CDTLink

NUS National University of Singapore

Centre for Development of Teaching and Learning

July 2006 Vol. 10 No. 2

From 'B' Student to 'E' Educator: A Geographical Journey

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Introduction: Becoming an 'E' Educator

As I teach, I embark on a journey of self-discovery; a journey in which I learn more about geography as a discipline and also become more conscious of my teaching philosophy. I have always been an 'A' or 'B' geography student and today I have evolved into an 'E' educator. This essay presents some elements of my teaching philosophy: the need to enrich students with a body of knowledge; the importance of engaging students through experiential learning; the desire to impart enduring skills and my wish to encourage student research. Apart from these fundamentals, I have also become more aware of a number of value-adding dimensions in teaching. These include empathising with students; taking advantage of the environment; enthusing learners through personal touches and exposing students to cross-cultural encounters.

Enriching Content Knowledge

In teaching, I hope to enrich students with an understanding of geographic concepts, phenomena and specialised bodies of knowledge. While it is not the goal of education to know everything under the sun, it is nevertheless worthwhile for students to understand a select body of knowledge (pertaining to the chosen modular discipline) that will distinguish them as people of learning.

Working within a 13-week timeframe per semester in NUS, educators face a challenging task of condensing a sub-discipline into a semester's worth of salient issues and concepts. To ensure that the key ideas taught are relevant and current, I find it essential to update my teaching material annually. Refreshing modular content, visuals and updating reading lists

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keep me vigilant; as I have fresh materials and novel insights to share, I will be more enthused in my delivery. At the end of each semester, I always ask myself whether what was taught has made a difference in students' lives. Reviewing student feedback provides a gauge. If students benefit from the knowledge taught, I know that I have enriched them in some tangible way.

Engagement through Experiential Teaching

In lectures and tutorials, I engage students through 'Active Learning Sessions' (ALS); I believe that learning is most effective when students actively apply personal experiences. Hence, in a tourism module (GE2218 "Leisure, Recreation and Tourism") that I teach, instead of talking about souvenirs and the concept of 'cultural commodity', I insist that students bring to class items they had bought overseas. Original and memorable insights are shared when students discuss tourism concepts while viewing and touching an Aborigine boomerang, a Thai tribal fabric or an engraving from Mecca.

Enduring Skills

Content knowledge and conceptual understanding are not enough. When I was a student, I was always fascinated when lecturers share their study tips. As a teacher today, I try to impart study skills which I have found helpful as a student. I call these 'Big Picture' skills as they can be applied across disciplines and faculties; hopefully these are also lifelong skills that students can take into the working world.

Let me illustrate with one example. In 2004, I first came across Tony Buzan's concept of mind-mapping (Buzan, 1996, 2002) and found it to be an effective tool for classifying and categorising ideas and information. By applying mind maps in my lessons, I exemplify their usefulness. During revision, students are asked to apply mind maps to summarise all the key points covered in class. Able students do a remarkable job in mind-mapping all the main concepts and issues taught. In the final lecture, the best mind maps are reviewed and discussed. I believe that an ability to mind map is a lifelong skill that everyone can apply to good effect in a corporate environment.

Encouraging Student Research

Students often find the academic research process daunting. Through 'Research-based Teaching', I share my research challenges and personal field work and publication strategies. I go 'behind the scenes' to discuss research methodologies and the ways knowledge is constructed. By demystifying the research process and demonstrating that research methods are never foolproof, students are less intimidated by the research process. Students are heartened to hear of their lecturers' experiences (and failures), and to learn that research is an ever-evolving craft. Through sharing my experiences, I hope students are encouraged to venture into independent inquiry and research.

Empathising with Students

I regularly put myself in a learner's position and try to recall what learning tools I found useful as a student. When students have to grapple with five modules per semester, it is difficult for them to internalise the numerous new concepts and ideas introduced. As a student, I have always found alliterations, quirky acronyms and metaphors helpful in understanding and remembering new ideas.

As much as possible, I devise wordplay to facilitate learning. For example, instead of reminding students to evaluate a phenomenon from the various 'social, political, economic, cultural and spatial' perspectives, I tell them to put on their 'SPECS'. When students enquire about possible research topics to explore, I encourage them to ask the five 'P' questions: what is their personal *passion*; what *place(s)* are they interested to study; what noteworthy *phenomenon* should be studied; what *practicalities* need to be considered; what is their *personality* type?

When alliterations fail, helpful metaphors may be used instead. As a secondary school student, I recall a Chemistry teacher helping us understand the periodic table with a humourous limerick, and a Geography teacher explaining glaciation through metaphors of eating and other domestic activities. These memories have stayed with me. 'Memorising' facts in our information age is rather useless;

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Interpretation: An Essential Thinking Process for Innovation

Professor Hang Chang Chieh
Director, Centre for Management of Science and Technology,
Chairman, Steering Committee for Interactive and Digital Media, NUS

Introduction

Lester and Piore (2004) discussed the importance of combining 'analysis' and 'interpretation'—two fundamental thinking processes that gave managers, designers and innovators the concepts and tools to keep new and successful products flowing into the market and to move forward in the face of uncertainty. Lester and Piore (2004) observed, after studying cases of product development (e.g. cell phones, medical devices, blue jeans), that managers who were innovators used both 'analysis' and 'interpretation'. The former is essentially a rational problem solving process while interpretation is used when one tries to make sense of an event or a new piece of information. While managers easily recognise the importance of analysis, the role of interpretation is not widely understood or even recognised.

This article will examine the difference between analysis and interpretation to emphasise the importance of interpretation when teaching students, specifically those from the engineering and science disciplines, to be innovative and creative.

Limitations of Analysis

Analysis is an essential thinking process that breaks down large and complex problems into smaller and more manageable components. This process works best when alternative outcomes are well understood. However, analysis is not useful if the problem is not yet well-defined. This is when the interpretative process comes in to define or extend the range of alternatives available. In this way, the processes of analysis and interpretation could complement each

Table 1. Interpretation vs Analysis.

No	Interpretation	Analysis
1.	The focus is a process which is on-going and open-ended.	The focus is a project which has a well-defined end.
2.	The thrust is to discover new meanings (divergent thinking).	The thrust is to solve problems (convergent thinking).
3.	Managers set directions.	Managers set goals.
4.	Managers invite conversations to stimulate different viewpoints and explore ambiguity.	Managers convene meetings to resolve disagreements and eliminate ambiguity.
5.	Designers develop an instinct for what customers want.	Designers listen to the voice of the customers.

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Examinations for Broad-based Education

Assistant Professor Goh Bee Hua
Department of Building

Every semester, teaching staff are tasked to set examinations for the student body. The Oxford English Dictionary (4th Edition) defines an examination as "the testing of knowledge or ability by means of questions, practical exercises, etc. …i.e. have one's knowledge tested by a written examination". In this short paper, I shall explore whether the approach of setting examinations can have a significant effect on how students' knowledge or ability can be tested fully or at least in a fair manner.

In particular, I question the approach to setting an examination paper that gives students a choice of questions to attempt (e.g. 'choose three questions out of five'). While having a choice is good generally, does it have any positive effect on students in an examination context? Will it imply that we are in fact giving students a choice of knowledge as they can choose the questions they want to attempt in an examination? While we may expect students to learn all that had been taught, there may be little motivation for students to do so if they already know that not everything will be tested. Students, under the pressure of time, may resort to 'spotting' topics and if so, we may end up testing them for a different kind of ability.

In real life situations, graduates are expected to apply their acquired knowledge or ability to solve problems. In other words, they do not get to choose the type(s) of problems they might encounter in their work. Hence, the quality of their performance may be attributed to the approach we adopt in setting examinations to test their knowledge or ability. With this in mind, we should have a greater sense of purpose when setting an examination.

One solution could be for the teaching staff to consciously set questions that require students to apply their knowledge across topics taught in a module. In this way, students are tested on their ability to integrate knowledge across subject areas and apply it to the context of the question. Thus, having a choice of questions (or not having it) becomes immaterial as each examination question now involves a mix of different topics.

The nature of the module I teach, BU4280 "Development and Building Economics", allows me to develop questions of this kind. While students generally commented that the scope of the module is too broad, its main purpose is not to stump students with the amount of content they have to learn but to facilitate knowledge integration. In essence, students should have already learnt the fundamentals in the earlier years of their 4-year course and, in the final year, students will have to demonstrate the ability to integrate what they have learnt. Briefly, the module's four objectives aim to provide students with:

A. An understanding of development economics in the context of economic development and basic appreciation of sustainable development as well as the ability to apply these principles to the construction industry;

B. An understanding of the continuous development of the construction industry in a competitive environment, both domestic and international;

C. A deeper appreciation of cost control throughout the project's life cycle and a consideration of new analytical methods that are enabled by computer technology; and

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D. An appreciation of the use of construction projects as investment vehicles and how to balance the consideration of project costs with revenue.

Each of the above objectives is further broken down into a range of topics. For example, a complete answer to one of the questions (Figure 1) asked in the examination (AY 2005/2006) will involve an understanding of the following topics that come under objective C:

- Information technology, productivity and economic growth;
- Information standardisation: cost and resources classification;
- Cost information systems;
- Development and construction cost modelling, theory and applications;
- Whole life costs-life cycle cost management; and
- Intelligent enterprises for construction.

> Discuss the following statement: "Computer technology is likely to continue to play a large part in improving cost planning of buildings. The power of the machine to hold vast quantities of information and recall and manipulate that information must be of interest to all those charged with providing cost advice."

Figure 1. An examination question for BU4280 in AY 2005/2006.

The module's continuous assessment component comprises a tutorial assignment and an open-book semester test. To further instill in students the need to read beyond the recommended texts, the examination, which constitutes 60 percent of the total marks, is also open-book.

Now as we know an examination is a means to test a person's knowledge or ability on a particular subject, we need to also realise that information stored in humans is temporary. In other words, instead of cramming in as much content as they can, it may be more essential for students to acquire skills that will enable them to search and apply relevant knowledge in wide-ranging contexts. It may be good to bear in mind what Douglas Everett says: "The mark of a well-educated person is not necessarily in knowing all the answers, but in knowing where to find them."

Perhaps, in a nutshell, this is what broad-based education intends to achieve in the longer term. And so, examinations must have a deeper meaning as well and they have to have a significant role in moulding the process to reach this end.

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Is Quantitative Student Feedback Useful?[1]

Ms Caroline Tan and Professor Andrew Wee
Faculty of Science

With the introduction of 'commercialisation' in higher education, we are often left baffled by the myriad of processes and feedback exercises the university solicits from students. Increasingly, universities around the world recognise that students are our customers and they are free to chose where they want to study. In the same manner as collating market surveys, these institutions assiduously collect feedback from its students with the aim to improve its 'service' as well as to serve as additional 'customer satisfaction' indicators for potential students and stakeholders. In NUS, quantitative student feedback data is also often used to rank faculty according to their 'teaching ability', and such rankings are often the main indicator used to shortlist faculty for both Faculty and University Teaching Excellence awards. Moreover, student feedback scores often have a direct or indirect impact on the faculty member's annual performance bonus, and may influence his/her chances of tenure and promotion, especially if the scores are particularly low.

However, "it is not always clear how these views collected from the students fit into institutional quality improvement policies and processes. To be effective in quality improvement, data collected from surveys and peer reviews must be transformed into information that can be used within an institution to effect change" (Harvey, 2001: 2). But before this can be worked into the system effectively, we need to know what the student feedback system can tell us.

Information from student feedback should help create a profile of each lecturer being evaluated. At a FTEC (Faculty Teaching Excellence Committee) briefing (May 20, 2005) organised by the Centre for Development of Teaching and Learning, Professor K P Mohanan described the two typical profiles of 'good' teachers:

- Profile A: "Good at lecturing, clear presentations and explanation, passion for subject, interesting, dedicated, approachable, organised/systematic, knowledgeable";
- Profile B: "Encourages students to think, clear presentation and explanation, does not spoon-feed, knowledgeable, encourages independent learning, asks probing questions, challenging".

If we believe that *education* involves higher order learning outcomes that distinguish the quality of the mind of a *well-educated* person from those of a *well-trained* person, then we should be aiming to identify lecturers with profile B as the best ones. Our current student feedback gives us both quantitative and qualitative information. Quantitative data are the feedback scores and percentage of nominations for teaching awards. Qualitative data, which are often overlooked, may be derived from students' written comments. We can identify repeated comments versus sporadic ones to identify the majority views of students. From such repeated comments, the lecturer's teaching profile should emerge, which would complement his/her qualitative scores.

First, let us address the quantitative student feedback scores. Some key questions that we need to ask to correctly interpret the quantitative scores include:

- Is class size important?
- Do larger classes get fewer nominations for teaching awards?
- Is there a correlation between the response rate and the class size?
- Do poor scoring modules have lower response rates?

- Are feedback scores higher for more advanced modules?

The following graphs and interpretations are based on the National University of Singapore's Faculty of Science student feedback results for all modules taught in semester 1 of AY 2004/2005, using the following standard feedback questions:

1. The teacher has enhanced my thinking ability.
2. The teacher provides timely and useful feedback.
3. The teacher is approachable for consultation.
4. The teacher has helped me advance my research (if applicable).
5. The teacher has increased my interest in the subject.
6. The teacher is able to demonstrate cross-disciplinary relationships in relevant topics and has taught us to draw interconnections between different areas in Science.
7. The teacher is able to illustrate some actual or potential applications of knowledge covered in the syllabus.
8. Overall the teacher is effective.
9. Average of Question 1–7.

Is Class Size Important?

As we can see from the plots in Figure 1, it is more difficult to obtain higher feedback scores for larger classes. This is despite the fact that good teachers are often assigned to teach these large classes, which are often general education (GEM) or first year modules.

Do Larger Classes Have Less Percentage of Nominations?

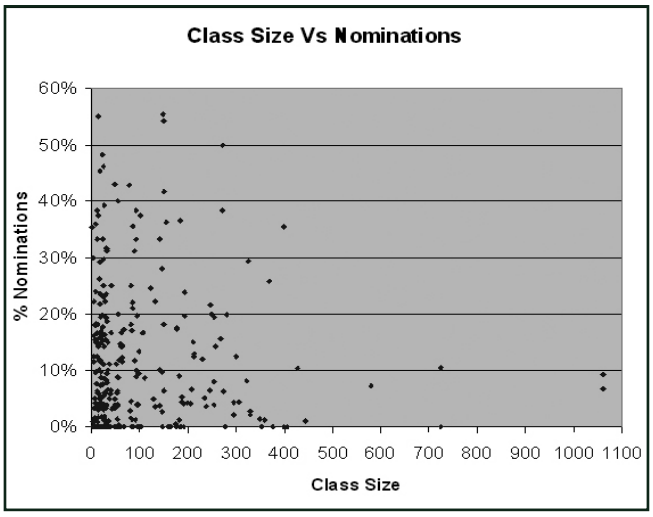

Figure 2. Percentage nominations for teaching awards versus class size.

Figure 2 shows that the percentage nominations for teaching awards is indeed lower for larger classes, consistent with feedback scores in Figure 1. This means that it could be more difficult to obtain a teaching award if you are assigned to teach a large class, even if you have been an excellent teacher consistently.

Hence it is important to ask what incentives we can provide to encourage good teachers to teach large classes.

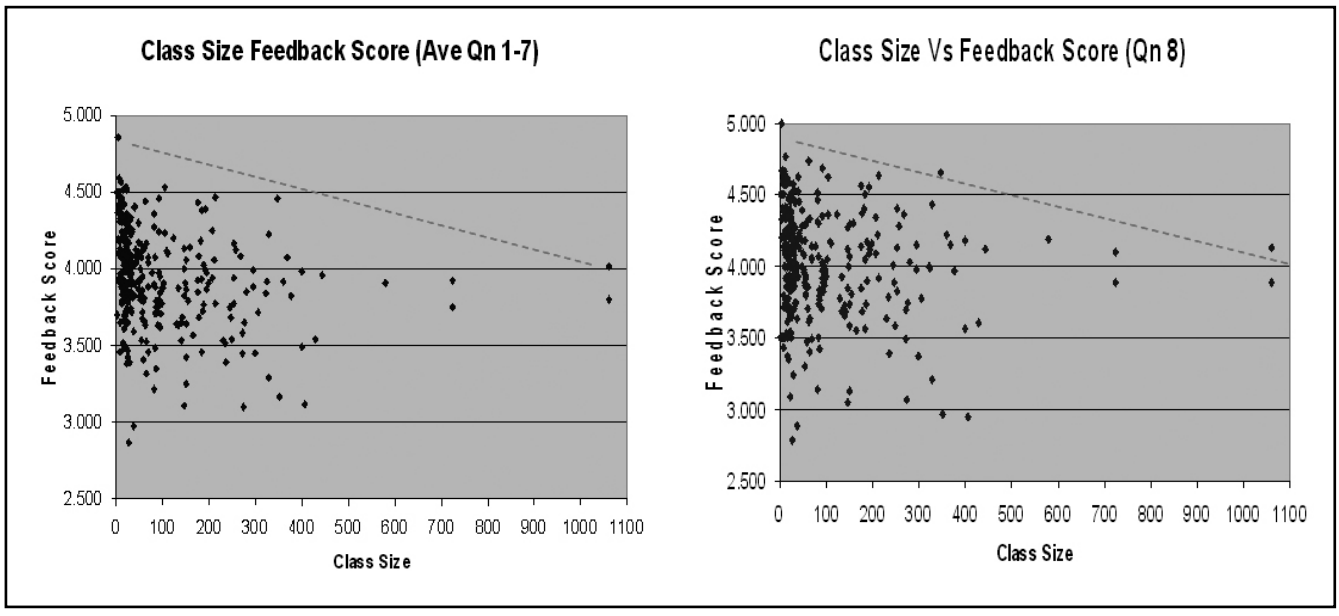

Figure 1. Feedback score versus class size.

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TLHE 2006

December 6–8, 2006

Quality in Higher Education

CDTL will be organising its International Conference on Teaching and Learning on December 6–8, 2006. The Conference will examine the problems and challenges of assuring quality in higher education.

What is quality in higher education? Who are the stakeholders in education who participate in defining quality? How do we achieve and assure quality?

As institutions of higher education develop frameworks for assuring quality, educators will need to ascertain how their role in education will fit in within these frameworks. Existing quality assurance frameworks for Universities are problematic because they focus on processes rather than learning outcomes. It is imperative that we judge the quality of education in terms of the goals of education.

Please also join us for pre-conference workshops on **December 5, 2006**.

'Describing and Influencing Student Learning'
Professor Barbara Cambridge,
Director of the Carnegie Academy Campus Program
Stanford University, USA.

'Improving Teaching: Lessons from Doing Research'
Dr Gregory Light
Director, Searle Center for Teaching Excellence
Northwestern University, USA.

Pre-conference workshop registration fees are **S$50 (US$30)**.

For more information,
please visit the TLHE website at http://www.cdtl.nus.edu.sg/tlhe or
contact the Conference Secretariat, Ms Rita Roop Kaur,
at cdtrrk@nus.edu.sg. ■

From December 6–8, 2006, we have lined up the following experts to examine the problems and challenges of assuring quality in higher education:

Keynote Speakers

Professor Barbara Cambridge
Director, Carnegie Academy Campus Program
The Carnegie Foundation for the Advancement of Teaching, Stanford University, USA

Dr Gregory Light
Director, Searle Center for Teaching Excellence
Northwestern University, USA

Invited Speakers

Professor Graham Webb
Pro Vice-Chancellor (Quality), Monash University, Australia

Dato Dr Sharifah Hapsah Syed Hasan Shahabudin
Director, Quality Assurance Division
Department of Higher Education,
Ministry of Education, Malaysia

Professor Lily Kong
Vice Provost (Education),
National University of Singapore, Singapore

Dr Gary Poole
Director, Centre for Teaching and Academic Growth
University of British Columbia, Canada

Professor Adrian Lee
Pro Vice Chancellor (Education and Quality Improvement) (Retired),
University of New South Wales, Australia

Regional Panel Session - Speakers

Professor Dr Sudjarwadi
Vice Rector for Education and Quality Control Affairs,
Gadjah Mada University, Indonesia

Professor Dr Supachai Yavaprabhas
Director, SEAMEO - Regional Institute of Higher Education Development (RIHED), Thailand

Associate Professor Ho Shi-huei
Director, Teaching and Learning Centre
Soochow University, Taiwan

Dr Emerlinda R. Roman
President, University of the Philippines, Philippines

Calling All Writers

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

- CDT*Link* (700 words maximum per article; photos & illustrations in hard/digital copy are welcomed)
- CDTL*Brief* (text-only newsletter; 1000 words maximum per article)

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

Sharon Koh
Email: cdtsksp@nus.edu.sg
Tel: (65)-6516 4692 • Fax: (65)-6777 0342

Announcement

WELCOME!

CDTL welcomes as Research Assistant **Ms Tiu Ting Ling, Angela.**

GOODBYE!

We would also like to thank:
Mr Emil Cheong Shen-Li, our Research Assistant, who left in June 2006 for all his invaluable support in the past and wish him all the best in his future endeavours.

Interpretation: An Essential Thinking Process for Innovation

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other. However, most engineering or science students, who are trained predominantly in analysis, are not comfortable with the process of interpretation. In NUS, the implementation of the University Scholars Programme is a step towards rectifying this imbalance by exposing small groups of engineering and/or science students to opportunities that develop both their analytical and interpretive thinking capabilities.

Combining Analysis and Interpretation

As can be seen from Table 1, analysis and interpretation are fundamentally different resembling the contrast between 'yin' and 'yang'. To succeed in the real world, a combination of interpretation and analysis is essential but may not be commonly or consciously practical. Educators need to better appreciate the critical role of interpretation by creating, cultivating, renewing and enriching the spaces where interpretation can take place.

Concluding Remarks

In order to enhance the capability for innovation among engineering and science students, educators need to strengthen their education in liberal arts and humanities. Students will be able to broaden and deepen their interpretive capabilities as they will learn important skills from literary critique, historical perspectives as well as linguistic and artistic accomplishments.

For Frans Johansson (2004), the opportunity for drastically enhancing creativity and innovation at the 'intersection' of ideas is clearly demonstrated. However, Johansson highlights a major problem: as experts in their fields, many potential innovators tend to take a particular point of view and may not appreciate other alternative perspectives. As a result, 'associative barriers' are erected, making intersectional ideas less likely. This is perhaps another instance where the process of interpretation will be useful as it highlights ambiguity, delays judgment and gradually overcomes the established pattern of thought, and hence, the associative barriers. Understanding the importance of interpretation is also relevant to an emerging area of research and economic development for Singapore, Interactive and Digital Media (IDM), as announced by Dr Tony Tan, Chairman of the National Research Foundation. IDM is an intersection where technologists, artists and social scientists would meet and explore collaborative, interdisciplinary research and innovation opportunities. Technologists (e.g. research scientists, engineers) will need good interpretive capabilities to participate and contribute significantly to innovation in IDM.

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Johansson, F. (2004). *The Medici Effect: Breakthrough Insights at the Intersection of Ideas, Concepts and Culture*. Harvard: Harvard Business School Press. ■

Is Quantitative Student Feedback Useful?

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Is There a Correlation Between the Response Rate and the Class Size?

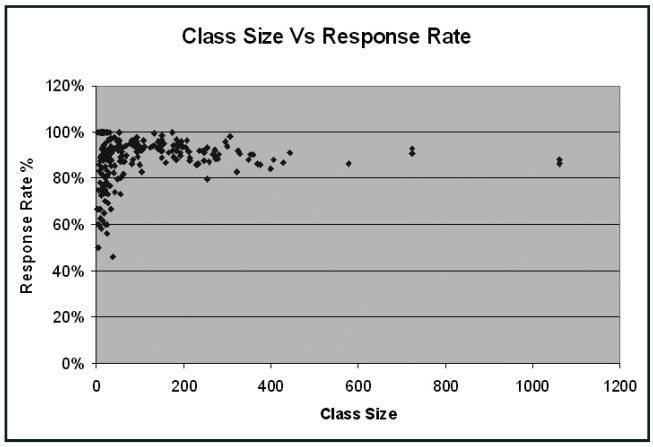

Figure 3. Student feedback response rates versus class size.

In order to assess whether there is any bias in feedback due to poor response rates in some modules, Figure 3 plots students' response rates against class size. It can be seen that the response rate is consistently high (>80%) if the class size is not too small, in which case the statistics could be strongly affected by individual non-respondents. Hence, we can infer that there is no clear correlation between the response rate and class size. However, it would be interesting to then ask whether poor scoring modules have a lower response rate.

Do Poor Scoring Modules Have Lower Response Rate?

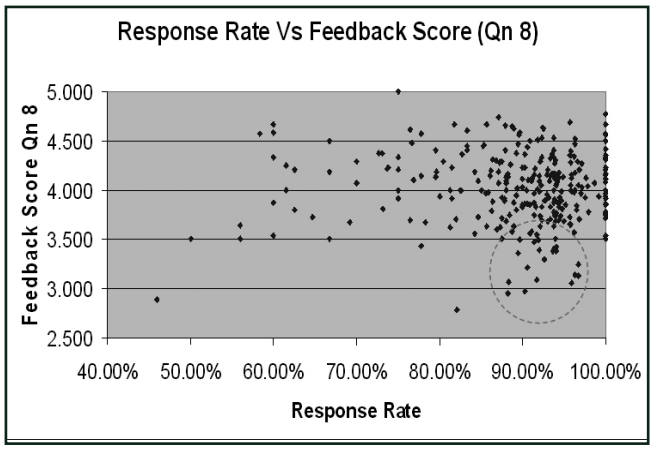

Figure 4. Overall feedback score versus response rate.

Looking at the data scatter in Figure 4, there is no conclusive evidence to conclude that poor scoring modules have lower response rates. In fact, there is a cluster of low scoring modules (circled in Figure 4) which have received very enthusiastic student responses, suggesting that many students are willing to provide negative feedback if they feel that a module is not well taught.

Are Feedback Scores Higher for More Advanced Modules?

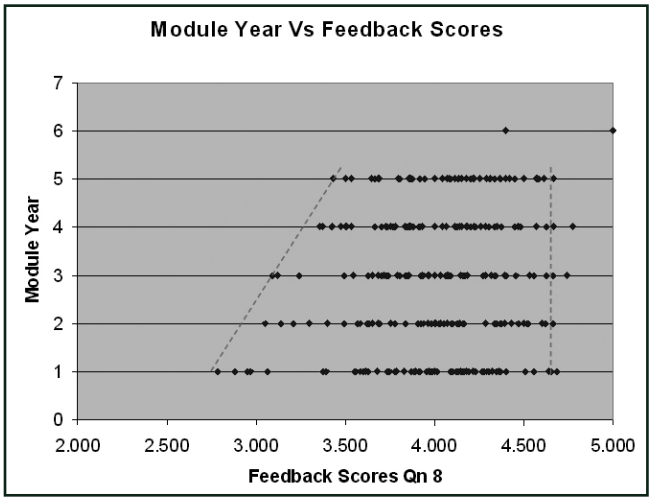

Figure 5. Feedback scores plotted according to module level.

There is a common perception that it is easier to achieve higher student feedback scores when teaching higher level modules. Figure 5 shows the overall feedback scores plotted according to module levels (1 to 6). It is clear that the minimum feedback scores improve significantly for higher level modules, while the maximum remains approximately constant (the average score increases with level). This could in part be attributed to the smaller class sizes at higher module levels. Nevertheless, this result reinforces the notion that teaching higher level modules is preferable, and teaching evaluation committees should exercise some degree of score normalisation when comparing scores of modules taught at different levels.

The major trends observed so far can be summarised as follows:

- Implications of class size:
  - It is harder to achieve higher scores for large classes;
  - Percentage nominations for teaching awards is lower for larger classes.
- The response rate is not a clear indicator of feedback scores.
- Higher level modules do not suffer from low feedback scores.

Due to space constraints, further details of this quantitative study cannot be presented here. However,

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Teaching for Students' Success at NUS

Dr Lakshminarayanan Samavedham
Department of Chemical and Biomolecular Engineering
Winner, Outstanding Educator Award, 2006

The prospect of continuously interacting with fertile young minds and the possibility of creating professionals who are better equipped (than I am) in dealing with the engineering and societal problems brought me to an academic setting after a intellectually rewarding three and a half years of R&D at Mitsubishi Chemical Corporation, Japan. Looking back, the working experience has helped me to teach with a definite purpose.

Over the past five years at NUS, I have been involved in teaching several modules and as a result, I have become more experienced in teaching classes of different sizes at various levels. While classes of 50 students had seemed large to me in the beginning, classes of 300 no longer intimidate me now. While I was essentially a pen-and-board teacher before arriving at NUS, I had to quickly embrace Microsoft PowerPoint, live computer demonstrations, IVLE and webcasting to be effective at NUS. NUS has definitely made me tech-savvy!

To further facilitate student learning, I adopt a two-tiered objective as part of my pedagogical efforts at NUS. I make use of both the Integrated Virtual Learning Environment (IVLE) and the first lecture of each module to communicate two important learning objectives to students (Table 1).

I emphasise to students that while quizzes and exams may test basic concepts they need in the future—and it may well be argued that quizzes and exams alone had produced good engineers in the past—it is no longer adequate by current industry standards and it is possible to do even better, given today's technological advances.

The widespread use of personal computers and several simulation packages now allow a more 'hands-on' approach in teaching and learning chemical engineering. Processes ranging from the more conventional chemical engineering systems to the increasingly popular biological systems can now be simulated with appropriate software on PCs. Even processes with nonlinearities and multivariable interactions can be simulated with relative ease. For instance, it is easy to generate 'what-if' scenarios or study the effects of parameters on system responsiveness with the right software. Students

Table 1. Short-term vs long-term learning objectives.

Short-term learning objectives	Long-term learning objectives
• Acquiring information to pass conventional course quizzes and exams.	• Acquiring lifelong skills (e.g. multidimensional thinking, independent study, computational skills) to maintain relevance in future career.
• Students are tested on basic concepts	• Students are to conduct discussions through tutorials or project work.

get to reinforce their theoretical understanding of the subject by 'doing' an engineer's job on these virtual processes. This approach eliminates needless approximations and over-simplifications that classical pen-and-paper approach requires.

I also align student assessment with the overall objectives of the module. With a view to shape students' long-term learning attitudes, I have arranged for a higher percentage of students' continuous assessment to count towards their final grade. Examinations are also open book to further discourage rote-learning. While students are well-adapted to making proper 'parametric' decisions that optimise a certain quantitative performance measure, they are not as comfortable in providing qualitative explanations or dealing with situations where 'structural' decisions need to be made. I try to set exam questions that equally emphasise both the qualitative and quantitative aspects by getting students to articulate opinions on situations rather than punching into their calculators ceaselessly during the exam.

Even at the undergraduate level, research is becoming more important. To impart the desire for both independent learning and learning from others, I arrange for students to work on projects and they are given the following choices:

1. Read up on a research topic, learn about the latest developments in that area and check how well the industry is adopting these developments,
2. Work with provided industrial data sets to develop suitable mathematical models,
3. Choose a physical system or develop a product development idea. Plan and execute experiments and analyse resulting data to optimise performance.

These projects provide students with the opportunity to do something beyond what they have learnt from lectures. Students learn by experimenting and experiencing, discussing with their group members as well as consulting research articles from journals. As part of the project work, students turn in a report with their results and photographic record of the experiments they have conducted. Through project work, students learn essential lifelong skills (e.g. group work and its dynamics, understanding the uncertainties of experiments) which prepare them for the workplace.

Of course, some students do not like my teaching approaches. To them, these measures are 'different', 'intimidating' and 'aggressive'. But from both emails and student feedback, the majority of students seem to enjoy them. Winning the NUS Outstanding Educator Award has been a delightful achievement for me. Help and support from my family members, department and university colleagues (CDTL provided a great platform to interact with superb teachers from various NUS Faculties), my teachers, friends and most importantly, my students are gratefully acknowledged. Still one thought always lingers in my mind–"I wish I can teach as well as my teachers did." ■

Is Quantitative Student Feedback Useful?

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we have found that teachers who promote higher order learning outcomes do not necessarily get nominated for teaching awards. This can be seen, for example, from the results shown in Figure 6, which shows the score on question 1 ("The teacher has enhanced my thinking ability") versus percentage nomination.

This somewhat surprising result which shows no correlation indicates the limitations of using quantitative student feedback in identifying excellent teachers, in particular the lecturer with profile B who "encourages students to think, gives clear

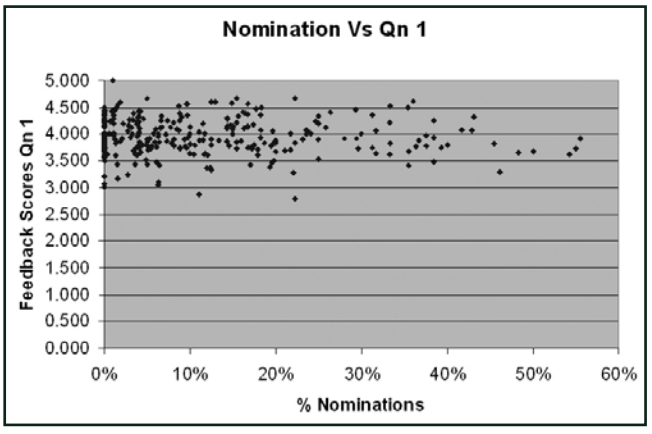

Figure 6. Student feedback scores on Question 1 ("The teacher has enhaced my thinking ability") versus percentage nomination for teaching awards.

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presentations and explanations, does not spoon-feed, is knowledgeable, encourages independent learning, asks probing questions, and is challenging". There could be many factors influencing the scores of such questions but these will not be dealt with here. Nevertheless, it is clear that there is a need to probe specific qualitative student feedback comments to build more accurate lecturer profiles.

Creating a Profile Using Qualitative Repeated Student Comments

To give specific case studies, we have collated selected repeated comments from the feedback of Lecturer X that reflect higher order learning outcomes:

- "He encourages us to have open discussion during lectures."
- "… encourages students to think for themselves …"
- "Made us think and do things on our own."
- "He stimulates his students' thinking."
- "… made me want to understand the concepts even before I came to lecture…"
- "… stimulated students' thinking when attending to students' questions because he liked to get students think over their question …"
- "It is very refreshing to be expected to learn for yourself and not be spoon fed all the time."
- "His mode of education is really different. He makes the students think for themselves and cultivates independence during the process."
- "He taught students how to use their brain and think, and not spoon feeding and focus on memory work! (sic)"
- "He motivates me to learn, to challenge myself and work out problems on my own."

Similarly, the following are repeated comments for Lecturer Y from the same department:

- "explains very clearly. very cheerful"
- "ability to go in depth of the topic. have lots of knowledge/ experience for that subject (sic)"
- "talks patiently and slowly for students to most of the concepts (sic)"
- "notes are detailed and clear delivery of lecture"
- "He is humorous."
- "Approachable for consultation and willing to answer questions beyond the course materials as well."
- "Always punctual for lecture."
- "He is clear, and does describe the processes well. Uses good examples."
- "lecturer can explain the module content to student very clearly."

It is useful to note that both lecturers have similar and reasonably good feedback scores, though both would not normally qualify for teaching awards based on feedback scores alone. However, it is evident that Lecturer X's teaching promotes higher order learning outcomes, making him a better educator and a good candidate for a teaching award.

In conclusion, this simple study shows that whilst quantitative student feedback has its uses, it may fail to give an accurate profile of the lecturer concerned. One effective way of doing this is to examine student feedback more carefully and to compile repeated, consistent comments to build up a more accurate profile of the lecturer. The Faculty of Science FTEC has indeed started to do this from AY2005/06 in its evaluation of lecturers for teaching performance and awards. Peer review and module folders also provide additional inputs, but various problems in peer reviewing have been noted and will be addressed in the new peer review system to be implemented in AY2006/07[2].

Endnotes:

1. This article is based on the talk given by Professor Wee at the Faculty of Science Teaching Workshop, July 2005.
2. This new Peer Review System will be presented at the Faculty of Science Teaching Workshop, August 2006.

References:

Harvey, L. (2001). 'Student Feedback: a report to the Higher Education Funding Council for England'. Centre for Research into Quality. http://www/uce.ac.uk/crq/publications/student-feedback.pdf. Last accessed: 6 July, 2006. ■

From 'B' Student to 'E' Educator: A Geographical Journey

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nevertheless, some degree of memory is still needed when we study. Helping students recall and classify ideas with alliterations and other literary devices is a fun activity for both teacher and learners.

Using the Environment to Best Advantage

Who says lessons have to be conducted in a static classroom? A scenery change is always refreshing, especially for a geography class. Each semester, a colleague and I bring students to the Singapore River for a 3-hour outdoor lesson. More recently, this riverside lesson has incorporated a 15-minute visit to a café to talk with a budding entrepreneur. Students get to ask the café owner questions about his operations, as well as validate academic concepts in the business world.

Figure 1. Classroom with a view: conducting a field trip at the Singapore River.

While it is ideal to get students out into the field (e.g. through overseas field modules which the Geography department conducts twice annually), it is not always logistically and financially possible. A less ambitious, but equally memorable environment change can be effected. For instance, for a tutorial on eco-tourism, I conduct the lesson under the beautiful rain trees near the Old Administration Block in NUS. I have invested in a number of inexpensive rattan mats for students to sit on and a few rustic fans to chase away the heat. A simple change in environment always keeps lessons fresh and students anticipative. The NUS campus abounds with limitless possibilities for alfresco classrooms.

Figure 2. The alfresco classroom: an eco-tourism discussion outside the Old Administration Building.

Enthusing Learners through Personal Relations

Knowing students and calling them by their names do make a difference. When students feel they are given personal attention, they are willing to put in more effort. Whenever I take attendance, I sketch a floor plan of the class and attach a name to each 'smiley face' in it. I will call on students with their names (after stealing surreptitious glances at the plan, of course). After each class, I attach brief comments to different students in the plan to help me remember who had said what. These notes also help me to identify students who are non-participative. After two or three tutorials, it becomes much easier to attach names to faces and voices.

Cross-cultural Encounters and Exposures

Above and beyond the classroom environment, I like to get my students to meet peers from a different cultural background. If we are to prepare youths for a global working environment, what better way to start than in schools? In 2001, I participated in a 'borderless classroom' exercise with colleagues from University of Hawaii, Manoa (UHM). Over five weeks, 150 NUS students exchanged information and ideas about tourism with 50 UHM undergraduates. Virtual chat-rooms, communal discussions and group projects were created online to facilitate student interaction. Notwithstanding some technical glitches, the sustained dialogue between American and Singaporean youths provided opportunities to dispel stereotypes and misconceptions.

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More recently in 2005 and 2006, a colleague and I initiated a field studies module (GE3230 "Field Studies in Southeast Asia") involving 20 University of Malaya (UM) and 20 NUS participants. The 6-week long special semester module allows students to spend three weeks each in Malaysia and Singapore. Project groups comprise a mix of NUS and UM students and assignment tasks are designed to facilitate cooperation and cross-cultural dialogue. It is heart-warming to see students from across the Causeway helping one another in a spirit of camaraderie. More significantly, strong bonds of friendship are forged between Malaysians and Singaporeans. I look forward to many more cross-cultural encounters in these borderless classrooms.

Figure 3. Cross-cultural encounters: TC Chang, NUS and University of Malaya students with Orang Asli children in Cameron Highlands.

Conclusion: Empowering Educators

It is a challenge to maintain a high standard of teaching from semester to semester, over the years. In the same way that we try to empower students with new knowledge and skills, educators also need to be empowered for the long haul. I suggest three strategies of empowerment. Firstly, a good teacher must be passionate about research. When one actively undertakes research, the material one teaches is current and cutting-edge; such an educator speaks with personal experience and conviction of his/her research findings. Secondly, pedagogical research provides an excellent outlet for educators to reflect on their teaching strategies. Through publishing articles on my Hawaii-Singapore collaboration, for example, I have learnt more about the role of the Internet in education and its effects on the young. Finally, colleagues need to share with one another their best practices and problems. CDTL does a great job by providing a platform for exchange and dialogue. In the Department of Geography, we have also inaugurated a biannual staff sharing session to brainstorm best practices and challenges. There is always something inspirational and insightful when we discuss and share with one another our teaching experiences. Empowering educators is undoubtedly a crucial ingredient in producing and sustaining teaching excellence in NUS.

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