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Interaction in asynchronous discussion forums: peer facilitation techniques

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Abstract Peer facilitation is proposed as a solution to counter limited interaction in asynchronous online discussions. However, there is a lack of empirical research on online peer facilitation. This study identifies, through cross-case comparison of two graduate-level blended courses attended by Asian Pacific students, the actual peer facilitation techniques that could encourage online interaction. Analyses of interviews and online discussion transcripts suggest that techniques such as 'showing appreciation' and 'considering others' viewpoints' encourage online interaction. However, instructors intending to incorporate peer-facilitated online discussions should also consider the influence of factors such as the design of the online discussion activity and learners' cultural background as some participants could consider challenging others' ideas culturally inappropriate and need to be encouraged through techniques such as 'general invitation to contribute'. Facilitators might also re-consider the use of certain traditionally recommended strategies such as directing an online message at specific participants to encourage responses. This study suggests that doing so could sometimes backfire and discourage online contributions.

Keywords asynchronous online discussion forums, interaction, knowledge construction, participation, peer facilitation techniques, student facilitators.

Introduction

The main purpose of this study is to examine the peer facilitation techniques that may influence student interaction in asynchronous online discussion forums.

Prior research suggests that limited interaction in online discussion appears to be a persistent and widespread problem (Wan & Johnson 1994; Guzdial 1997; Hewitt & Teplovs 1999; Vrasidas & McIsaac 1999; Cheung & Hew 2004, 2005; Hewitt 2005). Research has shown that well-facilitated online discussions lead to more interaction (Feenberg 1989; Anderson *et al*. 2001; Gilbert & Dabbagh 2005; Hewitt 2005; Seo 2007) and knowledge construction (Prammanee 2003; Zhu 2006). Peer facilitation, in particular, has been proposed as a means to encourage a greater degree of interaction in asynchronous online discussion forums (Tagg 1994; Rourke & Anderson 2002; Gilbert & Dabbagh 2005). However, there is a lack of empirical research on online peer facilitation (Sheingold 2005; Osman & Herring 2007; Hew & Cheung 2008). There is a need for more research on peer facilitation (Smet *et al*. 2008) to delineate the actual types of facilitation techniques that encourage interaction and knowledge construction in asynchronous online discussions.

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Literature review

In this section, we summarize existing literature on participation, interaction, knowledge construction,

classification of facilitation techniques, and instructor and peer facilitation in asynchronous online discussions.

Participation, interaction, and knowledge construction

Participation, which is defined as the posting of an online message (Dennen 2008) which could be a comment or question, is a prerequisite to interaction in asynchronous online discussion (Ingram & Hathorn 2004; Weinberger & Fischer 2006). Once learners have initiated a discussion by writing and posting an online message, they are ready to interact or post messages in response to other individuals' online messages (Schrire 2006; Weinberger & Fischer 2006).

However, interaction alone does not necessarily imply that students are constructing knowledge or engaging in higher levels of thinking. An asynchronous online discussion should go beyond social interaction to include knowledge construction (Knowlton 2001; Garrison & Cleveland-Innes 2005; Walther *et al*. 2005; Dennen & Wieland 2007). To construct knowledge, learners must negotiate meaning or modify their ideas in response to feedback from others in order to integrate their prior knowledge with other learners' ideas (Smith 2001; Fischer *et al*. 2002; Pena-Shaff & Nicholls 2004; Staarman *et al*. 2005; Osman & Herring 2007). Thus, knowledge construction happens when learners make sense of their experiences through interaction with others and constantly restructure and test their mental structures when faced with ideas that contradict those structures (Driscoll 2000; Osman & Herring 2007).

Given the earlier association between participation, interaction, and knowledge construction in online discussion, these three concepts can be viewed as different degrees of interaction in online discussion forums. Examples of the various degrees of interaction in asynchronous online discussion forums are shown in Fig 1.

To measure the degree or depth of interaction in online discussions, Gunawardena (1997) outlined five phases of knowledge construction. These five phases that occur at both the individual and social levels are: Phase I: Sharing/Comparing – refers to the giving of information in response to a question; Phase II: Dissonance – refers to the exploration of inconsistency among the ideas advanced by different participants; Phase III: Negotiation/Co-construction – refers to the negotiation of meaning; Phase IV: Testing Tentative Constructions – refers to the testing and modification of proposed synthesis or co-construction; and Phase V: Statement/Application of Newly Constructed Knowledge – refers to the agreement statement(s) or applications of newly constructed meaning. Gunawardena (1997)'s description of knowledge construction allows researchers to code participants' online discussions and quantify the level of knowledge construction. In this way, knowledge construction can be operationalized.

Categories or classification of facilitation techniques

A number of researchers have classified facilitation techniques into different categories (Feenberg 1989; Berge 1995; Salmon 2004) according to the roles or functions performed by an online facilitator. Feenberg (1989) provided one of the earliest classifications of the functions of an online facilitator: contextualizing, monitoring, and meta-functions. Contextualizing functions include using facilitation techniques such as opening a discussion by posting comments to announce the theme of the discussion, setting norms to establish expectations about the rules of discussion, and setting agenda about the order and flow of discussion topics. Monitoring functions involve the use of facilitation techniques to give recognition and prompts to participants, while meta-functions involve the use of facilitation techniques such as clarification and summarizing the points of discussions.

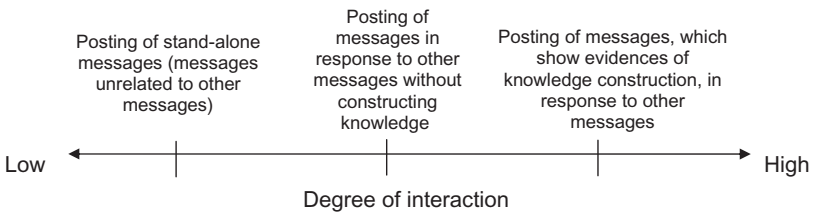

Fig 1 Examples of the various degrees of interaction in online forums.

Instructor facilitation

The role of an online facilitator is traditionally undertaken by the instructor. Some studies found that online discussions were kept on track through instructor facilitators' use of good questions, guidelines for students, and provision of discussion summaries (Beaudin 1999). Other researchers suggest that an instructor facilitator should help students overcome technical difficulties or concerns on how to access the online discussions (Cifuentes *et al*. 1997) and set explicit expectations for student participation in the online discussions.

However, not all researchers agree that an instructor should facilitate the online discussion. Some researchers are concerned that instructor-facilitated discussion might lead to instructor-centred discussion (Light *et al*. 2000; Nickel 2002). For example, Dennen (2005) found in her study that when the instructor was very active in the asynchronous online discussion, the students wrote in response to the instructor rather than to one another.

One possible solution to the challenge that instructor facilitation poses is to have a student facilitate the discussion (Seo 2007). Through peer facilitation, a learner can help his or her peers learn, and in the process, advance his or her own understanding of the discussion topic (Gilbert & Dabbagh 2005).

Peer facilitation

Some studies have shown that students' interaction improved when the instructor was not involved in the online discussion (Poole 2000; Mazzolini & Maddison 2003; MacLean 2004). Baran and Correia (2009), who investigated 16 educators taking a course in an online Masters in Education programme, found that peer facilitation motivated participants to interact actively in the discussions and provided an atmosphere for involvement and commitment. Other studies reported similar findings (Tagg 1994; Rourke & Anderson 2002; Gilbert & Dabbagh 2005).

Rourke and Anderson (2002), who conducted a study to investigate whether peer facilitators could lead an online discussion more effectively than an instructor, found that participants rated the peer facilitators as higher in ability than the instructor in fulfilling the role of an online facilitator. However, it should be noted that the study investigated teams of four students facilitating online discussion forums that lasted for only 1 week each. This could have limited the generalizability of the findings. In another study, Gilbert and Dabbagh (2005) reported that the involvement of student facilitators led to an increase in the number and type of facilitator postings, and deeper discussion threads after the facilitation guidelines were provided (Gilbert & Dabbagh 2005).

Although the above studies focused on peer facilitation, they did not delineate the actual types of peer facilitation techniques that encourage interaction and knowledge construction in asynchronous online discussions. One empirical study that gave examples of peer facilitation techniques used by students was the work done by Smet *et al*. (2008). The study found that the peer facilitators tended to agree with the content of the discussion and praised others for their contribution (Smet *et al*. 2008). However, the researchers pointed out that one limitation of their study was that their coding scheme, which was based on Salmon's stages of e-moderating, was not validated. In addition, the researchers did not examine participants' perception of the effect that peer moderation had on them.

In contrast to the above researchers, other educators cautioned against the use of peer facilitation. For example, Braham and Piela (2009) pointed out that the use of certain techniques such as praising a participant (rather than her or his contribution) could lead to competition instead of cooperation among participants. This does not facilitate knowledge construction. In addition, very confident contributors may dominate and silence others. Such dominance of discussion will make other participants feel excluded. Other researchers suggest that peer-facilitated asynchronous online discussions are more useful in achieving higher-order learning objectives, which emphasize evaluation of each others' work and application of concepts rather than lower order learning objectives, which focus primarily on the learners' ability to recall facts and demonstrate basic understanding (Rourke & Anderson 2002).

Given the conflicting views from researchers on peer facilitation and the lack of empirical research on the topic (Sheingold 2005; Osman & Herring 2007; Hew & Cheung 2008), there is a need for more research on peer facilitation (Smet *et al*. 2008).

Method

This study adopted a case study methodology involving the constant-comparative approach. A case study

approach is most appropriate if a contemporary phenomenon is investigated within its real-life context, and the boundaries between phenomenon and context are not clearly evident (Yin 2003). In other words, a case study methodology is preferred when the relevant behaviours in a real-life context cannot be manipulated, and the context is very important to the phenomenon of the study (Yin 2003). Using the case study approach will help the researcher to gain a more holistic understanding of the characteristics of the phenomenon under study (Yin 2003) and an in-depth understanding of a particular situation (Merriam 1998).

For this research on online peer facilitation, a case study approach is especially relevant as online facilitation was dynamic and dependent on many factors such as the discussion activity, the facilitator, and students (Smet *et al*. 2008). As these variables and processes can influence participants' interaction in asynchronous online discussion forums, the context for the study may not be completely under control. Hence, the choice of a case study approach provides a better understanding of how various complex inputs to a class (such as students, peer facilitation techniques, and the topic of discussion) work together to affect student interaction in asynchronous online discussion forums.

According to Yin (2003), the unit for a case study could be an individual, an event, or even a process of change. The choice of this unit depends on the research questions (Yin 2003). In this study, the focus is on the peer facilitation techniques that were associated with students' interaction in asynchronous online discussions. This depends on factors such as how the peer facilitator used the facilitation techniques. As such, it was decided that each unit for this study should be one course in which peer-facilitated asynchronous online discussion forums were incorporated. In this research study, two courses or cases were examined.

Descriptions of two case studies

The two case studies were two courses delivered over one semester of a Masters programme in a university in the Asian Pacific region. The 14 participants in Case Study 1 took a multimedia course over a period of 5 weeks from June to July 2008, while the 12 participants in Case Study 2 took a course on flexible learning over a period of 13 weeks from January to April 2008.

For both case studies, students were taught principles and concepts related to the course and given time to work on a proposal for their final course projects. The instructors created discussion forums for students to upload their project proposals for critique. They were to facilitate their own forums to get feedback to improve their proposals.

The discussion forums were fully student-facilitated without any involvement from the instructors. As students had the freedom to choose to contribute to whichever and any number of asynchronous online discussion forums they wished, it was up to the peer facilitator of each forum to use various facilitation techniques to encourage and attract contributions for the 4-week-long online discussion.

The students from both case studies were given a handout listing some peer facilitation techniques and examples of these techniques that they could use to facilitate the asynchronous online discussion forums. This list is presented in Table 1.

With this list as a guide, they were expected to facilitate the online discussion to get feedback for their project proposals. Although the students were not graded on their roles as facilitators, the instructors told the students that discussing ideas with their peers should help them improve their final projects.

The list of similarities between these two case studies is presented in Table 2.

While efforts had been made to identify similar courses for this research study, no cases were likely to be identical. For Case Study 1, the 4-week-long online discussions took place during a vacation break between the third and fourth face-to-face lessons, which were 1 month apart. For Case Study 2, the online discussions took place simultaneously with weekly face-to-face lessons.

This difference could influence the degree of the interaction. For example, the students in Case Study 2 could face more time constraints because they had to cope with the demands of attending face-to-face lessons and participating in the online discussions at the same time. Although the focus of this study was not to examine how this difference was associated with participants' interaction in the asynchronous online discussions, we kept an open mind of any possible association as we carried out this research study.

Table 1. List of peer facilitation techniques given to students.

Facilitation technique	Example
Questioning	What is the name of this concept . . .?
Giving direct instruction	I think in class we mentioned that . . .
Giving examples	I think I solved this sort of problem once when I . . .
Praising	Wow, I'm impressed . . .
Providing cognitive task structuring	You know, the task asks you to do . . .
Asking for cognitive elaborations	Provide more information here that explains your rationale.
Pushing exploration	You might want to write to Dr. 'XYZ' for . . .
Fostering reflection	Restate again what the teacher did here.
Encouraging articulation	What was the problem-solving process the teacher faced here?
Giving general advice	If I were in her shoes, I would . . .

Adapted from Bonk and Kim (1998).

Data sources and collection

To improve the validity of this study, data were gathered from multiple sources – online discussion transcripts and semi-structured interviews. Transcripts of the online discussion were downloaded and printed in hardcopy at the end of the course for content analysis. Gunawardena's interaction analysis model (1997) was used to analyse the content of the transcripts for knowledge construction, because it remained one of the most frequently used online and reliable content analysis models currently available (Marra *et al*. 2004).

Two independent coders coded the phases of knowledge construction in all the online forums. The per cent agreement of the coding for knowledge construction in Case Studies 1 and 2 was 93% and 94%, respectively. The coders then counted the total number of units of knowledge construction (the total number of times that different phases of knowledge construction occur) in each online forum.

For Case Study 1, content analysis of the online messages arrived at a result of 75 units of knowledge construction Phases II to V. The total number of units of

Table 2. Similarities between Case Studies 1 and 2.

Characteristics	Similarities between Case Studies 1 and 2
1 Modes of learning	Both case studies were blended courses with face-to-face and online components.
2 Type of online component	The online components of both courses were peer-facilitated asynchronous online discussions.
3 Asynchronous online discussion tool	Students of both courses used the threaded asynchronous online discussion tool in Blackboard – a learning management system.
4 Design of online discussion activity	Both courses required students to upload their project proposals to the asynchronous online discussion forums for critique by their peers.
5 Experience of students in the use of the asynchronous online discussion tool	All the students of both courses had used the asynchronous online discussion tool before.
6 Duration of online discussion	The asynchronous online discussions for both courses were 4 weeks long.
7 Instructor(s)	Both courses were co-taught by the same two instructors.
8 Role of instructors	The two instructors for both courses were not involved at all in the online facilitation. Instead, the instructors' roles were restricted to that of designers of the asynchronous online discussion activities.
9 Facilitation of asynchronous online discussion forums	The asynchronous online discussion forums were fully facilitated by the students.
10 Profile of students	The students of both courses were adult learners from Asian Pacific cultural backgrounds. They were taking a part-time Masters programme. The median age of the students in both courses was about 37.0 years, and the ratio of males to females in both courses was about 2:1.

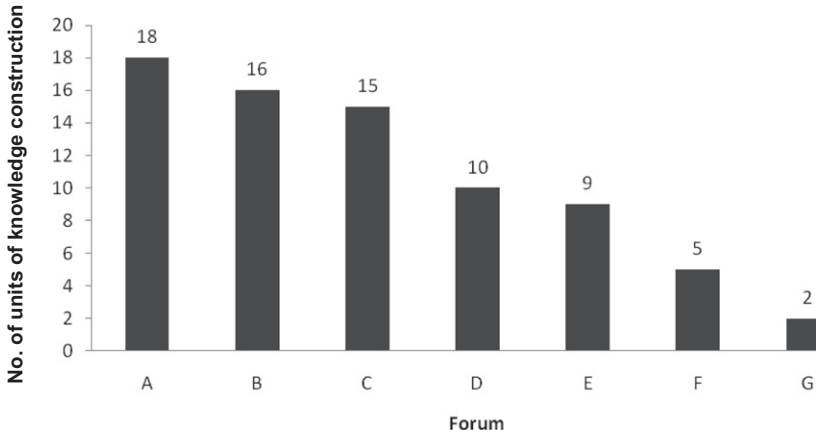

Fig 2 Total number of units of knowledge construction Phases II–V in individual forums.

knowledge construction Phases II to V in all the forums is shown in Fig 2.

Figure 2 shows that knowledge construction had taken place in all the seven discussion forums of Case Study 1. The number of units of knowledge construction in the forums was as follows: 18 in Forum A, 16 in Forum B, 15 in Forum C, 10 in Forum D, 9 in Forum E, 5 in Forum F, and 2 in Forum G. This means that the average number of units of knowledge construction per forum was 11.

As there were no standard guidelines given in past studies on what constitutes a high level and low level of knowledge construction (Veldhuis-Diermanse 2002), forums with more than the average number of units of knowledge construction per forum were considered as forums with high knowledge construction, and forums with the lowest units of knowledge construction were considered as forums with low knowledge construction. In this case study, as the average number of units of knowledge construction per forum is 11, Forums A, B, and C were considered as forums with high knowledge construction. On the other hand, the forums with low knowledge construction were Forums E, F, and G. Forums with high levels of both knowledge construction and participant postings were considered as active forums, while those with low levels of both knowledge construction and participant postings were considered as less active forums. A similar process was carried out to identify the active and less active forums for Case Study 2.

Content analysis of the online discussion transcripts was then done to determine the types of facilitation technique used in the forums and whether they were used more frequently in the active forums as compared with the less active forums. To confirm that the peer facilitation techniques did indeed influence participants' degree of interaction and the reasons, interviews that lasted about 20 min per participant were carried out 2 weeks after the end of each course. To ensure quality and reliable data, Erlandson *et al*. (1993) recommended that researchers record interviews and simultaneously take notes. This was done for this study.

Data analysis

Each online posting was read in its entirety and coded for peer facilitation techniques based on an initial list of literature-based categories of facilitation techniques. Examples of these initial coding categories were: clarifying, summarizing, and setting rules of discussion. Although the categories were established prior to the analysis, care was taken not to let the use of predetermined categories restrict the discovery of new peer facilitation techniques. This means that during the coding process, new peer facilitation techniques were allowed to emerge inductively. The list of peer facilitation techniques and the exemplars were continuously refined, and the online discussion transcripts were re-coded until the list was finalized. Table 3 shows the final coding scheme.

This list was then used by two independent coders to code the transcripts for peer facilitation techniques. The per cent agreement for peer facilitation techniques for Case Studies 1 and 2 was 92% and 93%, respectively. As recommended by the literature on content analysis procedure, the two coders discussed differences between

Table 3. Final coding scheme for peer facilitation techniques.

S/N	Peer facilitation technique	Description	Example
1	Challenging others' points	Giving alternative suggestions/ interpretation, pointing out gaps or discrepancies, or raising concerns	However, Fischer's checklist only focuses on quantity. Consideration is not given to discerning different levels of development in the students' reasoning skills.
2	Citing references	Citing evidence from article to support points raised	In a local study by Hewitt (2005), the students were introduced to a . . .
3	Considering others' viewpoints	Acknowledging contribution by considering others' suggestions or agreeing with the other participants' viewpoints	I will take your suggestions into consideration when working on the storyboard.
4	Elaborating/clarifying	Elaborating on reasons for agreeing or disagreeing on points raised or elaborating/clarifying in response to request for clarification/elaboration	Subtitles are good when we have a static or dynamic picture that goes with it. Should there be text only, then it will be lopsided and breach the guidelines for the use of text alone.
5	General invitation to contribute	Encouraging all participants to post by specifically stating that viewpoints from all participants were welcome	Any more ideas from any one of you? Please give us your insightful idea before we work on it further.
6	Giving personal opinion	Giving personal opinion or sharing experiences about an issue or topic	Perhaps I would think twice about putting these kids . . .
7	Personal invitation to contribute	Encouraging a particular person or group of persons to post by stating their name(s) in online postings and asking for their responses	Hey M and K, probably you might want to share with all of us your views in this issue too.
8	Questioning	Asking questions to seek clarification, encouraging elaboration, or seeking others' viewpoints	I am wondering if you may want to elaborate on your assessment for the mini-project. How are the outcomes measured?
9	Setting focus for discussion	Uploading a new version of project for comments, highlighting unanswered questions, or proposing a new angle for discussions	I noted that . . . we have adopted different tools in our projects. I would therefore like to find out more about your experience in the area of assessing participants in the online environment
10	Setting ground rules	Setting ground rules for desired online behaviour	To begin with, a few ground rules for the posting and discussion of topic. For example, participants to visit and respond to questions posed to them as soon as possible (within 36 h), no personal attacks.
11	Showing appreciation	Offering thanks for a posting or complimenting others for a good suggestion	Thanks for responding and sharing with all of us some of the pros and cons of using technological resources in teaching
12	Synthesizing/summarizing	Summing up understanding or interpretation of a series of online discussions by sharing reflection or giving a summary of the points discussed	Ok, from the numerous posts, let me try to summarize some issues or queries we've discussed . . .

their coding to resolve any differences (Hycner 1985). After the peer facilitation techniques were coded, the number of times each peer facilitation technique was used in the active and less active forums was compared.

Content analysis of the interview data was also done to identify the peer facilitation techniques that students perceived to encourage their interaction in the online forums. After this, a comparison was done

Table 4. Cross-case comparison of findings for each peer facilitation technique.

Peer facilitation technique	Case Study 1		Case Study 2		Triangulation across data sources and cases indicating that technique encouraged interaction?
	Interviews	Content analysis	Interviews	Content analysis	
	Technique encouraged interaction?	Technique used more frequently in the active forums?	Technique encouraged interaction?	Technique used more frequently in the active forums?	
Showing appreciation	Yes[1]	Yes	Yes[1]	Yes	Yes
Considering others' viewpoints	Yes[1]	Yes	Yes[1]	Yes	Yes
Elaborating/clarifying	Yes[1]	No	Yes[1]	Yes	No
General invitation to contribute	Yes[1]	Yes	Yes[1]	Yes	Yes
Personal invitation to contribute	Yes[1]	Yes	Mixed reaction	Yes	No
Setting focus for discussions	Yes[1]	Yes	Yes[1]	Not conclusive	No
Questioning	Yes[1]	Yes	Yes[1]	Yes	Yes
Citing references	Nil	Nil	No	No	No
Challenging others' points	Yes[1]	Yes	Yes[1]	Yes	Yes
Giving personal opinion	Not mentioned	Not conclusive	Yes[1]	Yes	No
Setting ground rules	Mixed reaction	Not conclusive	Mixed reaction	No	No
Synthesizing/summarizing	Mixed reaction	Not conclusive	Mixed reaction	Yes	No

[1]Indicates that there was triangulation among participants, i.e. more than one participant indicated that this peer facilitation technique motivated them to contribute more postings and knowledge construction.

across both data sources and cases as shown in Table 4.

Reliability and validity of study

Measures for increasing the quality of an exploratory case study include addressing issues related to reliability and validity (Yin 2003). Qualitative researchers may improve the reliability of their studies by explaining their methodology fully, stating the research questions clearly, and leaving an audit trail (Bodgan & Biklen 1992; Marshall & Rossman 1999; Yin 2003). For content analysis of data, including those of interview data, reliability is established through inter-rater agreement, which refers to the extent to which different coders achieve a high degree of agreement regarding the occurrence of the construct being measured (Hycner 1985; Rourke *et al*. 2001; Fraenkel & Wallen 2006). In this study, all the above methods were implemented to increase reliability.

To increase the validity of this study, member check (Lincoln & Guba 1985), which involved getting interviewees to validate interpretations of their viewpoints (Appleton 1995; Johnson 1997), and direct quotations from participants in reporting the findings (Johnson 1997) were done. To further strengthen the validity, data source triangulation was also used.

Cross-case findings

For both case studies, the facilitators of the active forums tended to use more facilitation techniques than the facilitators of the less active forums. Content analysis of the discussion transcripts shows that the peer facilitators used the following 12 different types of peer facilitation techniques: 'showing appreciation', 'elaborating/clarifying', 'general invitation to contribute', 'challenging others' points', 'considering others' viewpoints', 'setting focus for discussion', 'questioning', 'personal invitation to contribute', 'giving personal opinion', 'citing references', 'synthesizing/summarizing', and 'setting ground rules'.

Interviews with the participants in Case Study 1 indicated that they perceived five of these techniques as having encouraged their interaction in the online forums. As for Case Study 2, the participants mentioned seven techniques. Table 4 shows a comparison of the findings for each peer facilitation technique across both data sources and cases.

Table 4 shows that there was triangulation across data sources (online discussion transcripts and interview

data) and cases that the following five peer facilitation techniques seem to encourage interaction in the asynchronous online discussion: 'showing appreciation', 'considering others' viewpoints', 'general invitation to contribute', 'questioning', and 'challenging others' points'. In contrast, the other seven peer facilitation techniques did not seem to be associated with interaction in the asynchronous online discussion forums. These seven techniques were: 'elaborating/clarifying', 'personal invitation to contribute', 'setting focus for discussions', 'citing references', 'giving personal opinion', 'setting ground rules', and 'synthesizing/summarizing'.

The average frequency usage of each facilitation technique in the active and less active forums of Case Studies 1 and 2 is shown in Table 5.

We will discuss the similarities and differences in the findings between the two case studies in the following sections.

Findings that span the two case studies

The peer facilitators showed appreciation by thanking the participants for contributing in their forum or complimenting them for good suggestions. The participants indicated that they perceived the use of 'showing appreciation' as an indication that the facilitator was open to others' ideas, especially opposing views. However, the participants revealed that they doubted the sincerity of the 'thanks' given by some of the peer facilitators. For example, participant P8 from Case Study 1 said that:

> A "thank you" is only a formality. A posting in AOD [asynchronous online discussion] should not be like an email to tell us that "it's noted". "Thank you" suggests that the facilitator has noted the posting. However, if the message is "thank you, your idea is interesting . . ." – this is a constructive feedback.

The facilitators of the active forums in Case Studies 1 and 2 used 'showing appreciation', on the average, 15 times and five times more than the less active forums, respectively (refer to Table 5). The greater difference in average frequency usage of 'showing appreciation' between the high and less active forums for Case Study 1 (15 times) compared with that for Case Study 2 (five times) could be due to the faster pace of learning for Case Study 2. Interviews with the participants revealed that participants of Case Study 2 were more constrained by limitations due to time because they had to attend face-to-face lessons for the same course while participating in the online discussions.

The facilitators considered others' viewpoints by indicating that they would ponder over the participants' suggestions or agreeing with the other participants' viewpoints. The facilitators of the active forums in Case Studies 1 and 2 used this technique, on the average, nine times and three times more than the less active forums, respectively (refer to Table 5). Interviews with the participants revealed that they viewed 'considering

Table 5. Average frequency usage of facilitation techniques in the active and less active forums of Case Studies 1 and 2.

Facilitation techniques	Average frequency usage					
	Case Study 1			Case Study 2		
	Active forums	Less active forums	Differences	Active forums	Less active forums	Differences
Showing appreciation	22	7	15	6.3	1.3	5
Considering others' viewpoints	12.7	4.7	9	3.3	0.3	3
General invitation to contribute	10	4	6	4.8	0.8	4
Challenging others' points	9.7	0.7	9	3.5	0.5	3
Questioning	7	0	7	3	0	3
Elaborating or clarifying	7	6	1	5	3	2
Personal invitation to contribute	3.3	0.7	2.6	1.3	0	1.3
Setting focus for discussion	7.7	3.7	4	2.3	1.3	1
Giving personal opinion	1	0	1	1.8	0	1.8
Synthesizing/summarizing	1	0	1	1.5	0.5	1
Setting ground rules	1	0	1	0	0.3	–0.3
Citing references	0	0	0	0.5	2	–1.5

others' viewpoints' by facilitators as an indication that they were open to opposing ideas. The following extract from the interview of participant P14 of Case Study 1 shows how participants reacted to this technique:

> To me, a facilitator is open to or willing to consider opposing viewpoints if he keeps asking participants for feedback or if he shows appreciation and consideration of our (participants') ideas even if our views are different from his.

The peer facilitators extended 'general invitation to contribute' by specifically stating in their online postings that viewpoints from all participants were welcome. The facilitators of the active forums in Case Studies 1 and 2 used this technique, on the average, six times and four times more than the less active forums, respectively (refer to Table 5). The participants indicated that it motivated them to interact in the discussion forums as they felt that the facilitators were open to feedback, and there was a need for them to help the facilitator by contributing their ideas. For example, participant P3 from Case Study 1 said that:

> If the facilitator invites all of us [participants] to contribute and thank us when we do so, to me, it shows that he's not defensive and willing to consider or hear more of my ideas. We owe it to the person to elaborate more. It also helps me to think deeper.

Questioning took place when the facilitators asked questions to seek clarification, encourage elaboration, or seek others' viewpoints. The facilitators of the active forums in Case Studies 1 and 2 used this technique, on the average, seven times and three times more than the less active forums, respectively (refer to Table 5). Interviews with the participants suggest that 'questioning', especially open-ended questioning, encouraged them to interact in the discussion forums, because such questions prompted them to think from different perspectives and were less threatening as they could give their personal opinions without worrying about giving wrong answers. For example, participant P11 from Case Study 1 said that:

> Questions that asked for opinions give me room for discussion. It's also less threatening as I don't have to worry about giving a wrong answer.

'Challenging others' points' was done by giving alternative suggestions/interpretations, pointing out gaps or discrepancies, or raising concerns about the points contributed by the participants. The facilitators of the active forums in Case Studies 1 and 2 used this technique, on the average, nine times and three times more than the less active forums, respectively (refer to Table 5). The participants indicated that, as long as the facilitators showed respect and openness to opposing viewpoints, the use of this technique helped them to construct knowledge. If the participants were not sure of how a facilitator would react to a disagreement or alternative suggestion, they would test the facilitator's response by: posting once and observing how the facilitator responds to their alternative suggestion; taking the cue from the facilitator's responses to other participants who had already posted an opposing viewpoint; or posting a controversial remark to see the facilitator's reaction. The following extract from the interview data of participant P6 from Case Study 1 illustrates these viewpoints:

> Sometimes, I-test the facilitator by posting a non-example or a controversial remark to see his response. If the facilitator shows that he is open to the remark, then I'll continue participating in the discussion. However, if other participants respond before the facilitator and keep the discussion alive, then I might still participate in the discussion until I detect that the facilitator does not welcome controversial views.

Differences between the two case studies

Although there might be triangulation within individual case study that the remaining seven techniques could be associated with interaction in the discussion forums, cross-case comparison did not support the within-case observations. We discuss some interesting findings about some of these peer facilitation techniques in the rest of this section.

When the facilitators used the technique 'personal invitation to contribute', some participants felt obliged or honoured to respond because the facilitators specifically addressed them by name. However, other participants whose names were not mentioned in the online discussion held back from contributing postings because they felt that they were intruding into an online dialogue between two persons.

As for the technique of 'citing references', which referred to instances when the facilitators cited the literature to support their comments in online postings, there was triangulation from both data sources within Case Study 2 that it discouraged the participants from interacting in the discussion forums, because they

construed its use as an indication that the facilitator was not open to ideas. It seems that when this technique was the predominant peer facilitation technique used by the facilitator, the participants perceived him or her to be condescending. However, this finding was not triangulated across cases because 'citing references' was not used by any of the facilitators from Case Study 1.

As for another technique 'synthesizing/summarizing', while some participants felt that it encouraged them to interact more, other participants stopped contributing further in the online forums because they viewed summaries from peer facilitators as signals that the online discussion had ended and that there was no need for further viewpoints.

Discussion and implications

In this section, we will discuss the implications of the findings that spanned both cases, followed by a discussion of other issues that did not result in consistent findings across the two case studies, but which might merit further exploration. Although this study did not set out to explore the influence of Asian Pacific cultural traits on the participants' interaction in asynchronous online discussions, it was highlighted by a number of the participants during the interviews. The possible influence of cultural traits will thus be discussed in this section.

Conducive environment for online discussion

Liang and McQueen (1999) who investigated the online learning experiences of Asian Pacific adult learners found that students in this region tended to hold back their thoughts when they perceived that their peers were not receptive to negative comments. Another researcher, Biesenbach-Lucas (2003), who compared the attitudes and behaviours of American and Asian Pacific students towards asynchronous online discussion attributed this tendency to the Asian Pacific cultural background of the students. He observed that the Asian Pacific students in his study tended to avoid disagreement probably because of the fact that they considered challenging and criticizing others' ideas culturally inappropriate (Biesenbach-Lucas 2003). Tu (2001) also found in his study on Asian Pacific students that this group of learners was more likely to avoid conflict with someone whom they were unfamiliar with in an online learning environment.

In this study, the online discussion activity was anchored in the peer critique of project proposals. As the feedback given by the participants of the online discussion was directed at the facilitator's project proposal, the comments could be taken very personally by the facilitator. This could have significant impact on Asian Pacific students because of their cultural trait of avoiding conflict or confrontation.

To encourage more contribution from Asian Pacific participants in an online environment, Tu (2001) found that it was necessary to provide them with a comfortable environment, particularly when it was necessary to disagree. Research has shown that social norms such as approval by others are important to individuals from collectivist cultures (Suh *et al*. 1998) such as Asian Pacific cultures. In a study involving one group of Asian Pacific students, Cheung *et al*. (2008) found that as high as 80% of the participants indicated that they contributed in forums where the peer facilitators showed appreciation for their contributions. Showing approval could be more pertinent in context such as this study which required the participants to critique each others' project proposal. The participants, especially Asian Pacific students, could hold back from giving their feedback to the project proposal because they were concerned about not offending others. Hence, if the online discussion is anchored in the peer critique of each others' work, it might be even more important for facilitators to show their approval compared with a less personal discussion activity.

Besides sharing similar findings with the above studies, this study revealed that showing appreciation by simply thanking participants might not be sufficient to motivate students to interact actively. Ng *et al*. (2009) suggest that one way to convey sincerity in showing appreciation in online forums is to use peer facilitation techniques 'showing appreciation' in conjunction with 'considering others' viewpoints'.

Image-consciousness

Tu (2001) found that Asian Pacific students were very concerned about presenting a positive image in the online environment. He found that these students perceived that bad quality writing when corresponding online would tarnish their image and give others a bad impression of them.

This study suggests that reluctance to interact could be overcome if peer facilitators ask more open-ended questions especially questions that asked participants

for their opinions. Such questions could help the participants to give their points of view without worrying that their answers were wrong (Ng *et al*. 2010).

Invitation to contribute

A number of researchers propose that responses to online messages be directed to specific students to motivate them to contribute in the online discussions (Tagg & Dickinson 1995; Xie *et al*. 2006; Osman & Herring 2007).

This way of getting a response mirrors the technique used in face-to face conversations where one way to grab attention and create an obligation to answer is to address a person by name (Silverman 2006) followed by a question or request.

It seems that 'personal invitation to contribute' was a double-edged sword. It motivated those whose names were mentioned in the online postings to contribute, but it might discourage those whose names were not mentioned in the online postings from contributing. One way to overcome this dilemma is to end a 'personal invitation to contribute' in an online posting with a 'general invitation to contribute' (e.g. by saying 'do the rest of you agree with this view?'). This could signal to the participants whose names are not mentioned in the online posting that their feedback is welcome as well.

Citing references

The negative feeling experienced by the participants towards the use of this technique could again be linked to the cultural background of the Asian Pacific students. In some Asian Pacific culture, experts or instructors were perceived as having absolute authority in the learning environment (Tu 2001) and must be respected and complied to (Westwood *et al*. 2004). When the facilitators cited references in their online postings, the participants could have perceived that these facilitators were using the authorities (other researchers or experts) to point out that their points were right.

Some ways to avoid sounding condescending when using 'citing references' could be to use it together with other peer facilitation techniques such as 'showing appreciation' and 'general invitation to contribute'.

Synthesizing/summarizing

Online facilitators have been frequently advised to generate summaries that synthesize ideas from different learners so as to foster higher levels of interaction among participants (Feenberg 1989; Hewitt 2005) or keep discussions on track (Beaudin 1999). This study shows that doing so might not necessarily lead to more interaction among participants. One possible reason why this technique did not work well in this study could perhaps be linked to both the nature of the online discussion activity in this study and the Asian Pacific cultural background of the participants. As each online discussion forum was owned by a student facilitator who posted his or her project proposal for other participants to discuss in his or her discussion forums, the participants could have viewed a summary by the facilitator as an indication that she or he has made a decision on whose and which views to incorporate in the project proposal. Hence, the participants could have stopped contributing in order to maintain harmony. Past studies have found that Asian Pacific students tended to focus on values such as harmony and obedience to authority, and proper behaviour (Hofstede 2005; Ohbuchi *et al*. 1999; Thompson & Ku 2005; Valcke *et al*. 2008).

To encourage more contribution from Asian Pacific participants in an online environment, peer facilitators could consider using peer facilitation techniques such as 'general invitation to contribute' or 'questioning' in the same postings to create an environment that encourages contribution from participants.

Conclusion, limitations, and future directions

The findings of this study provide some addition to the scant literature in the area of peer facilitation and factors influencing Asian Pacific students' interaction in asynchronous online discussion forums in blended courses. In particular, this study described the actual peer facilitation techniques that could be used to improve the interaction in asynchronous online discussion forums. In addition, this study shed light on how other contextual factors, such as the design of online discussion activity (e.g. peer critique of each others' work) and the features of blending (e.g. whether the online discussions were carried out concurrently with or in between face-to-face lessons), could influence participants' interaction in asynchronous online discussion forums.

As with any research, limitations exist and more study is needed in certain areas. We discuss these two aspects in the next two subsections.

Limitations of study

Because of the nature of case studies, the findings from this study may not be generalizable to all peer-facilitated asynchronous online discussion forums. In addition, the students in this study were graduate students, and the online discussion activity was anchored in design problems. As such, the findings of this study may have more relevance for adult learners and design problems. In addition, the generalizability of the findings is also limited by the possible effects because of the nature of the course, activity design, and participation structure of the course. Another limitation is that the differences between Case Studies 1 and 2, such as the fact that the online discussion was graded in Case Study 2 but not Case Study 1, might further limit the extent that the findings of this research study could apply to a wider group of students.

Further research

More studies are needed to determine if the recommendations proposed in this study lead to more interaction in online discussion forums in other contexts such as nonadult learners and non-design-based tasks. A larger sample of students should also be used. Future research could also investigate and confirm whether the association of some of the peer facilitation techniques with interaction was indeed influenced by the participants' cultural background. Further research might also investigate the importance of various peer facilitation techniques at different stages of knowledge construction in an asynchronous online discussion.

Although the study presented here was on a small scale, it delineated the actual peer facilitation techniques used in active forums, which had influenced one group of Asian Pacific participants' degree of interaction in online discussion forums. This could help the reader to develop hypotheses for further studies on peer facilitation and enlighten educators on how peer facilitators from the Asian Pacific region could be trained to facilitate asynchronous online discussion forums.

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