

# **User-Centered Design of Online Learning Communities**

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## Chapter VIII

# Developing Evidence-Based Criteria for the Design and Use of Online Forums in Higher Education in Hong Kong

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### Abstract

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*This chapter describes the evaluation of 13 educational online forums. The forums were classified into structured or free, and teacher-centered or student-centered forums according to the learning designs used to prepare the tasks and the style of online interactions. The study provides empirical data across multiple online forum experiences to better inform the pedagogy of using online forums. Findings are that structured forums generally have a higher quantity and quality of postings than free forums, and that student-centered ones also tend to be more effective than teacher-centered ones in encouraging quality online discussion. Further, through*

*analyzing the evaluation feedback from students and teachers in these cases, the study has identified three key factors that tend to affect forum success—ease of use, clear facilitation, and motivation to engage. The centrality of the role of the teacher was confirmed.*

## **Forums in Online Learning Communities**

Online community broadly refers to a community that has some kind of online presence (Preece, Abras, & Maloney-Krichmar, 2004). In general, online communities have characteristics that include:

- a defined community membership, as members usually demonstrate some legitimate interest before participating (Lave & Wenger, 1991);
- the asynchronous nature of computer-mediated communications (CMC) (Daft & Lengel, 1986; Hiltz & Turoff, 1978);
- an extension of community membership, as members can be physically distant and geographically dispersed in an online community (Zhang & Storck, 2002);
- a capacity for rapid dissemination of ideas (Markus, 1994); and
- the possibility of revealing a more holistic picture of the topics under discussion through the cumulative contributions of each member (Zhang & Storck, 2002).

A closer look, however, reveals that online communities are indeed very varied, especially in the purposes for which the communities have been established and the technology used. One of the main purposes of online communities is related to communication between members of a similar profession (often called communities of practice) (e.g., Zhang & Bascelli, 2005), while another main purpose is for the maintenance of communities “that support interest groups such as dog-owners, gardening, football, bridge, and book” (Preece et al., 2004, p. 4); these are known as communities of interest.

The focus of this chapter is the use of online communities for learning purposes (learning communities) (Bielaczyc & Collins, 1999). Online learning communities often claim to be aligned with a social constructivist perspective of learning (Farmer, 2004) in which learners use the contributions of other members to construct for themselves an understanding of a given topic (Zhang & Storck, 2002). It is claimed that the unique features of online communities bring in new qualities that are fun-

damentally different from traditional classroom settings. Ashcroft and McAlpine (2004) envisaged that this new use of technology should “enable students to learn in more active ways, leading to a deeper understanding of the course materials” (p. 1). Salmon (1998) also suggested that the online learning environment can support the development of cognitive processes such as skills in asking questions and reflecting on personal positions. However, as will be discussed next, the evidence about claims such as these is patchy and context-bound.

The technology used in online communities can vary. For example, Ma (2005) reported the use of e-mail to assist collaborative activities, Luca and Cowan (2005) and Farmer (2004) investigated online discussion with blogs or Weblogs, and Xiao (2005) mentioned videoconferencing. All these reports indicate a mix of positive outcomes and some challenges.

Nevertheless, the use of the forum is regarded as one of the most common and important strategies to help build online learning communities. Online forums serve as virtual environments in which students and teachers can interact. Intuitively, it is thought that this mode of communication should assist in the creation of a sense of community within the course. Forums can also be a supplementary source of course-related information for students. Kirk and Orr (2003) claimed that “discussion forums are the enabling tools for those teaching in the e-learning area to build greater student learning outcomes by engaging students in productive discourse” (p. 2). Online forums do allow students to discuss and exchange ideas in flexible times and locations, and considerably extend teaching and learning outside the normal contact hours of the classroom. This chapter focuses on online communities of a very specific type—course-based learning communities using online forums for communication.

There is literature that records serious problems in realizing the potential of online learning communities. For example, Mohan and Lam (2005) outlined problems such as increased workload and group conflicts. Farmer (2004) mentioned the weakness of the forum in maintaining social presence—the ability of the users to project themselves and appear as real persons can be severely limited (p. 4). Cuthell (2005) described the difficulty in achieving active learning among all students: “A common observation is that one-third of online community members are active, one-third read postings and only occasionally contribute, and the final third are inactive” (p. 323). Wozniak and Silveira (2004) remarked that “studies ... have concluded that students do not take full advantage of the opportunities available to them, and the e-moderator needs to devote considerable time overseeing the process” (p. 1).

There are several examples of guidelines and strategies that can provide practitioners with tactics to use in online communities so as to achieve better outcomes. In this vein, Preece et al. (2004), for example, advocated that online communities should be constructed with attention paid to their “usability” and “sociability.” Salmon (2000) developed a five-stage model for designing activities in online forums, so as

to progressively induct learners into the community. For example, critical thinking and knowledge construction will only occur after online socialization and information exchange have taken place.

As the use of online forums is now more common, it is timely to examine a number of cases to see if there are any overarching success factors that operate in varied contexts. We thus decided to do a meta-analysis looking at the empirical evaluation data of multiple cases. The study investigated how forum designs relate to student learning outcomes, and the general factors that tend to positively and/or negatively influence the success of online forums.

We are particularly interested in a smaller size online community—that developed within a relatively short period of time, usually a semester, with the definite purpose of students supporting and enabling each other to understand some defined academic concepts and skills with the aid of a teacher facilitator.

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## Methodology

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### The Nature of the Data in this Study

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We have as our data set a rich collection of cases which have come from a project across three universities in Hong Kong. The forums we have investigated were all in course Web sites built by the e3Learning (Enrich, Extend, Evaluate Learning; e3L) project, designed to support teachers in three universities to supplement classroom teaching with e-learning. Details of this project are in James, McNaught, Csete, Hodgson, and Vogel (2003) and at the project Web site. The e3L project operates across three universities: the Hong Kong Polytechnic University, the City University of Hong Kong, and The Chinese University of Hong Kong. Over a three-year period, the e3L project has supported the Web development of nearly 140 sub-projects, and the outcomes of 70 of them have been evaluated. By the end of the 2004-2005 academic year, a total of 4,951 students have used these 70 Web sites and the number of accesses to these Web sites was over 67,000.

All e3L evaluations began at the very beginning of the design process. Discussion about how to evaluate the experience occurred alongside design and development decisions. For each evaluation, after a number of discussions (online and face-to-face), our evaluation team suggested evaluation questions based on the nature of the Web site. Together with the teacher, we decided the types of data to collect and the instruments to use, taking into consideration limitations such as the availability of the students and the teachers. We also set the time schedule for the use of each of the selected instruments. Decisions concerning evaluation questions, data types, evaluation instruments, and the evaluation schedule were put into a formal evalu-

ation plan. The evaluation was conducted in one semester of teaching, and after the data had been analyzed, a full report was returned to the teacher and further discussion offered.

Thirteen of the 70 evaluated course sites had active online forums; 10,713 messages were recorded in these 13 forums which involved 1,280 students. We defined an active forum as one where:

- the teacher saw the forum as a key component of the course,
- there was a plan of using the forum at the start of the course, and
- the teachers introduced and/or demonstrated the forum to the class.

Further, all these 13 teachers were willing to allow project staff to conduct a detailed evaluation of the forum data. The forums were situated in courses in a variety of disciplines and year levels of university education, and the forum profiles are summarized in Table 1. By examining the forums and course documentation, it is possible to classify the forums. Forums 1 to 9 are structured, student-centered forums; Forums 10 and 11 are free, student-centered forums; and Forums 12 and 13 are free, teacher-centered forums.

*Table 1. General profiles of the 13 cases*

Forum Number	Forum Type		Class Size	Discipline	Year Level
	Activity	Major Role			
1	Structured	Student	229	Nursing	Undergraduate
2	Structured	Student	200	English	Undergraduate
3	Structured	Student	149	Nursing	Undergraduate
4	Structured	Student	84	English	Undergraduate
5	Structured	Student	84	Finance	Undergraduate
6	Structured	Student	82	Nursing	Undergraduate
7	Structured	Student	41	Textile & Clothing	Undergraduate
8	Structured	Student	26	Nursing	Postgraduate
9	Structured	Student	12	Food & Nutritional Science	Undergraduate
10	Free	Student	129	Nursing	Undergraduate
11	Free	Student	89	Nursing	Undergraduate
12	Free	Teacher	108	Nursing	Undergraduate
13	Free	Teacher	47	Biology	Undergraduate

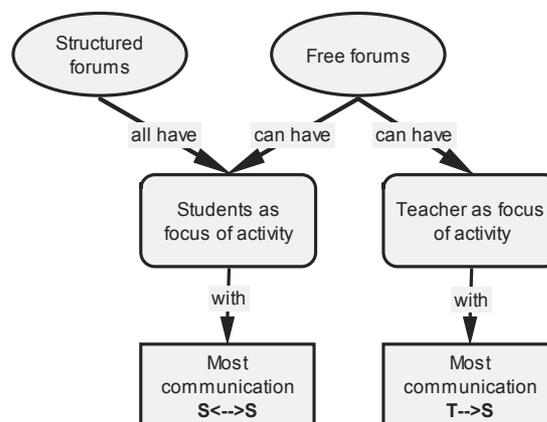
Forums varied in the degrees of flexibility available in the structure of the discussions and the directionality of the communication. There are nine structured forums and four free forums. The nine *structured* forums all have the following characteristics:

- There were pre-assigned topics/ problems in projects to be discussed which were set at the beginning of the course. The assignments could be in the form of peer review, within-student-group discussions, or between-student-group critique.
- Some course grade was allocated to the participation in the online forum, either on a group or an individual basis.
- The forum was designed to be a supplement to the traditional classroom teaching and learning.
- Contributions by students or student groups were mandatory.
- The online forum was introduced to the students at the beginning of the course.
- Students needed to visit the forum from time to time to read the postings by classmates in order to get involved in the discussions.

The *free* forums have the following features:

- There were no pre-set topics to be discussed and activities to be carried out in the forum.

Figure 1. Nature of online forums in this study



- Students' participation in the forum would not be counted as a part of the course assessment.
- The forum was designed to be an extra component in the course and act as a platform for students to have free discussion on course-related topics.

The directionality of the communication ranges from *teacher-centered* designs (where the communication direction is mostly from teacher to student) to *student-centered* designs (involving much more student-student communication). The nature of the forums is illustrated in Figure 1.

As shown in Table 1, most of the 13 active forums were student-centered. The main reason for the small number of teacher-centered forums is that the teacher-centered forums are less likely to be active ones and thus were not included in our study. Most teacher-centered forums were free forums with no pre-assigned discussion topics and little incentive for students to contribute; the forums were thus mainly used as a place for course announcements. As teacher-centered forums seem to be less successful in general, this type of forum does not have a strong focus in our analysis.

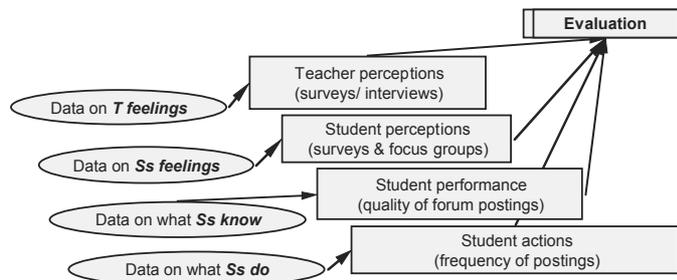
There is also an imbalance in the number of cases between the two categories (nine structured forums vs. four free forums). However, there is a great deal of data—more than in most studies—covering various disciplines and year levels, and so we believe there is value in this approach.

## Evaluation Strategies

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The evaluation data set for each of these 13 cases included: the quantity of messages posted, the quality of the discussion, and the students' and teachers' comments about what made or could have made the forums successful.

Figure 2. Evaluation data types



The evaluation strategies employed have allowed us to collect evaluation data from various sources. Put simply, there is perception data from both teachers and students (what we term *feel* data). We also have data on what students *do* through a study of the forum logs. A content analysis of the forum discussions provides some information about what students *know*. This is summarized in Figure 2.

The evaluation strategies used in each of the 13 cases are summarized in Table 2.

Opinions of students and teachers were all recorded in the evaluation reports. Evaluation strategies included student surveys, teacher surveys, focus-group meetings, forum log data records, and forum postings analyses.

1. *Student surveys* were made up of two sections: “closed” force-choice questions on a range of matters about the course, and “open-ended” type questions which were designed to collect students’ free opinions on the use of the Web, including the forums.
2. *Teacher survey* was a standardized six-item, open-ended survey which asked about the teachers’ feelings on the design and implementation of the course Web site.
3. *Focus-group meetings* were carried out at the very end of the courses. The main aim was to elicit more details concerning students’ feelings about the

Table 2. The evaluation data for the 13 cases

Forum	Class Size	Source of Data				
		<i>feel</i>			<i>know</i>	<i>do</i>
		<i>Student Survey</i>	<i>Teacher Survey</i>	<i>Focus Group</i>	<i>Postings Analysis</i>	<i>Forum Log Data</i>
<b>1</b>	229	√	√	√	√	√
<b>2</b>	200		√	√	√	√
<b>3</b>	149	√	√		√	√
<b>4</b>	84			√	√	√
<b>5</b>	84	√		√		√
<b>6</b>	82	√	√		√	√
<b>7</b>	41	√	√		√	√
<b>8</b>	26	√	√		√	√
<b>9</b>	12	√	√			√
<b>10</b>	129	√	√	√		√
<b>11</b>	89	√	√	√	√	√
<b>12</b>	108	√	√	√	√	√
<b>13</b>	47			√	√	√
<b>Total</b>	<b>1,280</b>	<b>10</b>	<b>10</b>	<b>8</b>	<b>10</b>	<b>13</b>

usefulness of the Web sites and Web components. All the expressed opinions by the participants were recorded in focus group reports written by the evaluators within two days of the meetings.

4. The *postings analysis* looked at the content of the postings and classified them into non-substantive (usually social, though we do recognize the value of social interaction in community-building online; in this case the public forum was the social arena), substantive (related to the topic), and elaborated substantive. These classifications are related to the Structural Observation of Learning Outcomes (SOLO) classification (Biggs & Collis, 1982; Biggs, 1999), as shown in Table 3. The SOLO classification or taxonomy has also been used by Hatzipanagos (2005) and seems more manageable than using a tool such as NVivo on all the full text messages, such as discussed by Stacey and Gerbic (2003).
5. The *forum log data* recorded the number of postings contributed by students and teachers in the forums.

The student questionnaires used in these 13 evaluations covered a range of aspects of the whole course, and the closed items did not specifically relate to the forums. For this reason, the data for the analysis focused on the open-ended comments.

Table 3. Forum postings classification categories related to the SOLO taxonomy

SOLO Taxonomy Categories	Explanation of SOLO Categories	Postings Classification Categories	Type of Posting
Pre-Structural	Misses the point	Non-substantive	• Social
Uni-Structural	Single point	Substantive	• Adding new points • Enhancement and clarification of points
Multi-Structural	Multiple unrelated points		
Relational	Logically related answer	Elaborated substantive	• Making clear contrary statements • Developing complex arguments
Extended Abstract	Unanticipated extension		

All of the *feel* data from surveys and focus groups were manually processed by the second author with the help of QSR NVivo (2005). NVivo allows flexible coding and processing of large amounts of data (in this case the forum-related data situated in large evaluation reports). A NVivo project was created to hold the data for the current study. Rich text records of the 13 evaluation reports were imported into the project database for processing. Every comment concerning the use of the forums in the surveys and focus group meeting reports was identified and coded. Three types of coding were adopted in this study:

- *positive data* (the things teachers and students liked or appreciated about the online discussion experience);
- *negative data* (the weaknesses of the forums); and
- *suggested improvements* (suggestions of improvement that will make the online discussion a better experience).

After making codings on all the 13 reports, NVivo was used to generate separate reports for each of the codings. These new groupings of comments were then re-interpreted, compared, and contrasted, revealing a set of factors that appear to influence forum uses. The analysis was cross-checked and validated by the first and the third authors.

## **Findings**

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### **Ranking the Forums through Analyzing the Postings**

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As shown in Tables 4 and 5, the quality and quantity of the postings of the 13 cases were varied. The number of postings per student ranged from 0.1 (Forum 12) to 22.2 (Forum 4), while the number of postings by teacher fell between 0 (Forum 4) and 154 (Forum 10). For the quality of postings, which was indicated by the percentage of substantive postings under the simplified SOLO classification, the range was wide also—from 34.0% (Forum 7) to 98.9% (Forum 8). No SOLO analyses were carried out on Forums 5, 9, and 10; Forum 9 was small, and the teachers in Forums 5 and 10 did not wish a SOLO analysis done at this time as they wanted to gain more experience of teaching online first.

A rough ranking on quantity and quality for all the cases were carried out. On each aspect we classified the forums into three categories: High (H), Medium (M), and Low (L). For the quantity ranking, Forums 2, 3, 4, 6, and 7 were graded as H because they received large total numbers of postings and also many postings by

Table 4. Quantity of the forum postings in each forum

Forum	Class Size	Number of Postings			
		Total	By Students	Per Student	By Teacher
1	229	167	104	5.0 *	63
2	200	3443	3431	17.2	12
3	149	1793	1709	11.5	84
4	84	1862	1862	22.2	0
5	84	462	390	4.6	72
6	82	1127	1064	13.0	63
7	41	782	774	18.9	8
8	26	91	88	3.4	3
9	12	94	82	6.8	12
10	129	411	357	2.8	154
11	89	449	370	4.2	79
12	108	22	10	0.1	12
13	47	10	5	0.1	5

\* number of postings per group instead of per student was noted here

Table 5. Quality of the forum postings in each forum

Forum	Class Size	SOLO Analysis Statistics (% of messages in forum)		
		Non-Substantive	Simple	Elaborated
1	229	34.1	65.3	0.6
2	200	4.78	91.8	3.4
3	149	13.8	72.3	13.8
4	84	45.0	47.2	3.3
5	84	/	/	/
6	82	19.1	53.5	27.4
7	41	66.0	19.7	14.3
8	26	1.1	94.5	4.4
9	12	/	/	/
10	129	/	/	/
11	89	8.8	30.4	60.8
12	108	30	70	0
13	47	20	80	0

students. In contrast, Forums 8, 10, 12, and 13 were ranked L because their average numbers of postings by students were relatively lower. The rest of the forums fell in between and were ranked as M. Similarly, for the quality ranking, Forums 2, 6, 8, and 11 received H ranking because they contained few non-substantive postings and a relatively high proportion of elaborated postings. Forums 1, 4, and 7 comprised a high proportion of non-substantive postings and thus were ranked L. With these rough rankings, the 13 forums can be compared on both quantity and quality; the result is listed in Table 6.

Table 6. Forums' rankings based on both quantity and quality

Forum	Activity Type	Major Role	Quantity Ranking	Quality Ranking
6	Structured	Student	H	H
2	Structured	Student	H	H
11	Free	Student	M	H
3	Structured	Student	H	M
4	Structured	Student	H	L
7	Structured	Student	H	L
8	Structured	Student	L	H
9	Structured	Student	M	/
5	Structured	Student	M	/
1	Structured	Student	M	L
10	Free	Student	L	/
13	Free	Teacher	L	M
12	Free	Teacher	L	M

Only Forums 6 and 2 were ranked high on both quality and quantity. In both cases, peer review was central to the activity in the forums. Forum 11, which is a free forum, was ranked the third. The remaining three free forums were ranked the lowest among the 13 forums. It is of note that teacher-centered forums tend to have lower quality and quantity than student-centered forums.

## **Analysis of the Open-Ended Data**

The *feel* data from each case were extracted from teacher and student surveys, and focus group meeting with students. A meta-analysis of the 13 sets of qualitative data was conducted to generate a list of factors related to forum use and forum success. In the data set of comments, there were 36 different positive comments (26 from structured forums and 10 from free forums); 13 negative comments (9 and 4 from structured and free forums, respectively); and 29 suggestions for improvements (18 and 11 from structured and free forums, respectively).

A grounded approach (Strauss & Corbin, 1990), with iterative cycles of refinement, was taken in order to identify the categories which best described the open-ended *feel* data. There were three key clusters of comments, and these are summarized in Table 7. Note that our categorization is not unique but has been arrived at as a "best fit" decision.

While we have classified most of our forums as student-centered in that the students are the focus of the activity and that most of the communication is between students, the evaluation data point out unequivocally that the teacher has a vital central role.

The three main factors we have described as:

- **Ease of Use:** teacher as organizer and planner

*Table 7. Major factors contributing to success of online forums as gauged from teachers' and students' comments*

Main Factors	Specific Exemplification	Where Mentioned	Examples of the Nature of the Comments
Ease of Use: Teacher as Organizer & Planner	Making it easy to enter and quickly understand the environment	In nine evaluation reports; both free & structured	<ul style="list-style-type: none"> <li>• Giving the forum good organization</li> <li>• Providing good technical support</li> <li>• Preventing technical problems</li> </ul>
	Clear structure and procedures	In two evaluation reports; both structured	<ul style="list-style-type: none"> <li>• Teacher planning well at the beginning</li> <li>• Arranging students in functional groups</li> </ul>
Clear Facilitation: Teacher as Learning Guide	Good teacher participation	In nine evaluation reports; both free & structured	<ul style="list-style-type: none"> <li>• Teacher participating actively, giving feedback frequently, and replying promptly</li> </ul>
	Timely teacher guidance and monitoring	In six evaluation reports; both free & structured	<ul style="list-style-type: none"> <li>• Teacher giving background knowledge to help students perform online tasks</li> <li>• Teacher following up on students' discussions</li> </ul>
	Building group dynamics	In one evaluation report; structured	<ul style="list-style-type: none"> <li>• Facilitating online group-working effectiveness (by close monitoring, teaching of workgroup skills, etc.)</li> </ul>
Motivation to Engage: Teacher as Community Builder	Active encouragement of individual students	In two evaluation reports; both structured	<ul style="list-style-type: none"> <li>• Maintaining high student participation</li> </ul>
	Active encouragement of whole class	In two evaluation reports; both free	<ul style="list-style-type: none"> <li>• Teacher encouraging the use of the forum in class</li> <li>• Giving marks to online tasks (particularly at the beginning) so that students get used to contributing to the forum later on</li> </ul>
	High perception of usefulness by students	In four evaluation reports; both free & structured	<ul style="list-style-type: none"> <li>• Making students aware of the benefits</li> <li>• Making the forum suit students' own learning styles</li> </ul>
	High perception of usefulness by teachers	In two evaluation reports; both free & structured	<ul style="list-style-type: none"> <li>• Teachers realizing the learning benefits that the forum activities can bring</li> </ul>

- **Clear Facilitation:** teacher as learning guide
- **Motivation to Engage:** teacher as community builder

The numbers in the third column of Table 7 relate to the number of forums being referred to. In most cases there are many more than one comment relating to the factor or one of its exemplifications. What we have recorded here are the “clusters” of comments.

## **Discussion of the Three Success Factors**

### **Ease of Use: Teacher as Organizer and Planner**

Careful planning beforehand is important to achieve a good outcome in any learning environment—building an online learning community is no exception. Teachers need to design and give an organization to the forum. Such organization usually relates to the nature of the course, grouping of students, and the activities to be carried out in the forum. Students also commented that the teachers should tackle all IT-related problems before the forum is in use. There were forums in our dataset where the forum use was delayed due to the existence of technical problems; students had difficulty attaching files in the forums, and this problem effectively halted activities.

*Figure 3. Forum structure of Forum 3*

Homepage > Forum			
Discussions			
<a href="#">Compose message</a> <a href="#">Search</a> <a href="#">Topic settings</a>			
Click on a topic name to see its messages.			
Topic	Unread	Total	Status
Main	0	15	public, unlocked
Notes	0	2	public, unlocked
Messages from subject lecturer	2	23	public, unlocked
- Ruby group	0	271	private, unlocked
- Orange group	0	249	private, unlocked
- Amber group	0	296	private, unlocked
- Jade group	0	295	private, unlocked
- Olive group	0	225	private, unlocked
- Navy group	0	204	private, unlocked
- Purple group	0	213	private, unlocked
<b>All</b>	<b>2</b>	<b>1793</b>	---

Forum 3 (ranked 4 in the postings analysis) is an example of a well-organized forum. The course was a large class, with a class size of 149. The teacher divided the students into seven groups of group size of around 20 and carried out within-group “Web-based tutorials” on a weekly basis (see Figure 3 which is a capture of the main page of the forum). The sub-forums were private forums in which access from non-members were blocked. This feature gave students a sense of security so that they would not be intimidated in posting their work. After the course was finished and with the consent of the students obtained, the course teacher made all the sub-forums public so that other students could gain access to others’ ideas.

Thus, making use of useful forum functions, keeping the forums error-free, and also briefing the students on the use of the functions in the forum at the beginning of the course help create a better discussion environment. Existence of technical problems, lack of technical support, and poor forum organization are clearly disadvantageous (cf. Preece et al.’s (2004) criteria of “usability”).

This is true for both structured and free forums. For example, teachers in Forums 6 (structured) and 11 (free)—ranked 1 and 3 in the postings analysis—were especially aware of the importance of their involvement in the forums. So, while the purposes of the forums varied, both teachers introduced the online forum in the first class, made the first contribution in the forum to initiate the use, gave clear instructions, and answered students’ queries with great conscientiousness at the beginning of the semester.

Clear requirements about the online assessments were also welcomed by the students. They wanted clarity in setting the scene. Information such as the minimum number of postings required, number of tasks, and the description of each task are seen to be helpful. It was observed that teachers of good forums set discussion topics, gave clear instructions, and grouped students in an appropriate way at the beginning of the semester.

## **Clear Facilitation: Teacher as Learning Guide**

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As in a traditional classroom, teachers are responsible for planning and facilitating in order to establish a useful learning environment. Feedback from students showed that they like their teachers to give comments frequently, to give encouraging feedback, to follow up students’ discussions, to reply promptly in the forum, to raise questions in the forum, and to inspire their thoughts. For example, although Forum 12 received the least number of postings per student, the students expressed in the focus-group meeting that they regarded the forum as a useful tool in the course, partly because the course teacher always made timely announcements in the forum and gave prompt replies to students’ questions during the whole semester. It reveals that even though students did not explicitly participate by making contributions to

the forum (which is perhaps related to their preferred learning style), they would still check the forum for any updates by the teacher.

Teachers also need to monitor the forum use throughout the whole semester in order to keep students on task. One main reason for the lower-than-expected participation of Forum 9 (ranked 8 in the postings analysis) was that the teacher did not regularly remind her students to make contributions. The teacher remarked:

*“It was a course requirement that each student must submit at least three postings each to the [two sub-forums]. Unfortunately I did not stress this throughout the term, nor did I provide a frequency or schedule to be followed for their submissions, and only a few contributed early on. As a result, the interaction I had hoped for never flourished. Next year I will require each student [to] post 3 contributions per term, but at a rate of one a month, e.g. one in January, one in March, and one in April. Hopefully, this will encourage more and earlier interactions and postings and learning.”*

There is a tension here in that an overly protective and directive approach by teachers can hinder the development of students' independence in learning and sense of initiative. There is a delicate balance to be maintained here so that a sense of community is nurtured and not just a culture of compliance. It may be that Hong Kong students expect more guidance than students elsewhere in the world would welcome. Certainly the Hong Kong school education system is remarkably highly structured. With the growing number of Chinese students studying in the West and the growth of transnational programs, this is certainly a factor worthy of further investigation (McNaught, 2004).

Students also needed guidance throughout the process in order to perform well in the graded activities in the online forums. Clear guidelines given as early as possible were commented as being useful by students in several cases. For example, in Forum 4, students did not feel they had enough background knowledge to review peers' work. So, they found it hard to give feedback during the process. Teachers need to be aware of students' needs and provide timely support throughout their learning.

Forum 2 (one of the two highest ranked forums) is especially interesting in that the forum had a much more central role than in most of the other cases. Traditional lectures were replaced with students' online study. Teachers and students met in the one-hour seminar each week. Students produced a number of assignments in a portfolio format. Students discussed their assignments online in small groups and revised them based on the peer reviews before the final submission. Students were also asked to evaluate online the quality of help their group members had given them throughout the online discussion at the end of the course. This learning design was quite a change for many students, and the success of the forum seems to be related

to the ongoing support of the teachers. The weekly seminar was integrated with the online activities to provide continuous support and encouragement for students.

Facilitating group dynamics is a key role for teachers. The teacher of Forum 7 designed an interesting ice-breaking activity for her students to get to know each other at the beginning of the course. First she divided the students into groups. Then she required each student to participate in their belonged sub-forum and give three descriptions about themselves, one of which had to be a false statement. Students were then asked to chat freely and try to find out other group members' lies. The quantity of postings of this forum was boosted up to quite a high number (18.9 postings per student) due to this activity. A sense of community was built among group members, and a high student involvement was recorded.

One more example is Forum 5. Student groups were formed and each group took either the role of researchers or editors. Once each group's members finished their own tasks, they would pass the tasks to the corresponding group for checking or amendments. With this design setup, there were both within-group and between-group discussions. Different kinds of interactions among students were thus created, which in turn created a good learning and discussion environment.

Of course, not all successful uses of forums result in high activity statistics. This happened in Forum 1 (ranked 10 on the postings analysis). Again, students were formed in groups to produce projects for peer review. Within-group discussions were carried out off-line (not using the online forum). Project productions were uploaded to the forum for peer review, and reviewers made the comments in the forum as well. It turned out that there were only 150 postings by students (0.66 per student), which would apparently be regarded as an unsuccessful forum. Yet, the reason behind this low number of postings was that student groups did the peer review together, and then made only one summarized comment in the forum for each production. Thus, the forum log data could not reveal the hidden dynamics among the students. Nonetheless, the students did collaborate, discuss, and make decisions.

## **Motivation to Engage: Teacher as Community Builder**

Feedback also suggested that teachers need to motivate their students to participate in the forum by encouraging, questioning, responding, and commenting there. It is just like the teacher asking questions and encouraging student discussion in traditional classroom learning. Also, it is the teacher's role to foster group dynamics among the students. Teachers need to guide students to make substantive discussions.

Even in structured forums where students obtained extrinsic motivation (participation marks), students should explore the intrinsic potential that might arise from the forum use. For the one successful case of a free forum investigated (Forum 11), the teacher did much to encourage the students to participate in the no-marks-allocated

discussions and let the students know the benefits of the extra learning arena. The outcome of the forum was obvious.

Being the participants of the forums, the students themselves influence the forum use. Regardless of all the *manipulations* by the teachers of the learning environment during the whole process, students' perceptions on the usefulness of the forum are of vital importance. Data revealed that students in successful forums perceived the forums to be a good tool in their learning process. They were aware of the advantages brought about by the forum use, such as the flexibility, the rich content, and the value of articulating ideas.

For example, in Forum 2 and Forum 4 (structured forums), students were required to work on exercises and discuss the answers with group members in the online forum. The students realized that this was a good channel for them to learn the subject matter better. Also, they could gain marks for online participation. With both the intrinsic and extrinsic motivations, students participated actively in the forums and posted messages with high quality. As the students in these two courses possessed a positive attitude towards the online communities, the outcomes of the two forums were high among all the 13 cases (rankings of 2 and 5 in the postings analysis).

The successful free forum (Forum 11) was similar. Though extrinsic motivation did not exist (students' postings were just for sharing purposes), students recognized the benefits and still contributed well to the forums.

When students perceive the forum as useless or they prefer other means of communication, their involvements in the forum drop. For example, for Forum 13 (ranking 12), apart from the online forum, there were several other means for the students and the teacher to communicate with each other. Students preferred other means of communication to the forum. Together with the low participation of the teacher, the forum was used just as an announcement corner.

It is also important that teachers believe in the learning effects that online discussion can bring. It was observed that if the online forum was not valued by the teachers, the students would also not initiate or take part in the discussion. For example, the teacher of Forum 13 used the forum together with other means to make announcements. The value of the forum was recognized but yet not fully utilized. There was only low activity in the online forum. Students knew that the forum could be a place for better information exchange among the members of the course (e.g., one could know what others did not understand if there were questions posted in the forum), but they preferred to ask the teacher questions directly by stopping by the teacher's office or sending an e-mail to him or her. One student commented that if there was someone (the teacher, the tutor, or some active students) to initiate discussions in the forum, he would definitely participate in the online forum discussions. Another student suggested that after personal discussions with students, the teachers could post those inspiring and interesting questions to the discussions for student reference. All in all, teachers' initiation of the utilization of the forum seems to be crucial to a positive outcome with online forums.

Due to the fact that participation in the structured online forums is mandatory, a guaranteed quantity of postings can be obtained in this kind of forum design. The students are motivated extrinsically to contribute to the online community, as marks are allocated to forum participation. Students may post some postings with quality so as to get the marks. Yet, once the requirements are fulfilled, the motivation drops and students may quit the online discussion. Also, when quality of postings is not set as the criterion for assessment, students may post messages with vague content. As a result, without intrinsic valuing of the forum, it is not an easy task to maintain a structured forum with consistently high quantity and quality of postings.

It is therefore natural to find that users of this type of forum are concerned with the clarity of the descriptions, and instructions of the required and pre-assigned activities. Also, they are particularly concerned about the smooth operations of the online discussion process. As the smoothness of this type of forum depends as much on students' contributions as the teachers', structured forums need to focus on the organizational, facilitative, and motivational aspects we have discussed. These ideas are echoed by Hatzipanagos' (2005) finding that forums need to have interfaces that emphasize both the cognitive and the affective aspects of learning, and also Preece et al.'s (2004) second principle of "sociability."

## **Structured or Free Forums?**

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As mentioned, three of the four free forums were ranked the lowest among all the investigated forums on both quantity and quality. This illustrates the difficulty in planning and carrying out successful free forums. The one successful free forum (Forum 11) was moderated by a teacher whose skills of induction (Salmon, 2000) were strong enough to build an online community without the *coercion* of marks.

In the structured forums, pre-assigned course-related discussion topics were set. Students usually discussed in a serious manner and provided substantive ideas with a focus on solving the problems. There were follow-up postings which were also content-rich. For many teachers in a semester university course, structured forums may be better than free forums in achieving teaching and learning outcomes.

Challenges that seem to be particular to the structured forums as revealed in this study seem to focus on the provision of clear instructions and guidelines for the required online activities, and the ability of the forums to continually involve the students and maintain group dynamics.

There are, of course, other important considerations that have to be taken account of when designing Web-supplemented teaching and learning. For example, the nature of the course, the teachers' educational beliefs, and the type of non-Web activities obviously influence forum use. For example, in a postgraduate course that

emphasizes research or professional training, it may not be appropriate to impose a significant mandatory online participation. Forum 8, which was from a postgraduate course, is an example. The average number of postings per student was 3.4 and per teacher was 3. However, the quality of postings was very good with serious and apt discussions.

## Conclusion

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This chapter studied 13 online forums. Two kinds of forum designs were observed, structured and free. Structured forums generally performed better than free forums. In addition, forums where the communication was largely between students seem to be more effective than teacher-directed forums. However, the centrality of the role of the teacher is confirmed. The evidence from the 13 evaluation studies is that the teacher's capacity to plan activities and continually support learners is crucial. The skilled teacher remains as a strong key to effective learning in a university course; teacher skills in the online world are just as important as in the classroom.

The results of this study indicate that successful forums in the Hong Kong context are ones where:

- it is easy for students to enter and quickly understand the environment;
- the teacher provides a clear structure to the task and suggests procedures for students to consider using in tackling the task;
- the teacher actively participates in the discussion;
- the role of the teacher is recognized as not being the same as a student, and is more about timely guidance and monitoring;
- the teacher seeks to build group dynamics;
- there is active encouragement of individual students, initially at least by the teacher;
- there is active encouragement of the whole class, initially at least by the teacher;
- the students rate the forum as being of real value for their learning; and
- the teacher rates the forum as being of real value for students' learning.

It is hoped that the findings of the study will assist teachers in planning teaching and learning experiences using forums that genuinely build an online learning community.

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