Online facilitation: Strategies for gaining engagement in different OLEs

Chris Hughes, Sophie di Corpo
School of Public Health and Community Medicine
University of New South Wales

Lindsay Hewson
School of Medical Sciences
University of New South Wales

The strategies that some teachers use in online learning environments engage students, facilitate participation and, more importantly, promote interaction with content, teacher and peers. Following a detailed analysis of the contributions to a sample of online groups, and interviews with the teachers, we report on the strategies that led to the highest contribution rates. This paper focuses on two cases that achieved high contribution rates using two different software packages. We provide an analysis of the tasks set by teachers, class activity, the frequency of postings, the value of the software features and the overall structuring of online processes. While we could not identify clear impacts of the different interfaces on the contribution rates achieved, we do canvass some possibilities in this area.

Keywords: online, pedagogy, learning, environment, interaction, analysis

Introduction

Although many studies have been carried out to examine online interaction within learning systems (Holmes, 2005; McKenzie et al, 2000; Henri, 1991; Mowrer, 1996; Gunawardena et al, 1997; McDonald et al, 1998; Angeli et al, 1998; Newman et al, 1995; Kanuka et al, 1998; Garrison et al, 2001; Pawan et al, 2003) few have specifically addressed how the software and its features affect the learning and teaching process. We initially set out to explore this issue by comparing the quantitative and qualitative character of the contributions made to classes using two different systems to support asynchronous communication.

The two systems differed significantly in their support for asynchronous communication. WebCT(CE) used a standard newsgroup interface for group communications but lacked any specific structural support for teaching strategies. WebTeach provided explicit structural support for pedagogic interaction using a range of strategies, including discussion, brainstorming, case studies, questioning, debates, commitment activities, quizzes and task-setting. It also offered participants a 'meta-comment' facility whereby they could make a contribution intended as an aside, or as a query or comment on the current task or process. These meta-comments were displayed in a different font and colour and were indented in the transcript. The teacher in one of the cases reported below used this facility extensively.

Both systems notified participants of group activity by a summary email, sent to their private email address. The WebCT summary listed affected groups only, while the WebTeach summary was more informative as it included the titles of the threads contributed to, in addition to the group titles.

Apart from the above differences, the most significant difference between these systems from a user perspective was the interface: WebCT organised learner and facilitator postings through nested 'threads' or topics, allowing out-of-chronological-order postings; while WebTeach provided a continuous and strictly chronological transcript of each online activity.

The style of the WebCT communications interface should be familiar to most readers, even if the specifics are not:

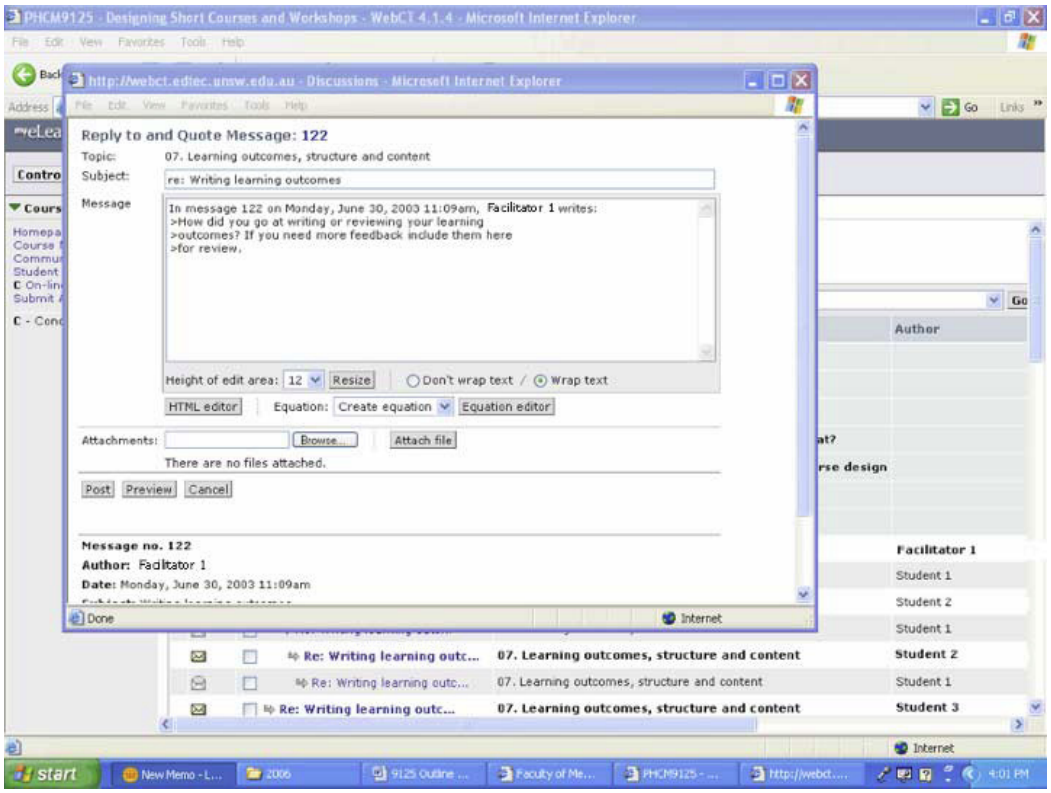

Figure 1: The WebCT CE communications interface, showing threaded discussion and the contribution window

But the interface of the WebTeach environment may be less familiar:

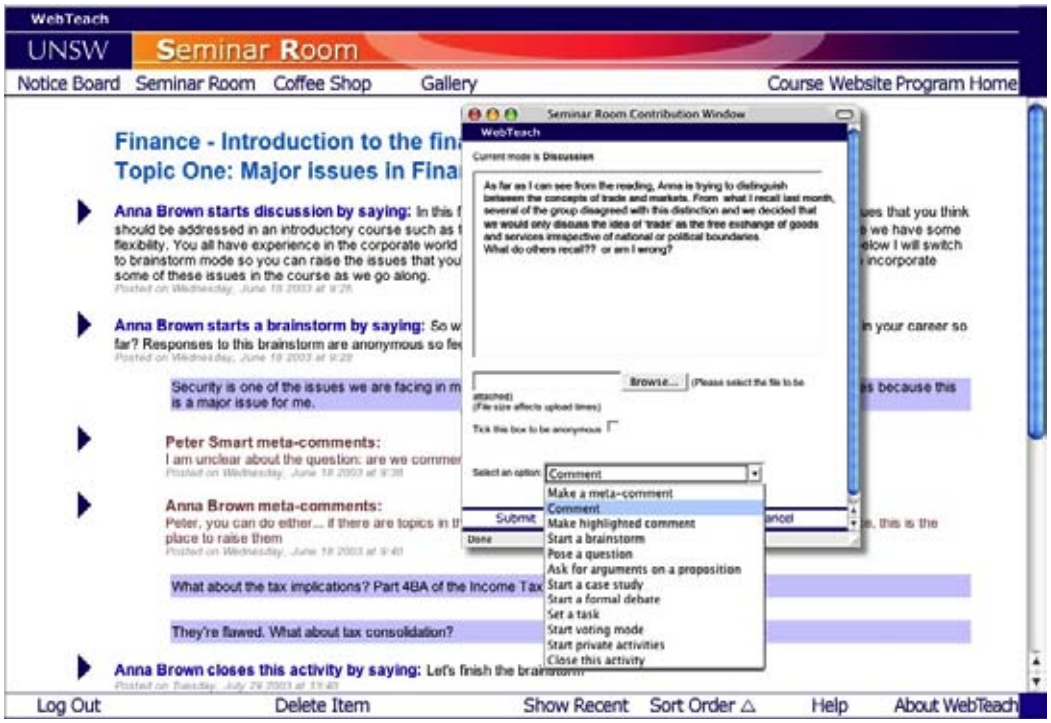

Figure 2: The WebTeach communications interface, showing the chronological and structured presentation of contributions and the contribution window

Our original research questions sought indicators of deep learning processes and how the contributions of learners and facilitators could be characterised. Ultimately, we sought to identify the impact, if any, of the features of the two software systems on the educational processes they supported.

Background study

Our initial study obtained ethics approval for an opt-out consent process that eventually gave us access to 17 fully online classes, 15 of which were assessable postgraduate classes, and two that used WebCT for faculty development purposes only. The classes were not randomly selected. Firstly we sought permission to view the transcripts of only those classes that had had instructional design support in their development and ongoing facilitator support for their delivery. We did this in the hope of maximising the quality of the pedagogic designs of the classes included in the sample. We then only had access to those classes for which both the teacher and all the students gave consent. In the end all but two of the classes in the sample had the benefit of instructional designer support. Two of the classes using WebTeach were unsupported.

Following a search through the literature for a coding approach by which we could identify indications of deep learning and engagement, we adopted a broad scheme, based largely on the work of Salmon (1999) and involving three categories:

- ***Individual*** – in which a participant initiates a new topic; articulates, explains or justifies a position; give examples and reflects.
- ***Interactive*** – in which a participant expands the ideas of others; critiques, discusses, negotiates or summarises previous material, proposes actions and shares resources (Salmon, 1999; Paulsen, 1995; Gunawardena et al., 1997; Cutler, 1995).
- ***Affirming/social*** – for affirming others, maintaining phatic processes, making metacomments, group management contributions, or for off-the-point comments (Salmon, 1999; Hughes & Hewson, 2005).

The coding scheme that we adopted identified a 'posting' as the fundamental unit of online interaction and classified the communicative purpose of each contribution according to one or more of the categories above. Each posting was evaluated and coded using percentages split three ways; indicating the proportion of the posting that was considered to fall into each category, with the sum equalling 100%. Sample classes were dual-coded in an attempt to demonstrate reliability in the coding, but despite a range of simplifications and refinements, acceptable reliability levels proved elusive. This experience accords with the general tenor of the literature in this area (Rourke, Anderson et al, 2001).

Although the attempt to code the contributions to the system failed to achieve acceptable reliability levels, the project yielded a considerable amount of objective data, and this revealed a differential in contribution rates between the two systems. The relevant statistics from the dataset involving over 5000 contributions to 176 teaching activities in the 15 fully online and assessable postgraduate classes are shown in Table 1.

Table 1: Comparative statistics overall

Characteristic	WebCT CE	WebTeach
Number of classes in sample	7	8
Average number of students per class	45	20.9
Average number of teaching activities per class	5.6	15.6
No. of contributions analysed	1025	3181
- % teacher	13%	24%
- % student	87%	76%
- % that name someone	46%	34%
Mean number of contributions per class	146.4 (SD = 120.8)	397.6 (SD = 350.7)
Maximum contribution rate (posts / participant)	5.7	42.6
Mean contribution rate (posts / participant)	3.15 (SD = 1.71)	16.71 (SD = 12.73)
Median contribution rate (posts / participant)	2.98	16.06
Intensity of contributions (posts / total topic days)	0.59	1.12

We can summarise this dataset by saying that the teachers using WebTeach were teaching somewhat smaller classes, and were using on average three times as many teaching activities than the teachers using WebCT. A teaching activity is defined here as a distinct thread in which the teacher sets a task for the students to respond to. The teachers using WebTeach were also more active in their classes, contributing 24% as opposed to 13% of the contributions. But the standout difference was the contribution rate data. Teachers using the WebTeach software seemed to achieve contribution rates, however defined, that were up to five times the rates achieved in WebCT.

Given the failure to achieve reliability in the attempt to code the character of the individual contributions we decided to explore the contribution rates issue by using a case study approach. The two different learning systems offered different tools, and accordingly, we reasoned, the facilitators might also approach their teaching in somewhat different ways.

Accordingly this report is focused on our analysis of just two fully online groups. We selected the two groups that exhibited the highest contribution rates as the focus. The WebCT group with the highest rate was one of the non-assessable faculty development groups in the original sample. It was not included in the data reported above. The highest contribution rate achieved in a formal award class using WebCT in the dataset was 5.7. We considered this to be too low to represent a worthwhile case through which to explore how high contribution rates are achieved. Hence the adoption of the faculty development case as the WebCT focus. The WebTeach group was included in the data reported in Table 1, as it was a formal award class, fully online and assessable. Firstly, we will report on the quantitative data for each group and then use facilitator interview data to compare and contrast the processes employed in the teaching process.

The results of our analysis of the quantitative data for the two cases are presented in Table 2.

Table 2: Comparative statistics for two cases with high contribution rates

Characteristic	**WebCT - Campus Edition**	**WebTeach**
Group focus	**Online learning**	**Business Technology**
Period of activity	12 weeks	12 weeks
Number of discrete topics/activities	27	28
Number of 'students'	26	24
No. of postings/contributions	619	1085
- % teacher	23%	29%
- % 'student'	77%	69%
No. of 'student' postings	477	749
Posts per 'student' (excluding teacher posts)	18	31
Overall contribution rate (posts / participant)	23	43
% all posts that name someone	17.0%	45.7%
Course intensity (posts/course day)	7.4	12.91
Intensity (posts/total topic days)	1.63	1.66

Firstly, it is noteworthy that these two groups are comparable in many ways, with identical durations, and similar numbers of teaching activities and students. The teacher contribution rates are also similar. When compared to the overall dataset reported in Table 1 however, it appears that both groups are outliers on several indicators. The group sizes are at the smaller end of the overall range, and are particularly small when compared to the WebCT classes in the overall set (26 as opposed to 45). The number of teaching activities used is higher than the average for both systems, five times higher for the WebCT case, and almost twice as high in the WebTeach case. The teacher contribution rates are higher than the average too, and again much higher (23%) than the WebCT average in the overall set (13%).

The naming rate, a possible indicator of phatic engagement, is much higher than the average in the WebTeach case, and much lower than the average in the WebCT case. We have tentative explanations for these results, discussed below, but note only that care must be exercised when interpreting the naming rate indicator. The WebCT interface effectively asked for a name since a contribution was made in that environment in direct response to another, as though the contributor was addressing the author of the

chosen message. In WebTeach contributions were made more to the group as a whole and to all the current participants, rather than to any one individual. It was not possible to respond to any single contribution directly in this interface. Hence the use of names in the WebTeach environment was a way of indicating the target of your comment, as well as a way of affirming another contributor. Thus the different rates found in the two environments arise from quite different underlying contributor behaviours.

Given the overall similarity of the groups, the higher level of contributions achieved in the WebTeach group (1085) compared to the WebCT group (619) is noteworthy. Taking into account the teacher contribution rates, there were 477 student contributions to the WebCT group, and 749 contributions to the WebTeach group over the same period. The average number of contributions made by each student in the WebTeach group was 31, whereas the 'students' in the WebCT group made an average of 18 contributions each.

It might be thought that the higher contribution rate achieved in the WebTeach case is due to the fact that it was an assessable award course, where there was an assessable participation requirement, whereas the WebCT course was for faculty development, and was not formally assessed. However, the WebCT course was chosen because it achieved the highest rate of all the WebCT courses in the dataset, whether participation was a requirement or not. Since it achieved contribution rates much higher than the courses that were assessed, it seems reasonable to suggest that this rate was achieved, at least in part, by the teaching approaches adopted. We will explore this issue further in the case studies below.

An analysis of the tasks set in each activity was conducted. Each task was evaluated to identify if it was explicitly collaborative, and if it set a clear definable task. Tasks were categorised as collaborative if they explicitly asked participants to respond to another participant's post. This was usually a straightforward categorisation task, but in some WebTeach modes the collaborative requirement was represented more by the mode employed than by the details of the task set, and this may not be captured in the analysis below. We comment on this further in the WebTeach case study. An example of a collaborative task was:

> Post your thoughts on the readings, and your responses to those of others, up into the discussion…

Additionally, the tasks set were categorised as either 'clear' or unclear'. A clear task was explicit with defined requirements. An example of a clear task was:

> What project management framework do you use in your organization? Does it follow a model?

An unclear task, on the other hand, was:

> Use this thread to discuss any issues that arise…

On analysis 5 of the 27 tasks in the WebCT group explicitly asked for collaboration, and 25 of the 27 were categorised as clear. In the WebTeach group, only 2 tasks were explicitly collaborative (but the number could rise if the impact of the inbuilt structures is taken into account), and 27 of the 28 were categorised as clear.

In order to gain a better understanding of the teaching approaches used in these two cases, we conducted semi-structured interviews with the two teachers involved to explore issues such as tasks set, level of class activity, approaches to managing the groups, facilitator engagement and the impact of the software features on the overall structuring of online processes. We report on the main issues that arose below.

Faculty development group on online learning using WebCT

This course was designed for academic staff at the university who would be using a digital environment in their teaching. The focus was on immersing the participants in the digital environment in order for them to take on new ways of interacting, behaving, constructing identity, using texts and learning and teaching online.

The teacher designed and taught the course fully online as a pilot in what has now become a course in a postgraduate certificate program. It was designed to apply a critical approach to the new learning spaces enabled by internet technologies, conducting collaborative work and discursive exchange across a range of modes and media including weblogs, wikis, discussion boards and chat rooms. The discussion board was set up to include weekly tasks using the discussions tool of WebCT. For some tasks students were assigned to a group. Many of the tasks focussed on handling real examples taken from other online courses to address issues around online learning and teaching as well as discussion around current literature. Reflection was also a large part of the course with the use of individual weblogs.

The design of the WebCT environment was based on structured activities, as the teacher explained:

> I wanted it to be flexible as the distance mode is and I also wanted it to be structured enough that there was a sense of purpose to the work people were doing so it was that really awkward kind of balance between getting a critical mass every week doing the same thing and introducing a certain element of rigidity into the course structure, so the way I did it was to have a week by week activity so that every week there was a separate activity.

The teacher also commented that the design of the structured activities was a deliberate attempt to engage the students and encourage a high level of interaction. If participants did not take part in the online discussions then they were really not taking part in the course. She noted:

> They were a very lively and precocious group but they were very busy as well, they were all teachers or support staff here and madly busy, particularly the academic staff so they were really fitting this in so the course had to motivate them to take part or they would have just let it fall – so the case study activity worked really well because it was very fragmented so it was quite easy to engage with and quite interesting to discuss.

Describing her role in the online environment, the teacher explained:

> The most 'teacherly' thing I did in that course, apart from designing it and building it, was to summarise I think, that was the biggest teaching task for me in the discussion forum, at the end of every week I'd spend a good hour or two constructing a summary of what had happened that week and people really valued that and it was quite time consuming but it was valued so that was an important role as a kind of meta commentator if you like.

The teacher varied the groups, explaining she wanted participants to experience different modes of group work online so sometimes she set up an all group discussion, sometimes it was small groups, sometimes it was bigger groups. When asked how the learners were managed, the teacher stated:

> We didn't do any nomination of leaders in that course, although leaders did emerge. Initially we split the group into two… and then for smaller groups we split those in two again … originally I was going to build in 'this week you must nominate someone to' or nominate a summariser but I ended up not doing that in the asynchronous discussion board because each activity was only a week it would have taken too long to negotiate that – we did it in the synchronous discussions.

When reviewing the course the teacher commented:

> In the evaluation of the first one some people said the structure was too rigid and that they wanted more time to go back to activities and this time I'm structuring it in blocks and each block is maybe 2 or 3 weeks – within each block there will be maybe 2 activities running concurrently so people will have a bit more flexibility and a bit more time so we'll see how that works, it will be interesting to see if it is not enough structure.

Few of the tasks in this group were categorised as collaborative, and this may in some way explain the relatively low naming rate exhibited in this group. Since the tasks set were almost all categorised as clear,

it may be that the participants felt that they were responding to the explicit demands of the task rather than to any particular posting by another, and this may have led to the lower than average naming rate.

Postgraduate course in business technology using WebTeach

This wholly online group was from a course within a Masters of Business and Technology. The overall approach taken by the facilitator of this group was to have a series of terminating tasks prepared in advance, along with a schedule for their deployment. Some tasks addressed the whole group (such as ice-breakers and brainstorming) while others were set for small groups of 4-5 using the 'private activity' feature of WebTeach. These small groups later reported back to the larger class to share the outcomes of their activity. In this way the facilitator kept quite tightly structured activity going throughout the course rather than initiating open-ended discussions with no clear end point.

> I try to start a few activities quickly in the beginning to build a sense of urgency. It is not easy to get students to interact. One of the techniques I use is to have a discussion on a study topic while at the same time I post a general topic. This is to divert the frequent posters to a more interesting place while the occasional posters can take the courage to chip in. I also state in my expectations at the beginning that shorter more frequent posts are better.

One significant feature of this group was the level and timing of facilitator intervention. The data revealed a high level of teacher contributions when compared to other classes analysed, but also that the teacher reacted quickly to learners' postings in the early stages of an activity. The facilitator explained:

> In an on-line class you have to guess how the student is feeling when he/she is responding to a question asked by you. You need to be intuitive and if you feel that the student is under stress you need to change your tone. … I think it is important to acknowledge each person's contribution wherever it is possible to give the class a personal touch. I always try to be proactive in the beginning to promptly acknowledge contributions to get students motivated with their names. In fact this is an advantage in an on-line class as sometimes you cannot remember the names of the students in a face-to-face class.

This comment also raised the issue of naming, in which a contributor (facilitator or learner) using the WebTeach software uses names when responding to the contribution of a specific individual rather than to the group in general. The naming rates in this class were unusually high (even for users of this software) and usually occurred as part of an affirming/social posting. This may be in part because of the deliberate use of names by the facilitator, both to address comments and questions to individuals and to affirm the contributions made in response. This also highlights the facilitator's active approach in maintaining an overview of the learning process while initiating tasks and offering content within them. When asked to explain his interventions, the teacher replied:

> Metacomments are useful to hover around the class and chip in a comment here and there to get things moving … like supplying grease to lubricate the wheels. They are particularly useful in group work, when you are mentoring them or offering suggestions to improve their process.

This facilitator had made extensive use of the pre-structured teaching 'modes' offered by the WebTeach system. He employed the brainstorming, private discussions and debate structures at specific points during the course. This created a class dynamic that mirrored face-to-face classroom practice, but which is usually not attempted online. The facilitator reported:

> I like to use a variety of activities and sometimes in a sequence to get the class involved. For example I may start with brainstorming and break up into a discussion based on the brainstorming outputs. While having a seminar discussion I may turn on the argument mode to get learners engaged in taking a stand and arguing their position. I also teach a class at my university where such facilities are not offered. I have tried to create these activities with the facilities in [another system] but it is not so effective.

Again the use of the structured modes in this group may have led to the higher than average naming rates identified. The argument mode in particular asks students to respond explicitly to the contributions of others. While this collaborative aspect of the task may not be identified from the topic set, it is implicit in the way the software structures this mode: it seeks arguments for and against a proposition and as the arguments are displayed, the tendency is to respond to arguments already contributed, and to do so, within this interface design, the contributor has to name the person to whom they are responding. On the other hand, the brainstorming mode referred to by the teacher enforces anonymity. In this mode the names of contributors are not displayed and cannot be used by respondents.

Finally, with regard to the use of heavily structured activity, this facilitator suggested that different subject areas and different levels of study lend themselves to quite different online strategies. The postgraduate audience for this class suggests that more open discussion might be appropriate, however:

> The possibilities are less in a project management class as the subject is quite focused. I feel that some courses lend themselves more to discussions than others.

Discussion

A number of issues arise from these two case studies that help to characterise the strategies used by these teachers to encourage high levels of participation. Both teachers set above average numbers of tasks for their participants to address, almost all tasks were clear tasks with explicit requirements, and the tasks were scheduled with clear deadlines, usually weekly.

Setting clear tasks with defined deadlines may have contributed to the high contribution rates. In discussions in which there is no clear task, each learner waits till others have contributed some content on the topic before attempting to build on or debate that content. This second, interactive phase of activity affords more opportunities for deep learning and the clarification of conceptions for both the facilitator and other learners. But the elapsed time between participants' subsequent postings may lead to disengagement and loss of the group dynamic. By setting specific expectations and then intervening quickly to encourage and affirm, the facilitator may more quickly guide the dialogue into mutual understanding or critique.

In both cases the level of teacher involvement was relatively high and both teachers felt that they spent a lot of time on facilitation tasks. In the WebTeach case the teacher actively acknowledged contributions and encouraged further postings, deliberately addressing participants by name. It may well be that the WebCT teacher contributed in a similar manner, but she explicitly mentions providing weekly summaries for each activity. Relatively few tasks in either group required students to collaborate, in the sense of building on another's contribution, in their responses.

Both teachers were aware of the busy lives that their participants led and explicitly sought short responses to tasks. The WebCT teacher acknowledges the difficulty of gaining and holding her participants' attention and set deliberately 'fragmented and interesting' tasks to encourage participation. The WebTeach teacher was explicit in his expectation of shorter and more frequent postings.

The WebTeach teacher deliberately ran simultaneous parallel activities in his group in order to allow frequent contributors a place to post without overwhelming or deterring the less confident contributor. Both teachers set specific early tasks designed to encourage early participation. In the WebCT group the teacher scheduled one major activity each week, but both teachers employed split groups working in different threads at specific times. When split groups were used, the teachers either nominated students into these groups to save time, or, in the case of the WebCT teacher, used a synchronous chat session in order to quickly divide the class into groups.

Both teachers employed structured activities (Salmon, 2002) as a means of encouraging participation. For the WebCT teacher this meant setting a clear task each week, sometimes involving a small group to large group process, and in the case of her proposed revision, two parallel tasks running over a longer timeframe. She was using other communication channels simultaneously (blogs, wikis, synchronous chat) but not within the communication area of WebCT itself. The WebTeach teacher used parallel activities, some within the weekly time frame, some for longer. Additionally the WebTeach teacher employed the

structured modes of communication available to enhance participation, including discussion, brainstorming, argumentation and meta-comments. Interestingly, the WebTeach teacher had had experience of WebCT and had found it more difficult to set up structured teaching processes using that interface. While some of the structured teaching modes embedded in the WebTeach software can be replicated in the WebCT environment, to do so the teacher not only needs to have these explicit strategies in mind, but also the technical ability to set up the structural support in the newsgroup discussion interface of WebCT.

While both teachers speak of preparing their teaching approaches in advance, there is a greater sense of spontaneity in the WebTeach teacher's comments, whereas the WebCT teacher has built her course and her main activity involves implementing it and summarising the weekly contributions:

> For example I may start with brainstorming and break up into a discussion based on the brainstorming outputs. While having a seminar discussion I may turn on the argument mode to get learners engaged in taking a stand and arguing their position.
> (WebTeach teacher)

> The most 'teacherly' thing I did in that course, apart from designing it and building it, was to summarise I think, that was the biggest teaching task for me in the discussion forum, at the end of every week I'd spend a good hour or two constructing a summary of what had happened that week and people really valued that and it was quite time consuming but it was valued so that was an important role as a kind of meta commentator if you like.
> (WebCT teacher)

From the interview it is clear that the WebCT teacher was using additional tools to encourage participation in the class as a whole, including individual blogs, wikis and synchronous chat. This approach, where the contributions are sought using different tools and sites, might explain the lower response rate within the WebCT communications area achieved in her group. However when the elasticity of response that the overall dataset presented is taken into account – with individual rates varying considerably – it seems unlikely that 'response rate' is a zero sum game in which contributing to an individual blog, for example, means contributing less to the official communications area. Indeed it is equally likely that an approach that is successful in achieving high response rates would encourage higher levels of individual responses in all the tools that the participants feel are relevant and appropriate. From the interview it seems that the WebTeach teacher did not use additional tools as part of his teaching approach, although he may have used email to address individual students confidentially.

Returning to the overall dataset presented in Table 1 we note that the WebCT classes tended to employ fewer teaching activities in their designs, and to feature lower teacher contribution levels. From the discussion of the two case studies we may surmise that these factors were partly responsible for the lower contribution rates achieved. But the question remains – why did these teachers, and their instructional design supporters, employ fewer structured tasks, and why did the teachers contribute at a reduced rate to their classes? We have no definitive answer to these questions, except to say that it was more difficult to set up structured processes in the WebCT interface, whereas the WebTeach interface was built to facilitate them. Additionally Thomas (2002) has concluded that the incoherent presentation format that was a feature of the WebCT interface results in many contributions being unread and an increasing loss of control of the thematic flow of each thread by the teacher. Faced with this situation, it may be that many teachers using WebCT responded by abandoning their attempt to guide and direct the discussion.

Conclusion

The examination of the two cases has allowed us to identify teaching approaches designed to elicit high contribution rates, and arguably, levels of engagement in the teaching process, from students. Significant elements in the approaches identified include high levels of teacher activity, high numbers of structured tasks with clear and often tight deadlines, attention to phatic aspects (acknowledging and affirming contributions, using names), an explicit expectation of short and frequent contributions, and regular summaries. These features broadly accord with the recommendations in the literature (Salmon, 2000; Salmon, 2002).

Given these features, it seems reasonable to assume that the higher contribution rates achieved in the WebTeach group arise potentially from a number of factors, including the assessable requirement for participation, the more informative email notifications, the simultaneous setting of parallel tasks, the more ordered presentation of contributions and activities, and the use of the structured teaching modes available. Of course we cannot rule out the contribution of individual factors such as the teacher's personality and online presence, the relevance of the content focus to the participants, and the person characteristics of individual participants. Further research would be needed to clarify the contributions made by each factor listed.

While the facilitator's own expectations and subsequent level of activity and control contribute to the tenor of the contributions and levels of interactivity in an online group, the interface provided by the online environment may also influence group behaviour, and possibly learning. If the goal is to have learners engage more deeply with content and each other, then facilitators who can promote second and third rounds of dialogue and engage many, if not all, of the group in these rounds, should be more successful. We have taken the contribution rate as an indicator of this engagement. If this is accepted then the above case studies suggest that wider engagement and additional levels of dialogue can be achieved by setting and structuring specific activities with defined limits and duration, but also through the management of the phatic aspects of the group process. Recognising early contributions, affirming critical responses and providing well-timed summaries of progress all help to engage learners.

The open structures and tasks often encountered in online classes may lead to acceptable learning, but this is likely to be achieved more slowly and with less student input and interaction. The more intense model of activity evidenced by the above cases studies clearly makes more demands on both facilitator and learners, but promotes higher levels of engagement and interaction.

Therefore, while it is not possible to say that the WebTeach interface alone contributed to the higher contribution rates achieved in the reported case, or in the overall data set, we are able to canvass some of the possibilities here. The interfaces provided by the two systems studied differ significantly and suggest different metaphors for group communication.

The WebCT metaphor, however used, is of parallel and one-to-one communication in which several contributions to a thread are extant and of equal status, and contributors may respond to any contribution within the tree. The result, in terms of the chronology of the process, is incoherent (Thomas, 2002) This interface requires each member to follow the tree of contributions within each thread, and then to synthesise them in order to reconstruct the chronological and semantic process that was followed.

The WebTeach metaphor, on the other hand, is one of a continuing class in which activities are presented chronologically in what is fundamentally a group or one-to-all model of the educational process. It employs a blog structure in which formal activities in the class are part of the 'teacher's blog', and within each activity, structures are available to guide and challenge contributors. The WebTeach interface reflects both the educational and social function of each posting, and its place within the overall process, by using clear visual cues to identify the sequence of contributions, the modes in use, and the roles of the contributors. This is intended to be useful in heavily structured complex processes where it is important to support participation and navigation.

It is tempting to suggest that the contribution rates achieved in the WebTeach groups arise from the more organised and transparent presentation style, which perhaps facilitated the use of parallel activities without causing confusion, and from the availability of the structured teaching modes, but it is not possible to draw this conclusion from the data presented in this paper.

References

Angeli, C., Bonk, Curtis J., and Hara, Noriko (1998). Content analysis of online discussion in an applied educational psychology course.. *Instructional Science,* 28(2), 115–152.

Cutler, R. (1995). Distributed presence and community in Cyberspace. *Interpersonal Computing and Technology: An Electronic Journal for the 21st Century*, 3(2), 12–32.

Garrison, R., Anderson, T., Archer, W. (2001). Critical thinking, Cognitive Presence, and Computer Conferencing in Distance Education. *American Journal of Distance Education*, 15(1), 1–24.

Gunawardena, C. N., Lowe, C , Anderson, T (1997). Analysis of a global on-line debate and the development of an interaction analysis model for examining social construction of knowledge in computer conferencing. *Journal of Educational Computing Research,* 17(4), 397–431.
Henri, F. (1991). Computer conferencing and content analysis. In A. Kaye (Ed.), *Collaborative learning through computer conferencing: The Najadeen papers*. (Springer-Verlag, London), 117–136.
Hewson, L., & Hughes, C. (2005). Social processes and pedagogy in online learning. *American Association for Computer Education Journal*, 13(2), 99–125.
Holmes, K. (2005) Analysis of Asynchronous Online Discussion using the SOLO Taxonomy. *Australian Journal of Educational & Developmental Psychology* Vol 5, 117–127.
Kagan, S. (1992). Cooperative learning. San Juan Capistrano, CA: Resources for Teachers, Inc.
Kanuka, H. &. Andersen, T. (1998). Online social interchange, discord and knowledge construction. *Journal of Distance Education* 13(1), 57–74.
McDonald, J., & Gibson, C. C. (1998). Interpersonal dynamics and group development in computer conferencing. *The American Journal of Distance Education* 12(1), 7–25.
McKenzie, W. &. Murphy. D. (2000). I hope this goes somewhere: Evaluation of an online discussion group. *Australian Journal of Educational Technology*, 16(3), 239–257.
Mowrer, D. E. (1996). A content analysis of student/instructor communication via computer conferencing. *Higher Education,* 32, 217–241.
Newman, D., Webb, B and Cochrane, C. (1995). A content analysis method to measure critical thinking in face-to-face and computer supported group learning. *Interpersonal Computing and Technology,* 3(2), 56–77.
Paulsen, M. F. (1995*). The Online Report on Pedagogical Techniques for Computer-Mediated Communication*, Available online at: http://www.hs.nki.no/morten/cmcped.htm (accessed 15 May 2006).
Pawan, F., Paulus, T., Yalcin, S.,Chang, C. (2003). Online learning: Patterns of engagement and interaction among in-service teachers. *Language Learning & Technology,* 7(3), 119–140.
Rourke, L., Anderson, T., Garrison, D. R. & Archer, W. (2001). Methodological issues in the content analysis of computer conference transcripts. *International Journal of Artificial Intelligence in Education,* 12, 8–22.
Salmon, G. (1999) Reclaiming the Territory for the Natives, Online Learning: Exploiting technology for training, London, Nov. 23 & 24, 1999. Available online at: http://www.emoderators.com/moderators/gilly/london99.html (accessed 19 May 2006)
Salmon, G. (2000) E-Moderating: *The Key to Teaching and Learning Online.* London, Kogan Page.
Salmon, G. (2002). *E-tivities: the key to active only learning*. Sterling, VA : Stylus Publishing Inc.
Thomas, M. J. W. (2002) Learning within incoherent structures: the space of online discussion forums. *Journal of Computer Assisted Learning*, 18, 351–366.

Author contact details

Lindsay Hewson, School of Medical Sciences, University of New South Wales, Sydney, NSW 2052, Australia. Email: l.hewson@unsw.edu.au.