

*This issue of CDTL Brief is the last of a two-part installment that features the teaching practices of the **NUS Outstanding Educator Award** winners and nominees.*

## My Teaching Philosophy and Practices

**Assistant Professor Tan Kay Chen**

Department of Electrical & Computer Engineering

### Philosophy

I believe teaching is a form of customer service in which the teacher creates a learning environment that motivates the students to learn and supports them in the learning process. Instead of focusing on a particular teaching technique, the teacher should utilise whatever tools that stimulate the maximum learning in the students. I have been developing my pedagogy skills as a university teacher for the past seven years and that development has been a process of finding the best teaching practices as I aspire to produce engineers who can learn independently and apply knowledge creatively.

### Practices

It is often difficult to motivate students particularly for large classes when interaction between the teacher and students is limited. Motivation occurs when students realise what they are learning is interesting and/or relevant. Once the students become interested and motivated, it would be much easier to encourage them to learn more about the subject and to inquire into topics beyond the course syllabus or exam paper. I attempt to make my presentation and lecture vivid with the help of audio-visual aids and real-life examples to stimulate students' interest. If I have an experience or a joke about something related to my course, I will share it with the students in class. In my undergraduate fuzzy/neural course, EE4305 "Introduction to Fuzzy/Neural Systems", I make use of examples such as 'marriage' and 'divorce' in human relationship to make the potentially dull concept of 'fuzzy relation' in fuzzy set theory more interesting. A number of animated simulations and video clips (e.g. a fuzzy cart-pole balancing robot) are also used

to illustrate the fuzzy logic in engineering applications and to motivate students to put their knowledge into practice. I also attempt to relate the theory to reality by pointing out the current commercial products which use fuzzy logic technologies so that students are aware of relevance of the course materials.

In addition, it is important to develop a positive teacher-student relationship by caring for the students' well-being and understanding their difficulties in acquiring knowledge. A good teacher should be committed to bringing out the best in every student with their passion for teaching and love for the students. Such an educational partnership will give students the confidence and trust in seeking assistance or guidance from the teacher. I maintain an open-door policy and proactively encourage students to come and discuss their difficulties with me. Instead of waiting for the end-of-semester evaluations, I attempt to monitor students' progress and provide them with opportunities for feedback through means such as mid-semester quiz or assignment where students could react to what they have learnt so far and make suggestion for improvement. I also make use of the discussion forum in IVLE (where I act as a moderator to clarify or encourage discussion in interesting topics) to encourage peer-to-peer interaction and learning.

My experience has taught me that students learn most if they are active participators in the learning process. When I teach, I use strategies that facilitate student learning rather than transmit information one-way (teacher to student). For example, I believe in using questions to engage and involve students in the learning process. Whenever possible, I will move around the

class to promote interaction among students and to post questions that allow them to express their ideas and thoughts. In small group teaching such as tutorials, occasionally students are asked to come up to the board to solve problems. Such practices help to increase their independence in acquiring knowledge and develop their communication and interpersonal skills, which are important for professional success. I often deliver my lecture within the period of 20 minutes at one time to keep the students attentive. During each break, problem-solving or challenging questions will be asked, and students are encouraged to discuss among themselves or even critique one another's thoughts and answers. Such approaches not only enable students to recap what they have learnt in the class, but also help them appreciate criticisms or uncertainty in solutions that are common in a real-world scenario.

I find it important to provide students with hands-on learning experience in engineering education. Instead of merely imparting technical knowledge on the subject matter, the lab assignment of "Introduction to Fuzzy/Neural Systems" requires students to go through the fuzzy logic design and implementation process for a physical liquid coupled-tank control system. Questions are also posted in the lab manual for them to engage

in critical thinking and to seek evidence/arguments to support the results obtained in the experiment. I also employed undergraduate students under the Vacation Internship Programme in the Faculty of Engineering, where students have the opportunity to work and practise on interesting projects that are related to my research and teaching. This has helped to keep the students abreast of current technologies and stimulate their interests in research. Many of these students have stayed on to continue doing research for their final year projects or postgraduate studies.

## Conclusion

I believe there is no single teaching recipe that is optimally applicable to every teacher. A good teacher must be a continual learner in the field of pedagogy in order to constantly exploit new and advanced technologies as well as to develop the best personalised and innovative teaching practices in order to realise his/her educational philosophy within the context of education in the 21<sup>st</sup> century. ■

---

*Assistant Professor Tan Kay Chen is a winner of the NUS Outstanding Educator Award in 2004.*

# The Joy of GEM

**Associate Professor Helmer Aslaksen**

Department of Mathematics

---

## General Education Modules

Teaching General Education Modules (GEM) allows me to put everything I've always wanted to do in teaching into practice! I have designed two modules GEK1506, "Heavenly Mathematics: Cultural Astronomy" and GEK1518, "Mathematics in Art and Architecture" where I aim to:

- change the way students look at the world around them,
- give students knowledge that they will enjoy for the rest of their lives, and
- make students appreciate the beauty and relevance of mathematics.

## Teaching Goals

*Appreciate mathematics.* I love mathematics for its internal beauty and its relevance to the world around us. Unfortunately, many of our students have been deeply

traumatised by the way mathematics is taught in schools. In my teaching I show the students that mathematics is not just about exams and formulas, but that it is related to a wide range of everyday phenomena.

*Lifelong learning.* The main reason why I wanted to become a professor is because I love learning! One of my main goals is to help students appreciate knowledge and develop a lifelong passion for learning. I also help my students understand that going to a university is not simply about getting a degree, but about picking up intellectual life skills that will serve them well, no matter what they do later in life.

*Presentation.* It is a sad fact of life that most of the time, it doesn't matter what you know or what you do, but how you present it. In my courses, I try to teach students the importance of clear presentations. I also stress that writing a paper does not mean simply copying dubious information from the web, but explaining and presenting the information clearly. When marking the students'

projects, one of my most common comments is: “I don’t understand this. Do you?”

*History, culture and society.* Scientists don’t live in a vacuum. It is important to understand the relationship and interplay between science and society. I want my students to appreciate how people throughout the world and throughout the ages have struggled with the same problems. It is fascinating to see how they sometimes come up with fundamentally different, but equally valid solutions!

*Singapore context.* For both courses, I try to take a Singaporean point of view. Many astronomy textbooks (including primary school science textbooks used in Singapore) take a ‘high-latitude centric point of view’. I try very hard to be ‘hemispherically correct’ and I sometimes describe the first part of my astronomy course as astronomy for ‘latitudinally-challenged people’.

Singapore is not just a multiracial and multicultural society, but also a multicalendrical society! A major part of my astronomy course is a detailed study of the four calendars—Chinese, Muslim, Indian and Western—that determine the public holidays in Singapore. At the beginning of the course, I often get strange looks from Chinese students when I ask them questions related to Muslim holidays. They seem to think that I’m a stupid foreigner who can’t tell the difference between a Chinese and a Malay. But by the end of the semester, most students seem to appreciate the links between science and society.

*Critical thinking.* The bookstores are filled with books about astrology, ‘sacred geometry’ and ‘lost civilisations’. I aim to give my students the knowledge and thinking skills to enable them to separate fact from fiction.

## **Respect for Teaching**

I love teaching. I am passionate about knowledge and I love sharing it. That’s why public lectures and outreach activities are an integral part of my work.

*Public lectures and outreach.* I give a lot of public lectures on topics in mathematics, astronomy and art at museums, libraries, science centres and schools. I have also been academic advisor for the exhibition, *Art Figures: Mathematics in Art* at the Singapore Art Museum and *The Dating Game—Calendars and Time in Asia* at the Asian Civilisations Museum and for the TV series *Ancient Chinese Inventions* on the Discovery Channel.

When I give a public lecture at the Asian Civilisations Museum or Singapore Art Museum, I have no guaranteed audience. I have to come up with an interesting topic and abstract and make sure that working professionals

would want to take time off their busy schedules to attend my talk. This teaches me not to take my audience for granted. Similarly, when I’m planning for a TV shoot with Discovery Channel, I need to keep my target audience in mind.

Public lectures tie in with my teaching and help me plan for my GEMs. They allow me to ‘road-test’ my courses. When I introduced my courses at the university, I knew they would be a success!

*Adding value.* When I lecture I always ask myself: “Am I adding value?” If I give the students detailed lecture notes, why should they bother coming to class? Therefore, I always approach each lecture by asking myself: “What do I want the students to get out of my lecture that they cannot get from books or lecture notes?”

*Teach responsibility.* When I teach a class with 300 students, it’s easy to be overwhelmed with practical problems like insecure students asking about things that are already explained clearly on the course page. I try hard to make the students understand the reason for the rules and give them confidence to apply common sense. This is a very radical break from what they are used to in the Junior Colleges.

## **Visualisation**

I believe that there are four levels of knowledge—knowing, understanding, explaining and explaining simply!

*Demonstrations.* I always try to come up with analogies to explain the concepts. For geometrical concepts, I create physical demonstrations involving my own body, teaching props or the students. In my astronomy course I assign the students to be the different heavenly bodies. Students often comment that the demonstrations help them remember the concepts better. In fact, the more hilarious the demonstration, the better they remember it! I also have a vast collection of celestial globes, sundials, navigational instruments and soft toys that I use to demonstrate the concepts.

*Animations.* IT allows us to go one step further by adding animations and interactive applets. With the help of the Faculty of Science’s Centre for Information Technology and Applications (CITA), I have created Java applets that are essential to my astronomy course.

*Website.* I have an extensive website. My web page on the Chinese calendar (<http://www.math.nus.edu.sg/aslaksen/calendar/chinese.html>) is the highest ranked page about the Chinese calendar on Google! Around the time of Chinese New Year, I get up to 50,000 hits each month. The information and the links on the website allow the

students to reinforce the concepts learned in the lectures and to explore further.

### **Alternative Assessment**

I don't want to stifle creativity, but to give my students the opportunity to express themselves freely.

*Project work.* For both my GEMs, 40% of the final grade is based on a group project. I have a list of possible topics, but I also encourage the students to propose their own topics. They can write a report, create a web page, make a computer animation or build a physical model. It is wonderful to see how enthusiastic and creative they can be when they are given the opportunity to do something that excites them.

*Innovative homework.* For both my GEMs I assign two innovative homework that require students to

make observations of the Sun and Moon at different parts of the year, make models of the five Platonic and 13 Archimedean solids and take pictures of five mathematically interesting things in the real world.

### **Conclusion**

I'm grateful to NUS for having given me the opportunity to design the kind of courses that I've been dreaming about my whole life, and to my students for having being enthusiastic in their response to my courses! I look forward to improving my courses further and to continue making a contribution to education at the NUS. ■

---

*Associate Professor Helmer Aslaksen is a winner of NUS Outstanding Educator Award in 2004.*

# **A Grounded Teaching Practice**

**Assistant Professor Kenneth Paul Tan**

---

Department of Political Science & University Scholars Programme

---

### **Introduction**

My teaching practice is driven by an obsessive delight in designing and executing curriculum and pedagogy for every learning encounter with my students. In this, I have been described as meticulous, creative and enthusiastic, aiming to inspire students to embrace for themselves both the struggle and joy of learning. I regard these learning encounters as enjoyably complex puzzles that pose several intellectual challenges, including the challenge of designing learning environments that do not, in a counterproductive way, feel 'over-designed'. These complex puzzles also provide me with ample opportunities to relate to my students as thinking adults, as individuals with specific needs and as young people with the potential to do very well in life. These reasons motivate continual efforts to innovate my teaching methods and materials in responsible ways that never lose sight of real learning possibilities and outcomes. These efforts are reflected in the design of new modules and constant refinement of older ones.

I am also driven by constructive and encouraging feedback that students give formally and informally, particularly feedback from students who document specific ways in which reading my modules has made a real difference in the way they think about politics, society, and culture (my academic field); about learning; and about their own lives as students, citizens and future

leaders. In their feedback, my students have recognised the passion and commitment—evenings and weekends spent with students at public talks, forums, exhibitions, performances and other relevant activities that I encourage them to attend—with which I conduct my teaching. Students have appreciated my efforts to make their (and my own) learning challenging, intellectually focused, provocative, relevant, interactive and fun. They have appreciated the way I have put them 'first' in my career as an academic, fully aware of the sacrifices that this entails.

My students too, have time and again exceeded my expectation. For example, a group of four University Scholars Programme students who read an Independent Study Module (ISM) with me in Semester 2 of Academic Year 2003/2004 went much further than the required research paper that they each had to write. Although they had absolutely no prior experience in making video documentaries, they took up the challenge that I threw them and produced a sophisticated full-length documentary that was screened and critically discussed in an open seminar.

In the classroom, I have painstakingly built up a climate of trust and friendship that enables a high level of discussion, uninhibited by ungrounded fears about what can or cannot be said. I have given students the confidence to apply and

critically reflect on what they already know intuitively, from everyday experiences, from general knowledge and from knowledge gained across modules. By giving students intellectual resources through an empowering pedagogy, I see myself as nurturing future citizens who will not simply be satisfied with conventional wisdoms, who will be motivated to act intelligently on their convictions and who will excel as leaders in the fields that they choose.

### Teaching Goals

In my teaching practice, I am guided by a number of goals. First, I want to inspire and empower students to take active ownership of their own learning and to be comfortable with the notion that they themselves are sources of learning for other students and their teachers. Second, I want to get students into the habit of continually re-examining the familiar in the light of the new and unfamiliar. In other words, I want them to get into the habit of not taking anything for granted. Thirdly, I want to encourage students to embrace, and not fear, the messiness of knowledge and understanding. More specifically, I want them to avoid thinking about the different components of their knowledge and experiences as neat, distinct and self-contained entities. Instead, I want them to learn how to make dialectical connections among theoretical, historical, empirical, practical, experiential and intuitive sources of knowledge. Finally, I want to help students to think, express themselves and communicate with others clearly, critically and creatively.

### Teaching Methods

To achieve these goals, my teaching methods have integrated a number of approaches. First, whenever possible, I have employed the Socratic method through seminar-style learning that involves strategically facilitated discussions. Even for traditional lectures, I usually adapt the Socratic method so that my students are expected to start their learning process 'with prior knowledge and intuitions, and then work through a rigorous process of responding to an indeterminate series of questions that seeks to clarify and critique every stage of their response' (Tan, 2003a). To make sure that these discussions have direction, shape and content, I employ concept-mapping methods, using a whiteboard to build up frameworks that explain and link complex theories, concepts and issues that, for example, arise from the readings that students are expected to prepare.

Second, I particularly enjoy designing pedagogical innovations such as simulated games and role play for experiential learning, formal debates to foreground specific structures of argumentation and student-facilitated discussions to ensure active engagement from everyone in class (Tan, 2003c). I recognise that such innovations need

to be designed with a sense of responsibility, attention to detail and a clear sense of purpose.

Thirdly, I have actively used multimedia and informational technologies in ways that are integral to my teaching, and not for novelty or entertainment. I have designed and written web materials and resources (e.g. Tan, 2001, 2003b, 2003d, 2003e, 2003f). I have also been interested in finding ways of using new software and technologies for teaching and learning (e.g. Tan, July/August 2002). Also, through extensive module websites and carefully structured IVLE forum discussions, I have expanded the classroom learning environment into cyberspace.

### Conclusion

I have decided to devote the greater part of my academic life to the noble vocation of teaching. This has involved critically reflecting on the practice of teaching in order to improve it. Writing short articles that reflect on teaching practice has been a useful way of taking stock and realising my own limitations as a teacher. In the same spirit, honest student feedback has provided me with the best way of making sure that my teaching goals are grounded in practice, and not merely engraved on sacred tablets that articulate a distorted version of what actually happens in class.

### References

- Tan, K.P. (2001). 'A Framework for Thinking about Civil Society'. *Civil Society Web*. <http://www.scholars.nus.edu.sg/resources/civilsoc/theory/theoryov.html>. (Last accessed: 5 May 2004).
- Tan, K.P. (July/August 2002). 'Storyspace: Using Hypertext in the Classroom'. *The Technology Source*. <http://ts.mivu.org/default.asp?show=article&id=965>. (Last accessed: 5 May 2004).
- Tan, K.P. (2003a). 'Building upon the Socratic Method'. *CDTLink*. Vol. 7, No. 1. <http://www.cdtl.nus.edu.sg/link/mar2003/tsm1.htm>. (Last accessed: 5 May 2004).
- Tan, K.P. (2003b). 'Constructing the Argumentative Essay'. *Successful Learning*. No. 29. <http://www.cdtl.nus.edu.sg/success/sl29.htm>. (Last accessed: 5 May 2004).
- Tan, K.P. (2003c). 'Learning beyond the Classroom: Strategies to Deal with Theory and Practice'. *Proceedings of the FASS-CDTL Teaching Symposium: Grounded Experience in University Teaching and Learning*. National University of Singapore.
- Tan, K.P. (2003d). 'Reading up for Class'. *Successful Learning*. No. 28. <http://www.cdtl.nus.edu.sg/success/sl28.htm>. (Last accessed: 5 May 2004).
- Tan, K.P. (2003e). 'Speaking up in Class'. *Successful Learning*. No. 39. <http://www.cdtl.nus.edu.sg/success/sl39.htm>. (Last accessed: 5 May 2004).
- Tan, K.P. (2003f). 'Writing the Argumentative Essay: Language and Style'. *Successful Learning*. No. 36. <http://www.cdtl.nus.edu.sg/success/sl36.htm>. (Last accessed: 5 May 2004). ■

# Constantly Learning to Teach

Assistant Professor Liu Gui Rong

Department of Mechanical Engineering

---

When I was approached to write an article on my teaching techniques, I was puzzled as all the techniques I have been using can be found in the existing publications. Therefore, I decided to offer a small personal opinion on learning to teach instead of specific teaching techniques. This is because one of the most important things that I have learnt in my 10 years of teaching at NUS is that to be an effective teacher, one has to first be a good learner.

I wanted to be a teacher since young. However, when I started teaching at NUS in 1995, I did not know much about what exactly I should do, and started worrying about whether I can do a good job of educating younger generations. These worries constantly motivate me to learn how to teach better throughout these years.

In the beginning, I approached CDTL for help and became one of the regular “students” there. Through CDTL’s seminars, I learnt good teaching practices, skills and techniques which gave me a very good start. In addition, I also found that books on pedagogy can also be a good source of well-established teaching techniques. To practise these techniques effectively and professionally, however, requires more than just attending seminars and reading books.

I decided to learn more from real-life examples of good recognised educators. I sat in the class of Professor J.N. Reddy, a visiting professor from Texas A&M with many teaching awards. The clarity in the classroom presentation and the convincing reasoning skills of Professor Reddy left a very deep impression in my mind I also learnt a great deal from Professor Patera from MIT through SMA teaching activities. Professor Patera creates a very active learning atmosphere in the class through the asking of pertinent questions. Because I tried to apply these excellent practices, my own teaching efforts have improved throughout the years, and I am more and more confident teaching in the classroom.

An occasional informal chat with colleagues also presents a good opportunity to learn some tricks. For example, the teaching-by-conversation technique that I use often in classroom-teaching is motivated by a lunch-time conversation with Professor C.M. Wang (a multiple educational award winner at NUS) who mentioned his idea of putting questions in his lecture notes.

As a non-native English speaker, effective classroom presentation in English has indeed been a big challenge for me. I knew that I had to break the language barrier, and I did it through 1) recording and listening to my own lectures; 2) consulting the lecture tapes by Professor William Anderson that are commercially available. I have to admit that during these years of teaching I have, in fact, behaved more like a hardworking student rather than a lecturer. My skills in oral presentation have also improved significantly, thanks to these self-improvement activities. I am very proud of the fact that I can now deliver a technical presentation in a classroom effectively in three languages: English, Japanese and Chinese.

It is often more important to conscientiously try and learn from the students and to grasp the level of understanding among students on a particular subject, without which it will be difficult to effectively apply any teaching techniques or skills. This application is dynamic in nature and hence contingent upon the development of the class. Therefore, the lecturer needs to be adaptive, and a ‘two-way-traffic’ environment needs to be present at all times. Questions should be properly designed and discussions should be conducted with the effective transfer of knowledge and skills in mind. This ‘two-way-traffic’, with its emphasis on effective interaction, is also useful in diagnosing ‘problem areas’ in a student’s grasp of the topic. Furthermore, technical questions and general feedback from the students are particularly useful in gauging the level of understanding of the students, identifying their weakness and strengths in order to take actions in modifying teaching procedures, adjusting the pace of delivery, re-organising teaching material, etc. These adjustments, when made wisely, are extremely important to maximise both the outcome of teaching as well as the potential of students.

I believe that the outcome of a teaching activity should be judged by how much knowledge is absorbed and how much creative skills are mastered by the students, and not how much material is taught or delivered by the lecturer. With this outcome defined as the ‘objective function’, one can learn through many possible ways to find out and to modify his/her way of teaching to optimise this function. In conclusion, it is my belief that students learn better when the lecturer is also learning. ■

# Teaching with Passion

**Associate Professor Bilveer Singh**

Department of Political Science

---

Learning being a journey, not a destination, has always been a philosophy that has guided me as a teacher. My vision has been to train and develop thinking leaders of tomorrow. Empowering students to be high achievers and critical thinkers in pursuit of life-long excellence in this ever competitive and inter-connected world where knowledge has limited shelf life has always been my mission as a university teacher.

I believe that teaching in the University should realise one's pedagogical philosophies as they apply to education both inside and outside the classroom. In an increasingly competitive environment with all kinds of unending demands on our time and resources, being an effective teacher is a challenging task. To rise to the challenge, it is first of all essential that the teacher have a passion for teaching. Only then can the teacher ensure that meaningful learning takes place all the time as he/she helps students to develop as morally sound and upright citizens, committed to diversity of ideas and thoughts.

In my view, good teaching produces self-confident and self-disciplined individuals who have been exposed to a core set of knowledge and ideas. To nurture such students successfully, the teacher should first possess critical thinking skills and be capable of not just transferring such skills to his/her students but also teaching them to apply the skills to novel and changing circumstances. The teacher should also arouse intellectual curiosity, train the students to develop an expertise in a given area and encourage the individual students to gain a breadth of exposure to interdisciplinary topics appropriate for the career aspirations of the individual. To achieve this, adopting innovative ways of presenting lectures can easily ignite the spark in students to go the extra mile.

To be an effective university teacher, ample time should be spent on preparing one's course and lessons. There is no substitute for adequate preparation. A rushed, half-heartedly produced reading list or a disorganised lecture is easily exposed. Once a university teacher loses the respect of his/her students, it is rarely regained. The teacher should also be aware that his/her behaviour strongly influences the receptivity and motivation of students. I believe that my enthusiasm for the subjects I teach keeps students motivated and emotionally positive. Outside the classroom, it is important to be approachable while maintaining a marked professional distance.

As most undergraduates need a greater sense of discipline and order, they tend to associate a less formal relationship with their teachers as indicative of lower performance expectations. Thus, it is important to continually send the message that 'we are here to work and learn'. Many students, concerned with how their peers perceive them, become paralysed by the fear to appear 'dumb'. These students neither speak up nor ask questions in class, thus forfeiting valuable opportunities for clarification and discussion. To encourage class discussion, I intentionally create an inclusive classroom environment where all questions are good questions. One of the ways I achieve this is by admitting both my mistakes and those instances when I don't know the answer to a question immediately (I will get the answer later). It has been my experience that such disclosures strengthen rather than erode the students' respect for the teacher.

To help students learn and excel in the course, it is necessary for the teacher to establish concrete guidelines on course expectations, performance evaluations and conditions under which exceptions may be granted. Such information should be communicated clearly to the students at the start of the course. The teacher should help the student understand that firm adherence to these guidelines is in the best interest of those who may require help to develop self-discipline. However, if external issues (illness, family and personal problems) prevent a student from performing well and/or requiring extensions, I strongly advocate a case by case treatment of these exceptions. Such rules and guidelines should help students achieve their goals, not 'burden' the students especially when external circumstances have already interfered with the learning process.

Teachers are role models. A misplaced word or inappropriate action may have a damaging effect on a student for years to come. The inherent power accompanying the position demands humility and constant self-reflection to ensure that one acts with wisdom, fairness and professionalism.

In this technology age, students also expect their teachers to be technology savvy. Technology-based educational tools are attracting a great deal of interest and students expect their teachers to be able to use such tools when they teach. However, this does not mean that the teacher

should use technology to convert the classroom into a cinema.

As the ‘CEO’ of a ‘knowledge corporation’, the teacher should be able to ensure that the quest for knowledge and learning continues without the teacher being present and that this becomes a way of life. Put simply, a good teacher should train his/her students to become lifelong learners capable of learning independently. This is especially important in an Asian culture where the teacher is subconsciously considered supreme. The things one learns from a teacher’s instruction are always greater than what is in the book. Teacher-student relationship is both sacred and permanent. However, with changes taking place all around us in the society, the teacher’s role should also adjust as well—from the sage of the olden days to more of a guide on the side.

To be an effective university teacher, one must maintain a high level of commitment to teaching and nurturing students while keeping abreast with the latest developments and needs. It is critical to create a warm and supportive learning environment that will ensure optimum learning. A teacher should also use

appropriate assessment data for diagnostic and planning purposes and employ varying methodologies to measure student’s needs, understanding and performance. In this regard, a good pre- and post-module feedback is critical. Respecting students will also motivate them and further ensure all-round learning in and outside the classroom.

In the final analysis, as a university teacher, I believe in empowering my students to be critical thinkers and independent learners. It is my duty to simulate creativity among the students who would be the future leaders in different fields. My students should be creative, research-oriented and intellectually inquisitive. They should be passionate about learning and eventually, be able to impart knowledge to others. They should develop an unquenchable appetite for knowledge in an increasingly borderless world. Yet, they should be sound citizens with a heart for those who are less fortunate in the community. It is only when I have successfully nurtured some of the mentioned qualities in my students would I have made a difference in the students’ life as an effective teacher in NUS. ■

# Strategies for Effective Teaching

Associate Professor Nitin Pangarkar  
NUS Business School

---

During the course of my PhD programme and over the several years I have been teaching, I have had the good fortune to observe a number of excellent teachers in the classroom. While there were specific aspects of different teaching strategies that I have tried to incorporate into my own teaching, I have come to a conclusion that effective teaching is instructor-specific. In other words each one of us needs to adopt an approach that is not just consistent with our own set of beliefs regarding what constitutes effective teaching and but also inline with our own strengths. Outlined below are some effective teaching strategies that I have used in teaching both undergraduates and graduates.

## 1. Variety

A key aspect of my teaching is that I try to build variety into almost every aspect of the course design—assessment methods, class activities or learning tools. With respect to assessment methods, I typically use a combination of group-work as well as individual work which both serve distinct purposes. Though I use individual assessment methods to judge the extent

to which students have imbibed the concepts, I find that group output is typically more substantial and higher quality than individual output. The quality of group presentations is also often better than individual ones.

While I use a variety of learning tools, I try to make sure that no tool is used more than twice during a term. For instance, I employ breakout sessions where the students discuss an issue or a case for 20 minutes and present their recommendations to the class. While doing this once or twice in a term is useful, I find that doing it more often leads to ‘fatigue’ and a ‘déjà vu’ feeling.

## 2. Giving students the voice

While most teachers have a lot of knowledge to share with their students, I find that it is often useful to step back and ‘give the floor’ to the students. In my classes, I encourage the students to actively participate in class discussion by attaching some weightage (10% to 15% depending on the level of the course) to class

participation. I make conscious efforts to draw out the quiet or shy students into the discussion by posing them questions. I typically grade the participation on a very strict curve (this is communicated to the students during the first class), thus providing incentives to participate actively.

### **3. Shorter assessment methods**

The nature of my subject (e.g. MBA 5104, "Global Strategic Management") doesn't lend itself well to two-hour exams since most substantial strategic problems cannot be solved in two hours. I prefer instead to administer short quizzes with interesting strategic situations which can be 'solved' in a relatively shorter time. Immediately after a quiz is over, I make it a point to offer my perspective (appropriate response) of the questions and discuss with the students. From my experience, some of the liveliest and most enjoyable discussions are those with my Executive MBA students who are mature students with substantial industry experience.

### **4. Challenge the mind**

Over the course of the last several years, I find that counter-intuitive situations have the greatest appeal for students. I often discuss cases and situations that have seemingly simple answers but actually require a more complex and in-depth explanation when you probe beneath the surface. For instance, many students in the BMA 5013, "Corporate Strategy" class (typically about 40 students) are aware that the crew members onboard any Singapore Airlines flight comprise personnel from countries such as Malaysia, India and China, among others. I then ask the students to think about how Singapore Airlines is able to achieve better levels of service than Malaysian Airline, China-based airlines or Air India despite drawing from essentially the same labour pool. In this way, I can bring in the importance of training and recruitment. To complete the 'story', I introduce other issues such as the importance of the top management's vision, commitment to training (not cutting training budgets during lean times) and having a lucrative incentive and reward system.

### **5. Debate and discussion rather than information transmission**

I believe the way issues are framed or posed to students will determine their responses. Therefore, I find it useful to pose a question to the students (e.g. what is the impact of globalisation on firms from small countries?), get their responses and then

inform them of my perspective and position regarding the issues. This often sparks debate and interaction among students. Through such a teaching approach, students are more likely to imbibe the key points rather than a one-way (teacher to students) transmission of information.

### **6. Discussion forums**

For business courses, online discussion forums are invaluable tools. I use the discussion forums on the IVLE for a variety of purposes. Firstly, for exploring issues that are related yet somewhat distinct to the class. In this way, I can also supplement the scarce class time. Secondly, such forums are a wonderful channel for the shy students to express their points of view. I also encourage students to respond to other students' posts through discussion and debates. I find it interesting that the online debates often generate more responses and counter-responses compared to the verbal discussion in class.

Over time I have observed that it is important to kick-start the online discussions by doing a couple of posts and responding to the first few posts rather than leaving it to chance since a weak beginning can quickly kill a forum. Once a discussion gathers momentum (it usually does), I retreat into the role of an observer. This is because if I were to participate too actively in a forum, students may perceive my posts as the final word on a particular topic and the discussion may close prematurely.

### **Conclusion**

While many of the above teaching strategies have worked well for me, I must emphasise that their effectiveness may be context-specific. Most of the strategies mentioned in this article would probably work well in sectional teaching, especially for disciplines (social sciences) where there is room for the students to offer their perspectives on an issue. ■

# Reflections on Field-based Teaching and Learning

Dr Carl Grundy-Warr  
Department of Geography

---

## Introduction

In Singapore, students take many things for granted and are often so remote from the very systems and processes that sustain them. This is a serious issue particularly, as Singapore seeks to play not only a global role, but also to be well integrated into this beautiful, diverse and dynamic region. Field studies helps students to better appreciate their own 'ecological footprint' as consumers of many environmental resources, develop a more holistic perspective of the myriad connections between our biophysical world and human societies and provides ample opportunities for cultural exchanges with folks who are living not so far away from Singapore's shores.

However, writing about field studies is difficult because so much of the module is based on classes 'in the field': fieldwork, short fieldtrips and a plethora of different experiences that can not be easily or simply explained. The module essentially encapsulates much of what I believe are critical to the teaching—researching—learning process with many pedagogic benefits. It is useful, therefore, to reflect a little on what some of these benefits are and share some ideas about the field studies experience.

## Applying methods and skills 'in the field'

Field studies provide students with (often) the first real opportunities to apply methods and technical skills learnt in the classroom in various fieldwork settings. In the June—July 2004 field studies module, two students, Song Guan and Li Yan, attempted a cultural mapping project for an elevated Akha village called Ban Mae Ter near Doi Mae Salong, Chiang Rai Province. The students soon discovered that relying on their enthusiasm and being equipped with the relevant mapping technology (e.g. Trimble Global Positioning System (GPS) and Geographical Information System (GIS) software, laptop) were insufficient for them to work on the project. Other preparatory work such as discussions with a local cultural anthropologist and meetings with contacts (one of who could converse in Chinese, Thai and Akha) from the village was crucial. The need for an accurate map of the village for visitors interested in the Akha culture and

specific sites of significance in village quickly became apparent through the project.

Three weeks later, the students produced a series of maps showing the basic local topography, position of village homes and key cultural sites. The students were satisfied that they were able to accomplish the exercise using applied computer cartography that is of potential use and benefit to the community. However along the way, the students also learnt that there were some problems in trying to include indigenous ideas into a 'modern' map and some inbuilt limitations with the software used. This kind of learning experience is extremely rich and rewarding for students who have to quickly develop many new theoretical and technical skills acquired in the classroom. It reminds me of Stan Stevens' (2001:149) remarks about the value of fieldwork: a 'sense of obligation, a desire to give back to the communities and localities that sustain our academic pursuits'.

## Intensive experience-based learning

During the June-July 2004 field studies module, 45 students were divided into 11 groups to work on seven different projects in seven locations around the province of Chiang Rai. After a one-week orientation involving workshops at local academic institutions, meetings with their respective Thai buddies and visits to four of the main field sites, the students had to propose alternative projects and sites for their eventual three-week group projects 'in the field'. For most students, this was not only their first experience of working intensively (day and night) in small teams, but also and their first at working within a foreign culture away from the comforts of their homes.

The uniqueness and intensity of the students' field experiences are revealed in their individual and group reports. November and Yangchen recalled their home-stay with a spiritual elder in the Lahu Nyi village of Ban Phu Kai, where they participated in several rituals, such as the full-moon (*Si Nnn*) festival at the village temple and the mountain-top ceremony (*Mo Le Ve*) at another Lahu Nyi village, Ban Hui Hock. These first-hand experiences provided the students with valuable insights into the spiritual attachment these villages have with

their physical environment, which was an aspect of their project on examining indigenous knowledge. Such direct experiences enable students to ‘think out of the box’, to question and analyse everything around them using all their senses, never taking anything for granted. Of course, such experiences are not just confined to research, but they also became lasting memories that linger long after the fieldwork is over. For instance, November recalls the convenience of wearing the local ‘sarong’ (*hair-doo-goh*), which enables easy access and privacy while bathing:

“Eventually temptation got the better of me and it was the experience of a lifetime, standing in the open bath area, bathing with ice-cold channelled river water at midnight under the luminous glow of the full moon while the entire village was asleep, shrouded in darkness.”

Field studies provides students with ample opportunities to become active inquirers as fieldwork makes the subject (and other subjects) come alive for the students, enabling them to make connections between what is learnt in the classroom and what is discovered in the field. Students get to see the multi-layered contradictions, limitations, benefits and necessity for primary research, making our students more observant, analytical and curious of the world around them. I couldn’t agree more with Clive Briffett (2000) on the need for more ‘real world’ experiences for our students, particularly within the surrounding regions of which Singapore—a global city—draws in so many of its environmental resources. Yet our students (regretfully this applies also to our geography students) remain so detached from the ecological, agricultural and physical environments that sustain them. As one student, Daryl, mentioned in his individual report:

“This is a rice plant taken from the paddy fields we visited during the first week. It is significant because it is my first physical contact with a rice plant. The urbanised environment in Singapore never permitted me to see real paddy fields that sustain our lives. On numerous occasions during this module, I have seen farmers labouring in the hot sun and heavy rain. I never understood why my parents have always told me not to waste rice. Now I can finally understand. The rice on our plates may seem inexpensive, but the effort taken to produce it is invaluable.”

### **Cultural and social exchanges**

One of the most rewarding aspects of field studies is the wide range of opportunities to interact with people from other cultures. Besides the home-stays, students also get to meet ‘buddies’ from host academic institutions. During the June-July 2004 module, such a student-

interaction scheme was arranged with both the Mae Fah Luang University and Chiang Rai Rajabhat University. The warm interaction between the Thai and Singapore students developed into friendships in some cases and spurred others to acquire a different language:

“This calligraphic writing of how my name is pronounced in Thai is written by Ajarn Nualanong. Although simple and done informally, it is a representation of the social ties that have emerged in the course of the field studies module. It is significant because of the friendship that has been forged and it also suggests that in any research project, it is possible to build meaningful and long-lasting relationships which can enhance both your research as well as your life” (Charlene).

### **More than just the grades**

Perhaps, more than any other module, field studies help the students to become less obsessed with grades as they go through the process of primary data collection and become immersed in teamwork, research and projects. One of the most rewarding dimensions of the ‘learning by doing’ approach is that students get totally absorbed in their projects and begin to see for themselves that the process is just as important, if not more, than the polished end product and the eventual grade it receives. It is not that grades do not matter, but most students taking field studies begin to see the other learning benefits and that the grade is but only one of the many outcomes:

“For me, this field studies module has been a success, not necessarily in terms of the grades we eventually receive. Rather, it is what field studies has managed to teach and train us to work in a group under the most difficult of situations. It is a most valuable skill which would prove to be immensely useful in all aspects of our lives” (Lin Shuqing Carissa Jacinta).

### **Lifelong learning**

Field Studies is a 24-hour a day, seven days a week, intensive ‘collaborative effort’ between staff and students (see Miksic, 2000:36). Clear-cut research, teaching and learning boundaries are often erased ‘in the field’ and teachers often become co-learners alongside the students. As Tim Bunnell, a colleague from a previous field studies module in southern Thailand and Malaysia, put it:

“Learning alongside students, learning from students and with students is so much richer for me than the usual delivery of information, which much classroom-based teaching ends up becoming” (*Traversing Borders*, a Field Studies 2003 video).

But it is the longer-term benefits for students that interest us most. If we consider, as Yi-Fu Tuan (2001) does, that life is a sort of 'field-trip', then undoubtedly, field studies provides exciting, challenging and intensive opportunities along that special journey for all those involved in it. Again, I believe that this is best expressed by some of our students in their final individual reports. For some, field studies has given them a real incentive to study harder and to undertake more primary research in future:

"I am now convinced that as a 'survivor' of the field studies module, any doubts of my inability to survive in the field, in a different culture and poor living conditions, can all be thrown to the winds. I can now truly empathise with the enthusiasm and passion that all field researchers proclaim...I would definitely consider field research a priority in my future academic endeavours" (November).

For others, the module has fed their working life aspirations directly:

"As I prepare myself to become a teacher in the Education Ministry, it is my desire to enhance my own learning experience, as well as to garner a unique and special insight into Geography, one which I can share proudly with my students in the future...When I begin my teaching career, I would like to share and teach those under my wing with a background of personal experiences such as these. I would also want to instil in my students the joy of doing fieldwork in Geography and the life-changing experiences it has to offer!" (James Chia).

As a teacher and educator, my primary aim is to help students to become intensely engaged in study, not just for final grades or for the important quest for knowledge itself, but as an on-going lifelong endeavour. I hope that I can be a simple 'bridge' to other ways of thinking and seeing, so that my students can explore horizons well beyond my own.

## References

- Briffett, Clive. (2000). 'Real World Experiences Make Real People: A Technique for Running Successful Tutorial Sessions'. *Reflections of Teaching: The NUS Experience*. Centre for Development of Teaching and Learning. Singapore: National University of Singapore. pp. 68-69.
- Miksic, John N. (2000). 'Archaeology vs Teaching'. *Reflections of Teaching: The NUS Experience*. Centre for Development of Teaching and Learning. Singapore: National University of Singapore. pp. 35-36.
- Stevens, Stan. (2001). 'Fieldwork as Commitment'. *Geographical Review*, Vol. 91, Nos. 1 & 2, pp. 66-73.
- Tuan, Yi-Fu. (2001). 'Life as a Field Trip'. *Geographical Review*, Vol. 91, Nos. 1 & 2, pp. 41-45. ■



The Centre for Development of Teaching and Learning (CDTL) engages in a wide range of activities to promote good teaching and learning at the National University of Singapore, including professional development, teaching and learning support, research on educational issues, and instructional design and development.

### contributors

Tan Kay Chen  
Helmer Aslaksen  
Kenneth Paul Tan  
Liu Gui Rong  
Bilveer Singh  
Nitin Pangarkar  
Carl Grundy-Warr

### advisor

Daphne Pan

### editors

Teo Siok Tuan  
Sharon Koh

### layout

Ma Lin Lin

© 2004 *CDTL Brief* is published by the Centre for Development of Teaching and Learning. Reproduction in whole or in part of any material in this publication without the written permission of CDTL is expressly prohibited.

The views expressed or implied in *CDTL Brief* do not necessarily reflect the views of CDTL. An online version is available at our web site.

Comments, suggestions and contributions should be addressed to:

The Editor, *CDTL Brief*  
Centre for Development of Teaching and Learning  
Central Library Annexe, Level 6  
National University of Singapore  
10 Kent Ridge Crescent  
Singapore 119260  
Tel: (65) 6874-3052  
Fax: (65) 6777-0342  
Email: [cdtpost@nus.edu.sg](mailto:cdtpost@nus.edu.sg)  
<http://www.cdtl.nus.edu.sg>