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Common Modules for Architecture, Building and Engineering Students in NUS

Taskforce on Common SDE/ENG Modules*

School of Design & Environment and Faculty of Engineering



Photo: OUB

A major review of the construction industry in Singapore was undertaken over the past 1½ years which involved representatives from major industry players, namely the developers, architects, engineers, and other professional consultants, contractors, as well as regulatory bodies and consumers. The Construction 21 (C21) study was initiated in May 1998 to address certain problems faced by the industry, in particular, the heavy reliance on unskilled labour and the low level of productivity. It became apparent that the underlying problem was systemic, and hence an integrated approach to address issues across the construction value chain was necessary.

After more than a year of extensive study and deliberations, the final C21 report was launched in October last year. It articulated a vision of the construction industry in the 21st Century: 'To be a world-class builder in a knowledge age'. It aims to transform the industry from a Dirty, Demanding and Dangerous (3 D's) to a Professional, Productive and Progressive (3 P's) industry.

To realise this vision, 6 strategic thrusts and 39 recommendations have been proposed. One strategic thrust is to enhance professionalism

in the industry. Specific recommendations under this thrust include:

1. enhancing the curriculum for construction-related fields by including soft skills (e.g. management) to make them sufficiently broad-based; and
2. introducing common modules for engineering and architecture students for foundation and multi-disciplinary skills development.

The objective for mounting common modules is to expose students to related fields so that when they eventually enter the construction industry, they will have, among other things, more balanced and broad-based skills. It will also help to promote camaraderie among architecture, building and engineering (ABE) students who will be working together in the future for closer integration and better understanding of the construction process.

Consequently to achieve the desirable interaction mooted by the Construction 21 Steering Committee, a Taskforce* comprising representatives from the School of Design & Environment (SDE) as well as the Faculty of Engineering (ENG) was formed in January 2000.

* The members of this Taskforce are: Assoc Prof Low Sui Pheng (Co-Chair, SDE), Assoc Prof Somsak Swaddiwudhipong (Co-Chair, ENG), Assoc Prof Chan Weng Tat (ENG), Dr Florence Ling (SDE), Assoc Prof M.A. Mansur (ENG) and Assoc Prof Teh Kem Jin (SDE).

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Common Modules...

The Taskforce examined the various ABE courses in NUS to identify modules possibly common in terms of curriculum and structure that ABE students can take jointly together. The Taskforce also considered logistical issues such as teaching staff, equipment and laboratory support, student numbers, as well as timetable coordination. In its deliberations, the Taskforce recognised that the department(s) with the relevant core competence should be responsible for mounting classes of common modules.

In addition, the Taskforce acknowledged that student interaction in the common modules should not be limited only to attending mutual lectures where interaction is only minimal. A conscious attempt should be made to mix ABE students in small tutorial classes where student interaction and camaraderie can be promoted more rigorously. Assoc Prof Lam Khee Poh, the Acting Dean of the then Faculty of Architecture, Building & Real Estate (now renamed SDE), commented that this deliberate mode of teaching and learning “would help to achieve integration and synergy between the professionals, and promote a common understanding and aspiration for a better built environment. This setting would also enable ABE students to cross-fertilise ideas as they learn about the arts, design, engineering, and science.”

After distinguishing the relevant modules and finalising the operational details of mounting common modules for students in FABRE and ENG, the Taskforce has sent its recommendations to senior management for implementation in the 2000/01 academic year. Apart from organising common modules, the Taskforce has also recommended that multi-disciplinary design projects, for ABE students to work together as a team, should be introduced so that multi-disciplinary skills development can further take place within the professions. Students should ideally undertake this in the higher years when they have completed their basic training in their respective professional disciplines. It would also be desirable to mount such mutual assignments using electronic media in the form of digital design projects. By working together, ABE students would have the opportunity to observe and evaluate how their counterparts from closely allied disciplines tackle problems that are of common interest to them.

The introduction of common modules and integrated design projects for ABE students is highly strategic. Not only will it facilitate interaction between ABE students and further strengthen the core competence of departments in the two faculties, it will also better prepare our ABE graduates for the work environment of the 21st century. ■

In March this year, we emailed all NUS students and invited them to submit their views on ‘Bad Teaching’. We received numerous replies, some of which are published in this issue of CDTLink, with the hope that these comments will make a difference to teaching and learning at NUS. Please read the next issue of CDTLink, to be published in November 2000, for more student feedback on this topic.

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Photo: OUR

Students on ‘Bad Teaching’ (I)

I took a BizAd module the previous semester in which we were required to produce an essay for which I received a C for my efforts. Nearer the exams, I found out from my class tutor that the course coordinator had marked me down BY 2 GRADES because I did not follow his classification on two aspects of an area on the external environment. The coordinator said in a lecture that we had to follow his classifications DESPITE admitting that the others were correct as well, if not more so, as he was the marker and had the right to determine what goes. My tutor went through my answer with me and narrowed the reason down to this. He also commented that my reasons for writing what I did were right and he could not fault them. But he advised me to avoid seeking redress since it would be a waste of time. Such teaching and grading habits are academically irresponsible, foolish and highly detrimental.

—Yuen Wei Loon, Law, Year 4

The lecturer should try not to be over-defensive simply because he got some lousy comments from the last batch of students that he taught. After all, the majority of the students

doing the same module this semester are not the same people as the previous batch and have not ‘complained’ against his methods of teaching. Especially in subjects where there are diverse points of view and a lot of discussion is required for learning to take place, do not get personal and use statements like, “You can waste your life if you want, but don’t waste mine,” which are very hostile and hinder learning.

—Anonymous, Year 1

The lecturer should place himself/herself in the students’ shoes and realise that we are learning certain topics for the first time; therefore, he should learn to communicate with students more effectively.

—Na Kok Peng, Engineering, Year 3



Photo: OUR

I am studying Information & Communications Management. My computing module tutor is a mainland Chinese. Her command of English is poor; thus, she has great difficulty teaching and explaining things to the class. She is also disorganised and cannot properly allocate the 5% that tutorial participation takes up in our final paper. I think this is detrimental to our performance in the course.

—Anonymous, Arts & Social Sciences, Year 1

In the Departments of Mathematics and Economics, the problem of bad teachers usually boils down to the poor English Language proficiency of expatriate lecturers from other Asian countries. While they may be very knowledgeable, their poor command of English results in their inability to bring their message across efficiently in their lectures, transparencies, and notes. Consequently, students often have problems understanding these lecturers and find difficulties in their learning.

Unfortunately, some lecturers even use Chinese to communicate with their students. A friend of mine actually got back her essay with comments in Chinese written on it by the lecturer! The lecturer also often resorted to using Mandarin to explain things in tutorials.

While I understand the need for foreign lecturers in NUS, can more be done to ensure that our lecturers have a certain level of English language proficiency, since the medium of instruction in NUS is English? NIE requires all its entrants to take an English proficiency test. Why can't NUS do the same, incorporating a written and spoken test? NUS students are required to pass a QET, otherwise they will be required to take English Communication Skills modules. Why can't the same apply to our lecturers? If all these are done, both students and lecturers will benefit and the standard of teaching in NUS can also be kept at a high level.

—Ong Chin Meng, Science, Year 2

1. The knowledge and experience of lecturers in their respective teaching subjects is admired. However, they must remember that when a student contradicts, evaluates, or questions a lecturer's opinion, they do so out of enthusiasm and interest in the subject. Younger lecturers, although at times more energetic and passionate about their subject matter, also tend to be more defensive in their retorts, which could then squash a student's enthusiasm in the subject.
2. A lecturer's rapport with his students can affect the students' interest in the subject, which in turn can affect their performance. To facilitate approachability, lecturers could initiate the relationship first, perhaps reaching out especially to the less extroverted students easily via email. For example, announcements to changes in timetables could be mass mailed to all the students; or on an individual basis, lecturers could encourage, praise, or even admonish one or two students a week. Quickly, an approachable reputation of the lecturer will spread among students.

—Adrian Phua, Arts & Social Sciences, Year 3

1. Reading directly off the OHP screen/transparency: The lecturer doesn't create any rapport with his students at all, turning them off. We can read the contents of the transparency ourselves, thank you. Look at us, and hold our attention.

2. Bad English: No one can understand what the lecturer is saying at all, which is even worse than reading off the OHP screen.
3. Unstructured lecturing: This just baffles the students because the lecturer is going through different points all at the same time.
4. Going through things that are NOT covered in the textbook, and then NOT allowing students TIME to copy down the information from the transparency.
5. Not establishing lecturer's expectations of students regarding essays: Different lecturers have different exacting standards that they do not reveal BEFORE submission of essays. For example, some lecturers do not like students to define their terms and students are penalised for it, whereas some expect definitions and penalise students who do NOT include these. This is very frustrating for students.
6. There ARE tutors who have a higher-than-thou attitude and do not think much of students' views during tutorials. They shoot down any ideas that are not in accordance with theirs. This merely causes students NOT to speak up.

—Anonymous, Arts & Social Sciences, Year 4

A certain lecturer has the habit of holding the mike and not speaking into it. Moreover, he speaks quite softly, so those at the back are unable to hear him. His notes, in point form, are too brief; and the points do not really link—so we have difficulty in understanding what the notes are about. His written transparencies are also very illegible, making it hard to read what he has written. It appears worse in his webpage when the transparencies are scanned in.

—Anonymous, Science, Year 1

My friends and I went to a lecturer to clarify the problems we had in his subject. To our surprise, he was not willing to help! It was not that we were impolite. He just put on an unfriendly face, rephrased the question and threw it back at us! What's this? If we knew the answer, we wouldn't have gone to him! If the lecturer continues to behave in this manner, students will suffer as they will have to turn to other lecturers or tutors for help.

—Anonymous, Science, Year 2

1. A lecturer turning up late and therefore letting us go late.
2. A tutor talking more than half the time, so that the students do not get to contribute, then blaming the students for not participating.

—Anonymous, Arts & Social Sciences

2 major components in good teaching are: (1) genuine interest to help students learn, and (2) efficient tools employed. No matter how much effort he puts in (2), if a teacher is not really interested in imparting knowledge (especially true in universities where it is widely rumoured that many lecturers are more concerned about their publications than teaching), it is not unfair to say that bad teaching will be the result.

—Anonymous, Mechanical Engineering, Year 4

Lecturers who flash lengthy transparencies and read off their prepared notes wholesale do not allow students to grasp

Continued on next page...

Students on 'Bad Teaching' (1)

concepts effectively as the students are busily copying away. It is also hard to concentrate when the lecturer drones on, disregarding the students' signals of restlessness.

—Anonymous, Arts & Social Sciences, Year 2

Monologues in which the lecturer just speaks and looks at the OHP: One lecturer from last semester did not vary his tone of voice or attempt to engage the lecture group. Approximately 15% of the group was asleep at any one time.

—Jeremy Ang Kay Yong, Science, Year 1

Some bad teaching habits in descending order of severity:

1. Poor articulation/pronunciation and low audibility (probably due to placing mike too far from mouth) that give the student the impression of overall low enthusiasm in teaching.
2. Disorganised lecture notes, for example:
 - Poor layout of lecture notes (e.g. chapter headings beginning at the middle of a page, headings not eye-catching, important concepts/formulae not highlighted).
 - Lecture notes like rough paper (due to large amount of scribbling here and there, cancellations, arrows pointing here and there).
 - Handwriting too small to be legible (especially when pencil-marks turn out too light after photocopying).
3. Explaining complicated concepts verbally especially when speech problem is as severe as mentioned above. Better illustration can be achieved with the help of diagrams, charts, etc.
4. An overloaded syllabus can cause a lecturer to rush through the copious amount of lecture notes and possibly a fair bit of irrelevant material. Clarity is compromised at the expense of quantity.

—Yeo Theng Hee, Electrical Engineering, Year 3

With so many students subscribing to pagers and mobile phones nowadays, it is inevitable that one will go off during lectures or tutorials. As the noise can distract a class, lecturers should occasionally make it clear that these devices should be switched off or set to a silent mode, thereby implying that failure to do so is wrong.

—Anonymous, Business Administration, Year 1

Bad teaching is said to have occurred if, as a result, students ask too many questions or if students do not ask questions at all. This is bad, as students will finish their course either knowing little and having to think too much, or knowing much and having to think too little. Science will not advance if either case is true.

—Lim Yeow Heng, Science, Year 4

Lecturers always expect a lot from students before they even allow the students to ask a question!

—Jianjun, Business Administration, Year 3

1. The use of inappropriate colours or font sizes and untidy handwriting on slides/transparencies leave the students sitting at the back of the lecture theatre straining hard to read.

2. Lectures that do not flow: This is caused by inexplicable pauses at inappropriate places.
3. Comments like, "This slide is wrong," leaves much to be desired about the lecturer's effort in presenting the lecture. Typo errors are not the issue here: whole slides are discarded. Should the mistake not have been spotted earlier?
4. Copying for copying's sake: While copying solutions for examples serves to give the students 'hands-on', there is little point in copying definitions or whole paragraphs of text.

—Anonymous, Mechanical Engineering, Year 2

Lecturers who:

1. talk without emphasis at all.
2. talk as if reciting text to themselves.
3. do not have good eye contact with students.
4. fail to highlight the main theme/important point of the lecture.
5. talk non-stop without breaks, e.g. through a 2-hour session.
6. fail to be concise and give a good summary/overview of the subject.

—Anonymous, Dentistry, Year 1

Lecturers should give detailed lecture notes so that students can follow the lecture, instead of losing focus as a result of having to ponder over a specific point during the lecture due to inadequate lecture notes. Tutors should give detailed solutions to tutorials so that more time can be spent qualitatively on further readings about the modules. If students are left to derive solutions ourselves, how on earth are we supposed to know we are on the right track? I understand you all want us students to learn independently, but if we are not allowed to grasp the basic concepts correctly, we will not be able to meet the objective of learning.

—Anonymous, Science, Year 1

Some lecturers actually read out from transparencies placed on the OHP during lectures. With the encouragement of notepad usage amongst NUS undergraduates, a bored student could simply switch off from his/her lesson and access another learning website on the Internet on his/her notebook or palmtop. If the lecturers do not become accessible facilitators of information, retrieving, and selectively sharing coherent and relevant information from all sources, books, and the Internet, then the way current lecturers teach will only make them dinosaurs in the new Information Age.

—Anonymous, Arts & Social Sciences, Year 2 ■



Photo: OUR



Photo: Eric Chung

Face-saving Devices in Peer Reviews & Their Implications

Dr Yuan Yi

Centre for English Language Communication

Criticisms and suggestions are face-threatening acts (FTAs) (Brown & Levinson, 1978) as they imply that the object of criticisms and suggestions is either undesirable or needs improvement. Since both speech acts are commonly found in student and staff peer reviews, we should examine how we can make them less face-threatening so that they are accepted with more ease. The present paper: (a) looks at the way criticisms and suggestions are mitigated in ESL students' written peer reviews, (b) discusses the function of face-saving devices, and (c) considers the implications of the findings for our teaching. For data, I have used peer reviews written by 40 Science Faculty freshmen enrolled in the NUS English Skills course of ES1301 in 1999. Altogether, 61 criticisms and 51 suggestions were identified from the 40 reviews.

FACE-SAVING DEVICES

About half of the criticisms and suggestions were given with such face-saving devices as hedges, point-of-view distancing expressions, understatement markers, diminutives, and compliments.

Hedges are “markers of possibility/probability and uncertainty” (Biber, 1988; cited from Hinkel, 1997: 372) which act to reduce “the imposition of beliefs ‘which are costly’ to the reader/hearer” (Leech, 1983). Hedges found in the student reviews include ‘seems’, ‘maybe’, ‘perhaps’, the use of modals (e.g. ‘can’), past tense of verbs (e.g. ‘could have’), and questions.

Example (1): *Linking words—could have made more use of proper linking words.*

Point-of-View Distancing Expressions include ‘I find’, ‘I think’, and ‘I personally think’. They render a criticism or suggestion less authoritative. By limiting the scope of the claim of knowledge, the writer is making his suggestion a ‘personal’ opinion that may NOT necessarily be shared by everybody.

Example (2): *I personally think that the conclusion has no relation to the topic.*

Understatement Markers such as ‘quite’ lower the assertive force of a statement and modify the content of a proposition (Hübler, 1983).

Example (3): *Last paragraph is quite ambiguous...*

In contrast, the use of **diminutives**, such as ‘a few’, ‘little’,

‘a little bit’, and ‘a bit’, reduces the negative force of a criticism or suggestion.

Example (4): *Writer’s language displayed a little discrimination.*

Using **compliments** is the most common way by which the students downgrade their criticisms and suggestions. Such compliments either immediately precede or follow a criticism or suggestion, or they may appear at the beginning or end of a review.

Example (5): *The story is very fluent. It does have a topic sentence hidden somewhere in the paragraph. And there are quite a number of evidences to support the topic sentence. But I spotted one grammar mistake... Well, at least this is a good piece of work.*

Apart from the mitigated criticisms and suggestions exemplified, about half of the 61 criticisms and 51 suggestions were given directly without any hedging.

Example (6): *The introduction is irrelevant, not related to the title.* (Criticism)

Example (7): *Pay more attention to subj-verb agreement and verb forms.* (Suggestion)

According to Brown and Levinson (1978: 73), such bald-on-record criticisms and suggestions are normally not used unless the writer’s want to be efficient overrides his want to maintain the addressee’s face. Previous research (e.g. Johnson & Roen, 1992) reports no such use of direct FTAs by native English speakers in their peer reviews; instead, hedges are used extensively in Anglo-American academic writing. The fact that about half of the criticisms and suggestions in the data belong to the FTA category indicates that the second language speakers of English in this study do show some unique characteristics. This directness may be related to the Singapore culture, where people tend to make more direct requests than native British English speakers (Brown, 1992).

FUNCTIONS OF FACE-SAVING DEVICES

The face-saving devices used in the reviews most obviously mitigate the face-threatening force of the criticisms and suggestions. Expressions such as ‘I think’, and ‘I find’ put the reviewer in a less powerful position than he otherwise would be by contracting the scope of his claim of knowledge. In contrast, hedges such as ‘if you wish’ and ‘maybe you could’ offer the addressee the option to decide whether or not to carry out the action suggested, thus satisfying the addressee’s desire to have freedom of action and not feel imposed upon.

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Open-book Examinations

Typically, open-book examinations (OBEs) are those in which students can bring texts into a test for consultation purposes. The aim of allowing students access to information they might otherwise feel they must memorise is to enable them to concentrate more on analysis, problem solving and evaluation.

When students believe memorising large amounts of facts is necessary, they may feel compelled to simply recount all they can remember in their examination scripts without heed to relevance, organisation, and application. Assessors may tend to reward those who can recall more data. A heavy emphasis on memorisation has been widely criticised as shallow by those who advocate a deeper approach to learning, e.g. the search for meaning inherent in learning tasks¹.

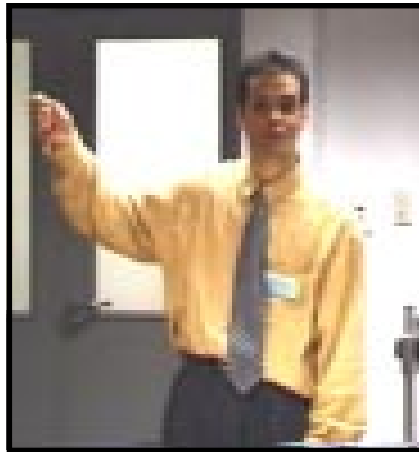
It has been shown² that OBEs can facilitate deeper learning by helping students to:

- use new knowledge creatively, i.e. they think more profoundly and critically about problems and develop their own answers instead of retrieving answers from established texts;
- master course content by practising study skills;
- self-evaluate their performance and identify gaps in their learning;
- reduce examination stress;
- self-regulate their approach to learning;
- increase achievement levels.

But studies also show that OBEs have not had any significant effect upon student learning³. Thus for OBEs to deepen students' abilities to learn, several issues must be carefully considered.

TASKS—WHAT TO ASSESS?

Setting open-book test questions is generally difficult. Asking students to list some facts from a text becomes nonsensical if they can refer to the text, unless the ability being assessed by the



Video Photo: Frederick Chew

Mr Glen O'Grady Senior Educational Development Specialist CDTL

task is the capacity to find specific data from a text. In 'higher' education, the better questions ask students to focus on relatively unique problems requiring responses that are less descriptive, more analytical and evaluative, and that involve synthesising a wide range of information.

ALIGNING ASSESSMENT WITH TEACHING AND LEARNING

Good open-book questions require instructional methods that demand students to actively construct their own understanding of knowledge. Setting only recall questions implies that the teaching and learning process simply entails the transmission of facts. Allowing students time during the semester to explore unique problems in a manner that facilitates analysis, evaluation, and synthesis will help them develop the skills needed to handle OBE tasks. Unsurprisingly, students exhibit reluctance towards OBEs⁴. A change in how students are assessed must be consummate with a change in how teachers teach to ensure that there is no disjunction between how students are taught and how they are assessed.

MARKING STANDARDS

Standards in higher education are premised upon making valid and reliable judgements about students' work that are consistent between individuals and across institutions. This belief has

encouraged a preoccupation with maximising reliability, sometimes at the expense of validity, e.g. lecturers may grade according to how many details a student recalls from set texts rather than how well the student represents each element. The former is easier to grade because there is less disagreement between markers. A lecturer's willingness to be flexible when judging students' higher order thinking skills and defend these appraisals in front of students, parents, and peers demands more time, greater effort and courage from the lecturer.

CONDITIONS FOR THE TEST

Like other forms of assessment, OBEs are practised differently by different people. Consider the following when planning an OBE:

- *Should there be a fixed time for the examination?*

An examination's time limit should depend on the tasks that students must complete. While some flexibility is appropriate, not all students respond well to speed tests; so students should be told how much time is reasonable to finish the task. One study⁵ on OBEs reported that students, who were given unlimited time, took up to 8 hours when the task needed only 2 hours to complete. Another factor to consider is how the lecturers expect students to use the texts that they bring. If students are required to use the texts extensively, e.g. search through financial data for trends, then a suitable amount of time has to be allocated to the task.

- *Should students be able to bring any text/notes into the examination?*

Obviously, this depends on what is being assessed. It may be vital that everyone has access to a certain text. Race⁶ suggests that there may be an equity problem in limiting students to bring in texts that are expensive and/or in limited supply. Whatever the case, students may need advice as to what might be appropriate and useful.

- *Should students be allowed to collaborate?*

In a traditional examination context, this perhaps seems outrageous. However, if the aim is to help students solve problems by giving them access to a wide variety of sources and peer discussion has been an important part of the learning process, consequently allowing students to consult their peers during examinations may be worthwhile. This naturally presents another set of issues that need to be investigated.

CONCLUSION

Although not a panacea for the challenges of assessing students, OBEs do prompt faculty to reflect upon the fundamental issues underpinning higher education. What tasks should be set to assess desired outcome? How does one teach students the skills needed to finish these tasks? How does one mark in a valid, reliable manner? Finally, how does one create a test so that students have maximum opportunity to demonstrate higher learning?

OBEs generally necessitate better questions than one usually sets in traditional invigilated examinations. As OBE questions requires skills beyond recalling facts, the instructional methods must demand that students become less passive recipients of information from texts and lecturers. OBEs that foster deeper learning entail more from lecturers when setting and marking the questions. Lecturers must carefully consider the impact of the assessment process on student learning, i.e. "If I allow students access to texts in the test, how are they likely to use them?"

Ultimately, OBEs can be useful as they encourage students to focus less on memorising and more upon higher order thinking skills by asking students to use the materials they bring into the examination in a manner that facilitates skills such as synthesis.

More controversially, OBEs can also facilitate better thinking by allowing students to bring any text they wish but with the intent to prove the point that the examination answers are not found in any single textbook, but rather, are best discovered from thinking carefully about what they have learnt in preparing for the test.

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Face-saving Devices...

...continued from page 5

These politeness strategies also reinforce the inter-relationship between the reviewer and the review receiver (Johnson, 1992). Since the informants of the present study are all peer classmates and therefore have equal claim to power and knowledge, they do not want to sound arrogant. The use of polite expressions brings the writer and reader on par and helps establish rapport and solidarity between them.

IMPLICATIONS

The suggestions and criticisms in our ESL writers' peer reviews are mitigated as those in native English speakers' reviews but to a less extent. Consequently, although our students may already be partially competent in using the English language, it is necessary to raise and reinforce their awareness of English pragmatics in our teaching. To avoid cross-cultural miscommunication, non-native English-speaking NUS teaching staff may also want to pay particular attention to English pragmatic norms since they are in constant contact with English speakers throughout the world. In terms of staff peer reviews, it is recommended that criticisms and suggestions be given with optimal face-saving devices so that they are more easily accepted, as

everybody has the face want of being appreciated by members of the same community.

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Millennial Milestone

The year 2000—the coming of a new millennium... What better time than now for NUS to take stock of its contribution to education in Singapore and to recognise and honour the commitment and efforts of its teaching community? So to achieve this aim, an idea was conceived at CDTL in July 1999 to compile a collection of essays written by, and interview transcripts of, current and former NUS teaching staff sharing their experiences and philosophies on teaching...

About 8 months later on 3 February 2000, CDTL proudly launched this very compilation, consisting of 88 essays



Photo: Verena Tay

Guests at 'Reflections on Teaching' launch with CDTL Director A/Prof Daphne Pan (in batik dress). From left: Dr Doreen Cheng (Singapore Polytechnic), Mrs Koh-Kwok Wan Yee (Temasek Polytechnic), and Mrs Margaret Chia (Nanyang Polytechnic).

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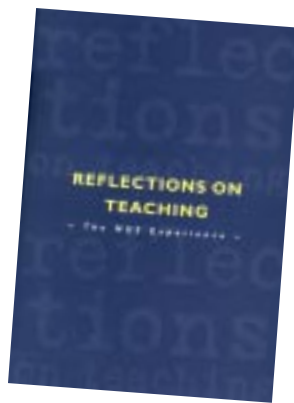
and 12 interviews, entitled *Reflections on Teaching: The NUS Experience*. Not only is *Reflections on Teaching* unique in content, it is also the first book published by CDTL other than its various newsletters and guidebooks.

In a simple ceremony at the Engineering Auditorium, the Guest-of-Honour, Deputy Vice-Chancellor Prof Chong Chi Tat described the book as “the collective wisdom of academic staff at NUS” that is “useful for newcomers and even old folks like me who will find a lot of good ideas” contained within. Prof Edwin Thumboo then kindly read his poem ‘Teach to Learn’ (published within the book), after which a tea reception was held for all invited guests.

Since its launch, *Reflections on Teaching* has been quite warmly received. Email bouquets sent to us included the following:

- “*Reflections on Teaching* is handsomely produced and a true masterpiece in editorial skills... Yes I enjoyed reading it and have found the various thoughts enlightening.”—Prof Sit Kwok Hung
- “Thanks for the wonderful volume, *Reflections on Teaching*. All the hard work has borne fruit... I must say that there were many interesting articles in the book. Some did hit the high and right notes.”—Prof Lee Soo Ying

Duly encouraged, we at CDTL endeavour to produce ever more worthy publications. ■



Pictures! Notes!

Visit CDTL nowadays and you will see two new features at our foyer!

If you have been wondering who makes up CDTL, take a look at the individual pictures of all directors, affiliates and support staff members that now hang by the wall next to the main door.

If you want brief notes/debates on key teaching and learning topics, we now have the solution. Adding to our list of publications, CDTL has launched two new series of one-page articles for quick reference. *Ideas on Teaching* is geared for teaching staff, while *Successful Learning* aims to make students more aware about the learning process. For free copies of either series, please drop by CDTL and choose what you need from the carousel, also located next to the main door. But visit us often, as both *Ideas on Teaching* and *Successful Learning* are available exclusively only at CDTL and a fresh batch of articles will be released periodically.

And if you wish to write for either series, please contact Christina Low at cdtlowc@nus.edu.sg or 874 4692 for guidelines—we will be pleased to receive contributions. ■

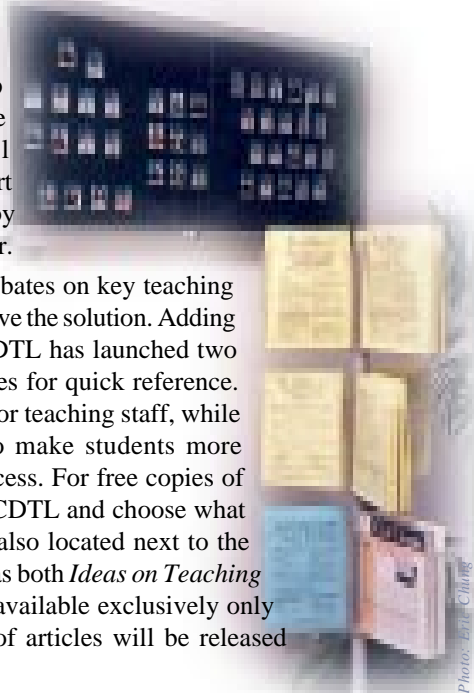


Photo: Ezzie Chong

Get Professional:

For several years now, CDTL has been organising induction programmes for new NUS teaching staff. However, 2 days seemed insufficient for in-depth exploration. It was felt that particularly for academics with little or no teaching experience, more extended guidance—with emphasis on practical, hands-on sessions—might be helpful. Thus the proposal for a Professional Development Programme (PDP) was drawn up and presented to the Vice-Chancellor, Deputy Vice-Chancellors, Deans, and Personnel Department for their approval and support. Launched on 10 July, the PDP is targeted at new teaching staff with less than 3 years of full-time teaching in higher education. Subject to space availability, more experienced staff may also elect to use this channel for developing themselves.

The PDP consists of 4 core and 2 elective modules. 3 core modules (on topics like *Introduction to Pedagogy: Paradigms and Theories that Shape Practice*, *Large-group Teaching*, and *Small-group Teaching*) are

CDTL's *First Symposium on Teaching and Learning in Higher Education* was, by many accounts, a success! Held on 6 and 7 July, the event was hailed by the Guest-of-Honour, Mr Peter Chen (Senior Minister of State for Education) as "timely" in addressing "the issues of teaching and learning in higher education and also on life-long learning which is becoming an important component of our education system" in the face of globalisation and rapid technological advances.

The two days (plus the pre-symposium workshops on 5 July conducted by Prof James Wilkinson and Prof David Kwan) were jam-packed with many opportunities for both participants and presenters to listen, interact and reflect on the issues and challenges surrounding the theme, *Facilitating Life-long Learning*. Prof Wilkinson, Director of the Derek Bok Center for Teaching and Learning, Harvard University, delivered the keynote lecture. Other invited lecturers were NUS's Deputy Vice-Chancellors Prof Chong Chi Tat and Prof Hang Chang Chieh, as well as Prof Kwan (McMaster University) and Prof Peter Jarvis (University of Surrey). Over 70 papers were presented by speakers from NUS, various Singaporean polytechnics and schools, Ministry of Education, and National Institute of Education, as well as Southeast Asia, Hong Kong, Australia, New Zealand and Canada. Squeezed in between were ample teas and lunches, and even a dinner on board the Kingfisher Cruise.

Says Mr Tan Oon Seng, Director of the Temesek Centre for Problem Based Learning, "This symposium reflects in many ways the

Photo: Eric Chung

educational innovations at NUS. I am impressed by the many initiatives such as problem-based learning approaches and the creative use of IT. The international presentations and participation added to the very valuable exchange of ideas and global networking. This is indeed a very stimulating and fruitful conference —thanks to the excellent effort and organisation by CDTL."

Adds A/Prof Benito Tan from the Dept of Biological Sciences: "The symposium was generally well organised into various themes and successfully implemented. The various ideas presented were also of practical value and not too theoretical about good teaching. As a participant, I enjoyed very much the two days and benefitted greatly from the many talks presented. I especially like, and learnt a lot about good teaching, from the 'Reflections on Teaching' session offered by the best NUS teaching awardees."

So for those who relished this occasion, and for those who unfortunately missed it, there is good news: Please look forward to CDTL's next TLHE Symposium! ■



Photos: Eric Chung

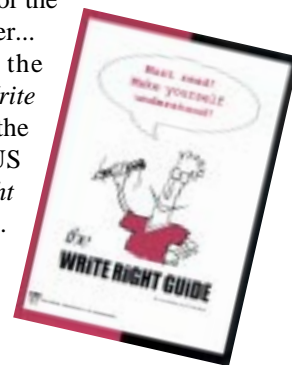
Training for New Teachers

conducted intensively over a week. The fourth core module, the Teaching Practicum, will span a semester and is closely integrated with the actual teaching done by the respective course participants. It seeks to encourage reflective practice and documentation (i.e. of personal teaching philosophy, aims/objectives of modules taught, practices/innovations in teaching, evaluation of the success/limitations of experimentation, etc.), thereby functioning as a useful learning tool and the possible basis of a teaching portfolio. The 2 elective modules, selected from the options offered each semester, include topics like *Assessment, Motivating Student Learning, Cooperative Learning, Use of IT in Teaching and Learning, Course Design, and Curriculum Development*. Each elective module will involve 4 fortnightly 2-hour sessions. All 6 modules should be completed within 1½ years. For more details about the PDP, please contact Ms Rita Roop Kaur at cdtrrk@nus.edu.sg or 874 8884. ■

read & write

Can't get enough of *CDTLink*? You'll be pleased to know that as of this year, *CDTLink* will be published tri-annually, instead of twice yearly, so as to foster even more dialogue on teaching and learning matters. So look out for the third issue of 2000 coming out in November...

Also, we are proud to announce the publication of the second edition of *The Write Right Guide: An NUS Writing Guide* for the 2000/01 freshmen. Although aimed at NUS students, the first edition of *The Write Right Guide* has been well received by staff too. As we have printed a few extra copies of the second edition for teaching staff, please email cdtsec@nus.edu.sg or call 874 3052 to obtain a copy if you so wish. ■



HELLOS, GOODBYE

There have been some changes amongst CDTL's support staff. On 13 January, we welcomed Research Assistant Ms Chandrama Acharya into our fold. On 3 July, Mr Glen O'Grady, formerly Section Head of Educational Staff Development at Ngee Ann Polytechnic, joined us as our new Senior Educational Development Specialist. Our other Research Assistant, Ms Elaine Chia, left CDTL on 13 July for postgraduate studies in Physiology. We would like to wish her all the best for her future. ■

TEACHING & LEARNING highlights

Faculty of Medicine



Professor Chia makes a point during the Cardiology Examination video

Clinical Teaching Videos for Medical Students

With the help of the Centre for Instructional Technology (CIT), CITA-Medicine has produced two clinical teaching videos on cardiology examination and clinical presentation skills for the medical curriculum. Scriptwriters, producers, directors, and cast included Professor Chia Boon Lock, Associate Professor Kuldip Singh, Dr Ivor Lim, and Dr Fong Yoke Fai, with excellent technical supervision by Mr Manuel Gamboa from CIT. The shooting was carried out on location at the National University Hospital and the footage was edited by CIT. The videos are aimed at the Clinical Skills Foundation Course for this year's M2 students and are presented online in MEDNet, the medical curriculum intranet (<http://www.mednet.nus.edu.sg/resources/resources.htm>). ■

Faculty of Engineering

The Application of IT in Teaching, Tutoring & Assessment

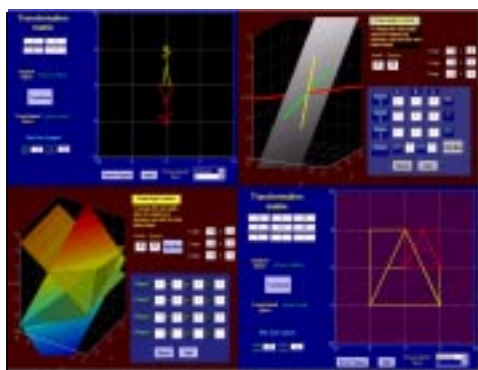
To enhance the teaching and learning experience for students and educators, the Engineering Faculty has sought to apply IT in teaching, tutoring, and assessment since 1997, such as providing shells for developing course notes on the World Wide Web, creating JAVA or other forms of web-based interactive programmes, and generating JAVA problems for use with a monitoring system. Presently, 8 different courseware have been developed and are online, covering modules such as Dynamics, Vibrations, Computer Aided Manufacturing, Thermodynamics, Calculus, Statistics, Algebra, Digital Systems, and two virtual experiments (Simple Beam and Angular Momentum). A key element in each courseware is the integration of different internet technologies to provide a comprehensive approach to teaching using the WWW.



Portal for EG1105

For instance, the Thermodynamics and Heat Transfer Portal for the EG1105 module provides students with a one-stop place for getting information. The portal has five sections: Main, Multimedia, Courseware, Contact and Search. The Main Section allows any course-related announcements to be easily disseminated and highlights any new updates to the site. Under Multimedia, streaming videos, animations, and online lectures in PDF or PowerPoint Broadcast are available for viewing to reinforce and aid in understanding. In the Courseware Section, students can do tutorial problems that can be diagnosed online through the *Flying Fish* v1.39 monitoring software; this section also features other useful courseware links on the WWW. The Contact function enables students to give feedback and ask questions about the course through email or discussion forum. The Search page facilitates students in their own research. ■

Faculty of Science



Toolkit for unravelling abstract concepts in Linear Algebra

A Vista to the Mathematical Landscape

Have you ever felt baffled by pages of mathematical symbols that purportedly describe how planes, lines and points are arranged in three-dimensional spaces or how the rate of expansion of a soap bubble is dependent on its current surface area? This feeling of helplessness used to be shared by many students learning Calculus and Linear Algebra. But not any more. In 1998, two teams from the staff of the Department of Mathematics revised the teaching of the two basic courses of Calculus and Linear Algebra by incorporating computer graphics and animation using the Derive and MATLAB software respectively. The computer animations help students visualise physical realisations of abstract mathematical results. Besides being treated to panoramic views of intersecting planes, roller coasters and other mathematical structures, students are also expected to explore the subject using the courseware developed for the course. The feedback from students

reveals that this confluence of visualisation and experimentation in examining difficult concepts has helped them acquire deeper understanding in, and greater enthusiasm for, the subject. Further refinements to the courses of Calculus and Linear Algebra as well as extending the use of computer technology to other mathematics courses are envisaged. ■

Faculty of Business Administration

Experiential Learning in the Faculty of Business Administration

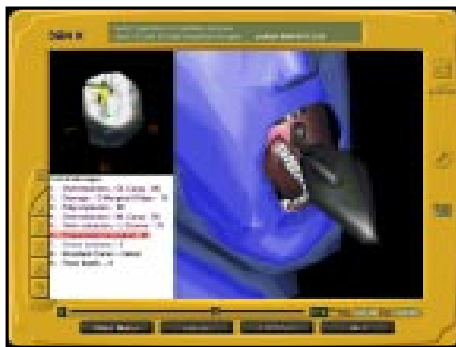
Two groups of BBA undergraduates (61 students) attended a first-ever 2-day residential workshop in Pulau Ubin as part of a third-year module on *Managerial Skills: Theory and Practice* in January this year. This course requires students to reflect deeply about how their attitudes, behaviours, and skills affect work performance. A classroom setting cannot achieve this. However, experiential exercises in an outdoor setting provide students with the opportunity to examine their own strengths and the depth of their interaction with others. Debriefing these activities promotes self-awareness for long-term learning. As part of their course assessment, students must ponder over their experience and highlight some areas for personal improvements in their individual reports.



Learning management skills through games

Says Noor Hanna bte Md Esa, a participant: “My coursemates and I recognised and were made aware of our strengths and weaknesses in participating in activities that test our understanding of skills in communicating, listening, and working in teams, amongst others. These skills, my coursemates and I agreed unanimously, cannot be grasped if learnt theoretically, by passive listening in class. Apart from the learning, we also had the opportunity to get to know one another better, and realised that this helps to facilitate our class discussions in lessons that followed after the camp.” ■

Faculty of Dentistry



Practice makes perfect: learning via virtual reality

Virtual Reality Simulation System for Pre-clinical Teaching in Dentistry

For the past year, pre-clinical students at the Faculty of Dentistry have been honing their operative (tooth cavity preparation) skills on the *DentSim®* system, the world’s first dental virtual reality simulation training system. Our dental school is one of the first worldwide to adopt this cutting-edge technology in pre-clinical teaching of operative skills. In *DentSim®*, the student performs cavity preparations on plastic teeth in a traditional phantom head simulator that is also modelled in a ‘virtual world’ in a PC workstation. Optic motion sensors track the static position of the head and teeth as well as the dynamic movement of the dental drill tip in real time. Thus as the plastic tooth is drilled, the virtual tooth undergoes the same process. To make the simulation more realistic, the presence and location of decay is also modelled in the virtual tooth.

In the traditional method of instruction, the student would perform the procedure to the limit of his self-assessment capabilities and knowledge base and then consult the human instructor for guidance or grading. By providing real time feedback to the student, *DentSim®* instead provides an immediate, interactive training loop of instruction, guidance, correction, and evaluation of psycho-motor skills through the personal computer. Automatically stored in the system as a three-dimensional ‘movie’, the entire procedure can be replayed and reviewed by the human instructor to highlight procedural errors to the student at any time. The student can also practise his/her skills independently, outside of traditional laboratory hours, thus escaping the traditional constraints of time and space. Storage of practice and test sessions allows full error tracking and a ‘training history’ of each student. Students have likened the system to a computer arcade game in which they are challenged to beat the machine and achieve higher scores in the quest for the perfect cavity preparation. ■

School of Design & Environment

Houses for Poets

The final project for Level 1 students at the Department of Architecture, entitled *P4: Habitat*, was an important design exercise that challenges students to express their conceptual, interpretive and architectural skills learnt in two semesters. A group of 17 students interpreted the works of 17 local poets and then designed dwellings for the selected poets. The project lasted five weeks and some time prior to the exercise was spent measuring and understanding a suitable site in Penang that could possibly be used to construct these dwellings. The anthologies were a means for students to learn and understand the historical, geographical, social and cultural contexts that shaped Singapore and the poetry, yet allowed design interpretation and architectural exploration as well as development for each scheme. As the project crossed over into the literary discipline, some students were able to communicate with poets face-to-face or by email while developing their schemes. Many poets who subsequently visited the design studio and examined these houses were impressed with the final design interpretations and realisations. ■



A poet's habitat

Continued on page 13...

Did YOU Know ...

Over the past year, CDTL has been busy conducting several surveys. For your information, below are selected key data extracted from two of these surveys. For detailed information about either survey, please contact CDTL at cdtsec@nus.edu.sg or 874 3052.

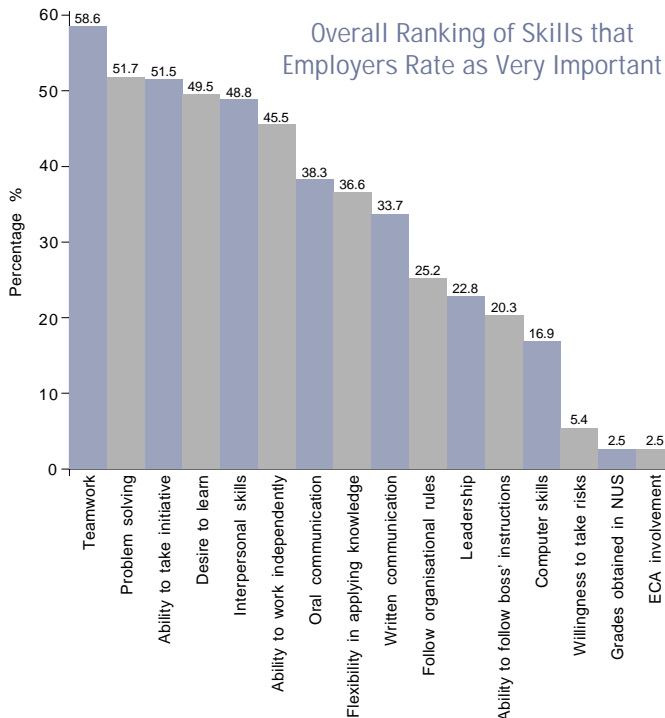
SURVEY ON SKILLS THAT EMPLOYERS DESIRE IN THEIR GRADUATE EMPLOYEES

Duration of survey: September-December 1999

Total number of questionnaires sent out: 1000

Total number of responses: 201

(90 foreign private firms, 32 government/statutory board organisations, 52 local private organisations, 27 private firms of mixed local and foreign ownership)



**85% of employers are happy with our graduates.
15% of employers are unhappy with our graduates.**

Overall Ranking of Shortcomings Mentioned by Unhappy Employers

1. Lacking in initiative
2. Poor attitude/lacking in humility
3. Poor interpersonal skills
4. Lack of practical knowledge (i.e. not street smart)
5. Materialistic
6. Lacking in problem-solving skills
7. Lacking in flexibility/creativity/innovation
8. Inability to work independently
9. Unrealistic expectations
10. Lacking in job commitment

SURVEY ON LEVEL OF UTILISATION OF IT TOOLS BY NUS ACADEMIC STAFF

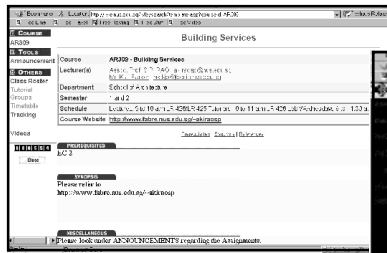
Duration of survey: September-November 1999

Number of responses from NUS teaching staff: 159
(or 10.8% of NUS teaching staff)

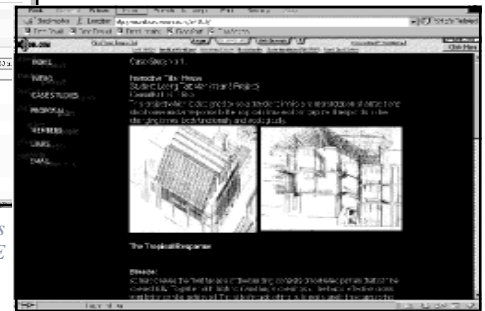
- 78% of teaching staff receive fewer than 5 emails/day during a typical semester week. But more emails from students are received when assignment deadlines and examinations draw near.
- 94% of teaching staff send fewer than 10 emails/day to their students during a typical semester week.
- 30% of teaching staff have accessed an NUS online discussion forum.
- 10% of teaching staff have accessed an NUS online chat.
- 52% of teaching staff have accessed an NUS online bulletin board.
- 69% of teaching staff have set up a course website or personal webpage on an NUS server. 36% of teaching staff do not update information on their webpages.
- 71% of teaching staff indicate that using email to communicate with students will improve the teaching and learning process in their courses.
- 43% of teaching staff think that participating in discussion forums will improve the teaching and learning process in their courses.
- 35% of teaching staff think that participating in online chats will improve the teaching and learning process in their courses.
- 78% of teaching staff think that having a course website will improve the teaching and learning process in their courses.
- 41% of teaching staff think that using online bulletin boards will improve the teaching and learning process in their courses; 37% are uncertain.
- 35% of teaching staff think that using web conferencing will improve the teaching and learning process in their courses; 36% are uncertain.
- 40% of teaching staff think that the on-demand provision of online lecture presentations will improve the teaching and learning process in their courses; 30% are uncertain. ■

Innovative Teaching of Building Services to Students in the Department of Architecture Using IVLE

Associate Professor S.P. Rao
Department of Building
School of Design
& Environment



Samples of Building Services course material on IVLE



The subject 'Building Services' covers a wide range of engineering services and equipment that are designed and installed in almost all major buildings, to produce satisfactory conditions for both health and comfort requirements of the buildings' occupants. An architect is expected to have a reasonably good understanding of the performance and maintenance requirements of these service elements in order to design and construct energy-efficient buildings. Architects and engineers need to understand each other's requirements and constraints of operation in order to deliver a quality indoor environment.

So to facilitate the teaching of engineering subjects to non-engineering students, I have successfully utilised the Integrated Virtual Learning Environment (IVLE) for a brand new elective course, 'Renewable Energy and Low Energy Architecture', first mounted during the 1998/99 session. One key feature of the course is the way in which the use of IVLE has been closely integrated into the design studio, which

is the focal point in the teaching and learning of architecture where the student explores, expands and applies whatever knowledge he has acquired in a real-life context.

Although the basic principles of the various components of building services are taught in lectures, seminars, and laboratories, the amount of information on building services actually required for use in the studio is enormous. For instance, a student usually works alone in the studio and can suddenly be faced with the problem of deciding upon the fenestration or orientation of the building, the location and size of the air-conditioning plant room or other similar situations. A trip to the library to look up the relevant information will not only consume a lot of time, but also disrupt one's train of thought at the drawing board. To enable the student to access material from his workplace using his computer, I have used the IVLE to deliver information on

building services at the drawing table as and when the information is required. In addition, mounted on the IVLE for students to access are much of my lecture materials (developed in *PowerPoint* presentation format), case studies of local and overseas buildings as well as miscellaneous materials and appropriate links.

Many of my students have also conducted course discussions on the IVLE. Working in groups, almost all of the students have mounted their work and submissions as well as provided cross-referencing through the IVLE course pages. When stumped on particular issues, students have been able to email me directly to seek clarifications and I have tried to respond to them as soon as possible. In general, my students and I have found the IVLE extremely useful and are grateful for this facility. ■

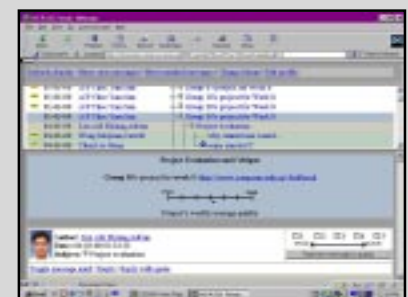
Teaching & Learning Highlights

...continued from page 11

School of Computing

Integrating the Use of Discussion Forums with Project Work

In the course *Human-Computer Interaction* conducted in Semester 2, 1999/2000, we deployed a discussion forum that allowed us to tightly integrate its use with students' work on the course project. Students first had to view the multimedia projects created by their peers via a specially constructed web link in the forum. They were then required to critique the quality of the projects they reviewed within the discussion forum. In this way, these critiques served as formative evaluations for the students whose projects were being reviewed, and a discussion was fostered by the interchange of ideas among students for improving the quality of the work. Owing to this special learning design, the content in the discussion forum proved meaningful and useful to the students, and thus was valued. This electronic forum, called *HYPERForum*, was developed by an Honours student. Among its unique features are the incorporation of support for peer rating of projects and message quality, use of color coding for representing message context as well as incorporation of student photos to encourage individual responsibility for content posted and to build up a sense of a learning community. ■



HYPERforum: facilitating student discussion

MEDNet : Towards an Intranet Learning Environment

Associate Professor Lee Szu Hee
Department of Pathology
Faculty of Medicine



The primary role of a Faculty Intranet is to provide rapid network delivery of learning materials that can be readily revised and updated. As an IT tool that uses the WWW platform, an Intranet can also be structured and designed to provide interactive content that is focused towards the needs of specific users. Whether viewed from the perspective of students or teaching staff, an intranet environment has the potential to foster the development of new educational methods, skills, and attitudes.



online journals and textbooks, an SSM project directory and several image libraries including the Faculty Digital Image Repository, created by the Medical Informatics Programme. By a special arrangement between CITA-Medicine and the Clinical Biomedical Computing Unit, University of Cambridge, MEDNet is host to a mirror site for *Computer-Aided Learning (CAL) Reviews*, a peer-reviewed guide to medical multimedia resources.

Features planned for the coming academic year include several multimedia applications and improved web database access. In the longer term, divergent delivery requirements that need to be reconciled are a broad bandwidth for multimedia in contrast to discrete packaging of information to exploit the ease and speed of PDAs (Personal Digital Assistants) and WAP (Wireless Application Protocol) technology.

Eight months after the launch of MEDNet, an opinion survey was conducted to assess the impact of MEDNet on first-year medical students. The response rate was 84% (171/204 students). Although objective measurements were not carried out, the survey nevertheless provided some interesting results. Almost all of the respondents (91%) found the M1 Road Map in MEDNet useful. The SSM, IT Resources, and self-assessment websites were equally popular. While most of the respondents (91%) felt that the use of IT can enhance learning for medical students, fewer (78%) felt that IT had enhanced their learning experience. This could be related to the widespread demand for more detailed lecture summaries (84%) and more links to medical WWW sites (78%). High on the list of items that students want in MEDNet are announcements, examination results and more self-assessment. Technically, a common complaint was the inability to access MEDNet by dial-up through Internet service providers other than NUSNET. Otherwise, MEDNet scored high on user-friendliness (82%) with 96% of respondents rating its overall quality as excellent (5%), good (54%) or fair (36%).

In 1999, the Faculty of Medicine began to implement a new medical curriculum. Although based mainly on traditional teaching, the curriculum incorporated major new elements such as Problem-based Learning, Special Study Modules (SSM), and the integration of IT through intranet delivery. The aims of intranet delivery in the new curriculum were: (a) to use IT to access information resources, and (b) to use IT as a dynamic learning tool. Implicit in our approach was an assumption that the use of IT in the curriculum should be driven by educational needs and not by technological advances. It was anticipated that students would benefit from an intranet portal that featured announcements, schedules, course content, self-assessment, discussion groups and WWW medical resources. With this perspective, MEDNet¹ (Medical Education on the Net), an intranet learning environment, was gradually constructed to support the new curriculum.

A series of workshops conducted by the Computer Centre helped to enhance staff IT literacy. To promote student awareness of IT, lectures and practical sessions were introduced into the curriculum. Collaboration with the Integrated Virtual Learning Environment (IVLE) team helped to strengthen and broaden the range of applications in MEDNet. Pivotal to the design of MEDNet was the M1 Road Map in which individual teaching units are linked to their respective objectives, references and lecture summaries mounted in a Microsoft SQL Server database in the IVLE. The objectives and summaries were mounted in standardised templates so that a unified curriculum can be presented to students over the duration of the course. Other features of MEDNet include self-assessment, links to medical websites,

Although the initial response to MEDNet has been encouraging, much will depend upon staff and student attitudes if we hope to attain a significant integration of IT-based learning into the curriculum. This is a fundamental change in educational culture that requires time, resources and a paradigm shift. Clearly, to develop an IT-based learning culture in students, it is first necessary for teachers to develop IT skills themselves. Only then will teachers be able to apply IT as a tool for new approaches to learning, and not merely as a means of information delivery. From our early experience with MEDNet, it would appear that IT awareness is attained relatively easily by students; consequently, their expectations are high. It is our task as teachers to match these expectations in the new IT era. ■

1. <http://www.mednet.nus.edu.sg/>

A Survey of Part-time Students' Use of IVLE

Assistant Professors Wong Nyuk Hien & Ong Seow Eng
School of Design & Environment

The part-time Bachelor of Building and Bachelor of Real Estate programmes were launched in July 1999. One of the key characteristics of these programmes is that about 50% of all the modules are taught online, relying heavily on the use of IVLE. Out of the 10 modules that were offered during the last two semesters, 6 modules were conducted online using the IVLE. Table 1 shows the 6 modules offered online in the first year and the corresponding number of hits for various tools in IVLE.

MODULE		No. of HITS		
		Course Outline	Discussion Forum	Workbin
BR1101	Information Processing	4803	140	-
BR1201	Principles of Building Materials	4614	225	15
BR1202	Decision Support System	2555	91	7
BR1105	Construction Technology II	2393	74	21
BR1106	Law	2278	41	9
BR1203	Information Systems	842	40	9

To determine the extent IVLE is utilised by the part-time students, its effectiveness, as well as problems encountered during its usage, a survey was conducted. A self-administered questionnaire was sent to all of the 75 part-time students and 51 (or 69%) returns were received.

Figure 1 shows the frequency of usage of various tools in IVLE. It can be seen that the Discussion Forum is by far the most frequently used tool in IVLE where 25 students indicated that they used it more than once a week and 21 students once a week. While the Discussion Forum is effective in generating discussion and as a medium for clarification of questions and doubts, the students suggested that staff should post more challenging topics or questions in the forum in order to encourage better participation. Announcement is the next most frequently used tool in IVLE where 35 students indicated that they used it more than once a week to check the announcements made by the staff. However, the survey also showed that the utilisation of Chat Room and Online Quiz is extremely low. It is generally felt that Chat Room is not very effective for discussion particularly pertaining to technical issues. Online Quiz could become more widely used once teaching staff become more familiar with its usage for the self-assessment of students.

Figure 1: Use of Tools in IVLE

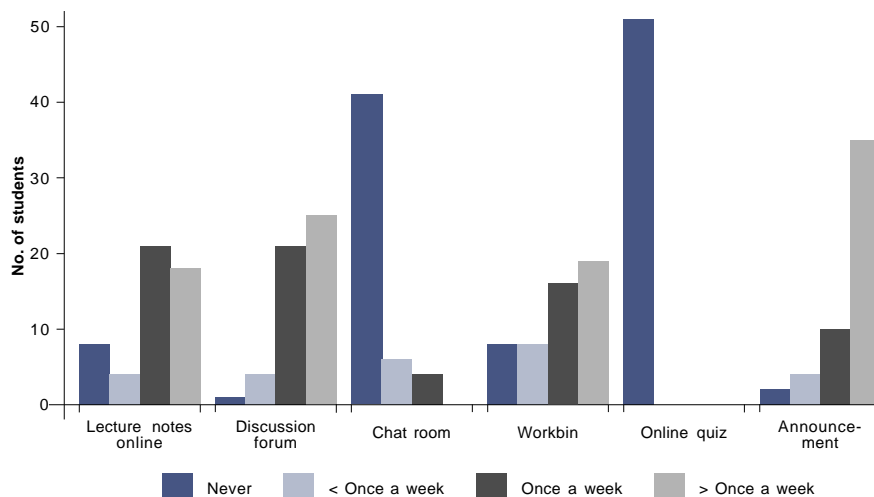


Figure 2: Enhancement/Promotion of Learning

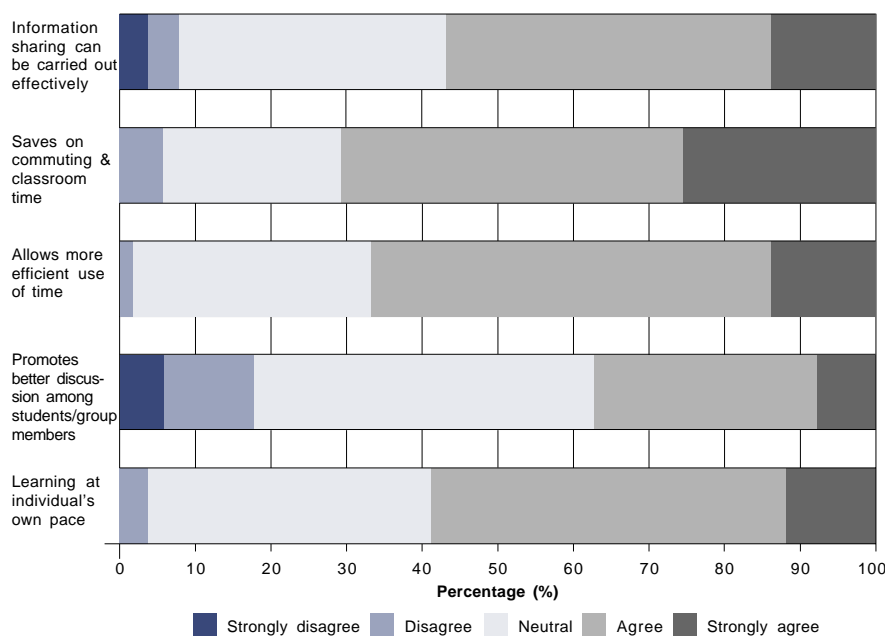


Figure 2 shows the students' responses on how IVLE has enhanced or promoted their learning. About 71% of the students felt that the use of IVLE

Continued next page...



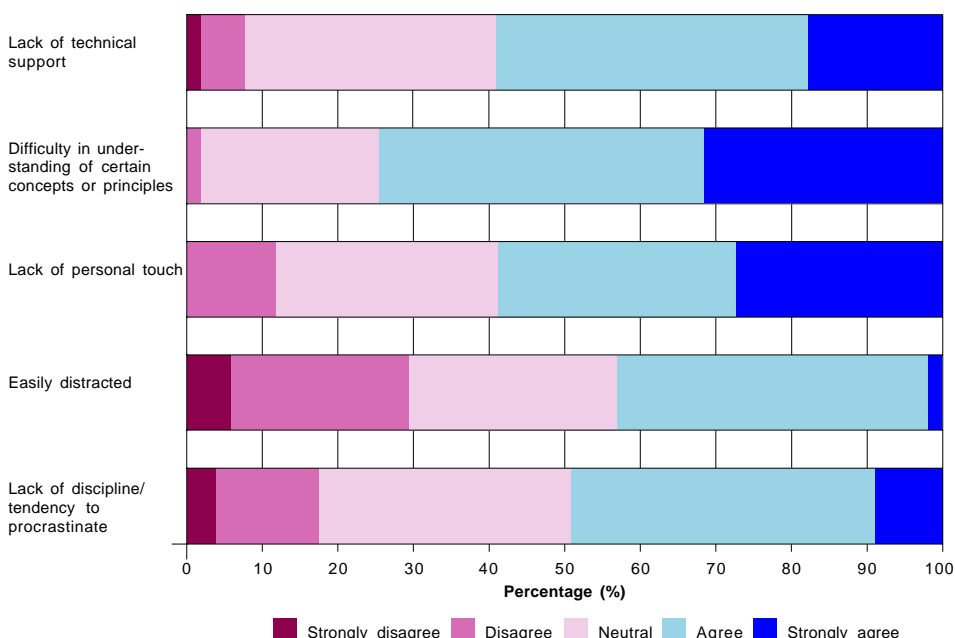
Part-time students at the School of Design & Environment doing project work

has resulted in time saved in commuting and attending classes and thus allowed them to use their time more efficiently. The students also indicated that IVLE has enabled them to learn at their own pace (58%). However, only about 38% of the students agreed or strongly agreed that IVLE has promoted better discussion among students/group members.

Figure 3 highlights some of the problems encountered by the students in the usage of IVLE. About 74% felt that the main problem is the difficulty in understanding certain concepts or principles by just relying on the online lecture notes and discussion forum. They also felt that not all modules are suitable for online instruction, particularly those that require the understanding of technical concepts or principles.

The main problem is the difficulty in understanding certain concepts or principles by just relying on the online lecture notes and discussion forum. They also felt that not all modules are suitable for online instruction, particularly those that require the understanding of technical concepts or principles.

Figure 2: Problems Encountered in the Use of IVLE



Other problems that the students encountered included the lack of technical support and personal touch. However, these concerns were not unanticipated. In fact right from the start, the part-time programmes are structured such that once in every 3 weeks, face-to-face small group teaching sessions are conducted. Such small-group meetings serve to ameliorate the limitations of online learning.

CONCLUSION

As online learning comprises a large component of the part-time Bachelor of Building and Bachelor of Real Estate programmes, this survey conducted one year into both programmes is useful in evaluating what students perceive are the benefits of IVLE. In general, online learning has been well received. However, it is essential that online learning must be supplemented with face-to-face sessions so that the students can clarify their doubts



Small-group teaching for part-time students in the School of Design & Environment

and be engaged in classroom discussion with peers and teaching staff. As the School of Building and Real Estate, and NUS at large, continually seeks to enhance the teaching process, we must recognise that while online teaching and learning has much to offer, it can only complement, but not substitute for, face-to-face teaching. ■

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