Factors Contributing to Learners' Online Listening Behaviors in Online and Blended Courses

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Abstract: Much research on online discussions has focused on the messages contributed but not how learners interact with the existing discussion. These "online listening behaviors" are important to the learning process, influencing both the uptake of others' ideas and the contributions made. Participants from two university courses (one blended, one fully online) were surveyed about factors influencing their online listening behaviors and their goal orientations. Results showed learners' decisions about which posts to open were based on the reply structure (if a post replied to them or had many replies). Once opened, participants in the online class often used a "triage" strategy, scanning posts to decide if to read in more depth. In the blended class replying to posts that provoked a question was associated with a Mastery approach; replying to posts that agreed with the learner's ideas was associated with Work-Avoidance. Implications for research and design of online discussions are presented.

Introduction

One of the key differentiators of online learning versus paper-based distance education is the opportunity to interact with others (Picciano, 2002). A common tool used to support online interaction in is the asynchronous discussion forum. Theoretically, discussion forums can support students in actively engaging with others to negotiate meaning and build understanding (Boulos & Wheeler, 2007). The ability to support reflectivity in contributions (Harasim, 2001) and allow many voices to be heard (Shank & Cunningham, 1996), have also led to the use of discussion forums as part of face-to-face courses in a blended model. However, online discussions don't always live up to their promise; in practice it is common to find fractured and incoherent conversations (Herring, 1999) with low levels of interactivity between students (Thomas, 2002).

The Importance of Online Listening Behaviors

How can we understand why conversations are occurring in this way? While a great deal of research has focused on the messages learners contribute (De Wever et al., 2006) and how they interact to produce group meaning-making (Arvaja, 2007), much less attention has been paid to the interactions learners have in the process leading up to these contributions. How learners navigate the existing discussion, which messages they choose to open, the strategies they use to interact with this content, and how they decide where to make their contributions are important parts of the knowledge construction process that influence both the contributions made and the uptake of ideas between learners (Suthers, 2006). In keeping with the idea of online discussions as conversations between learners, we refer to these actions collectively as "online listening behaviors" whose study can contribute to better understanding and design of online discussion interactions.

Initial work suggests that for many learners, their interactions with previous messages are brief and superficial. Thomas (2002) found that on average students read a low number of messages compared to the number they posted, and a substantial portion of messages did not meaningfully refer to previous ones. Hewitt (2003) found that while most students did read at least one message before composing their own, they took a "single-pass" strategy that focused almost exclusively on the most recently posted messages. In our own work (Wise et al., 2011), we have expanded these findings by using cluster analysis on log-file data to categorize specific learners as superficial, broad, or concentrated listeners based on the patterns of listening behaviors in which they engage. In this study we complement these mechanistic approaches by generating an understanding from the learner's perspective of the factors they see affecting their online listening behaviors. Additionally, we examine the relationship between these factors and learners' goals for participating in the online discussions to better understand how their choices may be driven by their achievement goals (Elliot & Murayama, 2008).

Research Questions

1. What factors do learners use in making decisions about their listening behaviors in asynchronous threaded discussion forums for online and blended courses?
2. Do these factors relate to learners' orientation towards particular goals for participation?

Methods

Courses, Participants and Discussion Structure

Participants were students enrolled in two undergraduate courses at a mid-sized Canadian university. Discussion in both courses took place in Phorum, a basic asynchronous threaded discussion forum.

Business 200 was an undergraduate course on organizational behavior with two-hour weekly lecture and one-hour weekly tutorial. Students were also required to participate in three week-long (Sat-Fri) online discussions with half of their tutorial group (10-12 students) worth 9% of their grade. Students were asked to collectively solve an organizational behavior challenge and required to be "actively involved" in discussions, posting at least one comment per challenge. Demographics are shown in Table 1; less than a third of participants were native English speakers, which may not be representative of a typical western university classroom. The initial participant invitation was given in a face-to-face class which may account for the elevated response rate.

Education 299 was an undergraduate course on educational psychology taught fully online. Students were required to participate in six week-long (Mon-Fri) discussions in groups of 10 to 13 worth 20% of their grade. Discussions asked students to resolve an applied educational debate and required at least three posts on different days per discussion. The course is a prerequisite for the teacher preparation program and several Master's level programs, thus often does not have a typical undergraduate population. As shown in Table 1, participants were mostly female, over 22, past the first two years of university and native English speakers. A large percent were also high achievers. Participants may not be representative of the class as a whole.

Table 1: Demographic information.

	Class Type	Participants / Class Size	Percent of participants who were:				
			Female	In 1st 2 years of university	Older than 22	High achievers ('A' GPA)	Native English speakers
BUS 200	Blended	47 / 113	51%	85%	6%	11%	28%
EDUC 299	Online	20 / 95	80%	25%	55%	45%	90%

Questionnaire

Participants were invited to complete an online questionnaire at the end of their course. The questionnaire was developed to identify factors that learners perceive to influence their online listening behaviors. The questionnaire also probed learners past experiences and attitudes towards the course and discussion forums.

Online Listening Behaviors were measured by two 5-point Likert-style scales ("Not important at all"-"Extremely important") that assessed what factors affected participants decisions about which posts to open (7 items) and reply to (12 items). An additional six 5-point items ("Never"-"Always") asked participants about the frequency with which they used different strategies to interact with the posts once they were open. Item responses were examined individually.

Goal orientation refers to the kinds of objectives learners have for their participation in a learning activity. There are multiple dimensions of orientation, and a learner can rate high on more than one. Five-point Likert-style items ("Not at all true of me"-"Extremely true of me") adapted from Elliot and Murayama's (2008) Achievement Goal Questionnaire-Revised (AGQ-R) and Nesbit et al.'s (2009) Goal Orientation Questionnaire (GOQ) assessed orientation towards Mastery (learning as much as possible) [six items; $\alpha = .84$ (both classes)], Public Performance (appearing well in front of others) [four items; $\alpha = .80$ (BUS 200), .91 (EDUC 299)] and Work-Avoidance (doing the minimum necessary) [three items; $\alpha = .77$ (BUS 200), .23 (EDUC 299)].The low reliability of the final scale is unexplained at this time; no further analyses were conducted for this data.

Participants' Interest and Perceived Ability in the course materials were each assessed by four 6-point Likert items. Cronbach's α was .89 (Interest – both classes), .83 (Ability - BUS 200) and .87 (Ability – EDUC 299). Perceived Value of the Discussion Forum was assessed by nine 6-point Likert items. Cronbach's α was .95 (both classes). Participants' Past Experience with Discussion Forums were measured by three 6-point items ("Never"-"Several times a day") that assessed participants' prior experience with the internet and discussion forums in general and two 4-point items ("Never"-"More than twice before") that assessed participant's prior experience using online discussion forums in academic contexts. One 6-point Likert-style item assessed participants' comfort communicating in online discussions. Item responses were examined individually.

Results & Discussion

Past Experience with Discussion Forums

Participants' reports of past experience with discussion forums are shown in Table 2. Both classes' participants were frequent internet users. The majority of BUS 200 participants were also familiar with discussion forums in casual contexts; however, participants from EDUC 299 reported less familiarity with these. This may relate to differences in culture between business and education students, the ages of participants, or other demographic factors. Differences in experience with discussion forums in academic contexts were less pronounced. The majority of participants from both classes indicated that they were reasonably comfortable communicating

through online discussion forums. Few participants from either class had used the discussion forum tool used in this study before.

Table 2: Past experience with discussion forums.

% of participants who:	BUS 200	EDUC 299
Use the internet at least once a day	96%	95%
Read online discussion forums in casual contexts several times a week or more	70%	35%
Post in online discussion forums in casual contexts several times a week or more	43%	20%
Participated in an online discussion forum as part of a class at least once before	60%	40%
Were at least "somewhat comfortable" using discussion forums to communicate	64%	75%
Used Phorum discussion tool prior to this class	19%	10%

Interest and Ability in Materials, Value of Discussion Forum, and Goal Orientation

Participants' thoughts on the course and discussion forum and their goal orientations are shown in Table 3; splits were based on the midpoints of the scales. The great majority of participants in both classes reported being interested in the course materials and saw themselves as high performers. This may be related to the large proportion of participants who also reported a Mastery orientation. A Public Performance orientation was also prevalent, most notably in the BUS 200 class. Almost half of BUS 200 participants also displayed a Work-Avoidance Orientation. These differences may be due to variations in the age, culture, or other demographic factors between the groups. While almost three-quarters of BUS 200 participants valued the discussion forum as part of their course, only half of those in EDUC 299 did. This is surprising as we would predict that students in the fully online EDUC 299 would highly value the interactive aspect that discussions bring to online courses.

Table 3: Interest and ability in materials, value of discussion forum, and goal orientation.

	BUS 200	EDUC 299
Interest (% who were interested in the topics covered in this course)	85%	95%
Perceived Ability (% who saw self as high performer in course topic)	85%	95%
Value of Discussion Forum (% who valued it as a part of the course)	70%	50%
Mastery Orientation (% who tried to learn as much as possible)	77%	85%
Public Performance Orientation (% who tried to appear well in front of others)	89%	70%
Work Avoidance Orientation (% who tried to do the minimum necessary)	45%	-

Online Listening Behaviors

The factors participants reported as affecting their online listening behaviors are summarized in Table 4. In deciding which posts to open, participants in BUS 200 reported that factors related to the reply structure were the most important in influencing their choices: if a post replied to their own post or had a high number of replies, participants were inclined to open it. At a basic level this indicates that learners are in fact listening (and replying) to each other, contrasting Thomas's (2002) description of a majority of messages which were isolated an unrelated. Whether a post was new or made by someone they knew were also factors that affected BUS 200 students' decision to open a post; learners in Thomas's study also tended to read messages marked with "new" flags. Looking at relationships with goal orientation, there was a high correlation between both Mastery and Public Performance orientations for all of these factors except the number of replies. This factor was correlated with Public Performance and Word-Avoidance orientations, but not Mastery, suggesting that number of replies may not be a meaningful indicator of discussion quality. Work-Avoidance was also correlated with a location factor (top of the screen). Similar to the pattern seen for Mastery orientation in BUS 200, EDUC 299 participants reported that whether a post replied to one of their comments was an important factor they considered, but a high number of replies in general was not. Perhaps due to the high posting volume in the course (three comments per person per week minimum), EDUC 299 participants found both timing factors (new and recent) important to consider. Unlike the blended BUS 200 where students might know each other from the face-to-face class, participants in the fully online EDUC 299 did not report the author of a post as important.

The strategies used to interact with posts once open differed greatly between the classes. Participants in BUS 200 reported using all strategies equally, sometimes reading posts and sometimes scanning them. In contrast, participants in EDUC 299 exhibited greater selectivity in whether they chose to fully read a post, reporting frequent use of initial scanning to determine whether to continue reading. This may be due to several differences between the groups. First, EDUC 299 had a high posting volume compared to BUS 200 (three versus one minimum posts per week); thus, participants may have used these "triage" strategies to cope with an overwhelming number of posts. Second, EDUC 299 participants were generally older and higher-performing than those in BUS 200; it is possible that these strategies result from past successful use of other selective

approaches to studying. However, online discussions are different from other sorts of class-based reading in that they include responsive and interactive components that depend on what is read; thus it is possible that the inappropriate transfer of these strategies is one factor contributing to fractured and incoherent conversations. Looking at the relationships with goal orientation within BUS 200, no relationship between these strategies and a Mastery Orientation was observed. A Work-Avoidance orientation was correlated with these selective strategies, and also with the low effort strategies of only scanning or not reading posts. Further research is needed to determine if selective reading is in fact detrimental to conversational quality. If so, designers might promote more thorough reading through task design, process structure and smaller group sizes.

Table 4: Factors affecting participants' listening behaviors by class and correlations with goal orientation.

Behavior	Category	Factor	Mean(SD)		Goal Orientation Correlations for BUS 200		
			BUS 200	EDUC 299	Mastery	Public Perform	Work Avoid
Which Posts to Open	Reply Structure	Replied to one of my post	3.8 (1.1)	4.2 (1.1)	.47**	.65**	.09
		High # of replies	3.6 (1.0)	3.2 (1.3)	.16	.36*	.33*
	Author	Made by someone I know	3.3 (1.2)	2.7 (1.4)	.32*	.29*	.17
Factor Importance 5-pt scale	Timing	Marked as new	3.4 (1.2)	4.1 (1.1)	.42**	.42**	.02
		Made recently	3.0 (1.1)	4.0 (.70)	.19	.07	-.23
	Location	Near top of the screen	2.8 (1.2)	2.3 (1.4)	.15	.04	.38**
		Near bottom of the screen	2.3 (1.0)	1.8 (1.0)	.13	.08	-.04
How to Interact with Open Posts	General	Read thoroughly	3.6 (.85)	3.1 (.72)	.42**	.29	-.23
		Scan to get the main idea	3.6 (.91)	4.0 (.51)	.11	.07	.51**
		Scan to see if it was worth reading thoroughly	3.6 (1.1)	3.8 (.89)	.01	.00	.46**
Frequency of Strategy Use 5-pt scale	Long post	Didn't read	2.7 (1.0)	2.7 (.75)	.06	-.04	.41**
		Read a few lines to decide whether to read it	3.0 (1.1)	3.5 (.83)	.11	.11	.40**
		Read thoroughly anyway	3.1 (.80)	2.6 (.76)	.26	.11	-.27
Which Posts to Reply to	Content	Built on my ideas	3.8 (.86)	3.1 (.64)	.37*	.19	.23
		Agreed with my ideas	3.4 (1.0)	2.2 (.93)	.26	.15	.29*
		Provoked a question	3.3(1.0)	3.9 (.88)	.35*	.22	.19
		With which I disagreed	3.3(.90)	3.6 (1.1)	.25	.15	.19
	Reply Structure	No other replies	2.5 (1.0)	1.8 (1.1)	.11	.04	.31*
Factor Importance 5-pt scale	Author	Made by someone I know	3.0 (1.1)	1.7 (1.0)	.31*	.13	.20
		Made a good student	2.8 (1.2)	2.0 (1.3)	.21	.04	.24
	Timing	Made recently	2.9 (1.1)	2.8 (1.3)	.18	.09	.36*
		One of the first posts read	2.6 (1.2)	1.8 (.97)	.29*	.09	.43**
		One of the last posts read	2.5 (1.1)	2.2 (1.1)	.11	-.11	.47**
	Location	First post in a long thread	2.7 (1.1)	2.1 (1.1)	.31*	.06	.09
		Last post in a long thread	2.5 (1.0)	2.2 (1.2)	.16	.01	.37*

* p <.05 ** p < .01

The decision about where to post a reply to the conversation drew on several factors. For both groups, the recentness of a post was found to be a somewhat important, aligning with previous work showing that recent posts are more likely to get responses (Hewitt, 2003). More interestingly, participants in both courses indicated that factors related to the content of posts were the most important in deciding where to reply. Within the content category, different foci were seen for the two groups. Participants in BUS 200 placed the most importance on replying to posts that built on their ideas, whereas participants in EDUC 299 put more emphasis on replying to posts that provoked questions or with which they disagreed. In Gunawardena et al.'s (1997) models of Knowledge Construction, the BUS 200 pattern aligns with Phase 1 (Sharing Ideas) while the EDUC 299 pattern aligns with Phase 2 (Exploring Dissonance). This suggests that the EDUC 299 participants are engaging in listening behaviors related to a higher phase of knowledge construction, perhaps due to a task structure that specifically asked them to resolve a debate or their status as older, high achieving learners. Looking at the relationships with goal orientation within BUS 200, a Mastery orientation was associated with replying to posts which provoked a question and those which built on the learner's ideas, while a Work-Avoidance orientation was associated with replying to posts that agreed with the learner's ideas. It seems that structuring discussions to encourage disagreements and questioning rather than simply agreement may be a goal worth pursuing. A Work-Avoidance orientation was also associated with several timing and location factors.

Conclusion

Very little work has looked at the interactions learners have with online discussion forums in the process leading up to their contributions. These online listening behaviors are important parts of the knowledge construction process that influence both the contributions made and the uptake of ideas between learners. This study generated an initial understanding of factors learners see affecting their online listening behaviors and their relationship with different kinds of achievement goals. Future work can build on this study by evaluating the relationship of these behaviors to educationally desirable processes to determine which behaviors should be encouraged versus discouraged. This study found that learners' decisions about which posts to open rely most strongly on factors related to the reply structure and that the "number of replies" factor was related to Public Performance and Work-Avoidance orientations. In interacting with the posts once opened, EDUC 299 participants often used a triage strategy, scanning posts and deciding if to read in more depth. In the BUS 200 class, these strategies were associated with a Work-Avoidance orientation. In conducting this work, the researchers noticed that there are few cues to guide learners in choosing which posts to interact with. Many of these are superficial (e.g. "new" post flags) and have been critiqued in previous work (Hewitt, 2003). Faced with a large number of posts and little selection guidance, it is not surprising that learners use a triage strategy. Future work is needed to determine if this is efficient or detrimental and explore what more meaningful cues for choosing posts can be provided by the system or generated by the learners (e.g. topical tags, reputation systems). Findings about what factors influence where learners choose to make a reply emphasized the content of posts. EDUC 299 participants placed importance on if a post provoked questions or disagreement; exhibiting listening behaviors possible related to Phase 2 of knowledge construction (Gunawardena et al., 1997). In BUS 200 replying to posts that provoked a question was associated with a Mastery orientation while replying to posts that agreed with the learner's ideas was associated with Work-Avoidance. Future work can test this relationship in more complex scenarios and situations, and explore ways to structure discussions that encourage disagreements and questioning through group composition, task structure, and other scripting factors such as assigned roles.

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