Journal of University Teaching & Learning Practice

Volume 8 | Issue 3 Article 3

2011

In-service Development For Graduate Teaching Assistants: A Blended-learning And Formative Approach

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Recommended Citation

Santandreu Calonge, D., Chiu, P., Thadani, D. R., Mark, K., & Pun, C. (2011). In-service Development For Graduate Teaching Assistants: A Blended-learning And Formative Approach. *Journal of University Teaching & Learning Practice, 8*(3). https://doi.org/10.53761/1.8.3.3

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1. Introduction

Postgraduate students in higher education institutions over the past few years have experienced gradually increasing responsibilities, and have progressively been employed by academic departments worldwide to perform a wide range of assigned duties, such as helping deliver material at undergraduate level, conducting laboratory (lab) sessions and grading lab reports, leading discussions online or face-to-face, supervising tutorials or teaching general-education courses. The Hong Kong higher-education sector is no exception: its graduate teaching assistants (GTAs) increasingly provide frontline learning and teaching support, despite their inexperience in using active-learning strategies or assessing students.

GTAs, although they know they need to be *prepared* to teach, as well as be *willing* to polish their teaching expertise for their future academic career, either express a lack of training and guidance on entering classrooms to teach (Bomotti 1994), or perceive teaching as 'delivery of content' only (Menges & Rando 1989) or as "spoon–feeding" (Cross & Hitchcock 2007).

One student illustrated the point:

> *After taking this course, I realised that teaching is not a one-way delivery of knowledge, simply pour the knowledge to the students. Mutual communication with feedback, arguments, discussion, adapting your approach to students' learning styles is very important. – An SG8001 student*

Students often mention particular difficulty in balancing their role as teachers with their role as graduate students (Rubin 1993). This situation is particularly stressful for students from overseas or mainland China, not only because the medium of instruction in Hong Kong is English, but because their main focus is on original research and publications in peer-reviewed journals:

> *So far, my greatest challenge has been finding the right balance between teaching duties and research work. This has been a struggle, but after reading the "Talking tutors" article (Synergy 2008) provided in the reading list for SG8001, I realised that other research students are struggling with the same issue. We might not realise it sometimes but tutorial duties do take away a chunk of our time from doing our own research.* – V. Yap, SG8001, Cohort 1, 2010

Generally speaking, postgraduate students in Hong Kong, like those in many other countries, are not very motivated to join voluntary teaching or staff-development programmes. Their motivational level is even lower when they are expressively asked *by their supervisors* to attend a mandatory "teaching and learning" course for which they have no time or curiosity:

> *Before taking this course, I was filled by questions and confusion such as why do I have to take the course (it is a mandatory course), what should I expect from it, how useful would the content be to what I really need? – An SG8001 student*

Given the number of new programmes and general-education courses being launched in Hong Kong and the number that are currently being taught, and taking into account a predicted sharp increase of students with the upcoming transition in 2012 to a four-year curriculum, greater emphasis needs to be placed on preparing postgraduates for the teaching profession. In response to these significant changes, as well as the need to boost the university's competitiveness, the City

University of Hong Kong (CityU) is implementing a five-year strategic plan (2010-2015). The plan sets a number of goals and strategies for six different aspects: student learning and career development; research and technology transfer; faculty and staff recruitment, reward and retention; campus planning and development; globalisation; and branding, image and culture. The continuous offering of the course "SG8001 Teaching Students: First Steps" to postgraduate students is one of the strategic decisions aimed at fostering outcome-focused learning to support professional education with the use of instructional technologies.

2. SG8001 Teaching Students: First Steps

At the request of the School of Graduate Studies, the Office of Education Development and General Education (formerly the Education Development Office) started offering the course "SG8001: Teaching Students: First Steps", a one-credit pass/fail compulsory course for all research postgraduates, starting from Semester B 2007/08.

The course was designed using outcome-based teaching and learning (OBTL) principles, and makes extensive use of synchronous and asynchronous communication tools (for example, discussion boards, wikis, Wimba voice tools, lecture-capturing technology and e-portfolios).
It is important for GTAs to be sensitive to the fact that people learn and prefer to be engaged in different ways, especially when part of the interaction is done online (Mupinga, Nora & Yaw 2006). Session 2 of SG8001 deals with three learning theories – behaviourist, constructivist and social cognitive – and uses examples from students' own experience to demonstrate how learning takes place. Session 3 focuses on creating constructively aligned teaching and learning activities and assessment tasks (formative and summative) to deliver and assess the intended learning outcomes designed in Session 2. Session 4 focuses on presentation skills, which are then applied to an assessed teaching and learning activity: students select an academic topic of their choice, close to their personal interests (Malone & Lepper 1987), and present it to their peers, who evaluate their work (summative peer-review) nearly instantaneously. Oral presentations are video captured so that students can evaluate their own work, and peer feedback using specifically-designed rubrics, as well as a personalised report from the instructors, help students gauge their facilitation skills. This assessment also puts them in a real, on-the-job scenario, an experience that helps them to construct their reflective portfolio.

The current study has three objectives:

(1) Assess the effectiveness of the intensive and compulsory education development course content, its immediate applicability in the classroom and its long-term effect
(2) Assess the effectiveness of the blended-learning approach, particularly the use of discussion boards and video-capture technologies, to engage students in class and online, including Suzhou (mainland China) students at CityU's off-shore campus.
(3) Evaluate postgraduates' satisfaction with the intensive course, achievement and attitude towards teaching and learning, using teaching-feedback and learning-experience questionnaires.

The three objectives for this paper are considered as the key performance indicators (KPIs) for SG8001, in alignment with the university's strategic goals.

3. The importance of an Outcomes-Based Approach to Train Future Graduate Teaching Assistants

Internationally, higher education has gone through substantial changes over the last few decades: The sector has, first of all, expanded exponentially, in terms of staff, students and the number and range of programmes or courses of study being offered. The *lingua franca* among academics and university administrators has also evolved to refer to programmes of studies using outcomes-oriented marketing jargon and concepts such as internationalisation, market segmentation, branding, integrated marketing communication and repositioning. Moreover, senior academic staff are less reluctant than before to seek greener pastures and higher salaries and migrate to senior administrative positions abroad (Foderaro 2011). The student population is increasingly mobile, diverse and international (Pan et al. 2003), with different abilities and perspectives and shifting demands. Many universities are responding proactively by providing a more effective teaching and learning environment that is better adapted to the changing situation. An outcomes-based approach that shifts the focus from a teacher-centred strategy to a student-centred strategy and emphasises the learner's active construction of knowledge is appropriate for this situation.

OBTL principles state that the learner is not a passive recipient; rather, the learner is at the centre of instruction, while the instructor acts as the facilitator of the process (Carswell 2001). This constructive process (Downing, Kevin 2001) requires a clear articulation of what students are expected to learn and be able to do (functioning knowledge), in total contrast with Chinese traditional educational principles: Chinese learners are relatively inactive in class, generally consider themselves to be respectful listeners (Brooks 1997; Gan 2009), and are afraid of losing face (Flowerdew 1998; Hu & Fell-Eisenkraft 2003). A recent study in China shows that the teacher-centred approach is favoured by academics, with a strong emphasis on memorisation and declarative knowledge (Ouyang 2008). Immersing Chinese GTAs in an OBTL environment is therefore of utmost importance.

An outcomes-based educational design starts with a clear identification of intended learning outcomes (ILOs), followed by the design of a learning and assessment process to facilitate and demonstrate the achievement of these outcomes (Figure 3).

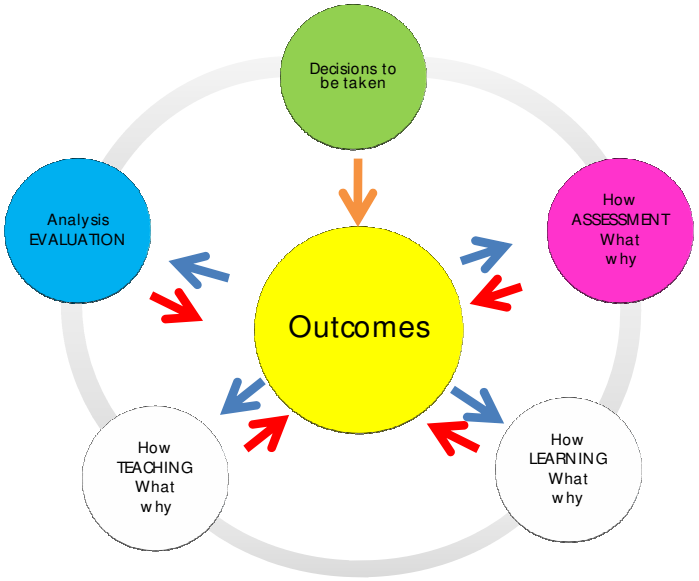

Figure 3: Subset Iterative, Developmental and Incremental Cycle Process Used in SG8001 Course (Source: Adapted from Cowan and Harding (1986))

This shift of emphasis (from teacher-centred to student-centred), becomes a collaborative model that can improve thinking and learning (Vygotsky 1978; Ning & Downing 2010), which is then situated in context, and rooted in the learner's cultural background and personal knowledge (Carswell 2001). This provides students with a clearer sense of direction in their pursuit of university education (Figure 4).

The Changing Teaching Context (a shift in context)		
Teaching	→	Learning
Teacher-centred activities	→	Student-centred activities
Processes	→	Outcomes
Discipline-specific	→	All-around development
Institutional learning	→	Life-long learning

Table 1: A Changing Teaching Context

The emphasis on ILOs addresses not only the disciplinary content but also the development of transferable competences, based on the expectations and requirements of employers, professional bodies and other stakeholders. Students are encouraged to actively engage in the learning process and take responsibility. Their instructors involve them in the process of decision-making and peer assessment when possible, where the focus is on what the students are able to do, rather than on what the teachers deliver. The teachers create a meaningful environment, a cognitive apprenticeship model that includes communication and collaboration with ample opportunities for interaction and exposure to multiple styles, perspectives and interpretations (Gold, Malhotra & Segars 2001):

> *I consider the integration of the three teaching theories we covered in this course as an effective way to direct teaching, with the constructivism approach as the primary one. Students can learn in experiencing. Then group activities such as role-play, presentation, and commentaries (both spoken and written) will help them to construct or form their own skills of the language and ideas of the culture. – An SG8001 student*
>
> *When we discussed three learning theories – behavioural, social cognitive and humanistic – I used the Mutually Exclusive Collectively Exhaustive (MECE) concept to analyse the learning theory group. I found that it passed my MECE testing very well. This raised my trust in these theories – An SG8001 student*

The teaching team regularly discusses and fine-tunes the ILOs to better align them with the research and taught postgraduate student outcomes. Specifically, the ILOs of SG8001 (followed by the corresponding student outcomes in italics) are:

- **Describe** the context for learning and teaching at City University of Hong Kong.
  Apply knowledge to generate creative ethical solutions in their working environment.
- **Apply** learning theories to the preparation of teaching and learning activities.
  Generate new ideas related to their areas of expertise.
- **Deliver** a high-quality teaching and learning activity.
  Apply effective communication skills in their profession/ in relation to research.
- **Create** a personalised reflective portfolio.
  Reflect on extensive knowledge and apply analytical skills in their discipline and professional areas.

Aligned with these ILOs, the teaching and learning activities (TLAs) of the course include in-class discussion and e-learning features (as mentioned above), which encourage and facilitate students' engagement and maximise teacher-student and student-student interactions. The assessment tasks (ATs) include students' oral presentation on their teaching and learning activities topics (mock teaching session), and students' creation of their reflective teaching portfolio.

4. A Blended Cognitive Apprenticeship Model

At the early stages of the course development, the teaching team tried to answer three critical questions: (a) to what extent are learning outcomes reflected in the course learning experience, (b) when and how do students demonstrate achievement of the learning outcomes and (c) how can we engage students without being *physically* present, as the course involves only five face-to-face sessions, taught in Hong Kong and Suzhou? The course materials and instructional methods were discussed, chosen and modified according to the iterative, developmental and incremental cycle process with multiple points of feedback at their core as shown in (Figure 5).

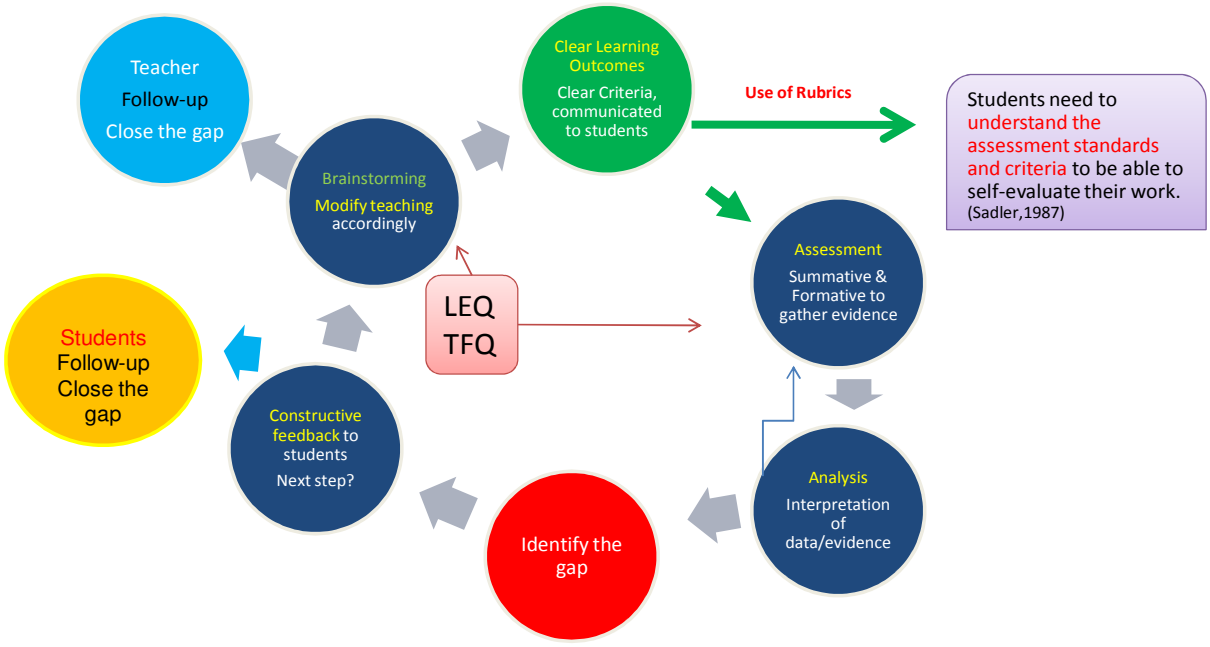

Figure 5: The Iterative, Developmental and Incremental Cycle Process Used in Course Design

In other words, the Teaching Team developed a system through iterative cycles (five cohorts of students in 2010/2011), and involving incremental approaches to small portions of the course (online exercises as formative assesments, for example), taking advantage of what had been learned during the development of earlier versions of the course taught by former colleagues. Learning and subsequent change came from both the development and use of the material and activities in class or online. In each iteration, things were added or removed based on feedback from colleagues and students. For instance, the teaching team used a wiki to engage students in discussions related to the content of the course and to enhance their awareness of what is learned; however, the team soon realised that time spent editing content *collaboratively* did not result in significant *individual* reflection at the end of the course (Lipponen 2002; Chen 2005; De Pedro et al. 2006). The team then opted for a discussion board. This approach was found particularly useful:

> *The active learning teaching and learning methods I have learned in this course were most beneficial to me. As I knew the traditional methods were not very good for students to learn, I would like to change this situation [intrinsic motivation]. This class gives me a chance to have learned these methods. – An SG8001 student*

> *In selecting the theories that I may rely on as the backbone of my teaching activity, I referred to the three major influential models: behaviorism, constructivism and social-cognitivism. I made the decision to draw more heavily on social-cognitivism because I believe that this theory incorporates the essence of the three, laying emphasis on peer-learning, which I believe is more effective than other models. – An SG8001 student*

Considering motivation as one of the key factors affecting student performance and learning (Dörnyei 2000), which subsequently boosts intrinsic motivation and self-efficacy (Bandura 1993; Prieto & Altmaier 1994), the teaching team had regular brainstorming sessions (mini-iterations) before and during the semester. In these sessions they used their own observations and feedback collected at multiple points (one-minute papers, online discussions, class interactions, teaching feedback/learning experience questionnaires, etc.) to reflect on the progress of the course, its overall relevance and its immediate application (Geiger & Cooper 1996; Adler, Milne & Stablein 2001; Brass 2002; Benbunan-Fich & Starr 2003; Burke & Moore 2003). The team constantly designed new ways to simplify difficult concepts:

> *A group discussion on planning a course for Dimple about survival skills in China was impressive. It was a great experience for me to learn setting up appropriate ILOs, TLAs and ATs. This interesting practice motivated me a lot. This gave me an insight that interesting activities held in class could draw the attention of students. – An SG8001 student*

4.1 Assessing the course

The teaching team also brainstormed on many occasions on how to better assess the course and how to integrate face-to-face and online learning experiences (Downing, Kevin & Chim 2004), The team carefully considering students' perceptions and reactions. Formative assessment with extensive feedback was particularly emphasised to drive learning, improve student engagement with assignments and feedback, enhance communication and rapport between students and assessors and promote "ready-to-use" feed-forward (Figure 6). , as shown in Figure 7: (adapted by Santandreu Calonge, D from Oxford Brookes University, 2010)

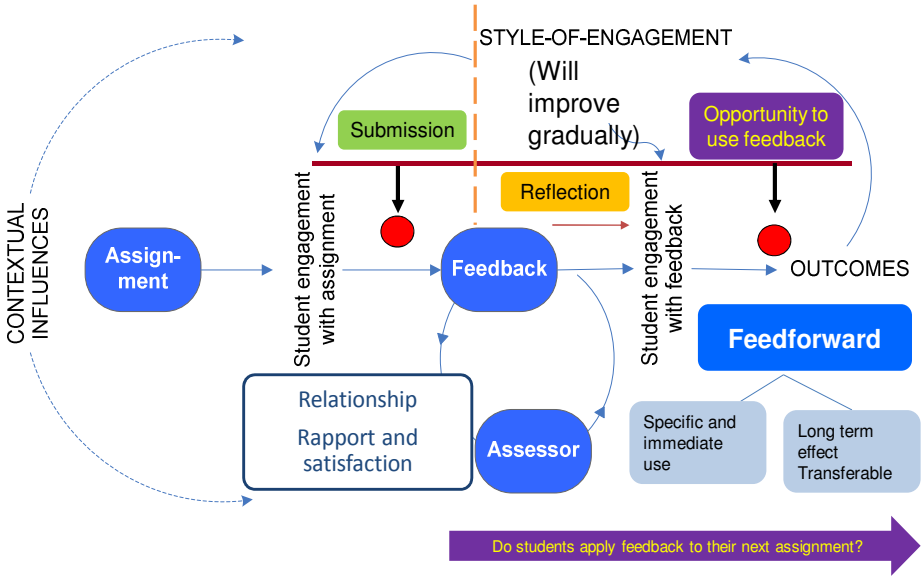

Figure 6: Engaging Students with Feedback: a Continuous Cycle
(Source: Adapted by Santandreu Calonge, D from Oxford Brookes University, 2010)

The use of this comprehensive continuous cycle produced the desired effects, as expressed by one of the students:

> *The content of this course is helpful to learn theory and practice about education. What's more, the assessment procedures are very clear for us. – An SG8001 student*

Students may know how to apply all the active learning strategies and skills seen in class or practised online (procedural knowledge), but unless they have the desire to use and reuse it (intrinsic motivation), learning is unlikely to improve. Many students, for example, expressed the view in class that they had never been asked to evaluate other students' work or to writing a reflective e-portfolio before, and therefore had no real clue about how to design one. Writing a teaching-philosophy statement with no real teaching experience was also considered a challenge:

> *Creating an e-portfolio is a hard task. Like creating a CV, it is difficult to present yourself through a piece of A4 paper. However, preparing a teaching philosophy is a good opportunity to motivate myself to study the teaching philosophies from experienced teachers. – An SG8001 student*

To avoid "description-only" portfolios (Orland-Barak 2005) and the "exaggerated mirage of achievement" (Macfarlane & Gourlay 2009), the teaching team clarified the portfolio issue at various intervals during the course by explaining its purpose in terms of self-reflection and self-evaluation, by demonstrating its alignment with the course activities, discussions and content and by providing clearly defined assessment rubrics (Santandreu Calonge et al. 2009). The team also gave students samples of outstanding portfolios written by their peers locally or overseas. The team analysed students' comments and reflective portfolios and interviewed past participants informally (face to face/online) to gather feedback and modify the rubrics, as well as the reflective portfolio structure, to enhance reflective thinking, uses and meaningfulness. Students said:

> *In my opinion, presentations are very beneficial. Through practice of presentations, my ability of presentation has improved. I know how to present effectively. This is very beneficial to my study and research. – An SG8001 student*

> *I master now some teaching theories. This is very beneficial to me. And I also become more confident after taking this course. The theories are useful when I become a teacher in the future. – An SG8001 student*

4.2 Engaging with the students, face-to-face and online

The teaching team used a wide array of active strategies to engage students, attempting to confirm whether a change in (mainland Chinese) students' view of the role of authority would bring any observable changes in their mode of learning. The most unconventional but nevertheless very efficient active-learning technique, as shown by students' feedback at the end of the course, was ***multi-directional engagement*** (Figure 7): at any time during class, any member of the team, *strategically positioned* at each side of the lecture theatre, could "chip in", share experiences, tell a story, ask a question, do an exercise, agree or disagree with another team member. As novelty is critical to attracting and maintaining attention over a two-hour lecture, and taking into account the average attention span of students, the main speaker changes every 10 to 15 minutes to keep the class interesting and active, so that students retain more and "zone out" less. Every member of the team (including the two teaching assistants, who had successfully completed the course a few years before) had also to help in the design of the content, master every part of each class and be able to present it to the audience, significantly reducing the time spent on team meetings.

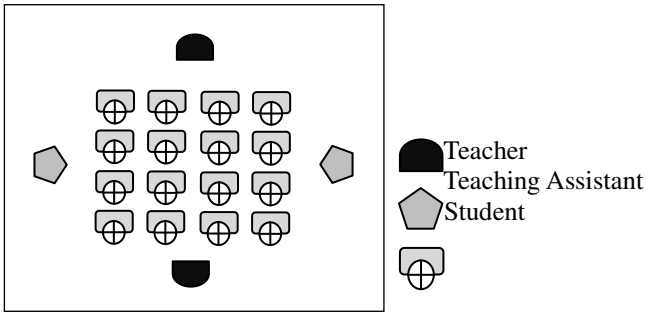

Figure 7: Team-Teaching Model Used in SG8001

Students found this atypical but nevertheless dynamic strategy particularly inspirational:

> *In my opinion, learning activities is the best part of this course. So many activities are used in this course, and it is interesting. – An SG8001 student*

> *In order to make students motivated in class, I will employ interesting learning activities to grab their attention and inspire them to learn. Therefore, students in my class may not feel uncomfortable and frustrated, and they can explore meaning and knowledge, engage in critical thinking and conduct their own experiment. – An SG8001 student*

4.3 The "central" category of blended learning

Gandell et al. (2000) categorise the extent of web use according to the importance and relevance of the learning goals. The use of the web in SG8001 falls into the "central" category, as use of the web is relevant and necessary to achieve most learning goals in the course, and would have a substantial impact on student learning.

Our course, which is taught in both Hong Kong and Suzhou, involves only five face-to-face sessions. The use of e-learning technologies is indispensible to this course in a number of ways: providing fast feedback during assessment, facilitating reflective learning, enabling collaboration between peers and encouraging participation in teaching and learning activities. The course used the Blackboard Learning Management System, which is the web-based e-learning platform for the University as a whole. In particular, the course used many of the system's add-on features, especially applications supporting collaboration and multimedia functions. Thus, the decrease in physical contact hours was offset by the internet-based communication. The instructors and course GTAs used interactive tools such as e-mail and Blackboard announcements to inform students about opportunities for interaction. About 80% of the students logged into Blackboard at least twice per week. Table 2 shows the utilisation rate of the Blackboard tools for different cohorts of SG8001.

Table 2: Utilisation Rate of Various Blackboard Tools

Course	Cohort	No of students	Blackboard Tool	No. of Hits	Utilisation Rate
SG8001-Batch 1 (Base: HK)	Mid-Aug 2010	45	Discussion Board	8025	41.85%
			Content Area	6517	33.98%
			Announcement	3274	17.07%
			My Grade	431	2.25%
			Gradebook	425	2.22%
			Staff Information	351	1.83%
			Wiki	105	0.55%
			Email	35	0.18%
			Tool Area	06	0.03%
			Others	08	0.04%
SG8001-Batch 2 (Base: HK)	Mid-Sept 2010	54	Discussion Board	2986	49.41%
			Content Area	1729	28.61%
			Announcement	987	16.33%
			My Grade	0	0.00%
			Gradebook	13	0.22%
			Staff Information	200	3.31%
			Wiki	117	1.94%
			Email	9	0.15%
			Tool Area	1	0.02%
			Others	1	0.02%
SG8001 M (Base: China)	Mid-Oct 2010	34	Announcement	10	55.60%
			Content Area	7	38.90%
			Others	1	5.56%
			Discussion Board	0	0.00%

As shown in Table 2, the utilisation rate of the Discussion Board was the highest for both Hong Kong cohorts, followed by Content Area. A high degree of engagement with these tools indicates that students were involved with the content by browsing online materials (for example, a reading list was sent to them, each article being released a day before the lecture to encourage discussion) as well as contributing to the online discussion board. Indeed, students were encouraged to lead online discussions and create threads, and were given full autonomy to do so. In other words we put them in "control" of the flow, with minimal interference. Instructors would start the online discussion and students would lead the discussions thereafter in line with the approach described by Downing et al. (2007). Open-ended questions such as "How would you define an effective teacher?" and "What is your opinion on e-learning, its uses and effectiveness?" were asked. In addition, students were required to evaluate and comment on their peers' presentations and reflective portfolio assignments according to the rubrics provided. Thus, we would have students lead most of the learning activities while the instructors and teaching assistants only provide support and facilitation. In contrast, the unusually low engagement of students online in SG8001M was probably due to three reasons: (1) extremely slow network connections in China, (2) the fact that the course was on-going and (3) the fact that observations were made at a time when the fewest students were enrolled.

Constructive feedback (Figure 8) was distributed to course participants accurately, individually and privately using the assessment platform, with minimal administrative workload. The platform was especially useful when course participants were required to anonymously assess their peers in both summative and formative forms. The teaching team aimed to release the feedback of every assessment task immediately once assessment was completed to facilitate instructional change, as "teaching presence" is very important for an effective learning environment.

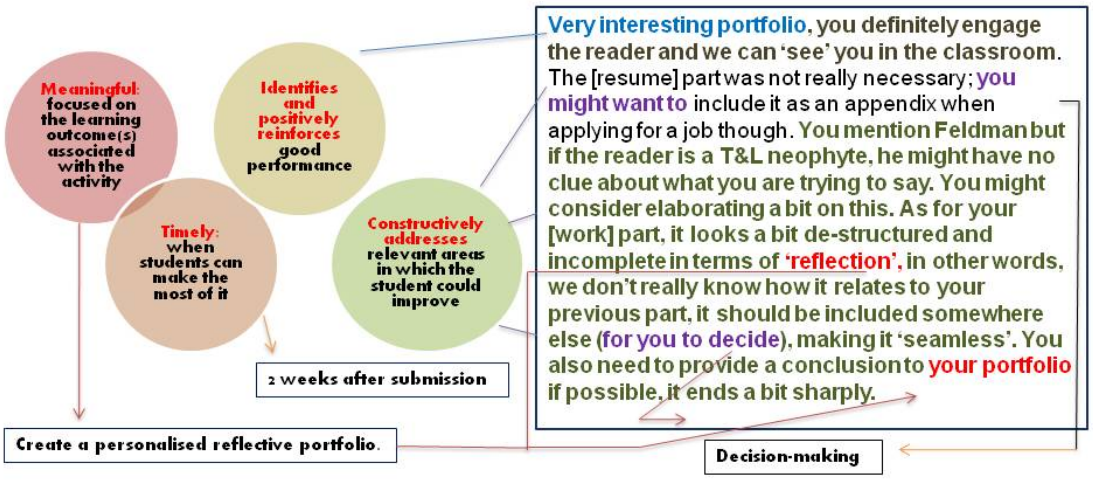

Figure 8: Constructive Feedback

4.4 Interaction

Harasim (1989) described interactivity as the factor with the greatest potential to affect learning. Similarly, Garrison, Anderson and Archer (2001) described the importance in online learning of creating a "virtual community of inquiry" that allows learners to construct experiences and knowledge through analysis of the subject matter, and through social interaction. As shown in Table 3, both teacher-student interaction and student-student interaction were ensured to avoid social isolation. Student-student interaction was 6.4 times and 44.6 times larger than that of the teacher-student interaction in SG8001 cohorts 1 and 2 respectively. The role of instructors in the online discussion board was as facilitators, limiting themselves to promoting interactions and offering guidance as required (Motteram 2001; Pallof & Praff 2001). Some examples of the facilitators' contributions to the online discussion forum include comments like "Great stuff! Any other thoughts?", "Can you elaborate a bit on this?" and "Why do you think an effective teacher should be funny and kind?"

Table 3: Student-Student /Student-Teacher Interactions

Cohort	Total no. of topic	Total No. of Post (All)	Total no of post by (teachers)	Total no of post by (students)	Interactions	Ratio
SG8001-Batch 1(45 students; 4 co-teachers)	6	222	30 (Average 7.5 post per teacher)	192 (Average 4.3 post per student)	student-teacher :30 times(Max) student-student :192 times(Max)	6.4
SG8001- Batch 2 (54 students; 5 co-teachers)	6	227	5 (Average 1 post per teacher)	223 (Average 4.13 post per student)	student-teacher :5 times (Max) student-student :223 times (Max)	44.6

Moreover, the team discovered an alternative form of online engagement in the discussion board: passive engagement. Although the number of posts per student was more or less the same for both batches, the total hit rate for batch 1 (3181 hits) was considerably higher than that for batch 2 (1909 hits); this suggests that students in batch 1 liked reading online posts more than writing them. Using a discussion forum, therefore, can actually improve collaboration inside and outside the classroom, encouraging classroom participation by giving shy students a chance to express what they think and fostering long-term reflection, as expressed in the following comment:

> *The experience that I had during the course has been a highly positive and memorable one. I learned the importance of having a clear outcome which directs the teacher's and students' efforts towards a common goal. I [have] come to appreciate the introduction of teaching and learning activities in impressive varieties that can enormously help improve the learning process. I have learned to introduce various assessment tasks for purposes of not only monitoring the progress of learning, but also to allow the students to speed up learning. Last but not least, I have learned that teaching is a profound discipline that is more than merely routines. It involves highly complex coordination of skills and resources of both the teacher and the student. Therefore teaching is an art that requires passion, skill, devotion and a never-ending desire to push oneself towards perfection. The things that the course has taught me will benefit my teaching in the years to come. – An SG8001 student*

4.5 Developing reflection or metacognition

Reflective learning and critical reflection (Orland-Barak 2005) are achieved at different stages during the course with the support of wikis, discussion boards, a lecture-capturing system and e-portfolios. Course participants are required to deliver a mock teaching session by the end of the course, and compose a reflective portfolio to reflect on what they have learned and taught (Downing, Kevin et al. 2009) and what they can improve after completing the course. An individual wiki assignment is set up to help course participants define ILOs, TLAs and ATs for a course of their choice and align them properly in the mock teaching session. Wikis enables extensive input from instructors and peers during the process to polish and improve the teaching plan, as shown in the following examples posted on the SG8001 wiki:

Table 4: Course Information on Pollution Monitoring

ILOs	TLAs	Learning Theory Support	ATs
Students will describe and evaluate air- and water-quality objectives and standards in Hong Kong and the Chinese mainland	Lectures and tutorial sessions to examine and evaluate the rationale behind environmental standards developed in Hong Kong and the mainland	Behaviourism-formative assessment and comment feedback from case-study analyses	Let students give results for some certain samples on the level of pollutants
Students will design experiments and hypothesise experimental results for pollution-monitoring programmes	Small-group laboratory and tutorial sessions to evaluate monitoring methods and discuss experimental methods	Modelling of case work	Give each group a sample to analyse and get their own data

Dimple Ramesh THADANI said…
Monday, August 30, 2010 6:36:06 PM HKT

Assessment tasks are one of the important components in the OBTL framework. Try to think of some assessment tasks that are aligned with the ILOs and TLAs proposed.

ILOs	TLAs	Learning Theory Support	ATs
EXAMPLE: Students will integrate different learning theories to explain abnormal behavior	Readings, lectures punctuated by formative assessments to check understanding of the five models, case-study discussions	Behavioral – formative assessment feedback; Social-cognitive – modeling of case-study analyses	Exam question focusing on integration of theories as applied to a novel case study
Students can classify qualitative research methods from quantitative research methods.	First, I will give them classic definitions of the two research methods. Secondly, I will give them examples adopting qualitative and quantitative research methods respectively. Thirdly, I will ask them to present some research questions relevant to the two methods.	Social-cognitive – modelling of two kinds of research methods	Exam questions focusing on differentiation and application of qualitative and quantitative research methods

Kai Pan MARK said…
Monday, August 30, 2010 11:09:57 AM HKT

Looks interesting that you are going to present a research methods course. It is appropriate to use a short lecture to introduce fundamental concepts of Qualitative

> *Vs Quantitative methods. I think to "classify" is a bit too simple here – perhaps you can consider "apply" if it is a post-graduate course. If so, I would suggest you to use some case studies to let the student practise in the labs. Data analysis using SPSS/ PLS Graph etc. for quantitative analysis, or leximancher for qualitative analysis. Perhaps a better idea is to use the exercises as a part of AT, in addition to examination. You cannot expect the students to fully apply what they have learnt in a 2-hour exam*

The mock teaching session is recorded by a lecture-capturing system so that course participants have a chance to reflect on what they have actually performed during the session, together with the feedback from the instructor and peers. Students felt that this tool was very helpful for identifying both flaws and particularly engaging sections of their presentation:

> *The presentation is recorded and the video is put onto the web for the students to look back [on]. Looking back on the presentation video could help the students understand their good\bad things more clearly. – An SG8001 student*

> *As a student during [the] course of SG8001 TLA activity, I have learned that a topic with [a] particular style of presenting [that] works well with one group of audience may fail miserably with another group of people. Instead of merely pouring information into student's minds, I focus to help them think analytically by favouring more class discussions with proper case studies. – An SG8001 student*

4.6 Video capture technologies: to be or not to be present?

4.6a Lecture-capture systems, background

The technology adopted in lecture capture is not a breakthrough innovation. Dating back to the 1990s, there have been cases involving development of lecture-capture prototypes for teaching and learning in higher institutions; for example, Abowd (1999). Generally, research on lecture capture has focused on the technical domain of the past decade, using the design-science (Hevner et al. 2004) approach. Abowd (1999), for example, attempted to design and develop a lecture-capturing system using a typical software-development approach involving system analysis and design, prototype construction and user evaluation. Yoshida, Tada and Hangai (2005) also developed an automatic keyword index algorithm and later performed student evaluation on its usefulness and effectiveness. Due to different technical constraints, lecture-capture systems have not been widely adopted in the institutional context in the past decade. Mark, Vogel and Wong (2010) postulated that networking constraints – specifically, the scarcity of bandwidth both high enough for multimedia content and affordable – is a significant bottleneck that prevents further diffusion of lecture-capture systems. Mobile devices, while too expensive for users, continue to play a critical role in re-accessing the captured content.

4.6b Their uses for Learning and Teaching

The rapid diffusion of inexpensive broadband networks in the early 2000s enabled lecture-capture systems to overcome the technical constraints and be fully institutionalised. In addition to the advantages to students for review and revision, teachers also find lecture-capture systems an effective tool for reflection on teaching practice. Tsang, Mark and Vogel (2010) reported a qualitative survey on 15 postgraduate students who took a teaching-development course. They found that both students and academic staff clearly considered the lecture-capture system useful for improving teaching and learning, as well as reducing administrative workload. Students find lecture-capture systems useful because they are a reliable backup source: videos can be viewed

conveniently through the Internet as often as desired. When students have difficulties understanding the lecture content or comprehending English, they can replay the lecture video at any time at a slower pace. Typically, students prefer to watch a particular section of the video (usually, the part they had difficulty understanding during the "real" lecture). However, there is a concern that some students might play truant if lecture capture is available. In SG8001, instructors emphasise making classroom interactions engaging and giving timely feedback to minimise such cases.

Teachers perceive lecture-capture systems as useful for teacher development. In a teacher-training course for new faculty and new teaching assistants, lecture-capture video provides a channel for senior faculty and education development staff to reflect together with new teachers on teaching performance. Enthusiastic teachers also watch their own teaching videos to see students' verbal and non-verbal reactions in the classroom. Interestingly, students also often get into the habit of watching the videos before approaching the teachers for questions.

Confirming Luo, Grady & Bellows' (2001) hypothesis, the teaching team often noticed, when observing participants and reviewing video footage, that postgraduate students in soft disciplines adopted a rather informal and relaxed teaching style: they preferred to make the assessed TLA interesting by using games, videos, group work, or engaging students with relevant questions, while students in hard disciplines emphasised knowledge acquisition and learning of facts and concepts (Smart & Ethington 1995), as exemplified by the two following examples:

> *When it came to the presentation of the teaching and learning activity, I found that I made serious mistakes. During the 10-minute presentation, I didn't make a clear statement of my TLAs. I even forgot to have an assessment at the end of my session. As the teacher said, it was a challenging task to give a 10-minute presentation with everything included and well organised. I got a comment from my peers that my 10-minute presentation was not well structured. In my revised teaching plan, I gave each group a task. They don't have to go through every example one by one. It can save a lot of time. Moreover, by working in a group, every student gets the chance to talk. And group work may encourage them to talk more because they do not have to worry that they might lose face if they speak individually. The students may be more motivated to participate. – An SG8001 student*

> *However, I still do not engage the audience actively and thoroughly in the learning activities, which mainly results from too much content I prepared for my ten-minute presentation on rare earth. Though I spent too much time focusing on imposing prior knowledge on the audience, I failed to motivate them to further study on this topic. I should go into details on a particular topic, such as rare earth or luminescence, not both of them. – An SG8001 student*

Reflective styles of portfolio writing and presentation were also often dissimilar among students from different disciplines (Macfarlane & Gourlay, 2009).

Students reported that the video capturing system is a very useful e-learning tool for self-reflection, helping them to improve delivery skills:

> *By reviewing the video, I saw that sometimes my body language was quite "large", which might not be what a teacher would do. I should control myself and avoid making large movements. Rehearsal is important and the video helped me to review*

> *what could be improved, and it increases my confidence in teaching. – An SG8001 student*

5. Evidence of Effectiveness in Achieving Desired Learning Outcomes

The teaching team exposed students to a number of different theories, strategies, technologies and assessment techniques, and showed them how, when and why to apply them (conditional/functioning knowledge):

> *In this semester, I am working as a lab tutor ... I have opportunities to practice the approaches and learning theories which I have learned from the course SG8001. – An SG8001 student*

> *A regular topic among my colleagues was that students had very weak motivation to get involved in the lectures or class activities. We thought the primary reason was that they were non-major English learners so they would not want to spend too much time or energy on it. After taking this course I've realised that the reason was the broken relationship between teaching activities/content and assessment. – Y. Wang, SG8001, Cohort 1 2010*

> *My conception of teaching and learning is to help students move from a passive role to an active or rather independent role. I should offer opportunities for them to debate, work on group projects, field trips…. I can set peer assessments for their class presentations or group projects, which also account for an important part in evaluating their class performance. – An SG8001 student*

Although ongoing refinements and adjustments to the content and structure of the course are inevitable and necessary, hence the use of a iterative, developmental and incremental cycle process, qualitative comments suggest that students felt that the instructional methods facilitated the achievement of the ILOs, and that the course was useful.

In addition to the qualitative comments, the above notion is also supported by quantitative data. Learning Experience Questionnaires (LEQs) were administered to students anonymously at the end of each course (SG8001, Hong Kong, and SG8001M, Suzhou) to elicit feedback about their experiences with this learning approach. The team also administered an additional survey (Teaching Feedback Questionnaire) to gather feedback on the teaching strategies used. Fifty-three students (of 79 enrolled) in the required course in Hong Kong and 23 students (of 42 enrolled) at the Suzhou Campus completed the LEQ surveys. Twenty students (of 42 enrolled in the Suzhou Campus) completed the TFQ survey. The results of the study, therefore, are based on 96 responses, which represent more than 60 percent of the total students enrolled in both courses.

The LEQ survey is divided into two parts. The first involves students' feedback in learning in the course (Table 4); the second involves students' own reflections. For part 1, the mean of each question was larger than 5.0 (with 7.0 as the maximum), indicating that students were quite satisfied with the course. Among the 11 questions asked, Q1 and Q2 received the highest score.

Table 4: LEQ Part I results: Feedback on My Learning in the Course (N=25, Response Rate=31.65%)

	(Scale: 0: Strongly Disagree -> 7: Strongly Agree)	Mean	Standard Deviation
Q1	The intended learning outcomes (ILOs) of this course were clearly explained to me.	6.16	0.94
Q2	The teaching and learning activities (TLAs) have helped me to achieve the ILOs.	6.04	0.89
Q3	The readings, notes, problem sets and other learning resources were adequate for learning the subject matter.	5.52	0.96
Q4	The assessment tasks (ATs) allowed me to demonstrate my learning in this course.	5.60	1.26
Q5	The assessment criteria are clear to me.	5.64	1.04
Q6	With reference to the CityU nominal workload (i.e. a credit unit is earned by approximately 40 to 50 hours of student work), the workload for this course is:	5.04	1.17
Q7	The spread of assignments throughout the duration of the course (13 weeks) is appropriate.	5.48	1.29
Q8	I have gained a good knowledge of the subject matter.	5.72	1.37
Q9	I have learnt how to apply the knowledge, concepts and theories I learnt in this course.	5.48	1.08
Q10	I have become more self-directed to explore the subject further on my own.	5.72	1.21
Q11	Having considered your learning experience in this course, how would you rate the quality of this course? (0: Extremely Poor -> 7: Excellent)	5.52	1.05

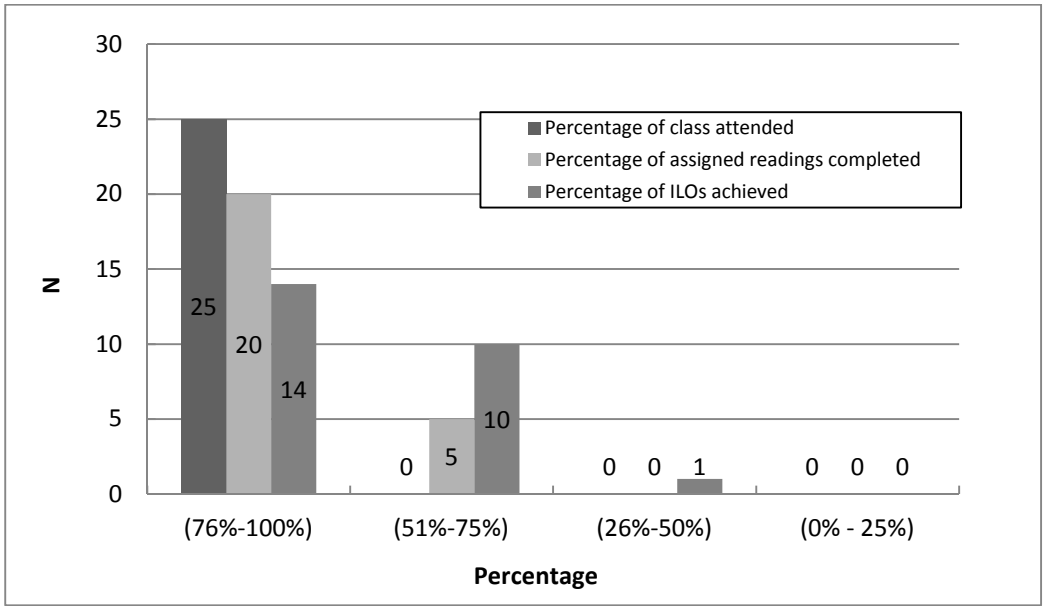

Figure 9a: LEQ Part 2 Results: Students' Self Reflection (N=25, Response Rate=31.65%)

The majority of students attended at least 75% of the class and completed at least 75% of the assigned readings (Figure 9a). This can be confirmed by the student feedback:

> *I am very lucky and it is important for me to have had this course. I have learned the theories of being a competent teacher and apply them to the teaching and learning activities, [and] particularly understood the learning theories to the preparation of teaching and learning activities and some presentation skills. I try to apply these theories into my own teaching duties. – An SG8001 student*

> *I think the major achievement I have made through this course is that I finally understood the logic connection between teaching goals, teaching activity design and assessment. – An SG8001 student*

However, the percentage of ILOs achieved was slightly lower: the majority of students achieved more than 50% of ILOs. A possible explanation is that most students were new to teaching, particularly in an English-medium instruction context:

> *The teaching presentation experience is really challenging for me, and the peer assessment exercise is quite new for most students. – An SG8001 student*

> *This is my first presentation in English. I try to use different ways to teach: I showed animations and pictures. But since I never used English to present, I had problems with my pronunciation and could not express exactly what I meant. – An SG8001 student*

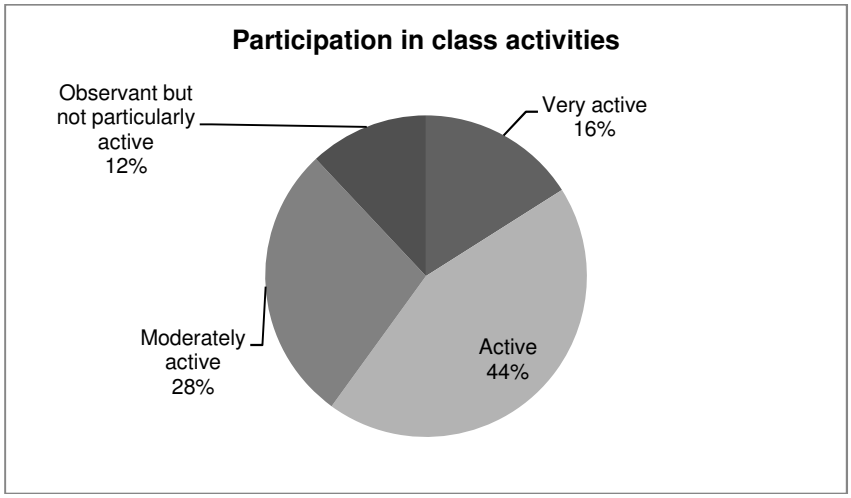

Figure 9b: LEQ Part 2 Results: Participation in Class Activities

Most of the students were active in the class activities (Figure 9b). Engagement in class activities was driven by the teachers as role models, and by relevant assessment tasks.

> *All the teachers are very excellent in motivating my interest; they are also good examples for me in exploring how to become a good teacher and learner. I am also impressed by the content about the education background in HK. Besides, the various types of assessment are very effective in helping me learn how I did in the whole semester. – An SG8001 student*

For example, the session on presentation skills was taught by a teacher with excellent presentation and communication skills. Students commented:

> *The instructor is very enthusiastic and obviously he loves what he teaches. He managed to have our full attention with his dynamic and energetic way of teaching. – An SG8001 student*

> *David talked about the BOX theory in his lecture. I think this one is very useful. So in my presentation, I used this way, I divided the content I wanted to deliver into four parts and planed some discussions, definitions and examples for each part. – An SG8001 student*

> *TA work (after taking this course): One amazing thing was: the teacher who is in charge of the lab thought that I really did a good job and she let me lead two tutorials. She told me that my presentation and the material are very well prepared. – An SG8001 student*

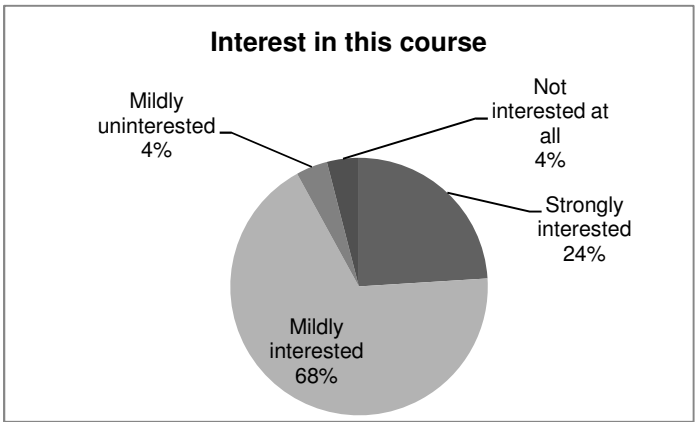

Figure 9c: LEQ Part 2 Results: Interest in the Course

The majority of students were positively interested in this course, as shown in Figure 9c. This may be due to the usefulness of course materials and team teaching by staff with different expertise. One student commented:

> *The teaching team prepared a lot of materials for this course. Moreover, there are different teachers with different teaching styles, which can set good examples for us. – An SG8001 student*

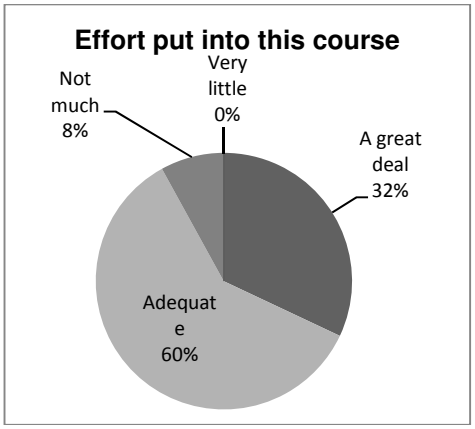

Figure 9d: LEQ Part 2 Results: Effort Put into the Course

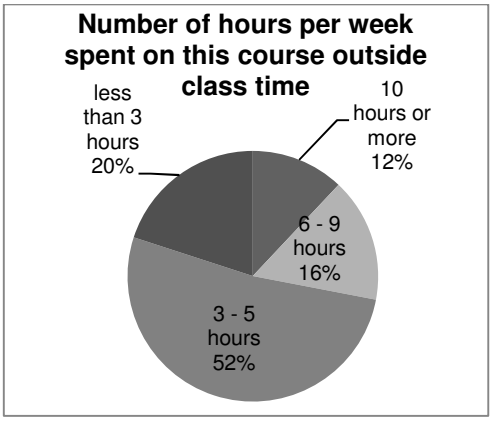

Figure 9e: LEQ Part 2 Results: Number of Hours Spent on Course Outside Class Time

The majority of the students put adequate effort into the course and spent on average three to five hours on the course outside class time, as reflected in Figures 10d and 10e respectively.

Students' ratings suggest that they felt the course was particularly useful and well-designed, and boosted their confidence level and self-efficacy (achievement of ILOs). The structured blended approach adopted for this course was well received, and the way the teaching team designed the class activities and the assessment parts was strongly appreciated. Students also felt that the content (teaching materials, self-study materials posted on Blackboard, topics posted in the discussion board, handouts, etc.) was carefully selected, appropriate, challenging and valuable.

Table 5: Teaching Feedback Questionnaire Results

	Item	Mean	Standard Deviation
1	This instructor prepared an excellent set of reading materials.	6.55	**0.69**
2	This instructor added to the discussion sessions and helped raise and answer questions.	6.55	**0.6**
3	This instructor organised class time effectively.	6.55	**0.83**
4	This instructor stimulated my interest in the subject.	6.2	**1.11**
5	This instructor's speech/language was easy to understand.	6.6	**0.5**
6	This instructor was responsive to student problems.	6.85	**0.37**
7	This instructor was approachable and helpful.	6.65	**0.49**
8	This instructor was enthusiastic about teaching.	6.8	**0.41**
9	This instructor encouraged me to ask questions.	6.4	**0.75**
10	This instructor encouraged me to think critically.	6.2	**0.7**
11	This instructor encouraged me to develop my own ideas.	6.35	**0.81**
12	This instructor aroused my interest to learn on my own.	6.35	**0.88**
13	**Having considered aspects specified above, how would you rate the teaching overall?**	**6.5**	**0.61**

The mean for each question in Table 5 was very high (>6). The three items with highest scores were responsiveness, enthusiasm for teaching, and helpfulness. This can be confirmed with student feedback:

> ***Enthusiasm:*** *Your classes are interesting and I am affected by your enthusiasm which is a kind of stimulus for me to be a teacher in the future as excellent as you are.*
>
> ***Helpfulness and responsiveness:*** *The class is useful, and the teacher is energetic and ready to help.*
>
> ***Enthusiasm:*** *Thank you very much for giving us so many interesting lectures and engaging us in this course.*
>
> ***Enthusiasm:*** *I remember you asked about three characteristics of a teacher we want to be. Actually I found three: professional, passionate and popular. I think you get all these three.*
>
> ***Responsiveness:*** *You really inspired me a lot about teaching.*
>
> ***Responsiveness:*** *I have learnt how to apply the knowledge, concepts and theories I learnt in this course.*

6. Conclusion

Increasing pressure on universities in terms of both teaching and research has augmented the use of postgraduate students as teaching assistants. In the past, many of these students have been launched into a teaching role with little or no formal preparation or instruction in how to go about it. While it's been asserted that "Every PhD can teach" (McGee; Caplow, 1965), in 2011 this remains a contestable statement. The course described in this study begins to address this important issue. It also attempts to answer the three critical questions posed at the beginning of the paper by ensuring that the content has both relevance and immediacy, the use of e-technologies is driven by pedagogy and not vice-versa, and the postgraduate students are satisfied that the training they receive through this course is relevant and engaging and will have long-term impact (Persellin & Goodrick 2010), preparing them to be more effective teachers or learning facilitators themselves.

The increased use of blended learning, and pressure upon universities from both employers and funding bodies to develop faculty and postgraduate students with lifelong learning skills (Sorcinelli 2007), has brought about a shift in emphasis from a concentration on subject-specialist knowledge towards the additional development of more generic skills that prepare students for a diverse and rapidly changing working environment. Blended learning technologies (Franklin & van Harmelen 2007), collaborative practice (Reder 2007) and active learning strategies, as well as an outcomes-based approach, are now extensively used throughout the world to enable and foster participation, reflection and collaboration (Prieto & Altmaier 1994), and are therefore incorporated into this innovative course for first-time graduate teaching assistants.

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