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Critical Thinking in Asynchronous Online Discussions: Examining the Role of the Student Facilitator

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Abstract: This paper is part of a larger study that investigates the types of facilitation techniques exhibited by student facilitators and how these techniques may foster in-depth levels of critical thinking in asynchronous online discussions. Data were collected from ten discussion forums, involving education major students. The top 30% of forums in terms of the most number of in-depth critical thinking incidences were first identified (i.e., higher-level group). Next, the bottom 30% forums were identified as the lower-level critical thinking group. Results indicated that student facilitators in the higher-level group acknowledged the participants' contributions, and posted more questions than their counterparts in the lower-level forums. Facilitators in the high-level group also tended to pose questions *throughout* the entire discussion, unlike those in the lower-level group who only posted questions at the start of the discussion. Six types of questioning techniques were found. Directions for future research are proposed.

Introduction

The increasingly prevalent use of Internet has resulted in online learning environment becoming popular in many universities. In an online learning environment, communication among learners may occur via an asynchronous online discussion forum. An asynchronous online discussion forum may be referred to as a text-based computer mediated communication tool that allowed students to interact with one another with no time or geographical location constraints (Hew & Cheung, 2008). Thomas (2002) claimed that asynchronous online discussions can facilitate the development of in-depth critical thinking because it provides the platform for students to think and organize their ideas before responding to questions or comments in the discussion forum. According to Swartz and Parks (1994), critical thinking is the ability to evaluate the reasonableness of ideas. Ennis (1985, p. 46) noted that critical thinking is "reasonable, reflective thinking that is focused on deciding what to believe or do". Cheong & Cheung (2008) noted that one of the challenges faced by students in a face-to-face classroom environment is the limited amount of time for critical thinking, and consequently discussions in class tend to be shallow. Consequently, some researchers have suggested the use of asynchronous online discussion forums because such forums can be deployed to extend student discussion and foster critical thinking beyond the traditional classroom environment.

Empirical research, however, has not provided much support for this claim in natural settings. Many previous studies have found that students do not necessarily exhibit in-depth critical thinking in online discussions (e.g., Bullen, 1998; Burt, Grady, & McMann, 1994; Landsman & Gorski, 2007). For example, Burt, Grady, and McMann (1994) examined the level of information processing in critical thinking among graduate students in inter-university computer-mediated conferences. The researchers found very few instances of in-depth level of information processing in critical thinking. Another study by Bullen (1998) examined the quality of critical thinking skills in a university-level computer conference. Bullen found that although all students demonstrated critical thinking at some level, none was doing so at the in-depth level on a consistent basis.

Past efforts to enhance students' critical thinking in online discussions have largely focused on the facilitation techniques used by the instructors (Bullen, 1998; Yang, Newby, & Bill, 2008). It is important to note, however, that there is currently no complete agreement among scholars that an instructor should be involved or to facilitate a student online discussion forum. Fauske and Wade (2003-2004) found that the presence of the instructor can oppress certain students and their ideas. An instructor's presence can prevent students from posting messages as students tend to think that the instructor's note must be the final authoritative one (Zhao & McDougall, 2005). There is comparatively little research done that addresses student facilitation (Hew & Cheung, 2008). Although some researchers examined student facilitation techniques in online discussions, their investigation was limited to thread development; for example why threads terminate (Chan, Hew, & Cheung, 2009).

Research Questions

The following research questions were the focus of the study:

1. What is the quality of thinking, in terms of critical thinking, demonstrated by the participants in the online discussion?
2. Are there any differences between higher-level and lower-level groups in terms of their group characteristics and the facilitating styles adopted by the student facilitators?

Method

Ten students (six males and four females) who were enrolled in a graduate level course entitled "Multimedia Design" at a major Asia-Pacific university enrolled in this study. During the course of the semester, two asynchronous online discussion sessions were held, each of them lasted a week with a week's break in between. The asynchronous online discussions were entirely facilitated by the students without the intervention of the instructor, using the Blackboard web-based course management software. Each student was required to design and develop an instructional multimedia software. After the students had drafted their projects, they uploaded the materials into their individual discussion forums. In total, there were ten online discussion forums created. Each student then became the facilitator of his or her own forum to discuss ideas with one another to critique and improve their multimedia software. Students had the freedom to choose to participate in whichever discussion forum they wanted.

To analyze the quality of thinking, in terms of critical thinking, exhibited in the online discussions, we used the content analysis method on all the online discussion postings. The actual analyses of the online transcripts were carried out in the following manner. First, the online posting made were read and divided into message ideas or units. A message idea or unit in this study refers to a single idea conveyed by the participants. This method is in line with the natural way one looks for ideas when reading a message. Once the message units were identified, the participants' critical thinking skills were analyzed. Cheung and Hew (2006) created a framework to assess the quality of thinking skills in terms of the level of information processing. We utilized the aforesaid framework to assess the quality of critical thinking exhibited by students in a peer-facilitated environment. The following 'surface' and 'in-depth' levels of information processing were used in evaluating the level of critical thinking. 'Surface' level critical thinking refers to: 1) making conclusions or judgments without offering justification, 2) sticking to prejudices or assumptions, 3) stating that one shares the conclusions or judgments made by others without taking these further, and 4) failure to state the advantages or disadvantages of a suggestion, conclusion or judgment while 'In-depth' level involves: 1) making conclusions or judgments supported by justification, 2) setting out the advantages or disadvantages of a suggestion, conclusion or judgment, 3) stating that one shares the conclusions or judgments made by others and supporting them with relevant facts, experience or personal comments, and 4) making valid assumptions based on the available indicators. The forums were then ranked according to their frequency score of in-depth critical thinking instances. The online transcripts of the top 30% forums and the bottom 30% were analyzed to identify the different group characteristics and to highlight the differences in the facilitating styles adopted by the facilitators in the two groups.

Results and Discussion

Research question 1: What is the quality of thinking, in terms of critical thinking, demonstrated by the participants in the online discussion?

Table 1 provides the details of the levels of critical thinking exhibited in the ten discussion forums. Based on the criteria of in-depth critical thinking units coded, the forums were ranked and the top three forums identified (higher-level group - Group A). The bottom three forums were identified as the lower-level group (Group B).

	Facilitator	No of questions posted by facilitators	Frequency of in-depth critical thinking	No of participants
Group A	A	15	9	5
	B	3	6	8
	C	7	7	7
	D	0	5	9
	E	1	5	7
	F	0	4	8
	G	0	4	6
Group B	H	0	4	6
	I	0	4	7

	J	5	1	7
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Table 1: A summary of the findings

Research Question 2: Are there any differences between discussion forums that have achieved higher levels of critical thinking and those that do not in terms of their group characteristics and the facilitating styles adopted by the student facilitators?

In the higher-level group, there was a clear progression of ideas. For example, Forum A started with the discussion of background colors, whether to use more or less colors in the background. The participants moved on to discuss the effect of white fonts on black background and black fonts on white background. This led the facilitator to create experimental slides for participants to analyze further. Other participants contributed to the discussion on colors by giving their viewpoint from a different perspective. For example a participant brought up the need to have consistency in the use of colors. The participants also discussed if the use of many colors on a slide could be distracting or reinforcing a concept on the color wheel. It was evident that message ideas posted by the participants in the higher-level group were subsequently build upon by the later participants in their postings. Also, it was observed that the development of the message idea could also be achieved when the other participants either agree or disagree to the idea and bring in a different perspective of looking at the idea.

However, such instances were lacking in the lower-level group. Each participant would post a different message idea and no one took the opportunity to further elaborate on the idea or question the idea. As such, message ideas in the lower-level group forums were not well developed and at times seemed rather disjointed, for example, one participant would raise the topic of voice over instructions and the next participant would raise the need to have the right amount of content for each slide. Subsequently, the next posting was on the use of graphics instead of word for the matching game and later learning objectives was highlighted in posting. Clearly, there was no elaboration and building up of the ideas in the earlier postings.

It was also observed that more questions were posed by the facilitators in the higher-level group than the lower-level group. In the former, participants were encouraged to either justify their earlier stand or to think deeper about the questions posed by the facilitators. It has to be noted that not all questions raised by the facilitators will generate satisfactory responses. However, the facilitators in the higher-level group showed persistency and perseverance in the use of questioning techniques in their forum. Questions were not only posed at the beginning of the forum but throughout the entire discussions. The facilitators would pose follow-up questions to encourage the participants to think deeper on their earlier comments. Facilitators in the lower-level group, however, posted questions only at the start of the forum and did not follow up with further questions or comment on the participants' response. There were a variety of questions raised by the facilitators in the higher-level group. These questions may be grouped into the following categories (with examples).

- General questions that focus on specific areas. For example, may I know if anyone has any comment with regard to the stated learning objectives?
- Question that require comparison. For example, do you think this is better in comparison to my previous version?
- Questions that require learners to explore other options. For example, one way I am thinking of is to let each

text grow big for easy reading before shrinking back to smaller size. Any other suggestions that I can explore?

- Questions that require justification. For example, is it sufficient to engage your interest and entice you to progress through the course after a heavy day of work? If yes, which are the activities do you find them motivating and make you more interested? If not, what type of activities will motivate you as a learner?
- Questions that require reflection. For example, although I'm doing colors, but I kind of get confused at times to how many colors should be used per slide and that if too many colors are used in a slide will it be too cluttered and distracting. Do you have the same problem also?
- Questions that probe assumptions. For example, I'm not very certain about using narration to enhance my course delivery and reduce the text used. In my opinion, colors are more visual things, hence, I thought it will be more appropriate to do away with narration. But then again, am I too narrow minded in making that assumption?

It was also noted that the facilitators in the higher-level group acknowledged contribution everyone's contribution to the discussion and for most instances would even pick up some of the points raise by the participants for further discussion. This however is missing in the lower-level group discussion forums. Some of the participants' postings were not acknowledged and some of the questions raised by the participant were not addressed by the facilitator. As a result, there was no encouragement for the participants to contribute further to the discussion. There was a facilitator in lower-level group discussion who only made her appearances at the beginning and at the end of the forum and as such did not contribute to the discussion. In acknowledging ideas contributed by the participants, the facilitators in the higher-level group made the rest of the participants willing to contribute even more to the discussion with the "We are all investigating this together mentality" compared to the facilitators in the lower-level group who might have created for themselves "the ultimate authority" image.

Limitation and Future Research

This paper is part of a larger study that investigates the types of facilitation techniques exhibited by student facilitators and how these techniques may foster in-depth levels of critical thinking in asynchronous online discussions. Results indicated that student facilitators in the higher-level group acknowledged the participants' contributions, followed up on the participants' responses, invited elaboration, and posted more questions than their counterparts in the lower-level forums. Facilitators in the high-level group also tended to pose questions throughout the entire discussion, unlike those in the lower-level group who only posted questions at the start of the discussion. Six types of questioning techniques were found.

Like any other research, there are a number of limitations in this research. Firstly, the results of the current study might not be generalizable as it was confined to a specific type of discipline and student. Other possible variables of peer facilitators such as their qualifications (e.g., undergraduates versus post graduates), discipline of study (e.g. other non-instructional design and technology related courses) or cultural background of students (e.g., Asian versus Western counterparts) should be studied to compare the differences in facilitation techniques and patterns of student facilitation with current study. Secondly, given the small sample size and that the research did not employ a control group, the current research cannot determine actual cause and effect relationships between facilitation techniques and critical thinking. We can only infer that the employment of some of the facilitation techniques such as

questioning, inviting elaboration, and following up on participants' responses may lead to higher levels of critical thinking.

References

- Bullen M. (1998). Participation and Critical Thinking in Online University Distance Education, *Journal of Distance Education*, 13(2), 1 – 32.
- Burt, M.T., Grady, M. and McMann, G. (1994). *Interaction analysis of an inter-university computer conference*. Paper presented at the Distance Learning Research Conference, College Station, Texas.
- Chan, J. C. C., Hew, K. F., & Cheung, W. S. (2009). Asynchronous Online Discussion Thread Development: Examining Growth Patterns and Peer-Facilitation Techniques. *Journal of Computer Assisted Learning*, 25(5), 438-452.
- Cheong, C. M. & Cheung, W. S. (2008). Online discussion and critical thinking skills: A case study in a Singapore secondary school. *Australasian Journal of Educational Technology*, 24(5), 556-573.
- Cheung, W. S., & Hew, K. F. (2006). Examining Students' Creative and Critical Thinking and Student-Student Interactions In An Asynchronous Online Discussion Environment: A Singapore Case Study. *Asia-Pacific Cybereducation Journal*, 2(2).
- Ennis, R.H. (1985). Critical thinking? What is it? Paper presented at the 48th Annual Meeting of the Philosophy of Education Society, University of Illinois.
- Fauske, J., & Wade, S. E. (2003-2004). Research to practice online: Conditions that foster democracy, community, and critical thinking in computer-mediated discussions. *Journal of Research on Technology in Education*, 36(2), 137-153.
- Hew, K. F., & Cheung, W. S. (2008). Attracting student participation in asynchronous online discussions: A case study of peer facilitation. *Computers and Education*, 51, 1111-1124.
- Landsman, J., & Gorski, P. (2007). Countering standardization. *Educational Leadership*, 64(8), 40–41.
- Swartz, R.J. & Parks, S. (1994). Infusing the teaching of critical and creative thinking into content instruction. A lesson design handbook for the elementary grades. Critical Thinking Press & Software.
- Thomas, J. (2002). Smart E-Classrooms, Traditional Classrooms and Critical Thinking. In G. Richards (Ed.), *Proceedings of World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education 2002* (pp. 2288-2291). Chesapeake, VA: AACE.
- Yang, Y. T. C., Newby, T., & Bill, R. (2008). Facilitating interactions through structured web-based bulletin boards: A quasi-experimental study on promoting learners' critical thinking skills. *Computers and Education*, 50(4), 1572-1585.
- Zhao, N., & McDougall, D. (2005). Cultural factors affecting Chinese students' participation in asynchronous online learning. In G. Richards (Ed.), *Proceedings of World Conference on E-learning in corporate, government, healthcare, and higher education 2005* (pp. 2723-2729). Chesapeake, VA: AACE.