Engagement in online asynchronous discussions - Roles of students' interests and preferences

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Abstract

Asynchronous discussion is considered an effective and pervasive tool for engaging students to learn in an online or blended environment.

Quality of asynchronous discussions in online learning platform has been suggested to associate with various design and learners characteristics, such as forum design in terms of embeddedness with background knowledge, social presence in group, type of discussion topics relating to higher-order thinking, cognitive strategies for eliciting discussion (e.g. debate, role-play), discussion group size, and intrinsic motivation to engage in asynchronous discussions.

Design and facilitation in asynchronous discussions constitute two major determinants in the success of interaction among students in a discussion forum setting. Regarding issues pertaining to the design of asynchronous discussions, relatedness to real-life problems, rubrics and guidelines for discussion participation, and students' choice, are key components for conceptualizing effective construction of knowledge through discussion.

While empirical evidence on effectiveness of asynchronous discussion in online learning suggested that choice and intrinsic motivation are critical to students' interaction and performance in discussion, the extent to which students' choices would moderate their effort and performance in participating discussions has received little attention and empirical investigation.

The current study aims to explore role of students' interest and choice in asynchronous discussion in predicting their engagement and performance in the discussion process. With students' choice operationalized as their self-indicated preference for discussion topic, we examine the following research hypotheses: 1) Students' self-indicated preference for a specific topic among an array of topics available for asynchronous discussions would be associated with quantitative performance in the discussion process, in terms of the frequency of posts; and 2) Students' self-indicated preference for a specific topic among an array of topics available for asynchronous discussions would be associated with qualitative

performance in the discussion process, in terms of the higher-order thinking artefacts exhibited in their posts.

These research questions were tested with an observational design study with 707 students in a large undergraduate introductory psychology course in Hong Kong. Participating students engaged in a 3-week asynchronous discussion towards summative assessment via a centralized learning management system (LMS). Discussion behaviors were extracted from the LMS, while learning outcomes attainment was coded according to the structure of observed learning outcomes (SOLO) taxonomy. Students' volition to participate, operationalized as their indicated preference for a specific topic out of an array of 8 available topics on the subject matter, correlated with their effort and performances in the discussion in terms of post frequencies, post length, and learning outcomes with reference to the SOLO taxonomy. Findings suggested that students' indicated preferences to commit to their discussion topics influenced their participation in the discussion in terms of both posting behaviors and level of learning outcomes. Impact on current findings for understanding students' autonomy and commitment in asynchronous discussion should be contextualized in a constructivist-learning environment.

Background

Effectiveness of an discussion forum in blended learning setting for asynchronous discussions is influenced numerous factors in its design prior to commencement of discussion and facilitation during discussion.

Design and facilitation in asynchronous discussions constitute two major determinants in the success of interaction among students in a discussion forum setting. Regarding issues pertaining to the design of asynchronous discussions, Rovai (2007) reviewed and suggested that relatedness to real-life problems, rubrics and guidelines for discussion participation, and students' choice, are key components for conceptualizing effective construction of knowledge through discussion. In addition, forum design and embeddedness with background knowledge required for discussion moderate the quantity and quality of interaction in asynchronous discussions (Gao and Putnam, 2009).

An interesting and intellectually stimulating question is necessary for initiating a vibrant discussion. Type of discussion topics for eliciting higher-order thinking is critical to participation in asynchronous discussions (Kim and Bateman, 2010). Debate and role-play strategies have been reported to be highly associated with exploration and integration phases in asynchronous discussions (Darabi et al., 2011). A moderate group size for students to feel comfortable for discussion is also crucial in a forum for effective learning. Large group size has been suggested to deter students from engaging in high-level interaction (Kim, 2013).

Even a well-designed forum could yield different learning experiences among students with individual differences towards the common learning task. Students tend to exhibit more engagement in asynchronous discussions when they are motivated. In particular, intrinsic motivation to asynchronous discussion has been suggested as a critical factor to interactions in discussion participation (Martin Timothy and Jason, 2016). Motivated students tend to establish social presence in asynchronous discussions, such as self projection and group identification, that moderates the quality and engagement in discussions within groups (Caspi and Blau, 2008).

Willingness to join in collaborative learning is critical to initiate interactions in asynchronous discussions (Bromme et al., 2005). However, students' willingness to participate and their efficacy about conversing on a particular discussion topic, in terms of the extent they exhibited engagement and effort on the discussion, has been suggested to be contingent upon their own perceived capabilities (Xie, 2013). In a structured asynchronous discussion environment (Salter and Conneely, 2015) in which students engage in a pre-defined debate question, students who "owns" the argument, in terms of their familiarity and interest on the discussion topic, could be a catalyst for their willingness to join and make effort in their discussions. With a design of pre-defined and finite number of topics for asynchronous discussion, leveraging students with their choices to pick from the finite set of topics could

facilitate students' perceived engagement with the topic and thus enhance their motivation in the learning process.

The current study aims to explore the role of students' interest and choice in asynchronous discussion in predicting their engagement and performance in the discussion process. With students' choice operationalized as their self-indicated preference for discussion topic, we examine the following research hypotheses: 1) Students' self-indicated preference for a specific topic among an array of topics available for asynchronous discussions would be associated with quantitative performance in the discussion process, in terms of the frequency of posts; and 2) Students' self-indicated preference for a specific topic among an array of topics available for asynchronous discussions would be associated with qualitative performance in the discussion process, in terms of the higher-order thinking artefacts exhibited in their posts.

Methods

Participants

From a 4-year undergraduate university in Hong Kong, a total of 707 students from three sessions of a large introductory level psychology class were included in this study. The majority (90%) of this enrolment were 1st year students, followed 2nd year students (6.5%), 3rd year students (2.4%), and 4th year students (1.1%).

The asynchronous discussion task

Towards the end of a 13-week curriculum, students engaged in a mandatory 3-week asynchronous discussion towards 20% of their overall summative assessment. The asynchronous discussions were hosted on Blackboard 9.1, a centralized learning management system (LMS) that is accessible exclusively to the participating students & their host institution. On this discussion assignment, students were required to deliberate on one out of 8 distinct topics across different sub-disciplines in psychology (e.g. cognitive psychology, neuropsychology, personality) towards application to real-life problems. A sample discussion topic would be "To what extent is preference towards Anime / Comic / Game (ACG) being influenced by one's personality?". During the 3-week discussion forum assignment period, students were advised to make an effort to post at least 4 replies to the original questions or replies by other students pertinent to the topic on hand. Prior to the commencement of discussion, all participating students were prescribed with a guideline documenting appropriate etiquette in conducting the forum discussion and rubric on discussion assessment based on the Structured Observed Learning Outcomes taxonomy (SOLO) (Biggs and Collis, 1982, Kember et al., 2004).

One week prior to the commencement of the discussion assignment, students in all three sessions were invited to indicate their self preference to their own discussion topics by indicating their preferred topics out of the prescribed topics array in a survey on the LMS. Based on their indicated preferences, students indicating their interest in any of the eight topics formed groups of eight members to commence their discussions. Those who did not indicate their preferences were randomly assigned to one of the prescribed discussion topics and formed similar groups (n=8) for discussions. The topic selection exercise did not contribute to any marks on students' summative assessment in this subject.

Students' performance and discussion behaviors in asynchronous discussions

Each student was assessed with an individual scores for their participation in forum discussion. Adopted from work by Chan (Chan et al., 2002) on applying SOLO taxonomy in local higher education context, a 5-level taxonomy of learning outcome was adopted for students' assessment in this study. Students' depth and complexity in their discussions were classified into five ascending levels: prestructural,

unistructural, multistructural, relational, and extended abstract (Biggs and Collis, 1982). Attainment in each level was separated by a 4-point increment, adding up to a maximum of 20 points. Actual scores were normalized to a 100-point scale for convenient interpretation.

Statuses of students having indicated their preferred discussion topics or not were extracted from the LMS and coded into a dichotomous variable (i.e. Preferred topic indicated Vs No Preferred Topic Indicated). Number of forum posts, word count on all posts, and timestamp of posts were extracted from the LMS records of the participating sessions. Discrete counts of forum posts and number of words in posts were imported directly into the analysis as scale variables. Hours before deadline – the differences between time of 1st post and deadlines in hours, was calculated with timestamps of students' 1st post in the forum (e.g. October 28, 2015 22:00), the extent to which they first initiated and exhibited their effort on the discussion, and their respective deadlines for completion in each of the three sessions (e.g. November 19, 2015 23:59).

Associations between research variables were analyzed with a Kendall-tau nonparametric correlation of forum behaviors and learning outcome variables. Forum behavior variables included topic self-preferences, number of forum posts, word length of forum posts, and time of 1st post in terms of hours ahead of the deadline. Learning outcome variables included SOLO-based students' discussion marks out of 100, as well as overall assessment of students in the subject out of a maximum marks of 100. All statistical analyses were conducted using the SPSS Version 22 software (IBM Statistics, 2014).

Results

The majority of participating students (530 out of 707, 75%) indicated their preferences on discussion topics. On average they contributed 4.37 posts in their discussion with 958 words in their posts. The mean hours before deadline at which students started their 1st post was 158 hours, equivalent to 6 to 7 days ahead of the deadline for graded discussions. Regarding students' performances, the average and normalized SOLO-based forum mark was 70.8 while the average overall assessment mark was 69.2. Table 1 presents descriptive of the forum behaviors and learning outcomes variables.

Table 1:   Descriptive of the forum behaviors and learning outcomes variables

Variable	n	Mean (S.D.)
Self-indicated preference on topic in Forum Discussion	707	0.75, (0.43)
Number of Posts in Forum Discussion	707	4.37, (1.53)
Word Count Total in Forum Discussion	692	957.49, (523.58)
Hours before deadline	692	158.75, (128.64)
Forum Score Normalized to 100	707	70.8, (16.03)
Overall Assessment Score Normalized to 100	707	69.21, (10.36)

Kendall-tau correlations between the study variables provided evidence in support of both hypotheses 1 & 2 about the effect of students' self-indicated preferences on learning behaviors and learning outcomes. Students' self-indicated preference on discussion topics was positively correlated with all forum behaviors, including number of posts (r = .155), word count total (r = .096), and hours before deadline (r = .162). Indication of preference was also correlated with both learning outcomes variables in normalized discussion forum scores (r = .163) and overall assessment scores (r = .186). All correlation coefficients reported reached statistical significance with an alpha level of $p \leq 0.01$.

Table 2   Kendall's tau Correlation Coefficients of study variables

Variable	Self-indicated preference on topic in Forum Discussion	Number of Posts in Forum Discussion	Word Count Total in Forum Discussion	Hours before deadline	Forum Score Normalized to 100	Overall Assessment Score Normalized to 100
Self-indicated preference on topic in Forum Discussion		.155**	.096**	.162**	.163**	.186**
Number of Posts in Forum Discussion			.486**	.192**	.312**	.288**
Word Count Total in Forum Discussion				.132**	.219**	.270**
Hours before deadline					.124**	.221**
Forum Score Normalized to 100						.375**
Overall Assessment Score Normalized to 100						

** Correlation is significant at the 0.01 level (2-tailed).
 * Correlation is significant at the 0.05 level (2-tailed).

Discussion

The role of self-indicated preferences on learning task resonated with various psychological mechanisms underlying students' behaviors in an asynchronous discussion context, namely their motivation, self-regulation, and goal orientation, as proposed in the seminal work by Corno & Kanfer on the role of volition on learning (Corno and Kanfer, 1993).

Findings suggested that students' indicated preferences to commit to their discussion topics influenced their participation in the discussion in terms of both posting behaviors and level of learning outcomes. Given students were required to

contribute 4 posts in the structured forum only, students with self-indicated preference exhibited higher engagement in terms of the additional posts on the topic and a significantly earlier head start on discussing their selected topics. The observed elevation in behavioral engagement in online learning task possibly correlated with positive emotions (Xu et al., 2013) at the beginning of the forum discussion, which was sustained throughout the learning process.

In terms of students' prospect to engage in online discussions, the observed increased engagement in the self-indicated preference group could be a subsequent manifestation of higher performance expectancy in terms of the utility of learning about a psychological concept and its application beyond fulfillment of curricular requirement as students were more likely to start a discussion out of their genuine interest in the topic. As outlined in Unified Theory of Acceptance and Use of Technology (UTAUT) (Dwivedi et al., 2011, Venkatesh et al., 2003), performance expectancy about how an online learning task and environment, the degree to which a tool brings benefits to its users, significantly influences students' online learning (Xie and Ke, 2011, Chan et al., 2015).

Aligning with contemporary conceptualization of motivation, self-indicated preference on discussion topic could be interpreted as a proxy of intrinsic motivation (Ryan and Deci, 2000) where students participated in the topic selection process with no apparent gain of extrinsic reward but responded to their need for autonomy in the learning process.

The effect of topic preference illustrated in the present study corroborated with two key aspects of constructivism in blended learning (Fosnot and Perry, 2005, Al-Huneidi and Schreurs, 2013) in personalization and responsibility. By selecting an interested topic in asynchronous discussion, these students have carved themselves with a personalized learning environment in which they discuss, research, and argue on a topic of their genuine interest. With such predisposed intrinsic motivation, they are more likely to assume more responsibilities in engaging in this learning task, as reflected in the early head start when compared with their counterparts who did not pick their own topics.

Conclusion

The present study offers empirical evidence to the role of autonomy through asking students to select their topic of interest for asynchronous discussion in a blended learning context. Results supported the hypotheses that students with self-indicated preferences were more likely to exhibit higher level of engagement in the learning task, as well as better learning outcomes. Findings from this study calls for further research on delineating the role of students' autonomy on various motivational constructs (Xie and Ke, 2011, Martin Timothy and Jason, 2016) and impact on blended learning designs (Rovai, 2007, Kim and Bateman, 2010, Gao and Putnam, 2009).

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