ONLINE LEARNERS' PREFERENCES FOR INTERACTION

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The purpose of this study was to investigate types of interactions that students perceived to be important for elearning. Interaction attributes studied in this investigation included content interaction, conversation and collaboration, intrapersonal/metacognitive skills, and need for support. This study was an initial investigation of learner perceptions of online interaction. Data were collected through the administration of the Online Learning Interaction Inventory (OLLI) to 52 graduate students in an online masters program. Online learners reported that flexibility (M = 4.65, SD = .74) and convenience (M = 4.13, SD = 1.14) were the two primary reasons why they selected to learn at a distance. Indicators of interaction were noted in each of the four interaction attribute areas. However, the idea of self-regulating learning (M = 4.58, SD = .72) and having timely feedback from the instructor (M = 4.48, SD = .64) was reported as most valued by participants.

Interaction has been defined from many perspectives. Most simply stated *interaction is engagement in learning* (Hillman, Willis & Gunawardena, 1994). It is agreed that interaction must be designed into an instructional program and that it is an important variable for online learning. Berge (1999) suggests that interaction is important to learner satisfaction and that it assists in maintaining student persistence in courses. With retention in online learning programs being as low as 50% in some cases and course completion rates in traditional courses at 10-20 percentage points higher than in online courses (Carr, 2000), learner satisfaction is a key variable. With interaction being a component of overall student satisfaction, interaction should be considered when trying to increase retention in online courses. However, from the online learners point of view, too much interaction may be perceived as busywork and lead to frustration, boredom, and overload (Berge, 1999); while too little interaction may result in student isolation. Both are considered frustrating and a balance has to be found.

The term interaction has been classified using many frameworks and taxonomies over the years. The most notable is Moore's (1989) communications framework classifying engagement in learning through (a) interaction

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between participants and learning materials, (b) interaction between participants and tutors/experts, and (c) interaction among participants. Interaction between participants and learning materials may take many forms and may be as simple as a student logging onto an online course and reading the weekly text. Or, it may be more complex with students engaged in an individual WebQuest (Dodge, 2001). Interaction between participants and experts likely would include participant to instructor dialog over an assignment communicated via email, chat room, or some other asynchronous method. Moore's third classification, interaction among participants may include collaboration among teams of online students discussing the problem of the week through a threaded discussion or on a group listserv. All three of the classifications of interaction are very open-ended, allowing for much flexibility in the design of engaging, interactive online learning.

Another approach to classify interaction is Gilbert and Moore's (1998) approach, dichotomizing it as content or social interaction. Content interaction is always directed at attaining the specific learning outcomes or goal of the instruction. Although a broad category, the notion is that any type of interaction directed at achieving instructional success would be classified as content interaction. Social interaction on the other hand, provides opportunities for peers to connect in non-task specific conversation (Northrup, 2001a). At least initially, this should be intentionally designed into the course. As a course evolves, this type of dialog will continue on its own. By the very nature of social interaction, learners will be able to directly foster content interaction (Liaw & Huang, 2000). Typically both content and social interactions are interwoven into highly interactive online courses.

Sorting through interaction frameworks to determine the most appropriate interactions for given learning outcomes is difficult at best. Northrup (2001a) provides a set of interaction attributes that can be used to select strategies and tactics to facilitate online interaction. The attributes encompass levels of content interaction, types of dialog through communications and collaboration, levels of student self-directedness, and types of support for the learner anytime, anyplace.

With most research on interaction focused on classifying the types of interactions or building frameworks from which designers would select appropriate interactions for given learning outcomes, it seemed apparent that there should be an upper and lower limit to the types of interactions used for a given set of instruction. Additionally, with *student perception of interaction being complete* as such an important variable for ongoing participation in the course (Zhang & Fulford, 1994), the relationships of student perception to the attributes of interaction should be considered.

PURPOSE OF THE STUDY

The purpose of this study was to investigate the types of interactions that students perceived to be important for online learning. The interaction attributes investigated included content interaction, conversation and collaboration, intrapersonal/metacognitive skills, and need for support. Also investigated were reasons why learners were taking online courses. It was presumed that students taking courses for convenience, flexibility, or preference would likely be more pleased with interaction in online course than those required to take an online course because it wasn't offered on campus. This study was an initial investigation of learner perceptions of online interaction. Data were collected through the administration of the Online Learning Interaction Inventory (OLLI) (Northrup, 2001b).

METHOD

Participants

This study consisted of 52 graduate students in an online masters program in instructional technology. Thirty-four of the students

TABLE 1
Indicators of Interaction

Variable	*Indicator*
Content Interaction	Level of structure
	Level of pacing
	Learning from multiple mediums
	Learning using interactive strategies
Conversation and Collaboration	Peer relationships
	Participation in learning community
	Peer discussion
	Teaming
	Peer tutoring
	Feedback from peers
	Feedback from instructors
	Learning using interactive strategies
Intrapersonal/metacognitive	Self-monitoring of progress
	Structure of embedded cognitive strategies
	Posted times for getting online
	Instructor encouragement/guidance
	Advance organizers
	Notetaking guides
Support	Timeliness of responses
	Mentoring
	Tutorials
	Peer tips
	Corresponding with instructor

were female and 18 were male. Participants ranged in their experiences with online learning with 14 students in their first online course, 24 have taken 2-4 online courses, 10 have taken 5-8 online courses, and 4 have taken 9 or more online courses. The majority of students (27 students) were in the 36-50-age range, with 18 students in the 26-35-age range. The remainder of the students were under the age of 25 (5 students) or over the age of 50 (2 students). Students were selected to participate in this study based on where they were in the program of study. Intact classes of students were selected from two courses at the beginning of their online learning sequence and two courses at the end of their online learning sequence.

Instrumentation

The instrument used for this study was the Online Learning Interaction Inventory (OLLI), with a reliability coefficient of .95. The OLLI focused on the four interaction attributes of content interaction, conversation and collaboration, intrapersonal/metacognitive skills, and need for support. Each of the attributes of the OLLI were designed around the indicators for interaction (Table 1).

The OLLI was divided into six sections with a total of 50 items. Section 1 dealt with demographic information. Section 2 included five questions on reasons why students selected to take an online course. Section 3-6 addressed each of the interaction attributes and were rated on a five point Likert scale with 1 representing strongly disagree to 5 representing strongly agree. Section 3 dealt with *Content Interaction*. There were 13 items relating to the indicators of content interaction. Section 4 addressed *Conversation and Collaboration* with 14 items relating to the indicators of interaction. Section 5 addressed *Intrapersonal/Metacognitive Skills* with 7 items relating to

the indicators of interaction. Section 6 addressed *Support* with 7 items relating to the indicators of interaction.

Procedure

The Online Learning Interaction Inventory was pilot tested with 26 students during the semester prior to implementation of this study. Students from two online classes in the masters program in instructional technology were sent a detailed email stating that the purpose of the OLLI was to test the instrument and to gather information about interaction and online learning. Students selected for the pilot test were in their last sequence of courses in the online program. Students had one week to complete the online instrument. Based on the pilot study, some items were reworded, two demographic identifier questions were added, and the classification of interaction attributes were clustered from five to four areas. In the pilot study, collaboration and communication were individual attributes. When updating the instrument, collaboration and communication were clustered into one attribute.

In the current study, students from four online classes were sent a detailed email stating that the purpose of the Online Learning Interaction Inventory (OLLI) was to gather information to continue to make the online courses and the program more appropriately interactive. The email indicated that data would be reported and used as research as well as be used for formative evaluation purposes. Students were provided with the URL to take the OLLI online. In two of the four courses, the OLLI was posted as a weekly assignment. In the other two courses taking the OLLI was optional. Students were provided with one week to complete the 50-item instrument.

Data Analysis

Data were analyzed by item using frequency, means, and standard deviations to report areas of interaction that are perceived to be valuable or a hindrance to success for online learning. Research questions for the study are as follows:

Question 1: Why do students learn online?
Question 2: What interaction attributes do students perceive as important for online learning?

RESULTS AND DISCUSSION

Data collected from the OLLI were analyzed by attribute, with frequency, means and standard deviations reported. Reported first will be responses from the first research question related to students learning online. The second research question related to the interaction attributes will be reported by each of the four interaction attributes.

Learning Online

Learning online is related to the first research question, *Why do students learn online?* The majority of students selected to take online courses for convenience ($M = 4.13$, $SD = 1.14$) and flexibility ($M = 4.65$, $SD = 1.33$). Most of the students reported that they could attend school even if the course was campus-based ($M = 3.58$, $SD = 1.58$), indicating that many of the students lived close enough to the campus to take campus-based courses. Only 12 students (23%) reported that it would be impossible to take the course if it were not offered online.

Interaction Attributes

There are four interaction attributes related to the second research question. Attributes included content interaction, collaboration and conversation, intrapersonal/metacognitive strategies, and support. Responses are included by attribute for the following research question: *What interaction attributes do students perceive as important for online learning?*

Content Interaction

In general, it appears that students agree that interacting with the content is important to their online learning experiences. Overall, they report that they like partially individualized courses with some instructor direction (M = 3.77, SD = .85). Participants also reported a desire to interact with content delivered via audio-narrated online presentations (M = 3.65, SD = 1.22). Interacting with innovative instructional strategies also was reported to be important to their online experience. Strategies such as case studies (M = 2.83, SD = .92); structured games (M = 3.10, SD = 1.11); and readings followed by online discussion (M = 4.56, SD = 1.09) were all rated popular with participants. Interestingly, participants expressed strong frustrations about being required to participate in too many interactive assignments in a weekly segment of the course (M = 4.08, SD = 1.06).

Interacting with the content is a major component of an online course and the primary location where new knowledge, skills, and abilities are presented. Typically instruction online is presented as instructor-centered or student-centered. Both are appropriate given the learning outcome and topics of the course content. Students in this study seem to prefer a variety of techniques, yet seem to feel most comfortable with the "feeling" of a traditional class. With the highest reported perceptions of positive interaction in the areas of audio-narrated presentations and readings text followed by discussion. The lecture itself (the audio-narrated presentations) can provide a foundation for other attributes of interaction including conversation, collaboration and informal discussion.

Conversation and Collaboration

Results of the interaction attribute of conversation and collaboration indicated that participants rely on their peers and their instructor in forming and maintaining the online learning community. The majority of participants (M = 4.94, SD = 1.06) reported that it is essential to build a community of learners in the online environment. Participants reported liking to discuss ideas and concepts with peers (M = 4.00, SD = .71) and also perceive that sharing information with peers is important (M = 3.83, SD = .71). In relationship to teaming, participants reported that working in teams was difficult for them (M = 3.08, SD = 1.19) and that once a team is formed, they prefer to maintain the same team for the entire semester (M = 3.62, SD = 1.05). In terms of innovative instructional strategies for interacting online, participants reported liking online debates (M = 3.04, SD = 1.12) and posing questions to experts (M = 4.02, SD = 1.02). Students weren't as receptive to the idea of posing as the guest presenter in class (M = 2.71, SD = 1.18). Finally, in terms of feedback from the instructor, participants reported that it is important to them (M = 4.35, SD = .76) and that the instructor should make every attempt to provide some kind of feedback to them at least two times per week (M = 3.77, SD = .85). Interestingly, participants reported that it was unnecessary for instructors to provide feedback on a daily basis (M = 4.25, SD = .84).

Promoting collaboration and conversation online is an attribute of online learning that participants considered important. Overall, forming the community of learners, collaborating with peers, and getting feedback from the instructor were the most highly rated indicators of this attribute. Given that groups of students do not just become collaborative because they are assigned together (Johnson & Johnson, 1994) means that designers and instructors should provide clear expectations for collaboration online.

Interestingly, note the positive responses on innovative instructional strategies. The variety of strategies presented within the confines of a course appears to yield positive perceptions among students. Providing both synchronous and asynchronous conversation and communication online can extend learning and at the same time motivate the learner (Sherry, 2000).

Intrapersonal/Metacognitive Skills

Analysis of items related to intrapersonal/metacognitive skills suggest that self-directedness and embedded cognitive strategies designed into the online learning environment are perceived to be important to participants. Participants reported that it is important to monitor their own progress each week (M = 4.58, SD = .72). With regard to embedded cognitive strategies, participants reported that it is important to have structured times that assignments are due (M = 4.33, SD = .83), to have an advance organizer to assist them through the assignments each week (M = 4.10, SD = 1.00), to provide graphical representations of the steps that should be taken to complete assignments (M = 3.96, SD = 1.31), and to have notetaking guides to accompany audio-narrated presentations (M = 4.04, SD = 1.12).

Overall, self-regulating one's own learning is an important aspect of online learning. Not only do students need to monitor their progress in an ongoing fashion and adjust their strategies for learning based on their progress, they also need to maintain a time management schedule in order to complete online learning activities in the allotted timeframes. To assist and guide learners through online learning, strategies like advance organizers and graphical representations are used to guide the learner through assignments, while note-taking guides and posted times for assignment due dates are also included.

Support

Results indicate that support is also a key attribute in the success of online learning. Designing online learning with a solid support system in place enables timely responses to questions, mentoring, tutorials, and tips from peers. This support system may very well provide a foundation for successful learning. Participants report that timeliness of response (M = 4.48, SD = .64) is a major indicator of support. Most participants reported also that having a mentor in place to provide assistance is also important (M = 3.52, SD = 1.35). Participants also reported that having tutorials available as needed (M = 3.12, SD = 1.55) will assist them in performing tasks such as being in a chat room, posting to a threaded discus-

TABLE 2
Means and Standard Deviations of Reported Interaction on Highly Rated Attributes and Indicators

Attribute	*Indicator*	*M*	*SD*
Content Interaction	Mixture of individualized And guided activities	3.77	.85
	Learning from Audio-Narrated presentations	3.65	1.22
Conversation & Collaboration	Peer Discussions	4.00	.71
	Sharing ideas with peers	3.83	.71
	Teaming with same partners	3.62	1.05
Intrapersonal /Metacognitive	Monitoring own progress	4.58	.72
	Structuring online time	4.33	.83
	Advance organizers	4.10	1.00
	Notetaking guides	4.04	1.12
Support	Timeliness of response	4.48	.64
	Corresponding with instructor	4.25	.84
	Peer tips	3.87	1.07

Note: 1=strongly disagree to 5=strongly agree

sion, etc. And no surprise, participants report that when the technology doesn't perform as intended, they are extremely frustrated (M = 4.17, SD = 1.15).

Overall Perceptions of Interaction

Overall, participants provided the reasons why they chose to take courses online. They also rated items in each attribute of online interaction as important to their success as online learners. The top reason for taking a course online was the flexibility (*M* = 4.65, *SD* = .74) followed closely by convenience (*M* = 4.13, *SD* = 1.14) With regard to the interaction attributes, Intrapersonal/Metacognitive had the most highly rated indicators with self-monitoring of individual progress (*M* = 4.58, *SD* = .72) rated at the highest frequency. The support attribute also rated at the top with timely responses by the instructor (*M* = 4.48, *SD* = .64) rated as the number two indicator of an interactive online course. Table 2 notes the frequency, means, and standard deviations of the top rated indicators for each of the four interaction attributes of online learning. Although indicators exist in each of the interaction areas, the idea of self-regulating learning and having timely feedback from the instructor was reported as most valued by participants.

CONCLUSION

In conclusion, it is agreed that interaction should be designed into online instruction. It is also agreed that interaction is an important variable for learning, primarily because it is important to learner satisfaction and motivation (Berge, 1999). In this study, online learners echo the importance of interaction by requesting interactive elements in their online experiences. Participants in this study are still most comfortable with the idea of simulating a campus-based class online, as reflected in their statements regarding the desire for instructors to use online audio-narrated lectures, provide note-taking guides, and discuss learned experiences in some type of online conversation. Although their comfort is with the "known," they still favorably rated using more innovative strategies in the online environment including case studies, debates, role-plays, and gaming. The foundation of the online learning environment however, included the notion of solid student support and self-directedness. Participants strongly stated that the need for timely responses from peers and from their instructor was of utmost importance. They also indicated that it was essential for students to self-monitor their progress for survival in the online course.

This study was an initial investigation into the perceptions of online learners' interaction needs. Future studies should consider other variables that may affect the individual learner, the learning environment, and instructional strategies that may be most appropriate for specific learning outcomes.

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