is to examine the consequences of the three interaction types on learners in terms of achievement, satisfaction, participation, and attitude. The research questions focused on learner satisfaction, achievement through social collaborative interaction, student participation within the collaborative or social interaction environment, and student attitudes toward online learning according to the types of interaction in which they engage. The authors utilized three interaction groups identified as social, collaborative, and academic which correspond with learner-instructor, learner-learner, and learner-content respectively.

The study implies that different types of interaction may vary in terms of consequences on achievement, satisfaction, and participation in distance learning. In summary, the results show that the social interaction group outperformed the other groups, and the collaborative group expressed the highest level of satisfaction with their learning process. In addition, the collaborative and social groups participated more often in posting their opinions to the discussion board than did the academic group; and regardless of the type of interaction, web-based learning experiences brought about a positive attitude change concerning the use of the web for learning.

Finally in a recent study, Reisetter and Boris (2004) studied a group of South Dakota students. Among several research questions concerning characteristics of online learners and important components for online learn-

ing, they concluded that students placed a high value on learner-content and learner-instructor interaction and note, with some surprise, the low value placed by students on learner-learner interaction.

6. Discussion

From the studies cited above, one can see that little consensus can be drawn regarding which type of interaction is most important to students in distance learning environments. One study found that learner-instructor interaction was perceived as most important, whereas learner-learner was perceived as least important (Kelsey & D'souza, 2004). Another study indicated that learner-content was perceived as most important (Sabry & Baldwin, 2003), followed by learner-learner and, interestingly enough, learner-instructor was perceived as least important. These two studies completely reversed the interaction that students perceived as most important.

Still, another study judged learner-content and learner-instructor as equally important to students with learner-learner, similar to Kelsey's and D'Souza's (2004) findings, relegated to minimal importance (Reisetter & Boris, 2004).

Although the study by Jung, Choi, Lim, and Leem (2003) does not directly ask the question of perceived importance, it can be inferred that learner-learner was perceived as more important than the other types of interaction due to the fact that the collaborative group expressed the highest level of satisfaction and along with the social group had the highest number of postings to the discussion board. Another inference is the placement of learner-instructor as second in perceived importance based on the number of postings to the discussion board. Learner-content can be inferred to be least important based on the author's conclusion that academic interaction was not sufficient to affect learner achievement, participation, satisfaction or attitude.

Numerous other studies advocate the benefits of collaboration and learning communities in online environments (Gay & Lentini, 1995; Kruger, 2000; Moller, 1998; Moller, et al., in press; Moore & Kearsley, 1996). In regard to the aforementioned studies concerning student perceptions about favored

types of interaction, one hesitates to draw any conclusion about the relative importance of learner-learner interaction when compared to other types. Given the extensive research on the benefits of collaborative learning, one can arrive at a working assumption that a greater sense of community will increase motivation, participation, understanding, and satisfaction. So it follows that, if the aforementioned students surveyed about interaction types were actually involved in classes with strong learning communities, they would most likely rate this type of interaction as very important. One is given no clear indication from the studies that learning communities were ever established.

However, the solution may not be that simple. Echoing many of the concerns expressed by Reisetter and Boris (2004), one must ask if we are doing the right thing forcing learning communities on an audience that, quite possibly, neither desires nor needs them. Does the extensive research on the value of learning communities in traditional classroom settings mean that they are a necessary component of online learning? There is simply not enough research to answer what type of interaction distance learners prefer or should be expected to engage in. It seems plausible, given the lack of collaborative learning in K-12 environments, that our educational system is producing learners who prefer to interact with the content and/or the instructor but not each other. It seems equally plausible that the type of learner who typically engages in distance education courses (adult, independent learners with higher internal loci of control) have significantly different goals and preferences when it comes to online learning that may not lend themselves well to learning communities (Navarro & Shoemaker, 2000; Reisetter & Boris, 2004).

This places the distance educator in a philosophical and pedagogical conundrum. Philosophically, one wants to believe in the value of dynamic learning communities; pedagogically, most educators have been trained to value collaboration and have often experienced the educational power of learning communities firsthand. However, the online learner is not the traditional student, and perhaps it is time researchers did a better job of acknowledging that and started thinking differently.

7. Conclusion

Validating the efficacy of learner-learner interaction in distance education environments is not as cut-and-dried a process as one might think. There is extensive research supporting learning communities, but there are also many unanswered questions about the value of learner-learner interaction as it regards the online learner.

That said, until the research can answer some of these questions, it may be best to err on the side of caution and the volumes of research promoting collaborative learning communities and focus design efforts on improving this aspect of distance education delivery. While current research may not be able to ascertain which type of interaction is most valuable or necessary to students in distance education, it seems plausible that, given all the documented benefits of learning communities, the quality of distance education should improve with renewed focus on incorporating learner-learner interaction.

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