# The Importance of Interaction in Web-Based Education: A Program-level Case Study of Online MBA Courses

Bude Su
Curtis J. Bonk
Richard J. Magjuka
Xiaojing Liu
Seung-hee Lee

*Indiana University*

***Abstract***

*Though interaction is often billed as a significant component of successful online learning, empirical evidence of its importance as well as practical guidance or specific interaction techniques continue to be lacking. In response, this study utilizes both quantitative and qualitative data to investigate how instructors and students perceive the importance of online interaction and which instructional techniques enhance those interactions. Results show that instructors perceive the learner-instructor and learner-learner interactions as key factors in high quality online programs. While online students generally perceive interaction as an effective means of learning, they vary with regard to having more interaction in online courses. Such variations seem to be associated with differences in personality or learning style. The present study also shows that instructors tend to use technologies and instructional activities that they are familiar with or have relied on in traditional classroom settings. When it comes to learning more sophisticated technologies or techniques, instructors vary significantly in their usage of new approaches.*

The rapid development of computer and Internet technologies has dramatically increased the ways of teaching and learning. Among these new approaches, online Web-based education has become a promising field. In the United States alone, the number of students enrolled in distance education classes has increased from 753,640 in the 1994-1995 academic year, to an estimated number of 3,077,000 in the 2000-2001 academic year (Lewis, Alexander, & Farris, 1997; Waits & Lewis, 2003). While increasing enrollment is certainly desirable from an administrative perspective, there is a growing concern about program quality. How can universities guarantee quality online programs when in the midst of such explosive growth? What are the exemplary pedagogical experiences that can help establish a high quality online program? These questions are not new in the field; however, answers to these questions are slow in emerging.

Many educators point out the importance of interaction in high quality online education. For instance, Shale and Garrison (1990) state that interaction is "education at its most fundamental form" (p. 1). In addition, Palloff and Pratt (1999) argue that the "keys to the learning process are the interactions among students themselves, the interactions between faculty and students, and the collaboration in learning that results from these interactions" (p. 5). A sage in the field of distance education, Moore (1992) points out that increasing the interaction between learner and instructor can lead to a

smaller transactional distance (i.e., a physical separation that results in a psychological and communicative gap) and more effective learning. Other empirical evidence also suggests increased interaction results in increased student course satisfaction and learning outcomes (Irani, 1998; Zhang & Fulford, 1994; Zirkin & Sumler, 1995).

Although the literature shows the importance of interaction for quality online education, interaction seems missing in many online courses (El-Tigi & Branch, 1997). Stenhoff, Menlove, Davey and Alexander (2001) pointed out that instructor unfamiliarity with technology is one of the key reasons why they do not know how to promote online interactions in practice. It seems obvious that there is a need to understand which instructional techniques and activities can promote interaction in online education. Driven by this overarching research purpose, two specific research questions are raised for this study:

1. Which instructional activities and technologies are used to promote online course interactions?
2. How do the students and instructors perceive online course interactions?

## Literature review

### *Interaction Versus Interactivity*

Before discussing the types of interaction and the activities that enhance online interactions, it is critical to understand the definition of interaction. There is considerable debate reported in the literature over the definition of interaction (Gilbert & Moore, 1998; Sutton, 2001; Wagner, 1994). Rose (1999) pointed out that especially in the domain of instructional technology; the concept of interaction is "a fragmented, inconsistent, and rather messy notion …" (p. 48). It becomes more confusing because interaction often is used interchangeably with the term interactivity. When pointing to the differences between interaction and interactivity, Wagner (1994) argued that "interactions are reciprocal events that require at least two objects and two actions. Interaction occurs when these objects and events mutually influence one another" (p. 8).

On the other hand, she claimed that interactivity "appears to emerge from descriptions of technological capability for establishing connections from point to point (or from point to multiple points) in real time" (Wagner, 1997, p. 20). From this perspective, interaction seems more process-oriented and focused on dynamic actions. And interactivity seems more feature-oriented and emphasizes the characteristics of the delivery system or the degree of interaction that certain communication channels provide. Others in the field also allude to the technology dependent nature of the concept of interactivity. For instance, Heeter (1989) pointed out that the term "interactivity" has yet to be clearly defined; however, it is often used as a concept to differentiate among new technologies. Steuer (1992) defined interactivity as "the extent to which users can participate in modifying the form and content of a mediated environment in real time" (p. 84). Thus, the words "interaction" and "interactivity" seem to address and describe same thing from different angles. As shown above, there is an effort in the literature that attempts to distinguish the concepts of "interaction" and "interactivity." However, in reality, people often use them interchangeably.

***Types of Interactions***

Before the explosion of online teaching and learning, a well-recognized classification of interactions in distance education was offered by Moore (1989). His three-part interaction scheme included: (1) learner-instructor, (2) learner-learner, and (3) learner-content interaction. *Learner-instructor interactions* establish an environment that encourages learners to understand the content better. This type of interaction is "regarded as essential by many educators and highly desirable by many learners" (Moore, 1989, p. 2). *Learner-learner interactions* take place "between one learner and other learners, alone or in group settings, with or without the real-time presence of an instructor" (Moore, 1989, p. 4). Many studies show that this type of interaction is a valuable experience and learning resource (Bull, Kimball, & Stansberry, 1998; Vrasidas & McIssac, 1999). Empirical evidence shows that students actually desire learner-learner interactions, regardless of the delivery method (Grooms, 2000; King & Doerfert, 1996). *Learner-content interaction* is defined as "the process of intellectually interacting with content that results in changes in the learner's understanding, the learner's perspective, or the cognitive structures of the learner's mind" (Moore, 1989, p. 2). Although learner-content interaction is well recognized as a type of interaction, there is not much discussion about learner-content interaction in the current literature. This is probably because different contents may require different interaction patterns, and, thus, it is difficult to have a generalized discussion about such interaction.

Given the technology-mediated nature of online education, learner-interface *interaction* is considered to be another important type of interaction. Hillman, Willis and Gunawardena (1994) point out that this type of interaction occurs between the learner and the technology used for online education. She further points out that it can be one of the most challenging types of interaction due to the fact that people have not experienced having learner-interface interaction in their traditional classroom education.

There are some other types of interactions that are not as widely discussed such as *vicarious interaction* (Devries, 1996; Sutton, 2001) and *learner-self interactions* (Soo & Bonk, 1998; Robertson, 2002). For instance, Devries (1996) pointed out that "vicarious interaction means that learners are participating internally by silently responding to questions" (p. 181). Vicarious interaction often happens when a learner chooses to observe rather then actively participates in online discussions and debates. Learner-self interaction emphasizes the importance of 'self-talking' when engaging with learning content (Soo & Bonk, 1998). Although it is critical to recognize the existence of learner-self interaction, Moore (1989) argues that it can be treated as an essential part of the learner-content interaction. However, scholars coming from a sociocultural perspective which emphasizes self-talk as a means of internalizing strategies witnessed on a social plane would likely differ with Moore on this issue.

The purpose of discussing different forms or types of interaction is to provide a more holistic picture of the literature in this field. It is not the focus of this study to explore which classification is correct or easier to identify. A factorial analysis may be needed for that kind of research. Through documenting some of the literature about interaction, researchers hope to demonstrate what instructional activities and technologies are used in practice to enhance interaction in general and how students and instructors feel about these interactions. In the current study, not all types of interaction are explored. The main focus is on the human interactions that include learner-instructor, learner-

learner, and vicarious interactions. Learner-content and learner-interface interactions are not addressed in detail here due to several limitations and deficiencies in the research data (e.g., we did not conduct usability testing with online learners or videotape them when engaged in online learning activities).

### *Technologies and Instructional Activities That Promote Interactions*

Constructivism posits that knowledge is generated or constructed by the learner through his or her interactions in the environment. People build meaning and make sense of their world through interacting with their surroundings. Social constructivists believe that learning occurs through social dialog and shared experiences (Jonassen, Davidson, Collins, Campbell, & Haag, 1995). From this perspective, interacting with others and with learning materials seems vital for learners to construct the knowledge internally. In effect, the mind, according to social constructivists, extends beyond the skin. The instructor's role is to use various technologies and instructional activities that will deepen learner understanding of the subject matter as well as critical reflection and analysis skills.

***Technologies for enhancing interactions***. In online education, there are presently a number of technologies and instructional activities used to promote course interactions. Frequently used technologies in online courses include textbooks; multimedia that combines text, images, and audio either through Internet or CD Rom; streaming audio and video; and synchronous and asynchronous communication tools, such as discussion boards, instant messaging, and voice chatting, and file-sharing (McGreal, 2004). However, the availability of these technologies does not necessarily mean that they are present in every online course. In addition, Soo and Bonk (1998) point out that the choice of technologies used in online courses is more often decided by economic, technical, or even political motives rather than pedagogical rationales.

In the current study, researchers aim to outline a pattern of general interactive technology usage in online graduate education, specifically online MBA courses. At the same time, the primary instructional activities used to promote course interactions are examined.

***Instructional activities for enhancing interactions***. An instructional activity is an educational event that helps students to understand the content better and enhances their engagement in learning. It is somewhat different from the traditional concept of instructional method. In general, a unit of instructional activity is smaller than a unit of instructional method. For example, case-based learning is considered to be an instructional method that uses real or hypothetical cases to help students develop critical thinking skills and analytic ability for later use in real world contexts. This one method can have many instructional activities to help accomplish these instructional goals. Bonk and Kim (1998), for example, outline a number of instructional activities that could be used to help scaffold cased-based instruction and generally assist in the learning process, such as questioning, feedback and praise, encouraging articulation and dialogue, and management, to name a few. There can be any number of instructional activities used to promote course interactions, thereby creating an environment more conducive to learning.

Educators have been employing various activities on their own to enhance interaction and increase learning. For example, Branon and Essex (2001) point out that

virtual office hours can help enhance learner-instructor interactions and other types of interactions in online education. In addition, Peters (2000) notes the importance of teamwork in learner-learner interactions. Similarly, Sutton (2001) encourages students to read others' online discussions to learn through vicarious interactions. In terms of other types of online interaction, Kerka (1996) recommends that learners respond to questionnaires in order to enable students to self-examine their opinions related to the content, thereby increasing learner-content interaction.

As discussed above, the literature suggests that there are numerous valuable instructional activities in practice. Despite all the literature promoting the importance of online interaction, the field is lacking in synthesis. There is no clear direction or overview for online interaction. In addition, there is a dearth of research on this topic. The present study addresses this research gap and reveals areas wherein online course interaction is vital.

## Methodology

According to Yin (1994), when the research questions aim to answer "how" or "what" questions related to certain phenomenon within real life contexts, the case study is an appropriate research method. Therefore, the current study uses a program-level case study to determine how interactive the online MBA courses were in general and what instructional technologies and activities were employed to promote online course interactions. One advantage of conducting a program-level case study is the ease in which the commonly applied instructional strategies can be extracted across different subject matters (or courses). This study was conducted in an accredited online MBA program in a large mid-western university in the United States. This online program was designed for professionals who want to continue their employment while earning graduate degrees or certificates. It is the only graduate management program offered by a top 20-business school that is delivered almost exclusively over the Web. In just a few years, the program has grown to include hundreds of students and over 70 online course offerings.

A total of 26 faculty members and 10 second-year online MBA students participated in an in-depth individual interview that took approximately an hour to administer. Two focus group student interviews were conducted to collect data on the same questions from different sources. A total number of 102 second-year online MBA students completed the survey that collected student perceptions of online learning. Demographically, 82 percent of the online MBA students were males, about 80 percent were between 26 to 40 years old, and 90 had taken more than seven online courses in the program. The survey contained 58 Likert-type scale items and four open-ended questions. The internal reliability of the survey, as measured by Cronbach's alpha, was .91.

Another data source of this research was from content analyses of the course documents and class assignments from 27 online courses, including student participation in class activities via a learning management system or shared class collaboration spaces. Two researchers independently conducted the course content analyses according to common themes. Their final inter-rater reliability was .81.

Patton (1990) pointed out that the constant comparison method can be used to analyze different perspectives on the questions by cross-case grouping of answers. Since the current study consisted of multiple interviews of different individuals, the constant

comparative method was used for the cross-case analysis to summarize emerging issues. Several researchers were helped test the reliability of the coding. Member checking was used to ensure the trustworthiness of the study.

Both quantitative and qualitative methods in this study, in part due to the diverse nature of the study's questions and, in part, due to the fact that these different methods enrich and triangulate the main data sources. Table 1 highlights how the different questions necessitated different data collection methods. The first question regarding commonly used instructional technologies and activities concerns course design issues. Since the courses had already been designed and delivered online, content analysis was used as the main data source for examining which instructional technologies and activities were used to promote online course interaction. The content analysis provided solid evidence of course design features that were present. The second research question about participant perceptions was best answered by interview and survey data. These additional data sources served to strengthen the results. For example, student survey data provided information regarding how students feel about the technologies and instructional activities which content analysis could not detect. The student survey data also triangulated the interview data to provide a more powerful interpretation of student and instructor perceptions of the importance of interaction.

**Table 1**

***Data collection methods for each research question***

| Research Question | Methods | Data Source |
|---|---|---|
| Q1. Which instructional activities and technologies are used to promote online course interactions? | Content analyses of online courses | 27 online courses |
| | Survey research | 102 students |
| Q2 & Q3. How do the students and instructors perceive online course interactions? In what ways do their perceptions seem differ from each other? | Student and instructor interviews | 26 instructors, 10 students individual interviews, and 2 focus group student interviews |
| | Survey research | 102 students |

## Results and discussions

### *Commonly Used Instructional Technologies and Activities*

Online education is still in a highly preliminary stage regardless of its extensive acceptance in many fields or disciplines in higher education. It is conceivable that faculty members will attempt to build up from their traditional teaching experiences, especially when there is lack of practical guidance on how to carry out online instruction. As much as one might encourage instructors to be creative and transformative, such innovations take time to develop. People often feel comfortable building upon what they are familiar

with instead of starting out creative. While such transitional stage from transfer to transformation is understandable, organizations should look for the best practices to help shorten this transitional process. Such organizational support not only improves the local program quality, but also helps expedite the overall development of distance education by providing more successful teaching and learning cases to the field. This program-level case study tries to provide a fairly holistic picture on which instructional technologies and activities are used to promote interactions in the current stage of online education.

***Technologies used to promote interactions***. The technology tools used for enhancing course interactions are displayed in Table 2.

**Table 2**

***Summary of Technology Tools and Other Course Resource Used in Online MBA Program***

| Technologies | Course using | Course not using | Percentage of usage |
|---|---|---|---|
| Text books | 27 | 0 | 100% |
| Email | 26 | 1 | 96% |
| Text-based two way communications/discussions | 25 | 2 | 93% |
| -Asynchronous text-basted (e.g., discussion forums) | 23 | 4 | 85% |
| -Synchronous text-based (e.g., chat) | 11 | 16 | 41% |
| Interactive quiz tools | 18 | 9 | 67% |
| PowerPoint slides | 15 | 12 | 56% |
| Web-pages | 13 | 14 | 48% |
| Audio and video clips | 12 | 15 | 44% |
| Telephone | 8 | 18 | 30% |
| Voice- and visual-based two way communications (voice mail, instant messaging, video conf. etc.) | 0 | 27 | 0% |

Textbook, email, and asynchronous text-based two-way discussion tools are used extensively in the current online program. The usage of the technologies that require some instructor training had much variability. About half of the instructors had audio and video clips integrated into their teaching with help from a technical support person who recorded and edited these clips. Nevertheless, student interview data revealed that some students hope more audio and video components can be added to their online courses.

While about 52 percent of the respondents thought that the program could integrate more new technologies into its courses, the research findings show that the voice- and visual-based two way commutations were not being utilized in these MBA online courses. The lack of two way communications with multimedia can be due to a couple of primary reasons. First, voice- and visual-based two way communications have not been widely used in practice and often require students and instructors to acquire the required technologies and technical skills. Such increased demand on technology and

technical skills inevitably reduces the accessibility. Second, student's work, family, and travel schedules often do not allow them to participate in real time communications. Since voice- and visual-based two way communications often require synchronous interactions, increased integration of such a component will certainly impact the flexibility of the program. This interpretation is consistent with Campbell's (2000) observation: family responsibilities, inflexible schedules, requirements for new technological equipment, and special arrangements such as videoconferencing all contribute to the difficulty level of the online learning. One of the advantages of taking online courses is the flexibility of taking them anytime from anywhere. Therefore, there is an issue of balancing new interactive technologies, accessibility, and flexibility in current online courses.

Is this dilemma an inherent feature of online education? Or is it something that can be solved with further development in technology and pedagogy? Further research is needed in this area to provide exemplary practices regarding how and which new technologies can be utilized to enhance the interactive communication environment without decreasing accessibility and flexibility.

In general, students think that the courses in this online program use technologies effectively in supporting learning and teaching ($X = 3.83$ on a 5-point Likert scale). And this favorable perception about technology usage is positively correlated with student overall satisfaction with the online course quality ($r = .39$). Although, taken as a whole, students perceive that the technologies used in the program help foster deep learning ($X = 4.07$), male students have significantly more positive attitude than female students ($F = 6.92$, $p<.01$). This attitudinal difference between genders may be explained by a study from Bernard, Mills and Friend (2000). In that study, the researchers found that males have significantly lower levels of computer anxiety than females even though there was no significant difference in the use of new technologies for interactions between males and females.

***Instructional activities used to promote interactions.*** Instructional activities that were used to promote course interactions can be found in Table 3. Content-related instructional activities (such as summarizing key points, asking/responding to questions, giving feedback, and instructor participation in class discussions) were widely used in most of the courses. Such findings indicate that instructor-learner interaction is a key part of this program. This point can be further illustrated by the survey data. About 80 percent of the respondents agreed that their instructors used various instructional activities to foster students' critical and reflective thinking. The instructor efforts toward improving student critical and reflective thinking also positively correlated with the students' course satisfaction ($r=.51$).

**Table 3**

***Summary of Instructional Activities Used in Online MBA Courses***

| Instructional Activities | Course used | Course not used | Percentage of usage |
|---|---|---|---|
| Asking/responding to instructor questions | 27 | 0 | 100% |
| Feedback on assignments | 27 | 0 | 100% |
| Summary of class key points/concepts | 26 | 1 | 96% |
| Instructor participation in class discussions | 25 | 2 | 93% |
| Team-based learning activities | 22 | 5 | 81% |
| Participation in online discussions as part of assessment | 18 | 9 | 67% |
| Small team discussions | 11 | 16 | 41% |
| Instructor participation in team discussions | 1 | 26 | 4% |
| Virtual office hours | 3 | 24 | 11% |
| Inter-team feedback/critique | 4 | 23 | 15% |
| Peer evaluation | 5 | 22 | 19% |
| Student online coffee house | 2 | 25 | 7% |
| Student introduction forum | 2 | 25 | 7% |
| Bulletin board to express student expectations | 4 | 23 | 15% |
| Newsline | 2 | 25 | 7% |

The instructional activities that promote learner-learner interactions are the next most commonly used methods. For example, team-based learning methods can help students work closely with each other on a given topic or project. Participation in discussions as part of assessment further pushes students to join the class conversation. Arranging small group discussions, asking students to give feedback or critique each other's work, and conducting peer evaluations all help establish rich interaction among students.

Although there are numerous instructional activities employed to promote academic interactions, over half of the survey respondents expressed a need for more interactions among students and between the instructor and students. Students do not want interaction to be limited to academic topics, but also want to know each other better and to build a more cohesive learning community. Only two out of the 27 courses in the program designed social interaction activities such as the coffeehouse hours, social chats, or introductory forums related to the online course management system. Some students expressed that they hoped to see an online profile that included a picture and a brief resume of everyone in the class.

Based on the results reported in Table 2 and Table 3, it is apparent that instructors are skilled at using various instructional activities and technologies if they have had similar experiences using them in traditional classes. Asking questions, giving feedback, communicating with students via text-based tools, and using team-based approaches do not seem to require additional skill or effort by faculty. When it comes to more sophisticated technologies or time to learn new techniques, instructors vary in their usage.

These findings confirm what Thomas, Carswell, Price, and Petre (1998) pointed out from their experiences at the Open University (OU). The OU researchers indicated that college faculty members tend to translate more often than to transform when it comes to distance education. They further pointed out that it happens because faculty lacks the time, the required skills, and the experience to work in the new environment. While these findings are not surprising, it suggests the importance of faculty training and support when it comes to online education. If instructors are not familiar or are unaware of the availability of better technologies and instructional activities, how is it possible for them to employ these new techniques to improve their teaching quality? Then again, such faculty training should be based on further research with regard to instructional effectiveness and student preferences regarding instructional activities and technologies. Summaries of the research to date, stories from faculty peers of their online learning successes and struggles, illustrations of best practices, and resources embedded in online learning portals might help inform such faculty training and guidance. In addition, teams of specialists from teaching and learning centers with diverse skills can be another way to bridge the sometimes considerable gaps that are present between traditional and online environments.

Given the limited faculty training in this program, it was encouraging to note that several instructors had been experimenting with innovative instructional techniques while teaching online. Although only a small number of courses employed new approaches such as virtual office hours, online cafes, expert chats, or online introduction forums, their adoption represents an attempt to introduce teaching and learning strategies that are unique to online environments. While the effectiveness of these new strategies is still under examination, the development of online education unquestionably needs such innovations. The instructors who try to be creative and transformative in their teaching strategies are all innovators and their efforts should be encouraged and rewarded. Innovative online instruction requires such support and experimentation.

***Student and Instructor Perception of Online CourseIinteraction***

***Instructor perspective.*** Online instructors perceive the interactions between the learner and the instructor and among learners as critical elements of quality online learning. At the same time, they often believe that indirect vicarious interaction among learners is critical as well. Still, many instructors claim that they are uncertain about how to promote interactions in online environment. Communications among instructors about effective online instruction should help improve their online teaching practices.

*Learner-instructor and learner-learner interactions are the key:* Most of the online instructors (N=26) perceived learner-instructor and learner-learner interactions as leading factors in a successful online MBA education.

> "The emphases on two-way communications I think are the most important things" (Emily).

> "The interaction with the faculty is probably the key" (Cathy).

> "…(The) best teachers in the business school are those that enjoy intense interaction and, at one level, as technology advances I think the better teachers will gravitate toward it" (Tim).

> "How are they communicating? How are they interacting with their peer(s)? Are they building on the conversation? From my perspective, that's an important managerial skill to develop and as we move into an online environment, they've got to learn how to do that in (an) online fashion" (Peter).

*Vicarious interactions are important as well*: Several instructors also pointed out the importance of vicarious interactions. They hoped students could read others' postings in the discussion forums and learn through observing how others respond to emergent questions and problems. Such peer modeling of problem-solving methods supports the social constructivist beliefs mentioned earlier. Some instructors revealed one of the reasons that there was a lack of vicarious interaction in the current online program was due to the technology.

> "I felt like the way that the discussion forums were put in… You just kind of post it and it's closed. And I felt like that what people were often doing rather than reading what else was there. They were just posting something…part of it, I think, was the technology" (Terry).

> "I really wish the technical folks would get that changed because it's not as good in the interactive learning environment because people aren't reading what others are saying" (Jerry).

*Lack of experience and skills to promote online interactions*: Obviously, instructors believe interaction is a critical element in online education. However, many of them admit that they do not know how to boost interaction in online environments.

> "The game isn't all that complex, but they get involved in discussing with each other and talking strategy and arguing, and that's where the learning is. And I don't think that happened [online] and I don't know how to make that happen" (Jane).

> "I couldn't figure out a good mechanism for them to present their stuff to their students, to their classmates. So I didn't have that, and I think that's a loss, that's a difference. Now there's probably ways to do that, maybe, but I didn't know what that way would be" (Greg).

*Lack of idea exchanges among instructors*: The challenge of making online classes more interactive not only illustrates the importance of further research on this area, but also demonstrates a need for instructor-instructor interaction within the program as well as with outside experts. Some instructors have experimented with creative ideas including the use of sound and visual clips instead of text-based lecture, experimenting with new

synchronous communication technologies such as the NetMeeting, and adjusting group size to increase peer interactions. Sharing instructional techniques with experienced instructors and experts does not only improve online program quality, but can also minimize the prejudice that some people have toward the certain types of emerging technologies. A couple instructors did not use available technologies because they did not trust technology or because they have heard horror stories from others.

> "My ideal would be to have some interaction with the students and I just have heard that the chat function gets too hard to navigate and, you know, I just heard a lot of horror stories. So I did not try that" (Ray).

On the other hand, several instructors report that they really enjoy using the available chat session to communicate with students.

> "What I try to do every week is have a chat session and I find those usually work pretty well…I enjoy seeing what the technology can do…I'm interested in kind of staying on top of what's possible as far as that goes" (Sam).

Since such attitude differences toward new technologies can lead to a variety of instructional activities, it may help if the program arranges occasional faculty communication opportunities where successful practices can be demonstrated to others.

***Student perspectives.*** Student perceptions vary when it comes to the importance of the interaction in online learning. Such differences in perceptions seem to be associated with differences in the individual personality traits or learning styles.

*Individuals differ in their perceptions of the importance of online interaction*: Compared to faculty's views, students seem to vary in their perceptions of online interaction. Some students crave for more interactions.

> "I personally prefer to have more interaction, because that is the way that I learn" (Brian).

> "We do not often have enough interaction and it's especially difficult for me" (Dave).

The student survey data revealed that one-third of the respondents thought more interactions were needed between student and instructors and among students in the online courses. However, the student interview data also showed that a number of students do not want much interaction.

The following quotes point out that individual personality differences have an impact on how students perceive the importance of online interaction.

> "I don't really crave [interaction] too much. I get a lot of it at work and you know at home as well...I'm very much an individual worker…I'm self

> motivated so like it's not so much the communication with others…[what I least enjoy is that] I have to say communication again" (Brad).
>
> "You might not get some of the social relationships with the people; I guess I'm not that much of a social person, so it's been good for me" (Donald).
>
> "I probably have the same amount of interaction with instructors that I would if I was there full-time, because I was the student in the class I never had much interaction anyway, I don't ask questions, I kind of just sit in the back of the room and listen and that's the way I've always been, so this is virtually the same for me" (Jacob).

*Expectation of interaction gets lowered when it comes to online learning:* On the other hand, student expectation of interaction gets lowered when they take online courses. Several students mentioned that it is quite difficult to interact in a natural way without hearing and seeing others' responses.

> "I think it's probably about as good as it can be. When you do this sort of a program and it's with people that typically all have full time jobs, they all have to schedule around family commitments and work commitments, the level of interaction between the students is difficult. It could be better but I don't see how given the constraints everybody is under" (Bill).

In general, instructors see interaction as an important aspect of learning in online environments and try to enhance course interactions as much as possible. Students, however, tend to vary in their preferences of having more online interaction, even though about 94 percent of the survey respondents believed that interacting with other students and instructors created more meaningful learning experiences. And such variation seems to reside in individual personalities or learning style differences. Another finding was that the web-based nature of online education combined with job or family responsibilities appeared to reduce student expectations of course interaction.

**Table 4**

***Summary of instructor and student perceptions***

| | Instructors | Students |
|---|---|---|
| Online interactions | Instructors perceived online interaction as an important factor to successful online teaching and learning | Students differ in their perceptions of the importance of online interaction |
| Reasons why there is not enough online interactions | 1.Lack of experience and skills to promote online interactions<br>2.Lack of idea exchanges among instructors | 1.Not all students want more interactions due to personality or learning style differences<br>2.Expectation of interaction gets lowered when it comes to online learning |

## Conclusion

Instructors of online courses perceive interaction as an important aspect of a successful learning. A number of technologies and instructional activities are employed to promote course interactions in general. However, instructors vary when using the technologies and instructional activities that require sophisticated technical skills or that need a significant amount of time to learn how to use them effectively. Furthermore, instructors admit that they have difficulty making their online courses as interactive as they wish. The difficulties of reaching a desired level of interaction in online courses appears not only is associated with faculty limitations in their technical skill and/or lack of time, but also is related to "old habits" or mind sets that they have developed over many years of teaching in traditional face-to-face educational settings. When the teaching context changes to a totally new environment, instructors face difficulties transforming their instructional skills that have been accumulated over the years. On the other hand, it is exciting to observe that some creative instructors attempting new instructional activities and technologies that are unique to online education. To help reduce such gaps of teaching skill in online environments, periodic experience sharing among online instructors, experts, and instructional specialists is recommended.

While interaction, in all its varied formats, is perceived as an effective means for learning, students tend to vary in their preferences about additional interaction in their online courses. Such variations tend to be related to individual personalities or learning style differences. Further research is needed to determine the relationships between learner preferences related to online interactions and individual differences. Although not everyone hopes to have highly interactive online courses, lowered expectations do not necessarily mean that they do not want higher interactions. Therefore, instructors should continue to search for effective instructional strategies to overcome the numerous barriers of interactive online learning environments.

Although the current research intended to address all types of online interaction in this study, the result is heavily focused on human interactions. One of the key reasons that learner-content and learner-interface interactions were not addressed directly here was due to lack of previous research on the topic. The dearth of research either reflects the need to conduct more studies on learner-content and learner-interface interactions or demonstrates the necessity of refining the conceptual understanding on these types of interactions.

Like all case studies, the current research is limited in its ability to be generalized. Although a substantial number of courses, instructors, and students are involved in this study, readers should keep in mind that this is a program-level case study that examined online MBA courses only. While it reveals part of the picture of what is transpiring in online business education, similar studies in other disciplines are needed to provide more data and evidence on the fast emerging issues related to online interaction.

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**About the authors:**

**Bude Su** is a Ph.D. candidate in Instructional Systems Technology. She is a research fellow at Kelley Direct Online MBA program at Indiana University. Previously she was the National Director of International Education and Resource Network in China (http://www.iearn.org ). Her major research interests include online teaching and learning, technology integration in education, organizational behavior and knowledge management. She can be contacted at subude@indiana.edu .

**Dr. Curt J. Bonk** is a Professor of Educational Psychology as well as Instructional Systems Technology at Indiana University. Dr. Bonk is also a Senior Research Fellow with the DOD's Advanced Distributed Learning Lab. He has received the CyberStar Award from the Indiana Information Technology Association, Most Outstanding Achievement Award from the U.S. Distance Learning Association, and Most Innovative Teaching in a Distance Education Program from the State of Indiana. Dr. Bonk is in high demand as a conference keynote speaker and workshop presenter. He is President of CourseShare and SurveyShare. More information about Dr. Bonk is available at http://mypage.iu.edu/~cjbonk/. He may be contacted at cjbonk@indiana.edu.

**Dr. Richard J. Magjuka** is a professor of business administration in the Kelley School of Business. He has been the faculty chair of Kelley Direct since its inception. His primary research interests are the design and delivery of effective online education and in online pedagogy. He received his undergraduate degree from the University of Notre Dame and his Ph.D. from the University of Chicago. He may be contacted at rmagjuka@indiana.edu .

**Xiaojing Liu** is Ph.D. candidate in Instructional Systems Technology and a research fellow at Kelley Direct Online Program at Indiana University, Bloomington. Her research interest focuses on online learning, information systems, communities of practices, and knowledge management. She can be contacted at xliu@indiana.edu .

**Dr. Seung-hee Lee** is a researcher at Kelley Direct Online Program within Kelley School of Business at Indiana University. Dr. Lee earned her doctorate from Hanyang University in Seoul, Korea in 2003. She worked as a postdoctoral research fellow at Indiana University for one year from September 2003- December 2004. Previously, she had worked in the Center of Learning and Teaching of Korean National Open University in Seoul, where she consulted promoted faculty development, and instructional design and development for e-learning. Major research interests of Dr. Lee are online collaboration, reflective technologies, e-learning in higher education, and online moderating/mentoring. She can be contacted at seuselee@iupui.edu .