



## Reflections on the Road Travelled so Far

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Winner, Outstanding Educator Award (2008)

I do not remember the precise moment when I decided to be a teacher. However, I remember helping a Primary Five student from an economically poor background who could not afford a tutor. I was requested to do so by my teacher. Perhaps she saw something in me that I was not aware of.

In junior college, one of my friends said to me, "You should be a teacher!" after I had explained a difficult concept in our electronics course to him. All these and other experiences led me to believe that teachers are born rather than made.

In retrospect, two things seem to have driven me along the road towards what I am today: a passion to know things and the joy of sharing my knowledge with others. They have propelled me towards my current role as a university lecturer.

### The Passion of a Novice Lecturer

As a freshly minted PhD, even with good teaching experience as a teaching assistant, the excitement I felt as I prepared to teach my first module was almost like a kid with a new toy. I wanted to do it all: conduct amazing lectures, set very tough, thought-provoking tutorials and exam questions, enlighten my students and so on.

Despite my best intentions, whenever I met the new lecturers in those days, we would complain about how students were not motivated, how hard we all worked when we were students and how keen we were about learning. As novice teachers, we failed to understand why students did not share our passion and why they were unable to see the importance of the latest and most exciting bits of

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### CDTL NEWS/ FROM THE FACULTIES

knowledge we brought to the class. As I gained more experience, I realised teaching is not about me but about my students. It took me some time to realise this. In fact, I only learnt the term ‘student-centered learning’ later in my teaching career.

### **Are Teachers Born or Made?**

In the old days, universities hired great researchers and if these institutions were lucky, they would get some good teachers from among them. Today, many universities require their lecturers to undergo some training in education. When I was offered such an opportunity, I went in with my initial mindset that teachers are born, not made. It was my good fortune to meet some great learning facilitators during my training and they helped me to reflect and realise that teaching is not a genetic trait. What we bring to the classroom is our passion for knowledge and the enthusiasm for sharing that knowledge. A good teacher must have the ability to constantly reflect and hone the skills required to facilitate learning. It is not your paper qualifications that make you a good teacher, but the attitude and values you carry with you and practise regularly.

Each of us who have chosen this profession should take time to reflect on our teaching goals. One does not need to be an expert in pedagogy or psychology, nor does one need to read all the books and do research in education. We can keep it simple and just focus on the following issues:

- What do I want my students to achieve?
- Are they successfully demonstrating the outcomes? If not, what inhibits their success?
- What can I do to facilitate that success?
- Do I see each of my students as a unique individual with potential to grow?

Reflecting on such questions and pursuing appropriate corresponding actions will lead you to more solutions and greater growth as an educator.

### **From Teacher to Educator**

What distinguishes an educator from a teacher? The word ‘teach’ comes from the Old English word ‘tæcan’, which means ‘to show’, ‘point out’ or ‘to give instruction’. When we teach, we instruct, show and expect the learner to repeat or demonstrate the skill or knowledge. The word ‘educate’ comes from the Latin root word ‘educere’, which means ‘to bring out’. It combines the Latin verb ‘ex-’, which means ‘out’ and the word ‘ducere’, which means

‘to lead’. When we educate, we assume the learner has hidden potential that we would like to bring out. An educator is a leader or a facilitator who transforms the learner. So which would you rather be? A teacher or an educator?

If universities are to be temples of transformation, all of us have to be educators. Of course, this does not mean we do away with teaching. Certain skills can only be learnt through training. However, we need to ask ourselves how much of it is teaching and how much of it should be education.

We are all domain experts. Thus, we feel insecure when we have to relinquish our urge to be a teacher in our domain. I have faced this dilemma too. We also face fears of acceptance or branding by our colleagues and the management. However, when I saw myself as a researcher and leader, I realised this attitude and approach I adopted in my research also helped me to be a good educator. It was necessary to be knowledgeable and skilful in my domain in order to become a good researcher. More importantly, to let go of the norms and boundaries of the domain, I had to have a learner’s curiosity and passion, the courage and strength of a leader, and the ability to develop insights like a Zen master. Above all, it requires integrity. All these qualities make a good educator.

I also realised somewhere along the road that good teaching is neither about techniques or pedagogical theory, nor is it about student feedback or what others think of you. It is also not about whether you make it to a teachers’ honours list or how many papers you published on education. It is, however, all about creating an environment where everyone can do their best. It is about being a learner and keeping an open mind. When all that happens, I realise it also educates and brings out the best in me.

### **About Winning Awards**

Awards are given as recognition of your actions and are not about you per se. An award is not a destination but a marker along one’s professional journey. Let me relate an anecdote to reinforce this point. A few years back, while visiting some family friends in India, I saw a mother reprimanding her daughter who was in Primary Six, for not completing preparations for her history test. The daughter complained the subject was boring and tedious, especially the task of memorising all the dates of Vasco da Gama’s arrival to India.

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# Education, Research and Experiments in Economics

Professor Vernon L. Smith, Nobel Laureate (Economics), 2002  
Professor Stephen Rassenti and Professor Bart Wilson

Economic Science Institute, Chapman University

Economic education, based on experimental methods, offers a way of thinking that arises from student experience in interactive markets and group decision-making. This methodology is a source of inspiration that encourages people to contribute to their own and others' understanding of the subject. The learning process becomes a growth path of discovery. Students at any level may become part of research teams composed of faculty, business practitioners and experienced entrepreneurs who want to explore using experiments in their search for innovation. The overall goal is to incubate creative, market-oriented projects that extend the boundaries of economic research and nurture thinking outside the traditional economics, education and policy boxes. Changing the way people think about economics is often the unanticipated surprise.

Research is about discovery and about recognising the importance of market-oriented solutions founded on property rights. Laboratory methods support work that asks: 'What kind of market?', 'How do we create and grow new markets?', 'How do we create property rights?', 'How do emergent orders form, evolve and survive?' and 'How can we assist these orders to advance human betterment?' Friedrich Hayek argued that "it is about studying that which is not" (Smith, 2007) — a task that necessarily involves imagining a world with different rules particular to an industry, issue or process.

Education and learning builds on acquiring new 'knowledge-how' in research and teaching, not only 'knowledge-that.' Education is about creating an environment in which students and researchers discover together and learn from each other. In this sense, the teacher who is not learning is not teaching.

Our joint efforts in research and teaching include the following topics:

- Specialisation, exchange and property rights
- Reciprocity, trust and trustworthiness in personal exchange
- Statistical methods and economic modelling for experiments
- Financial market bubbles: behaviour and modelling
- Regulations and subsidies in the healthcare industry
- Joint venture property rights
- Network markets: electricity, natural gas, gasoline and water
- Mechanisms in e-commerce
- Auction design: combinatorial, clock auctions
- Anti-trust: contestability and entry, bundling and pricing, competition policy
- Policy analysis: pollution emissions, spectrum policy, space resource policy.



*Professor Smith (front row, third from the right) and his team with participants of the graduate student workshops*

A unique feature of our vision in experimental economics has been the support of our participants for the following sponsored outreach programs:

- 323 participants from 13 week-long visiting graduate student workshops in experimental economics, beginning in 1995. Their fields included economics, psychology, philosophy, political science, science, computer science, engineering and anthropology.
- 450 participants from 19 week-long high school student workshops since 1997. As with the graduate students, their interests were broad-ranging; most are now enrolled at prominent universities.
- 60 participants from a recently inaugurated visiting undergraduate workshop.
- 400 participants in a series of 3-day seminars for the employees of Southern Power, the largest electric power producer in the US, where they learned about spot markets and financial hedges.
- 120 participants from the ranks of America's judiciary, who attended a series of 3-day seminars designed to elucidate basic property rights and competition principles.

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# An Alternative Peer Review System — A Faculty of Science Initiative

Professor Andrew Wee, Professor Wong Sek Man and Ms Yong Lai Cheng

Dean's Office, Faculty of Science

## Introduction

The Faculty of Science introduced an alternative peer review system in Semester 1, Academic Year (AY) 2006/2007 to improve current methods of evaluating the pedagogical work of its academic staff. Improvements to the peer review system have been ongoing in NUS, with the last major change in 2001.

In the past, the faculty required academic staff (except new appointees) to conduct the peer review for their colleagues. This proved problematic for the following reasons:

- With a long list of teaching staff to review every semester, the faculty would end up engaging a large number of reviewers, which often led to inconsistent evaluations and even disagreements between reviewers and the teachers under review.
- Many peer review reports lack detail or contain only general comments.
- Reviewers tend to provide sympathetic evaluations, perhaps mindful that they would come under peer review in future.
- The exercise is time-consuming and it can be a logistic challenge to arrange the peer review sessions.

To address these problems, trial changes were introduced to the system. Instead of sourcing for reviewers from the entire faculty, two standing teams of peer reviewers comprising experienced teachers were formed. Each team had two reviewers, with one team covering the physical and mathematical science departments, and the other the chemical and biological science departments. New teams are selected every semester, and reviewers are relieved of teaching duties for that semester so they can focus on conducting fair and useful peer reviews. They will give staff constructive feedback and follow up with discussions, if necessary.

Data from the peer review exercises conducted before and after the new system was implemented

have been compiled and the key findings are presented here.

## Comparing Data

We compared scores collected in Semester 2, AY 2005/2006 (Figure 1) using the previous peer review system, with scores from Semesters 1 and 2 of AY 2006/2007 (Figures 2 & 3) when the new system was implemented. While Figure 1 shows that most staff received gradings of either 4 or 5, Figures 2

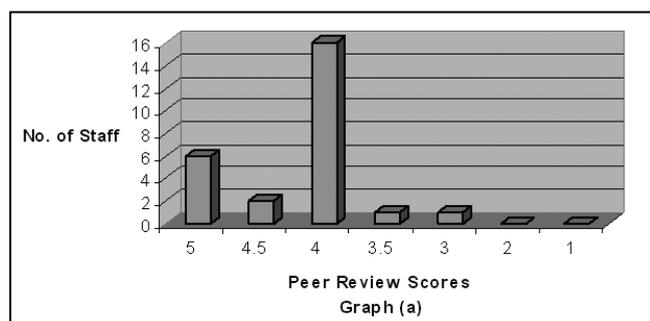


Figure 1. Peer review scores for Semester 2, AY 2005/2006 under the previous review system

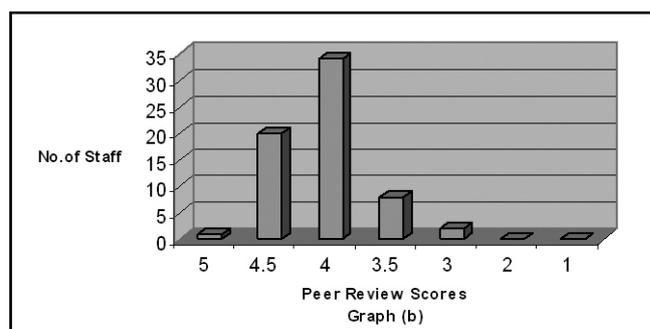


Figure 2. Peer review scores for Semester 1, AY 2006/2007 under the new peer review system

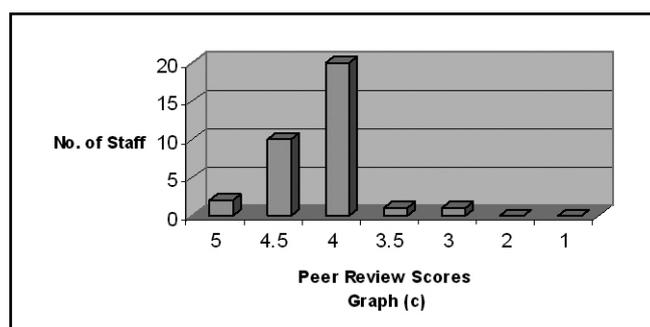


Figure 3. Peer review scores for Semester 2, AY 2006/2007 under the new peer review system.

and 3 indicate a bell-shaped distribution of scores collected under the new system, even though different review teams were employed. As the new system allows reviewers to make comparisons across the entire faculty, their scores are expected to be more reliable.

We also calculated the scores differently by taking the average scores for the evaluation questions. In Figures 4 to 6, the scores given refer to the overall scores displayed on the first page of the peer review report. When we compared the scores given and those calculated during the two periods, we observed that under the previous system, there was a larger scatter between the overall scores given and the scores calculated (Figure 4). In contrast, Figures 5 and 6 show very close correlations between the overall and calculated scores, indicating that using smaller dedicated teams of reviewers provided more accurate and reliable scoring.

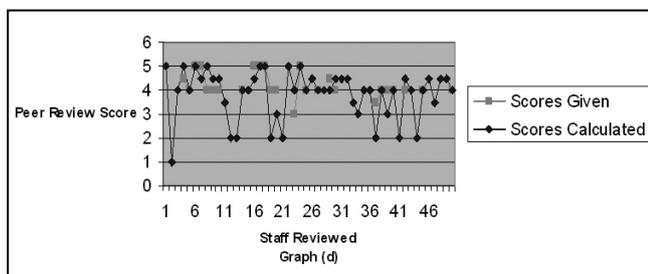


Figure 4. Comparison between scores given and scores calculated in Semester 2, AY 2005/2006 under the previous review system

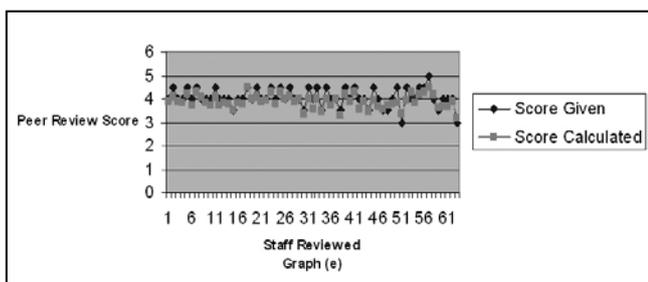


Figure 5. Comparison between scores given and scores calculated in Semester 1, AY 2006/2007 under the new peer review system

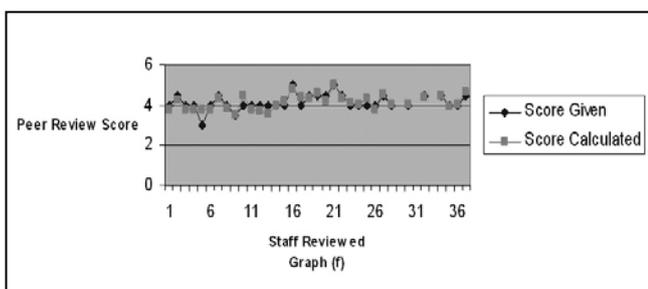


Figure 6. Comparison between scores given and scores calculated in Semester 2, AY 2006/2007 under the new peer review system

## Qualitative Comments

The reviewers' comments from the two systems provided further useful information. Under the

previous system, typical comments included:

- "This is a new course for Dr. A. PowerPoint slides were prepared and used in teaching. They are also available online."
- "Dr. B should encourage students' participation by asking some simple questions and checking whether the students are following the lecture. Lecture notes are well prepared. Delivery is clear and organised."
- "Dr. C is able to show his knowledge, enthusiasm and ability to motivate students to learn and think. The lecture materials are well designed and prepared. The presentation is generally vivid and interactive."

The comments in these examples lacked detailed explanations and did not address issues such as the staff's teaching abilities, level of interaction with students, presentation standards and clarity of speech. Although the last reviewer gave feedback on such issues, he failed to cite specific examples to support his points.

In contrast, review teams under the new system gave detailed and informative comments:

- "Dr. D very actively engaged his students throughout the lecture by asking probing questions related to the lecture content and students responded well. He began by reviewing what was taught in the previous session. Throughout his lecture he would pause to ask if students followed him and if they had questions. He ended the session with a summary of key points discussed. He also used examples closer to home to reinforce these points. One can see that he used effective methods to achieve the module's learning objectives."
- "Dr. E began with a recap of the previous lecture. He was well prepared, confident and most of all very knowledgeable of the subject. His previous industrial experience came in handy as he constantly mentioned current industrial practices. Throughout his lecture, he constantly paused and asked students questions to ensure they were given time to absorb the teaching materials. Due to the smaller class size (35 students), he actively engaged students using this method. Dr. E's unaccented English was not very good but he seems to be able to explain very difficult concepts to the class. He also communicated effectively by maintaining eye contact. He should be particularly commended for his effort to link his teaching materials to materials students had previously learned in other science modules. This should reinforce students' learning. Dr. E's lecture was well-organised and his notes were adequate. The PowerPoint slides however were not spectacular. They were mostly simple and not very flashy. He could have made better use of

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# Incorporating an Educational Field Trip to Broaden Pharmacy Students' Knowledge of Pharmaceutical R&D

Dr Eric C.Y. Chan  
Department of Pharmacy

Dr Edward R. Browne

GlaxoSmithKline N CEDD Cognition & Neurodegeneration Centre

## Introduction

This article relates our experience in planning and implementing an educational field trip for students from the Department of Pharmacy who took PR4207 "Applied Pharmacokinetics and Toxicokinetics" in Academic Year (AY) 2007/2008. This article also examines the effectiveness of such field trips as an experiential learning tool in enhancing students' understanding of the subject.

## Why Organise a Field Trip?

The pharmacist's role has changed significantly over the last decade. It has evolved from being product-centred and supply-oriented to 'clinical' roles which emphasise patient-centred cognitive services, as well as developing and regulating pharmaceutical products. Such changes pose new challenges in educating pharmacy students to ensure they have the skills to cope with the demands of their profession.

One of the biggest hurdles pharmacy students face is the ability to effectively apply their theoretical knowledge to solve workplace challenges (Shivo & Hemminki, 1999; Shivo *et al.*, 2000; Katajavuori *et al.*, 2002). In PR4207, students learn concepts of pharmaceutical drug development. Lecturers use case studies and application-based examples to help them grasp these new concepts. While this approach helps them understand how these concepts are applied in the workplace, it is confined to the classroom and students may still find the 'education-life-society' connection tenuous. According to Demartini (1983), incorporating experiential education into the curriculum is an effective way of making the connection clear to them, with educational field trips being good examples. We felt that a field trip to a laboratory facility would give PR4207 students first-hand knowledge of how these concepts are put into practice and boost their interest in the subject. The small size of the class (14 students in all) also made it logistically feasible to organise the trip.

## Planning the Field Trip

The coordinators chose to focus on the study of preclinical *in vivo* pharmacokinetics (PK) during the field trip. It is a branch of biopharmaceutical science which involves measuring drug concentrations in blood and tissue over time after it has been administered to an animal specimen. This topic is covered under the early phase drug development component of PR4207.

## Choosing a Suitable Site

We chose to visit GlaxoSmithKline's (GSK) Department of Drug Metabolism & Pharmacokinetics (DMPK) at their N CEDD R&D Centre located at the Biopolis. GSK's DMPK facility was a suitable choice for several reasons:

- It conducts routine preclinical *in vivo* PK studies, which facilitates teaching the topic to students with minimal disruptions to the facility's daily operations.
- GSK has been a strong corporate supporter of Singapore's educational programmes. PR4207's module coordinator is also involved in an ongoing research collaboration with GSK and is familiar with the facility.
- The Biopolis is near the NUS campus, which makes it convenient for students to travel there and return to NUS.

Preliminary visits to the facility were made by the coordinators to discuss and confirm the locations for the lecture and laboratory demonstrations to be conducted during the field trip. Students were also thoroughly briefed before the visit to ensure they were familiar with the chosen topic.

## Visiting GSK's DMPK Facility

The visit commenced with students attending a lecture delivered by Dr Edward Browne, team leader of GSK's DMPK Department. Dr Browne's lecture was designed

to be consistent with PR4207's syllabus, with certain portions emphasising how preclinical *in vivo* PK studies are used to profile early drug candidates. After a short break, the second session got underway with a tour of the DMPK laboratory. Staff from GSK set up three stations in the laboratory where students were given demonstrations of experiments related to preclinical *in vivo* PK studies. Students had opportunities during both sessions to ask questions to clarify any doubts.

### Evaluating the Field Trip

An evaluation form was prepared to gather students' feedback of their learning experience (see Figure 1). Students' responses to Question 1 (see Figure 2), showed that the entire class recognised that the field trip had broadened their knowledge of the topic. The results confirmed that knowledge can be enhanced as effectively during field trips as in a classroom. As for Question 2, more than 90% of the class agreed their interest in the subject increased following the field trip. This was an important finding, as increasing students' interest in the subject was one of the desired pedagogical outcomes of this visit.

One of the field trip's objectives was to help students bridge the gap between PR4207's theoretical concepts and its practice. We managed to do this through the

**Please tell us about your learning experience**

---

The lecture has enhanced my knowledge in preclinical PK study.  
 Yes  No  Not sure

The field trip has increased my interest in the subject of early candidate profiling.  
 Yes  No  Not sure

The lecture is able to illustrate actual potential applications of knowledge covered in syllabus.  
 Yes  No  Not sure

The laboratory demonstration reinforced my theoretical concept and knowledge in this topic.  
 Yes  No  Not sure

Are you planning to explore the pharmaceutical industry as a career option?  
 Yes  No  Not sure

What other topics would you suggest to be presented in future field trip to pharmaceutical company?  
 \_\_\_\_\_  
 \_\_\_\_\_

Other Comments:  
 \_\_\_\_\_  
 \_\_\_\_\_

Figure 1. Questions from the evaluation form for the field trip

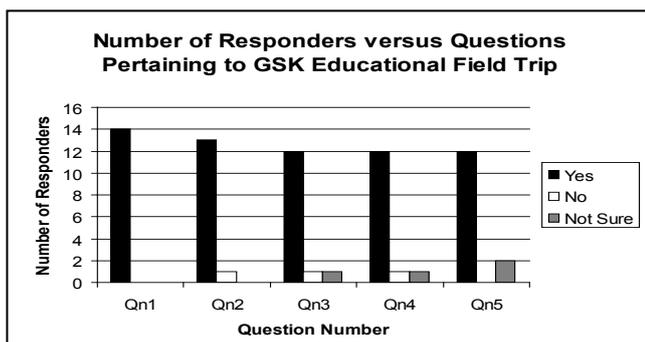


Figure 2. Students' responses to questions 1–5 in the evaluation form

laboratory demonstrations which showed them how theoretical concepts taught during lectures were applied in a workplace situation. More than 85% of the class agreed that the lecture illustrated potential applications of concepts covered in the syllabus, while the laboratory demonstrations reinforced their knowledge of these concepts (Figure 2). These results confirmed that field trips were suitable tools for short-term experiential learning.

Finally, the evaluation results also showed that most students were interested in pursuing a pharmaceutical career. While this observation is not surprising, it highlighted the fact that the subject matter was relevant to their learning needs. It also partially explained students' positive response to this experiential learning experience. In fact, some gave good suggestions for future field trips, such as making visits to other pharmaceutical facilities and including a drug development case study for subsequent lectures.

### Conclusion

It is evident that a meticulously planned educational field trip can lead to a rewarding experiential learning experience for both students and lecturer. These visits give them the opportunity to see how concepts learnt in the classroom are applied in workplace situations. Such learning experiences also enable students to develop a deeper interest in the subject and ultimately enhance their metacognitive as well as lifelong learning skills to become more effective healthcare professionals.

### Acknowledgements

The author would like to thank Ms Aveline Neo, Ms Catherine Goh and Ms Jean Lim of the Department of DMPK, GlaxoSmithKline N CEDD Cognition & Neurodegeneration Centre, for their kind assistance during the laboratory demonstrations.

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## Outstanding Educator Award Public Lecture Series 2008 cum Annual Teaching Excellence Awards Ceremony

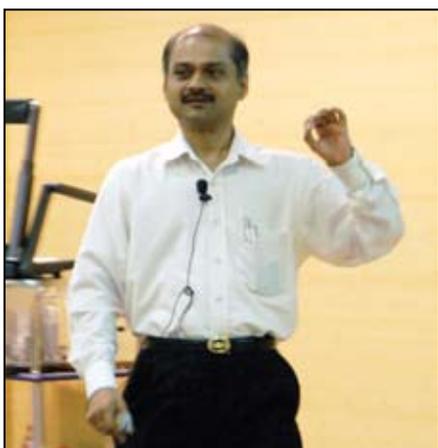
Winners of 2007/2008's Outstanding Educator Award (OEA) delivered their lectures as part of the OEA Public Lecture Series on 17 April 2008 at the University Hall Auditorium. Following Deputy President (Academic Affairs) and Provost Professor Tan Eng Chye's opening address, the audience were treated to lively presentations by OEA winners Associate Professors Ashwin M. Khambadkone, Erle C.H. Lim and Sow Chorng Haur, whose lecture topics included using multimedia tools and scientific demonstrations creatively to enhance teaching and learning experiences. Recipients of the Annual Teaching Excellence Awards (ATEA) and Honour Roll were also presented with their certificates at this event. ■



Deputy President (Academic Affairs) and Provost Professor Tan Eng Chye giving his opening address



Our audience give the OEA winners their undivided attention



Winners of OEA 2007/2008 deliver their respective presentations  
From left to right: Associate Professors Ashwin M. Khambadkone, Erle C.H. Lim and Sow Chorng Haur

### Calling All Writers

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

CDTLink (700 words maximum per article; photos & illustrations in hard/digital copy are welcomed)

CDTL *Brief* (text-only publication; 1,000 words maximum per article)

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

Liew Shin Dee  
Email: [cdtlds@nus.edu.sg](mailto:cdtlds@nus.edu.sg)  
Tel: (65)-6516 4692  
Fax: (65)-6777 0342

### Congratulations!

CDTL would like to congratulate Professor Matthew Gwee, one of our former Associate Directors from the Yong Loo Lin School of Medicine, on being elected by the Membership of the International Association of Medical Science Educators (IAMSE) to its Board of Directors for a period of two years, beginning 1 July 2008. Professor Gwee has the privilege and honour of being the first Asian to be elected to the Board. ■

### Welcome!

CDTL welcomes as Manager Ms **Lim Swee Yen, Elsie**, who joined our team in June 2008. ■

**TLHE**  
2 0 0 8

5th International Conference on  
Teaching and Learning in Higher Education (TLHE) 2008:

# Frontiers in Higher Education

3 – 5 December 2008

CDTL will be holding its next International Conference on Teaching and Learning in Higher Education (TLHE) 2008 from 3 – 5 Dec 2008.

This year's conference aims to provide a forum for the academic community to interact and exchange information on new developments and improvements in the following areas: Integrative Learning, Scholarship of Teaching, Teaching Methodologies, Assessment of Student Learning, Theories of Learning, Educational Management and Technology for Learning. We have invited the following distinguished practitioners in higher education to discuss and share their perspectives on these issues:

## Keynote Speakers

- **Professor Graham Gibbs**  
*Visiting Professor, Oxford Brookes University  
Former Director, Oxford Learning Institute,  
University of Oxford, United Kingdom*
- **Professor Tan Eng Chye**  
*Deputy President (Academic Affairs) and Provost  
National University of Singapore, Singapore*

## Invited Speakers

- **Professor Graham Webb**  
*Pro Vice-Chancellor (Quality), Monash University, Australia*
- **Professor Michael Prosser**  
*Professor & Executive Director, Centre for Advancement of  
University Teaching  
The University of Hong Kong, Hong Kong*
- **Professor Marcia Devlin (PhD)**  
*Chair of Higher Education Research  
Deakin University, Victoria, Australia*
- **Professor Keith Trigwell**  
*Director, Institute for Teaching and Learning  
University of Sydney, Australia*

## Pre-conference Workshops

Please join us for the pre-conference workshops  
(2 December 2008)

- **Professor Graham Gibbs**  
Workshop Title: Maximising the Benefits to Undergraduate Learning of Departmental Research Strengths
- **Professor Graham Webb & Ms Robyn Harris** (*Director Governance, Policy and Planning Services, Victoria University*)  
Workshop Title: Developing an Institutional Quality Management System for Teaching and Learning'
- **Professor Marcia Devlin**  
Workshop Title: Strategies to Enhance Teaching Skills and Practices

## Early registration is now open!

Delegates who sign up before **1 September 2008** are entitled to a registration fee of **S\$500**.

Registration fees (after 1 September 2008): S\$550.  
Pre-conference workshop fees: S\$ 50 per workshop.

Sign up for the conference online at our conference website:  
[http://cdtl.nus.edu.sg/events/tlhe\\_register.asp](http://cdtl.nus.edu.sg/events/tlhe_register.asp)

For more information, please visit the TLHE website at [www.cdtl.nus.edu.sg/tlhe](http://www.cdtl.nus.edu.sg/tlhe) or contact the Conference Secretariat at:

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

**Email: [tlhe@nus.edu.sg](mailto:tlhe@nus.edu.sg)**

**Tel: (65)-6516-2071**

**Fax: (65)-6777-3042 ■**



# Teaching & Learning HIGHLIGHTS

## *School of Design & Environment*

### **Departments of Building and Real Estate's Teaching Seminar 2007/2008: Connecting Teaching with the Real World**



*Associate Professor Wong shares his teaching experiences at the seminar*

The Departments of Building and Real Estate's teaching seminar this semester featured a presentation by one of NUS's multiple Teaching Excellence Award winners, Associate Professor Wong Nyuk Hien, entitled 'Connecting Teaching with the Real World.'

Associate Professor Wong commenced his presentation by highlighting initial difficulties he faced as a new teacher when he returned from his PhD studies in 1998. While comfortable with the content he had to teach, he was surprised by

the negative student feedback he received. He realised there were refinements he had to make to his teaching style so that students could benefit from their learning experience. This led to a process of soul searching, with Associate Professor Wong recognising that he had to make learning more 'real' for his students. To this end, he devised several strategies for a particularly difficult final-year module he taught, BU4102 "Integrated Construction Technology", which presumed prior knowledge from students and required them to assimilate various fields of knowledge.

Associate Professor Wong's presentation was peppered with various illustrations and strategies whose primary aim was to elicit students' interest and fully engage them in the learning process. Many of these involved using simple and readily-available resources such as newspaper articles, the Internet and simple activities which involved student participation during class. Although time and effort was required in putting such teaching materials together, the rewards of enhanced student learning made it worthwhile.

An interesting question-and-answer session followed the presentation and participants provided feedback that they would "definitely try out some of the strategies discussed." ■

## **Reflections on the Road Travelled So Far**

*... continued from page 2*

On hearing her lament, the educator in me took over. I asked her if she was willing to do something that would help in her preparations. Then, we used a big sheet of drawing paper and started creating a storyboard of Vasco da Gama's journey from Europe to Goa around the Cape. We drew cartoons, coloured them and included signposts with dates. The girl was very excited with this exercise. A few weeks later

on the 5<sup>th</sup> of September, which happened to be Teacher's Day in India, I was visiting the area close to where this family lived. This girl saw me on the street and requested that I wait there for awhile. She returned with a rose and a card wishing me a happy Teacher's Day and thanking me for my help. That card was certainly one of the best awards I had ever received. ■

## An Alternative Peer Review System — A Faculty of Science Initiative

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audio-visual technology to give a first-rate lecture. Dr. E used many illustrations during the lecture to reinforce his teaching, but it was unclear why they were not included in the students' handouts. However, the slides used in other lectures (as found in his module folder) included beautiful pictures and diagrams."

- "The lecture dealt with polymers. Dr. F started by showing two advertisements featuring polyethylene terephthalate (PET) and fabric that blocks ultraviolet radiation. This is a good start to the lecture's main theme. During the lecture, Dr. F asked students several relevant and probing questions, including comparing the usage and application of low-density against high-density polyethylene, why polypropylene is less dense than low-density polyethylene, whether non-biodegradable polystyrene is environmentally less friendly than paper, and how does non-stick Teflon stick to cookware. Another good use of current issues was the discussion whether PET bottles should be recycled. At the end of the lecture, Dr. F posed three questions (relevant to the lecture) for students to think about. Dr. F spoke clearly with good diction. His slides were very well prepared, with many eye-catching graphics."
- "Dr. G first gave a summary of topics covered in the last lecture. The lecture dealt mainly with defects in solids and alloys. He used diagrams to give clear explanations of the differences and origins of various types of defects (e.g. stoichiometric defects versus non-stoichiometric defects). He often used mnemonics to remind students about concepts like FISH (i.e. Frenkel defects are associated with interstitial and Schottky defects are associated with holes) which helped students appreciate the origins of the defects. In his discussion of alloys, he pointed out some interesting examples of its usefulness: sterling silver, 22-carat gold and pewter. His slides were nicely prepared. Some questions were incorporated but with answers provided. It may be better to omit the answers and explain them verbally instead, although students might complain that they had to take notes for the answer. During the break, Dr. G walked around the lecture theatre, pausing to interact with students. His delivery was good and he always maintained eye contact. At the end of the lecture, he gave a summary of the key points covered."

In these examples, the teams gave detailed feedback about teaching methodology and style which were substantiated with relevant examples. Such comments were clearly more informative and useful.

### **Logistics & Acceptance**

Under the new system, departments compile a list of academic staff to be reviewed for the teams at the start of each semester. The list includes pertinent information about the staff under review and the modules they teach. This gives the teams more time to discuss how they would conduct the reviews to ensure consistency and fairness.

It is also noted that staff were generally more receptive of the new peer review system. There were complaints that staff were unfairly evaluated under the previous system due to perceived bias or leniency by some reviewers. However, there have been no such complaints about the new system so far, and staff appear receptive to this objective method of conducting peer reviews.

### **Conclusion**

Staff's feedback on the new peer review system has been encouraging. Both reviewers and staff under review have welcomed the new system. We anticipate that promotion and tenure committees will also find it more reliable and useful. We will continue to use this new system and fine-tune the peer review process as we receive more feedback. ■

*The quotations by peer reviewers in this article have been edited to ensure clarity and readability.*



# Managing Your Own Portfolio: Using Computer Simulation Games to Teach Real Estate Students Risk Management

**Associate Professor Sing Tien Foo**

Department of Real Estate

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## Introduction

A simulation game entitled ‘Managing Your Own Portfolio’ was developed and used in RE3281 “Real Estate Market II” in Semester 1, Academic Year 2007/2008. This article examines how this game helped students improve their understanding of portfolio management theories. Through this game, I hope to simulate real-life market scenarios and illustrate to students how these theories can be applied to analyse their portfolio decisions. I also hope this game will enable RE3281 students to expand their learning horizons and go beyond their textbooks. The learning objectives would have been achieved if after completing this module, students can appreciate what market volatility is, rather than perceiving RE3281 as a module that merely teaches them how to compute standard deviations of asset returns.

## Simulation Games: Helping Students Put Theory into Practice

As a famous saying goes, “Don’t put all your eggs in one basket.” Indeed, diversification and risk-return trade-offs are concepts which form the cornerstones of portfolio theories covered in RE3281. However, students without real-life experience in making investment decisions may have difficulty appreciating what risk in investments entails. Developing creative teaching methods, such as a computer simulation game, is one way to overcome the challenge of engaging students with these concepts.

## Playing the Game

The game was played four times over two weeks in October 2007. As the game’s title implies, students had to manage their own account and investment

portfolios. At the beginning of the game, each student was allocated a cumulated sum of \$180,000 in savings. They also received an additional \$25,000 in cash savings at each game period for investment purposes. The savings increased by 10% per period.

Students could invest their savings in any of the following asset classes:

### A. Real Estate

Students could invest in a HDB flat or a private apartment. However, they could only purchase one unit of real estate per period. Similarly, they could sell no more than one unit per period if they own at least one property in the previous period. Property prices were announced every period through an online announcement board on IVLE. Students who did not own real estate would incur rental expenses of \$12,000 per period.

### B. Stocks

Students could buy or sell stocks listed on the Singapore Exchange. They made their final stock picks and transacted quantities based on the stocks’ closing prices at the end of each game period. If they held stocks for more than one period in their portfolio, they would earn a 7% dividend yield on the stocks by the end of each period.

### C. Bonds

Students could make bond investments in multiples of 5,000 units valued at \$1 per unit. Each unit carried a fixed coupon yield of 5% per period. They could also redeem the bond at par value at each game period.

Students could also choose not to make any investments, keeping their cash accounts at status quo. If they adopted this strategy, they not only incurred annual rental expenses amounting to \$12,000, their cash accounts would also earn zero interest rate (i.e. cash is a negative hedge against inflation).

To reflect market realities, the three asset classes were designed with different levels of information uncertainty. Real estate information was imperfect as prices were arbitrary and the price generation process was not disclosed to students. Bond returns, however, were fixed by a constant coupon yield. Stock prices in the game reflected market sentiments and fundamentals.

Figure 1: Students are required to upload their end-of-period portfolio compositions via IVLE

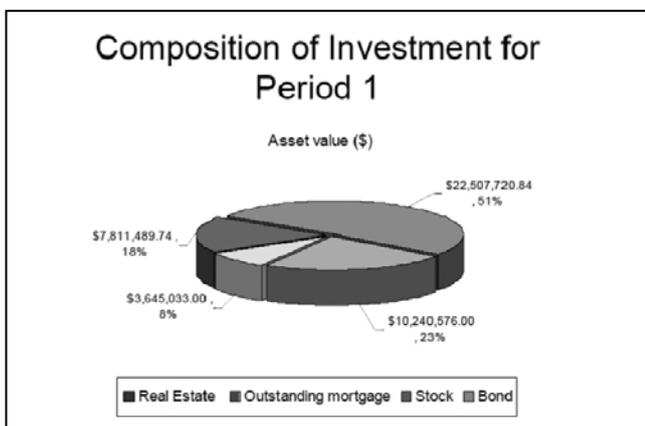


Figure 2: The aggregate portfolio weights will be announced via IVLE before the start of the new game period

At the beginning of the game, each student was given a standard spreadsheet to keep track of their investment activities and changes in portfolio compositions. They had to upload their portfolio compositions via IVLE at the end of each game period (Figure 1). The aggregate distributions of asset weights for the class were also uploaded at the end of each period (Figure 2). The class did their final calculations when they completed the game. The difference between their initial and final

balance sheet determined how well (or badly) their investment portfolios performed. However, students were not assessed solely on the performance of their investment returns, as higher returns could mean they took higher portfolio risks. They also had to submit a short report explaining their investment and portfolio strategies, and describe lessons they learnt from the game.

### Student Feedback

The game garnered positive responses from students. Many felt the game taught them good lessons about making sound investment decisions when managing their portfolios:

- “The exercise...kept me excited and on my toes throughout these 2 weeks...constantly checking on the stock prices, the made-up property prices and always keeping tabs on my total profits...I must say, something felt amiss when it all ended.”
- “In period 2, I jumped into the stock market upon seeing that prices [had] fallen. Unaware of the negative transmission from the US, my short-sightedness told me falling prices will rise. In reality, prices plunged further and it never rose back until the last period.”
- “In this game, I have also relied on the “Brokers’ Take” section of *The Business Times*...for free investment advice. However, there were several occasions where the forecast and predictions were wrong...instead of making profits, losses were made.”

### Concluding Remarks

The objective of including this game in RE3281 was to expose students to the markets’ volatile nature and also enable them to relate concepts they learnt, such as the efficient market hypothesis and portfolio diversification, to real-life scenarios. It was not meant for students to apply sophisticated trading strategies so their investments can outperform the markets. I do not expect students to become instant master chartists, expert stock traders or speculators after playing this game. However, I hope students were able to appreciate how market shocks can influence the value of their assets. A good example is the sub-prime crisis in the US, which occurred while the game was played. The game would also have achieved its objectives if students started taking a greater interest in current affairs and see how they affect the market, such as how SIA’s inclusion of new A380 aircrafts to its current fleet affected its share prices, and the impact of escalating oil prices on the economy. Such skills would enhance their effectiveness as future portfolio managers. ■

# Inspiration, Confidence and Techniques for Learning

Assistant Professor Meijun Qian

Department of Finance

It has often been said that it is better to teach a man how to make money than to give him the cash. Similarly, I wonder how many of us have ever considered the purpose of education. Is it simply to disseminate knowledge? Do our students attend classes for information they can obtain by simply reading lecture notes? The answer should be 'no'. Sometimes, we say that good students do not need to be taught. That is because they want to learn, they know how to learn and believe they can do it. Desire, technique and confidence are qualities that distinguish good students from 'not so good' ones. I believe that in the process of disseminating knowledge, the main goal of education is to teach students how to learn and turn 'not so good' students into good ones.

With this belief in mind, I devote a significant part of my teaching efforts to strengthening my students' ability to learn. The goal is to inspire in them a desire for knowledge, improve their confidence and equip them with the necessary learning techniques. These are achieved through several channels, including:

- Relating lecture topics to students' daily lives and local financial markets.
- Bringing explanations back to core economic principles and benchmarks to reinforce the analytical logic behind new concepts.
- Asking students to do research on current financial issues, challenging them to digest and apply what they found out, and to present the results to their classmates.

The objective of the module I teach, FNA3103 "Financial Markets", is to introduce students to various financial assets, the markets on which the assets are traded and the institutions who create, price, trade or facilitate the trading of these assets. To help students relate to local markets, I use the debt market as an example and introduce the auction mechanism and procedures that the Monetary Authority of Singapore (MAS) uses to issue its Singapore Treasury Bills. I also introduce the Singapore debt market's trading statistics after showing students the general evaluation and risk management of debt instruments. In the foreign exchange market, after showing students how the currency is priced, traded and why it is traded, I highlight to them the fact that MAS uses the foreign exchange rate to implement Singapore's monetary policies. This practice is unique to Singapore as other major economies such as the US tend to use interest

rates and treasury open-market operations. During the lectures, I go through with students how each mechanism works and why countries choose differently.

Equipping students with analytical skills does not mean just introducing them to principles, benchmarks or examples of logic reasoning and skills application. It also involves developing students' ability in logical reasoning. This requires the lecturer to understand the subject deeply. For example, for the topic of financial arbitrage, the valuation relation and parity conditions in almost every financial markets phenomenon is based on the simple rules of risk-for-return and profit exhaustion. Therefore, I would take every opportunity during the lecture to explain examples and variable relations (e.g. parity conditions and market equilibriums) within this framework. Towards the later half of the semester, students would volunteer to analyse materials in this framework through class participation. All I need to do then is just some rephrasing or provide explanations of variations where needed.

As for group projects, I choose topics that are not only related to the lectures but are also current and closely related to students' lives. Topics such as the sub-prime crisis, Islamic banking and developments in the Singapore Exchange (SGX) are chosen. Guidelines are given to the class and expectations are loosely laid out, with enough room for students to be creative. Each student signs up for one project in which he or she is interested. The rule is that there should be five people in a group and multiple groups for each topic to allow comparisons to be made. Each group has to submit a report and do a class presentation. To complete the project, they go through the process of collecting the information, digesting it and 'teaching' what they learnt to their 'colleagues'. Therefore, students not only learn more but also realise the closeness between these financial issues and their lives. More importantly, they realise their own potential in reaching higher levels when they tackle the challenge. I provide feedback to their projects, acknowledging their efforts and giving encouragement as well as suggestions. It inspires in them a desire to learn and boosts their confidence.

At the end of the semester, I conduct a survey to find out how effective this strategy has been in terms of inspiring students, boosting their confidence and equipping them with systematic and analytical skills. The survey consists of 10 questions, with five on the effects of the project and the rest on the module itself. The results (see Figures 1

*continued next page ...*

and 2) consistently show that majority of students think both the project and classroom lectures have ignited their interest and confidence in learning finance subjects. The students are also more likely to consider a career in finance as they feel increasingly knowledgeable and capable of analysing financial market issues.

One may argue that devoting so much effort into these strategies consumes too much energy. Based on my experience, I concur that it requires time and effort to be sensitive to students' needs and feelings. However,

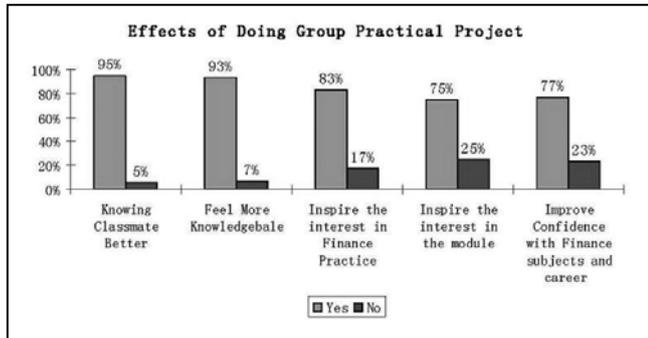


Figure 1: The learning effects of practical projects in terms of improving students' interests, confidence and analytical skills towards finance subjects

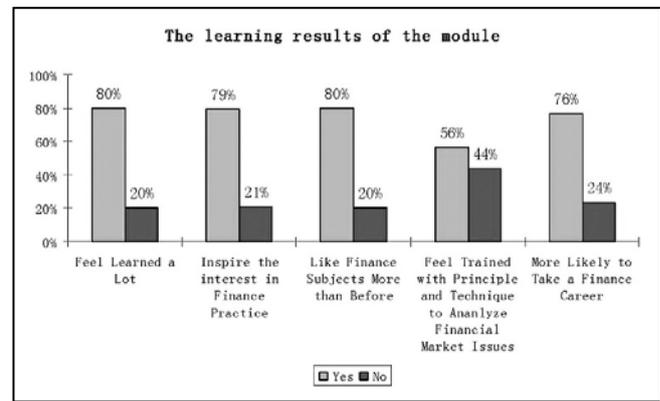


Figure 2: The learning effects of FNA3103 in terms of improving students' interests, confidence and analytical skills towards finance subjects

I think the effort is worthwhile as teaching the subject becomes easier over the semester. In addition, more students improve and become 'good' ones who know how to learn and take the initiative rather than wait to be fed with information. Overall, the experience reinforces the belief that students' potential can be nurtured when we encourage and help them look into their own strengths. Thus, we should teach such learning skills when imparting knowledge to our students. ■

## Education, Research and Experiments in Economics

... continued from page 3

Instruction in these workshops draw on the expertise of 21 faculty members from 12 universities, many of whom are alumni of our graduate workshops and were at one time pre- or post-doctoral visitors. For alumni of the high school workshops, a small new summer internship programme allows them to pursue new research and education experiences in an environment where they are not only mentored but also regularly interact and mentor each other.

There are critical characteristic principles of fact and value that underlie our use of the experimental methodology. They are, in brief:

- Decentralised knowledge and efficient coordination that require free choice among individuals, governed by rules respecting limited resources, and is constrained by the freedom of choice of others.
- 'Know-how' in society is dispersed across individuals in all social systems.
- Diversity of knowledge, preferences and skills are the hallmarks of all markets and social systems.
- Free choice allows human social systems to explore and discover opportunities through which all can achieve increasing gains from exchange through the specialisation enabled by exchange.
- Personal and impersonal exchange systems that have co-evolved with knowledge and skills specialisation are the only known engines of wealth creation.

- Market experiments enable us to better understand how institutions matter because the rules matter, and how rules matter because incentives matter.
- Personal social exchange systems are an important complement to market exchange systems. Both share the ancient principle of mutual giving and receiving, but are expressed differently as reciprocity in social exchange and property rights supported by the rule of law in market exchange.
- Markets can be structured so that they are self-regulating and self-ordering to create new long-term value, but the structure of (property) rights to act must honour technical features that vary across different industries and physical environments. This requires 'test bedding' (i.e. try it before you fly it) in both the laboratory and field to understand new applications. The important research question is: 'How should the rules vary with circumstances?'

What we have learnt, after years of discovery and innovation, is that experimental economics makes it possible to do the following:

- Test the limits of existing economic principles using motivated human subjects interacting in laboratory or field environments.
- Test assumptions about human behaviour in personal social and impersonal market exchange systems.
- Test the predictive power of traditional models

continued next page ...

## Education, Research and Experiments in Economics

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of exchange and decision-making, and explore the form and meaning of rationality in new and changing circumstances.

- ‘Test bed’ new self-regulating and self-ordering market and resource management systems both in the laboratory and in field applications, recognising that their technical and institutional features must be adapted to different industries and physical environments.



*Enthusiastic participation during the workshops for high school students*

- Study the means whereby the inherent decentralisation of information, knowledge and skills can be coordinated for improved performance and human betterment.
- Study ‘what is not’ (i.e. arrangements that currently do not exist) to better understand those that exist, and ask if and how what exists can be made more effective.
- Explore and understand counterfactuals — the ‘what if’, ‘what might have been’ or ‘what might be’ questions — which cannot be observed in life. Experiments can help us to investigate and enable us to better understand ‘what is not.’
- Engage with those close to real-world problems, where markets have not previously existed, to define the problems that need attention, then design and ‘test bed’ solutions before they are implemented to avoid costly mistakes.
- Seek more effective decisions or property rights arrangements within working systems, such as the Internet and other forms of shared goods and services.
- Build electronic exchange mechanisms, (i.e. rule systems) for markets in industries such as electric power, water supply and transportation networks, healthcare delivery, financial instruments and resource management within firms.
- Explore alternative ways in which markets can be structured for self-regulation.
- Establish better integration between field and experimental studies so that each can inform and enhance the other.
- Work to understand both the seen and unseen elements that affect the behavior of markets and other social systems.



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In summary, the experimental methodology we use to acquire new knowledge of economic systems underpins our use of apprenticeship-based, hands-on learning in interactive markets and group decision-making for students of all levels of education, from high school through to graduate studies, and even into the workplace. ■

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