Excellence in Teaching = \( f(x) \)
What is \( f(x) \)?

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Warden, Suen Chi Sun Hall
I ♥ Teaching in HKU.

One Day Induction to University Learning and Teaching at HKU

- Date: 2 Mar, 2011 (Wed)
- Time: 9:45am - 4:00pm
- Venue: Rm 321, Run Run Shaw Building (lunch will be provided)

Early registration is encouraged as enrolment is limited.

Organized by:
Centre for the Enhancement of Teaching and Learning
The University of Hong Kong
Excellence in Teaching = $f(x)$
What is $f(x)$?

What is “Excellence in Teaching”?

????

Not easy!

20, 25, 30, 35, 40 years
Seminar on Research
Seminar on Teaching
SCOPE OF THE SEMINAR

● INTRODUCTION

● 7-MUST TEACHING APPROACH

● OUTCOME-BASED APPROACH TO STUDENT LEARNING (OBASL)

● FUTURE CHALLENGES

● CONCLUSIONS
SCOPE OF THE SEMINAR

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● CONCLUSIONS
Is excellence in teaching simply facilitating students to achieve learning outcomes through innovative teaching or to enhance student learning experiences?
Frame

P = 100 kN

Frame 5

Hinge

3 m

6 m

Hinge
Frame (Research - Finite element analysis)
Engineering Drawing

FOOTING FOR COLUMN C3

PLAN

14T25-E1-250 B1
14T25-E1-250 B2

E1
E2
E3
E4
E5

4T40-E2 + 4T32-E3
3R10-E4-250 + 3R10-E5-250

19.900
19.100

75 BLINDING LAYER

A - A
3D Animation

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Innovative Teaching

• Explain the concept of partial differentiation by cutting watermelon.
This tangent line has slope $f_y(x_0, y_0)$.

The curve $z = f(x_0, y)$ in the plane $x = x_0$ has slope $f_y(x_0, y_0)$.

This tangent line has slope $f_x(x_0, y_0)$.

The curve $z = f(x, y_0)$ in the plane $y = y_0$.

$z = f(x, y)$
Innovative Teaching

- Explain the mechanics of torsion by twisting biscuit stick.
Excellence in Teaching = \( f(x) \)
What is \( f(x) \)?

\[ f(x) = \text{Innovative Teaching?} \quad \text{NO} \]
INTRODUCTION

- Can the achievement of teaching and learning outcomes, adoption of learner-centred approaches, leadership in curriculum development, innovation in teaching as well as development of effective teaching practice and assessment method for learning be considered as excellence in teaching?

- Let me share my teaching philosophy.
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● CONCLUSIONS
Must have a heart for students.
(1) **Must have a heart for students**

- **Good instructor** ⇒ **Have a heart of understanding, enthusiasm, patience, and kindness for students.**

- **Extra patience to students** ⇒ **Different levels of student ability varying from mediocre to top-notch.**

- **Some instructors teach from their “high level” of knowledge** ⇒ **Beyond the level of students’ learning abilities.**
(1) **Must** have a heart for students

- The instructor must also have patience for less competent and passive students ⇒ By explaining concepts repeatedly in different ways and through different methods.

- Other than teaching technical materials, it is also important to care for the welfare of students.
7-MUST TEACHING APPROACH

Must spend time to prepare for lectures.

(1) Heart for students

(2) Spend time
(2) **Must** spend time to prepare for lectures

- A good instructor must be willing to spend time in preparing lectures.

- It is important to revise lecture notes and tutorial questions from time to time to include up-to-date technology.

- Therefore, lecture preparation is a continuous process.
7-MUST TEACHING APPROACH

Must present well in lectures.

(1) Heart for students
(2) Spend time
(3) Present well
(3) **Must** present well in lectures

- It could make a significant difference between an instructor with good presentation skills and the one who delivers materials in a straightforward manner.

- **Good voice and eye contact are powerful tools.**

- In presenting abstract theories, it is necessary to use diagrams and models to illustrate the key components of the concepts.
(3) **Must present well in lectures**

• A student from Singapore once remarked “*A diagram explains a thousand words and a model explains a million words*”.

• **Use illustrations with student involvement for explaining the teaching materials (biscuit stick).**

• **Other useful teaching tools have been presented earlier.**
Art of clay

Put it on your palm (hand).

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7-MUST TEACHING APPROACH

Must always make students think in lectures.

(1) Heart for students
(2) Spend time
(3) Present well
(4) Make students think
(4) **Must** always make students think in lectures

- In lecture, students are often like signal receivers without data processing.

The following activities can stimulate students’ thinking:

- Get students to note down some lecture materials during the lecture ⇒ To keep their minds active.

- Give some apparently correct but **wrong examples** after teaching a theory ⇒ Ask the students to identify the mistakes in the example.
7-MUST TEACHING APPROACH

Must have two-way communication/interaction in lectures.

(1) Heart for students
(2) Spend time
(3) Present well
(4) Make students think
(5) Two-way communication and interaction

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(5) Must have two-way communication/interaction in lectures

• Ask questions in the class.

• Even if there is no response from the students ⇒ Asking questions is not meaningless, because students might have already answered the questions in their minds.
7-MUST TEACHING APPROACH

Must get feedback from students.

(1) Heart for students
(2) Spend time
(3) Present well
(4) Make students think
(5) Two-way communication and interaction
(6) Get feedback
(6) **Must get feedback from students**

- Get feedback ⇒ At the beginning of the semester, especially in the first few lectures, rather than waiting until the end of the semester (verbal or written).

- **It is important to get feedback from both the excellent and poor academic students.**

- The main purpose of getting feedback is to improve teaching quality.
7-MUST TEACHING APPROACH

Must always think of ways to improve.

1. Heart for students
2. Spend time
3. Present well
4. Make students think
5. Two-way communication and interaction
6. Get feedback
7. Always improve

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(7) **Must always think of ways to improve**

- A good instructor must always have a positive attitude to improve his/her teaching.

- **If the instructor thinks that his/her teaching is good, he/she will never improve.**

- **How to improve?** ⇒ Review and revise teaching materials on clarity of lecture notes, the pace of the teaching and the use of illustrations to explain difficult concepts.
7-MUST TEACHING APPROACH

The 7-MUST teaching approach includes the following:

1. Must have a heart for students.
2. Must spend time to prepare for lectures.
3. Must present well in lectures.
4. Must always make students think in lectures.
5. Must have two-way communication /interaction in lectures.
6. Must get feedback from students.
7. Must always think of ways to improve.

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(1) Heart for students

(2) Spend time

(3) Present well

(4) Make students think

(5) Two-way communication and interaction

(6) Get feedback

(7) Always improve

Young, B. and Lo, I.M.C. (2004). “Teaching Large Classes of Engineering Students”, Proceedings of the Second Teaching and Learning Symposium, Hong Kong University of Science and Technology, Hong Kong, China, 206-211.
SCOPE OF THE SEMINAR

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● FUTURE CHALLENGES

● CONCLUSIONS
HKIE’s Stipulated Programme Outcomes
Engineering programmes must demonstrate that their students attain.

HKIE’s Stipulated Programme Outcomes & University's Education Aims

University's Education Aims
6 aims

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According to Professor Ira Jacobson:

HiERARCHY OF OUTCOMES BASED PROCESS

UNIVERSITY MISSION

PROGRAMME MISSION

EDUCATIONAL OBJECTIVES

LEARNING OUTCOMES

PERFORMANCE CRITERIA

DATA COLLECTION AND ANALYSIS

EVALUATION/BENCHMARKING

FEEDBACK FOR CONTINUOUS QUALITY IMPROVEMENT
OUTCOME-BASED APPROACH TO STUDENT LEARNING (OBASL)

• **Stage 1** ⇒ Course Outline in OBASL format.
  
  Template (prepared by the Faculty).
  
  **Suggestion:** (a) Online submission.
  
  (b) More choices in the pull down menu (use the OBASL language).

• **Stage 2** ⇒ Documentation of the learning outcomes.
  
  **Suggestion:** Template to be prepared by the Faculty.

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OUTCOME-BASED APPROACH TO STUDENT LEARNING (OBASL)

• **Stage 3** $\Rightarrow$ Feedback for Continuous Improvement.

  **Suggestion:** (a) Centralized survey system.
  (b) To be handled by third party.

• In summary, there will be more work compared to the “good old days”.

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Excellence in Teaching = \( f(x) \)

What is \( f(x) \)?

\( f(x) \) is not a complicated function

\( f(x) \) is a simple function

\( f(x) = \) Heart for students
Art of clay

Smell your palm (hand).

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FUTURE CHALLENGES

Future challenges to the higher education system in Hong Kong.

• 3-3-4 ⇒ Expected.

• Outcome-based approach to student learning (OBASL) ⇒ Expected.

• Academic Advising System ⇒ Expected.

• Fertility rate in Hong Kong.
<table>
<thead>
<tr>
<th>Every 5 years</th>
<th>Total fertility rate (per women each year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005 – 2009*</td>
<td>1.01</td>
</tr>
<tr>
<td>2000 – 2004^</td>
<td>0.95</td>
</tr>
<tr>
<td>1990 – 1994^</td>
<td>1.32</td>
</tr>
<tr>
<td>1985 – 1989^</td>
<td>1.38</td>
</tr>
<tr>
<td>1980 – 1984^</td>
<td>1.82</td>
</tr>
<tr>
<td>1975 – 1979^</td>
<td>2.40</td>
</tr>
<tr>
<td>1970 – 1974^</td>
<td>3.32</td>
</tr>
</tbody>
</table>

* Census and Statistics Dept, the Government of the HKSAR.
^ The United Nations Statistics Division
Total number of applicants (include degree / associate degree / higher diploma): 36,249*

Number of main round offers: 18,731*

*JUPAS 2010 (source: http://www.jupas.edu.hk/)

• May be better quality of students going into universities in the coming years, but might not be easy to teach.
CHALLENGES @ HKU

Starting from Academic Year 2010-11 (Already started):

• Arrangement for re-exam/Supplementary Examination.

• Setting the # of exam paper per course = \( n + 1 \)
  where \( n \) is the # of student obtained 45 – 49 marks or had a medical certificate.

• For example, if \( n = 5 \), then setting the # of exam paper = 2 (best case) to 6 (worst case).
CHALLENGES @ HKU
CHALLENGES @ HKU

PRD = Performance Review and Development

<table>
<thead>
<tr>
<th>PRD Review</th>
<th>Performance Review and Development</th>
</tr>
</thead>
</table>

Agreed weightings for Teaching, Research and Service/Administration (total: 100%):
- Teaching Weighting
- Research Weighting
- Service/Administration Weighting

Part I. Reviewee’s Self Assessment
1. Indicate your assessment of your teaching ability/performance.
   You are strongly encouraged to submit relevant evidence to support your assessment (e.g., student ratings, peer review). (N.B. The provision of student ratings is not obligatory. If submitted, such data be formed one of the criteria in assessing teaching effectiveness.)
CHALLENGES @ HKU

Teaching:

Before: Duck Duck Duck Duck Duck Duck Duck Duck

After: Duck Duck Duck Duck Duck Duck Duck Duck
CHALLENGES @ HKU

Research:
CHALLENGES @ HKU

Service/Administration:
CHALLENGES @ HKU

Teaching:  
Research:  
Service/ Administration:
CHALLENGES @ HKU

Teaching, Research & Service/Administration.
CHALLENGES @ HKU

Teaching, Research & Service/Administration.
• Report of the UGC ⇒ Aspirations for the Higher Education System in Hong Kong (December 2010).

• According to page 5 (#14), it is stated that “We strongly feel the need for institutions to focus once again on the quality of teaching and learning, … The quality of education is no less important than research output, … ”.
According to page 9 (#22), it is stated that “UGC-funded institutions should place as much emphasis on the assessment of competence in teaching as they do on research”.

CHALLENGES @ HKU
CHALLENGES @ HKU

Let them play on their strength(s)
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CONCLUSIONS

• Excellence in Teaching $= f(x)$

• $f(x)$ is a simple function (Heart for students).

• The 7-MUST teaching approach has been presented.

• It has been proven successfully by obtaining “good” teaching evaluations from students in Hong Kong and Singapore Universities.
CONCLUSIONS

• Outcome-based approach to student learning (OBASL) has been discussed.

• The future challenges to the higher education system in Hong Kong have been discussed (personal opinion only).

• Let “them” play on their strength(s).
(1) Heart for students

(2) Spend time

(7) Always improve

(6) Get feedback

(5) Two-way communication and interaction

(3) Present well

(4) Make students think

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