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Building Classroom Culture Through Effective Facilitation

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The classroom is a diverse and unique community where standards, rules and expectations develop over time. In the adult learning arena, prevalent in graduate degree programmes, there is an experiential dynamic that adds depth and complexity to the community. As such, the community is best served in its omnipresent state of development through personal reflection of experience in the classroom combined with the world outside the classroom. Cultures, both collectively and individually held among members, seek structural balance between the need for change and the need for predictability. Just as members create the living culture of the community, disruption occurs when members of the community are changed by means of removal or arrival. The most prominent change in membership in an educational community of learning, especially those following a cohort model, is when a new professor enters the dynamic and introduces his/her own classroom standard. This upheaval results in time spent on relearning administrative specifics of cultural rules and limits the members' ability to quickly focus on the course content. Recognising this classroom dynamic raises a serious question—are you a disruptive professor?

The Disruptive Professor

As a new member to the community, the professor engages, knowingly or otherwise, in acculturation. According to McMillan and Lopez (2001), community members assimilate, integrate, marginalise or separate with the culture at large.

As facilitators of learning, professors are not likely to avoid interaction with the class even if the culture is one they would otherwise elect to

continued next page...

inside

TEACHING METHODS

Experiential Learning and Filming 'Floating Lives' in Cambodia: A Report on a CDTL Teaching Enhancement Grant Project 3

Evolution: Teaching the Controversy 4

Nothing is Permanent Except Change: How to Train Students to be Agile in Information Systems Development 6

LEARNING ISSUES

Thoughtful Teaching - The Spirit of Learning 5

Experiences in Teaching a Module Related to 3D Visualisation 12

CDTL NEWS/ FROM THE FACULTIES

TLHE 2008 8

Teaching & Learning Highlights 10

avoid. Thus, a separation strategy is not likely. The professor usually has more than just a mild interest in building and maintaining relationships with students at least for the duration of his/her class. Therefore, a marginalisation strategy, which occurs when the new community member has little interest in building or maintaining ties with members of the society, is not an option for the professor. This leaves the professor with an integration or assimilation strategy.

Assimilation happens when an individual gives up his/her culture to take on the values and beliefs of the new culture. This may occur if the professor is looking to change her/his classroom style and is open to persuasion by the students' culture. While assimilation is an option, integration is more likely in the classroom and perhaps the most effective strategy. Integration occurs when an individual maintains his/her own culture while participating in a new culture.

Classroom Culture and Professor Style: A Strategy for Integration

The integration strategy is the most effective because over time, the cohort model of education engrains a culture among students/community members and this becomes increasingly difficult to change. Similarly, professors often have a unique and individualistic style that is too engrained. If the collective cohort/programme professors can integrate a culture of academic administration standards such as participation rules, rubric, use of technology, assignment format, testing protocols, boundaries and other expectations among themselves, then new professors (each semester or term) can continually reinforce the standards while integrating their unique professor style in terms specific to course content. This, however, takes finesse because it is a cultural change endeavour. So, how best can change be introduced into a classroom while reinforcing the rules and standards of students' culture?

The short answer to effectively addressing cultural change is member involvement. Since it takes time for patterns to emerge and styles to form into a culture, the first two to three classes of the programme are paramount in setting standards, rules and expectations desired by the educational institution. It is during these early classes that work patterns emerge and member behaviours solidify. If new professors come into the culture every semester with new administrative expectations, routines are hard to develop and students become increasingly frustrated. This frustration does not stem from the challenge of new course content but from the constancy of administrative change.

We all have heard students say with a tone of disgust, "That is not the way other instructors have done it." While it is human nature to change for reasons of adaptation and survival, it is also human nature to desire consistency and balance. Such a statement is often a response to frustration. Asking students to change is difficult, especially in the later stages of the programme. One way to combat this is to have the programme and culture allow for subject-centric activities yet reinforce the existing student culture.

Integration Tactics: Setting Expectations and Ground Rules That Matter

The topic of setting or reinforcing classroom expectations and ground rules in an attempt to integrate student and professor cultures was discussed recently among 36 MBA students in a private university in the United States. The class was the students' last in their two-year MBA programme; hence a strong culture was established among them. The tactical process of the discussion was as interesting as the findings and is the focus of this article. While the facilitated approach was orchestrated by a single professor, the discussion was led and data were captured, codified and analysed by MBA students. The process, café-style facilitation, followed these steps:

1. At the start of the first class of the semester (the first time the professor met the students), the professor, serving as host, welcomed students and expressed appreciation for and value in their attendance, individual experiences, knowledge and capability.
2. The host asked for four volunteer student facilitators who were nominated based on their experiential knowledge from work and practice.
3. Each of the four volunteers was provided a question and a comfortable area with chairs, tables, flipcharts and markers in which a dialogue could occur. All questions pertained to the course and the classroom culture (e.g. what are your expectations from the instructor of this course, what ground rules should everyone uphold and respect throughout the course, what are the student-specific and professor-specific success factors for this course and what are the most pressing content issues that must be addressed during this course).

continued on page 11...

Experiential Learning and Filming 'Floating Lives' in Cambodia: A Report on a CDTL Teaching Enhancement Grant Project

Dr Carl Grundy-Warr
Department of Geography

During the recess week of Semester 1, Academic Year 2007/2008, Dr Carl Grundy-Warr conducted a 'learning journey' to Cambodia with a primary aim to expose students to an intensive learning experience whereby they would visit a variety of field-sites and meet with various people as a quick way to learn about real world problems in the country. Part of the journey was organised in collaboration with a Non-Governmental Organisation (NGO) called the Fisheries Action Coalition Team (FACT) which works with many fishing communities in the Tonlé Sap (or Great Lake) and other parts of the country.

A CDTL Teaching Enhancement Grant enabled this non-assessed 'learning journey' to incorporate a participatory student-produced video film and web-log. Three students (Yikang, Chinthaka and Shamraz) were directly involved in the entire process of the video's production, with aid from a professional cameraman and film editor (Liam Morgan). The remaining students (Deng Hang from China, Jack from Canada, Dominique from Germany, Blerina from Sweden, as well as Matthew, Jared, Hui Shi, Zhang Yang, Pei Qing, Li Min and Wee Siong from Singapore) were participants who contributed to the film's contents and the main contents of the web-log.

Using digital images and video as pedagogic tools required a lot of planning, preparation and dedication, all of which demanded a lot of time especially from already very busy NUS staff and students! The students were amazingly skilled with multi-media tools. Thus, they could apply some of their technological knowledge and skills to field trips and fieldwork settings. There were numerous benefits arising from this experience.

Shamraz, one of the student film crew, testing out the camera

Firstly, students involved in making the film really had to focus on what they wanted to show others from the 'learning journey'. This meant working on a detailed storyboard and working out their interviews with students, practitioners and ordinary Cambodians (aided by our translators—Mak, Honey and Puthea). Secondly, student participants were also considering what their contributions to the web-log should be. This meant serious post-field trip reflections and questioning their own observations and experiences. Thirdly, everybody was able to use the images to reconsider and discuss the places visited and the people we met. As Latham and McCormack (2007) put it, "technology enables the creation of a sense and space of engagement at distributed and disparate sites" (p. 253). Thus, film and images helped us re-examine numerous aspects of our shared journey, which like most fieldwork, is a highly situated practice.

Finally, the 'learning journey' was a fascinating pedagogic exercise. It was particularly interesting to see how it enriched both the cognitive and affective domains of learning. As Boyle (2007) observes, "Affective activities are processes that deal with emotions, feelings and values; they lead to perceptions of learning tasks (or moods)

continued on page 15...

Evolution: Teaching the Controversy

Associate Professor Rudolf Meier
Department of Biological Sciences
University Scholars Programme

Sometimes I wish I taught quantum physics. My students would be convinced it is hard science, many would have very little background knowledge of the subject and no moral objections would be raised. Instead, I teach ULS2202 "Evolution" under the University Scholars Programme (USP) and LSM3252 "Evolution and Comparative Genomics" under the Life Sciences Programme, where a large proportion of my students come to class armed with religiously motivated objections to the subject. Thus, unlike other modules, evolution lecturers do not have the luxury of starting on a 'clean slate' when they teach this subject. Past surveys revealed that while most NUS students were never taught evolution in school, many believed they understood the subject from discussions with parents and friends and TV shows they had seen.

What is the best approach for dealing with this challenge? With evolution playing a central role in the life sciences, this issue is actively discussed by biologists and organisations such as the National Academy of Sciences and Institute of Medicine (2008). Among the more controversial issues being raised is whether objections to evolution in the form of 'intelligent design' (a secular version of creationism) should be covered in a science class. Scott and Branch (2003) argue that such alternatives to established theories should not be mentioned unless they meet the following criteria:

- Students are interested in the controversy.
- The scientific community accepts that these issues are valid for discussion.
- The issues are well documented.
- All aspects of the arguments have been well thought out and are intellectually stimulating.
- The issues are easily understood by students.

According to Scott and Branch (2003), the 'evolution versus intelligent design' debate fails to meet some of these requirements and thus should not be covered. However, I would argue that Scott and Branch overlook the fact that students come to evolution classes armed with these objections, which makes addressing them unavoidable. I was initially unaware of the widespread skepticism among NUS students towards evolution and only realised late in my first semester in Singapore, during Academic Year 2002/2003, that Scott and Branch's approach does not work as students end up being detached from the subject. For them, the burning question is finding out why evolution should be preferred over 'intelligent design' and not whether a particular model, for example, offers the best explanation for sexual selection. As such, ignoring the controversy is not an option.

To deal with these challenges, I adopt a constructivist's approach to teach evolution (Scott & Branch, 2003). This approach uses the debate to illustrate how Science uses evidence to select from among competing hypotheses. To implement this approach effectively, students have to be actively involved in characterising the alternatives to accepted scientific theories and be directly exposed to relevant evidence. For example, in ULS2202 I introduce evolution, while I ask students to use resources of their own choosing to define the main elements of 'intelligent design'. They soon realise that 'intelligent design' is mostly a collection of objections against evolution, and offers no alternatives to theories such as the Tree-of-Life and only nebulous notions about the origins of adaptations.

A similar approach can be adopted to address other objections against evolution. Students are asked to

continued on page 14...

Thoughtful Teaching – The Spirit of Learning

Ms Chua Siew Beng
Human Resource Management Unit

We are just barely into the first session of a new semester, and I am already deluged with questions like: "Is it easy to get an 'A' for this module?" "How long is the exam?" "How many questions are there in the exam?" "Would you be showing us how to answer the exam questions?" "Can we get model answers for past years' questions?"

These questions disturb me. As an educator, my premise is that students come to the university to learn. However, their questions about the mechanics of exams and model answers before even formal classes could begin seem to suggest that students have lost the spirit of learning and they no longer regard learning as a process of discovery and pursuit of knowledge.

While we, as teachers, put in great effort to formulate learning and teaching objectives, how often do we pause to consider whether students' valued outcomes are aligned with ours? If the twain does not meet, would students regard our lessons or teaching as ineffective?

As I endeavour to introduce pedagogy which requires students' independent and active participation, I notice the gap between my idealistic view of learning and students' pragmatic approach to learning in university. A good example would be my experiences in encouraging active participation and collaborative learning amongst students via the discussion forum on the IVLE (see Table 1). I used three approaches to elicit participation from all students and each yielded a different outcome.

For the third scenario in Table 1, a perceptive student, Daryl (HR 2002, Semester 1, Academic Year 2007/2008), wrote in response to the few posts in the forum:

> "Relating this to the Singapore context, the extrinsic reward system (i.e. grades, marks, etc.) has already been so deeply rooted in each

Table 1. Rate of student participation under different scenarios

No.	Scenario	Rate of Student Participation
1.	The online forum as a graded activity. (Students were told of their participation in the discussion forum will be graded based on the quality of their posts.)	>95% of students attempted to post at least once.
2.	The online forum as a class activity. (Students were not told that their participation in the discussion forum will be graded.)	About 50%.
3.	The online forum as a non-graded class activity. (Students were told that their participation in the session will not be graded.)	About 15%. (Half of the participants contibuted only one post, most of it were short and lacked critical insight.)

continued on page 15...

Nothing is Permanent Except Change: How to Train Students to be Agile in Information Systems Development

Mr Tan Chuan Hoo
Department of Information Systems

In a constantly changing business environment, whether an Information Technology (IT) solution meets the users' requirements is no longer dependent on whether the delivered product conforms to its plan, but whether it satisfies the customers at the time of its delivery (Erickson, Lyytinen & Siau, 2005). The module, CS3214 "Information Systems Development Project", which I teach at the Department of Information Systems in both Academic Years 2006/2007 and 2007/2008, emphasises the principles of agility, flexibility and adaptability, and prepares third-year computing undergraduates for increasingly dynamic business environments.

CS3214 is a 100% continual assessment project-based course in which students are offered an opportunity to learn about multi-tiered software development architecture. We use the Critical Adoption Factors for Agile Methodology developed by McAvoy and Sammon (2005) to design our course along the project, team and customer dimensions. A project specification is released to student teams in week 1 of the semester and is deliberately designed to be ambiguous (i.e. the requirements are subject to frequent changes). Each team of five to six students is then instructed to develop an enterprise-level system using Java Platform, Enterprise Edition (Java EE), and assigned a project advisor who also acts as the user. This allows the user to be onsite and be an integral part of the team.

The following points summarise the key characteristics of CS3214:

Course Workload

CS3214 emphasises team-based guidance rather than lecture-based teaching. In this regard, the time demanded from both the lecturer and tutors will be significantly higher than other courses. For students, developing a system within a 13-week time frame can be a very demanding task. As a reward, students taking the course earn eight rather than the usual four module credits.

Preparatory Workshop

A preparatory workshop focusing on Java EE programming is conducted two weeks prior to the start of the semester with an objective to equip students with the necessary knowledge and skills in programming, enterprise-level system architecture and software development methodology.

Choice of Project Team Members

Students are allowed to choose their own team members and are accountable for whom they have chosen to work with. The preparatory workshop also offers an early opportunity for potential team members to socialise and understand each other's strengths, weaknesses and working styles through hands-on exercises.

Project Specification

Two factors are taken into consideration when drafting the project specification. First, the selection of the business/problem domain is less dependent on the lecturer's preference but

more on the composite aggregation of students' preferences, choices of the industry players, trends in the IT market, course objectives and the scope of evaluation. Second, selected industry players are invited to read and comment on the project's specification for realism.

Requirement Analysis

Students begin the planning process in week 1 by formulating usage scenarios. Advisors acting as surrogate users help teams visualise the system as a whole and plan the release schedule. Teams are also encouraged to identify functions of lower priority that can be deferred or even excluded from the final system. The output from the requirement analysis is a list containing the functional requirements, the dependencies among the functions, the complexity of each function categorised from low to high, the estimated amount of effort needed and the priorities associated with the functions. The schedule also serves as a monitoring device for teams to plan and track their activities.

Additional Requirements

Advisors often introduce one or more additional requirements (i.e. 'shocks') to train students to be adaptive to changes. Based on consensus between advisors of selected teams and other neutral advisors, only the top 10% of all the teams (about 3 or 4 teams) are given the 'shock' treatment. Weaker teams which are already experiencing difficulties coping with the initial set of requirements are often excluded. To compensate for subjectivity in the identification of stronger teams, 'shocks' are not explicitly stated but discreetly delivered during the consultation sessions between the advisors and their respective teams.

System Releases

Students are constantly reminded that the bulk of the assessment rests on their ability to deliver a working, integrated system. While we do impose continuous assessment throughout the semester, the evaluation of the system at its final release constitutes the bulk of the final grade. This is consistent with industry practice where the client pays the software vendor only when the system has been delivered. At the end of each system release, teams will engage in debrief sessions (i.e. post-mortems) where evaluators identify not only software flaws but also other areas for improvement. The final evaluation of the system is conducted in a way that simulates a real-world business situation where teams present and demonstrate their systems to the clients.

I hope this article, which documents my efforts in improving the quality of CS3214 over the last two years, would invite discussion and draw attention to the importance of aligning our teaching methods to research developments and industry practices.

Acknowledgements

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Announcement and Call for Papers

Frontiers in Higher Education

CDTL will be organising its International Conference on Teaching and Learning in Higher Education on **3-5 December 2008.**

At this conference, new developments and improvements in various key areas in teaching and learning in higher education will be discussed.

We invite papers from all stakeholders (students, administrators, industries, teachers, employers, alumni, government) on the following topics:

- Integrative Learning
- Scholarship of Teaching
- Teaching Methodologies
- Assessment of Student Learning
- Theories of Learning
- Educational Management
- Technology for Learning

Summary papers (not exceeding 1000 words) should be sent to the Conference Secretariat either by e-mail, fax, or post to the address below. Summary papers should clearly indicate the author's mailing address, email address, telephone and facsimile numbers. Please attach an abstract (not exceeding 300 words) and a brief CV (not exceeding 200 words) along with your summary paper.

We will especially be looking out for summaries that:

- Put forward claims, conclusions and/or research findings that are novel, interesting and/or significant; and
- Are supported by substantial justification.

The deadline for submission of abstract and summary papers is **16 May 2008**.

For more information, please visit the TLHE website at **www.cdtl.nus.edu.sg/tlhe** or contact the Conference Secretariat at:

Centre for Development of Teaching and Learning
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Kent Ridge Crescent
Singapore 119260

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TLHE 2008

TA Training *Programme*

About 80 Teaching Assistants from the Faculty of Science as well as the Schools of Computing and Medicine attended the TA training programme on 28–29 February. This year's programme covered topics such as effective methods of motivating students, how to assess student learning as well as teaching and learning in small groups. The TAs also gave poster presentations and participated in micro-teaching sessions which gave them the opportunity to hone their presentation skills and get feedback from their peers. ■

One for the album: Participants of 2008's TA Training Programme

Associate Provost (Undergraduate Education) Professor Alan K. L. Chan delivering his opening address

Participants and guests listening attentively during the plenary sessions

Calling All Writers

CDTL invites articles on any teaching and learning topic for the following two publications:

- CDTLink (700 words maximum per article; photos & illustrations in hard/digital copy are welcomed)
- CDTL *Brief* (text-only publication; 1,000 words maximum per article)

To submit articles for consideration or to obtain more information,
please contact:

Liew Shin Dee
Email: cdtlsd@nus.edu.sg
Tel: (65)-6516 4692
Fax: (65)-6777 0342 ■

Welcome!

CDTL welcomes as Publications Officer Ms **Liew Shin Dee**, who joined our team in February 2008. ■

Teaching & Learning HIGHLIGHTS

Faculty of Arts and Social Sciences

A Student's Perspective of the 'Learning Journey' to Cambodia

The 'learning journey' was totally unlike the usual experiences of academic life—assignments, readings, essays and presentations. The short field trip to Cambodia provided students with an integrated learning experience where participating students had to sacrifice a recess week that would normally be spent preparing for mid-term tests and writing essays to be involved as a member of a student camera crew and/or field researchers aiming to create a documentary of fellow students' activities and experiences.

Students bid farewell to the villagers of Anlong Raing

The filming crew (Chinthaka, Yikang and Shamraz) had to come up with a storyboard, prepare key interview questions and be familiar with the technical aspects of filming with useful tips from a travelling professional assistant, Liam. Students had a chance to observe the process of a 'learning journey' not just as participants, but also as someone trying to produce something intellectually useful and creative from the trip. Participants also benefited from the vibrant field sites they visited as well as learning collaboratively from other student participants, from Dr. Carl, from members of FACT and from a whole host of ordinary Cambodians they met along the way.

Students gained insight into life in Cambodia, particularly the 'floating lives' of the Tonlé Sap. Homestays enabled students to fully appreciate the everyday hardships, simplicities and the significance of fish and nature to these people. Where but in the fields can one see how a village goes to sleep with the setting sun and awaken with the break of dawn? Here on the lake, everybody seems to be up and about paddling on water—children going to their small 'floating' primary school, women selling vegetables and other consumables, the menfolk mending nets or traps or going into the lake to fish. Though all students had read about the Tonlé Sap prior to the trip, their senses came alive during their stay in one of the 'floating villages'. For a brief time, students experienced a completely different environment and a way of life that was removed from their materialistic, urbanised existence. This first-hand experience made students re-examine the academic articles on the Tonlé Sap from a fresh perspective, develop a sense of empathy for the folks living there, and reinvigorated scholarly interest in a myriad of environmental issues. ■

Building Classroom Culture Through Effective Facilitation

... continued from page 2

4. Students were divided into four groups and allotted 30 minutes in each of the four facilitated areas of dialogue. Although one large classroom was used for all groups, each was separated from the others enough to avoid disruption. To mitigate social facilitation and groupthink issues, after each 30-minute dialogue, each group was modified instead of taking on the next topic. While the facilitating volunteers remained to facilitate the same dialogue question, the group members—and thus group dynamics—within each dialogue were different. This meant that the eight-member dialogue groups had a different make-up of participants during each dialogue.
5. The facilitators' role was to introduce the question, ensure full participation and document the specifics of each dialogue. Along the way, similarities were categorised. While the volunteers' role is noted as a facilitator, each was encouraged to participate as well. Thus the facilitator is an active participant, referred to as a dialogue steward (Brown, 2005). As the second, third and fourth rounds of dialogue occurred, the steward reintroduced the question and quickly summarised the work from prior dialogues before the new members commenced their dialogue. Participating members were always encouraged to take their own notes, draw or document their ideas and feelings about the dialogue topic along with the facilitating steward.
6. At the end of the last dialogue, the professor thanked each member for their participation and allowed the facilitating stewards to report key findings. As the findings were reported, the professor acknowledged students' work and expectations, thus assimilating to their culture. When an issue arose, the professor negotiated with students, thus integrating both the students' and professor's cultures. The negotiations occurred only when a reported expectation was wholly unacceptable. To be sure, the professor attempted to assimilate as much as possible, but negotiated integration when necessary. This approach allowed for greater buy-in from students because they recognised that their involvement was valued and voices heard. The end result was an integrated student/professor culture.

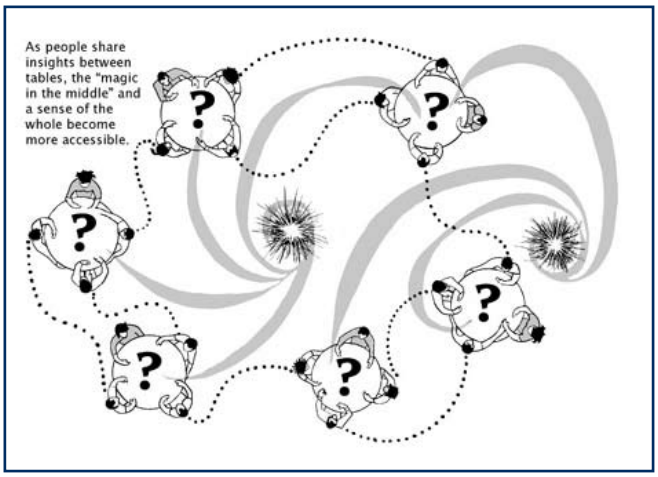

Figure 1. Illustrated example of café facilitation. Reprinted with permission from the World Café Community Foundation (www.theworldcafe.com)

People Matter: A Concluding Summary on the Power of Café Facilitation

The aforementioned findings from this MBA class may be of less interest than the café facilitation tactic employed to integrate two cultures. The tactic proved efficient and effective in quickly establishing the value of cultural members, as well as theirs and the new professor's expectations. The process can be modified to allow more questions or less, more time per dialogue or less, and it could even be done online. Furthermore, this tactic is not just for the start of classes. Whenever a professor wants a dynamic exchange of ideas discussed about an issue that is of significance to the audience/students, café facilitation is an applicable tactic.

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Experiences in Teaching a Module Related to 3D Visualisation

Dr Benny Raphael
Department of Building

Visualisation in Design and Technology

PF1102 "Visualisation in Design and Technology" is a compulsory module for first-year students doing two degree programmes at the School of Design and Environment: BSc in Project and Facilities Management; and BSc in Real Estate. This module was introduced in Academic Year 2006/2007 and repeated with minor modifications in the subsequent year. Currently, more than 200 students are taking this module.

The module consists of two parts. The first part has topics related to modelling and visualisation, while the second part introduces students to building elements and construction techniques. Students would use ArchiCAD software in tutorials to make architectural drawings as well as the detailing of building elements. Since students are new to the topic of buildings and elements, visualisation tools are used to improve their understanding of this subject.

Since its introduction, a large amount of data has been collected to gauge students' perceptions of the module via three channels:

- Discussion forum on IVLE
- Anonymous survey conducted through IVLE
- Formal teacher evaluation feedback

Qualitative Student Feedback

1. Classroom demonstrations

In the first year, classroom demonstrations were given using ArchiCAD software to illustrate theoretical concepts. Students responded negatively to this approach, providing comments such as:

- "Do not go through programmes like ArchiCAD during lectures as not everyone has a laptop."
- "I find the use of the ArchiCAD during lectures confusing."

Such comments disappeared in the second year when the lectures focused entirely on theories and the software was introduced only during tutorials. We also realised that when demonstrations were conducted using software with a complex user interface, students would concentrate more on how things were done instead of the concept behind the demonstration.

In general, students gave positive feedback about ArchiCAD software. While there were some comments that the software was difficult to use, the proportion of positive and negative feedback was similar for both years.

2. Tutorials

Tutors would introduce the software's features and show students how to use the various functions. Students were then encouraged to explore other features and complete some assignments. While some students liked this approach, many preferred to be guided, as shown in comments such as:

- "Maybe the lecturer can include step-by-step notes on the use of ArchiCAD at each tutorial, because we are often unable to recall how a certain step is done, especially those taught during previous tutorials."
- "The lecturer should repeat the points and ensure that students are on track before continuing the tutorial, as students sitting at the back sometimes cannot follow the steps."

Such comments were surprising because it was assumed that the current generation of students would be comfortable using computers and software tools.

3. Building elements and detailing

Since PF1102 was the first module in their degree programme which was related to buildings, many students had difficulty appreciating the module's technical content. It was worse for students doing BSc in Real Estate, since the main focus of their course is investments and finance. Many students failed to understand that some knowledge of building elements is required for real estate investments and property evaluations. However, most of them understood the importance of acquiring such skills to interpret drawings of buildings, a core objective of the module.

4. Interpretation of working drawings

3D visualisation software was introduced to improve students' ability to interpret 2D working drawings. However, some had difficulty reading technical drawings:

- "It is difficult to interpret and understand the technical drawings."
- "The module is difficult for those who are unable to visualise 3D objects. More examples of diagrams should be shown."

These comments pointed to fundamental problems related to students' visualisation capabilities. The responses were similar to those obtained in a survey conducted by Marshall-Ponting and Aouad (2005) where practitioners commented that "98% of the industry cannot understand drawings" and "IT skills are lacking and so more education and training is required" (p. 317). Some students are unable to imagine the 3D geometry by looking at the projections. Some solutions to tackle this problem would include giving students more exposure to 3D modelling software and exercises to encourage them to make 3D models and inspect projections generated by the software.

Quantitative Analysis

The online anonymous survey provided a means to quantify student perceptions about the module (see Table 1).

Question	Yes	No	Skip
Should any visualisation software be taught to illustrate the concepts in this module?	103 (86%)	17 (14%)	0 (0%)
Is it essential to have hands-on experience in using visualisation software in order to understand the concepts?	108 (90%)	11 (9%)	1 (1%)
Do you think you will be able to read and interpret drawings well even if you have never made any drawings yourself?	34 (28%)	86 (72%)	0 (0%)
Do you think your knowledge of CAD software will benefit you in your career?	97 (81%)	23 (19%)	0 (0%)

Table 1. Questions and responses to the mid-semester online survey

The numbers indicate that an overwhelming majority of the class favoured the use of visualisation tools in understanding the concepts. It was also interesting to note that 72% of students thought they would not be able to read and interpret drawings if they had no experience using drafting tools.

Concluding Remarks

The feedback showed that most students appreciated the role of IT tools in PF1102. However, it also indicated that some had fundamental problems using the IT tools and visualising 3D objects. What was more alarming was the fact that many students expected the lecturers to guide them at every step and were unwilling to explore and learn the software for themselves. A key challenge of teaching this module would be getting students to be pro-active in learning these skills.

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Evolution: Teaching the Controversy

...continued from page 4

collect these objections, which are generally about the existence of supposedly 'irreducibly complex systems' and the 'lack of transitional fossils'. The first objection can be challenged using examples such as the gradual evolution of the vertebrate eye (Nilsson & Pelger, 1994). Similarly, exposing students to 'transitional' fossils effectively counters the second objection. For example, one practical session in ULS2202 and LSM3252 is devoted to gathering morphological differences between human and chimpanzee skulls. After these differences have been characterised, skulls from human fossil records are introduced for comparison. Students realise that these skulls display a mosaic of ape- and human-like features and that the older fossils are more ape-like. Exposing students to molecular evidence is another powerful method of addressing such objections. In another practical session, they learn to reconstruct evolutionary trees based on mitochondrial genes for monkeys, apes, Neanderthals and humans. They discover that the common ancestry of humans and chimps and the intermediacy of Neanderthals is still supported even when 95% of all evidence is deleted or only synonymous mutations are considered (Wildman *et al*., 2003).

Based on my experience, I believe that using the constructivist's approach to 'teach the controversy' is more productive than ignoring it. As we address these controversies, students also learn to gather and evaluate evidence from a scientific perspective.

Publicity E-poster for ULS2202 Evolution. Reprinted with permission from the University Scholars Programme

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Thoughtful Teaching – The Spirit of Learning

... continued from page 5

> of us that it has become our main motivation to learn. If the reward system is removed, we will be less motivated to accomplish the task."

Does this observation suggest that students are motivated to learn only when there are tangible rewards? If so, how much do students value learning new information and from each other without the promise of a tangible reward? Where is the 'spirit of learning' that recognises the learning process as the milieu to acquire skills in higher level thinking and collaborative work?

In an era where continuous learning is an imperative, what roles do teachers play in inculcating the spirit of learning in students? Does it begin with us thinking about a module's learning and teaching objectives? While we develop pedagogically sound objectives, do we also consider 'soft' objectives such as inculcating the spirit of learning and a love for learning in students? If so, how do we articulate these objectives and what kinds of teaching strategies do we adopt to achieve the objectives?

I have yet to find all the answers to these questions. Perhaps, if we could make space for 'the spirit of learning' as we reflect on our teaching and make attempts to incorporate it into our pedagogy, we may make a difference. Then, our students would not need to worry about exams on the first day of class nor lose the joy of learning. ■

Experiential Learning and Filming 'Floating Lives' in Cambodia: A Report on a CDTL Teaching Enhancement Grant Project

... continued from page 3

that help to determine students' approach to learning activities" (p. 301). Our 'learning journey' helped stimulate students' interest in the natives' daily struggles and made students more aware of important issues in human existence. For instance, students became particularly interested in the histories and experiences of Cambodians whether we were visiting the notorious torture-death Khmer Rouge prison of S-21 (also called the Toul Sleng Genocide Museum), a contemporary 'floating village' on the Tonlé Sap, or playing with children in a marginalised shanty dwelling in the city.

After the journey, the first draft of the film was shown to a class of students taking GE3210 "Natural Resources: Policy and Practice" to generate discussion about the project and issues such as livelihood, security, environmental sustainability and natural resource management in the Tonlé Sap. In addition to this, we are in the process of making a short film in Khmer to be used by FACT to help raise funds to support projects

continued next page ...

Experiential Learning and Filming 'Floating Lives' in Cambodia: A Report on a CDTL Teaching Enhancement Grant Project

... continued from page 15

Dr Carl showing a map of the "floating community" of Anlong Raing in Pursat, Cambodia, to a group of students on one of the house-boats

Pei Qing, one of the student participants, being interviewed on camera at S-21 in Phnom Penh

relating to the fishing villages in the lake. Thus, our CDTL-supported journey continues to generate creative ideas.

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