Evidence Collection to Support Students’ Achievement of Learning Outcomes:

A Case from Hong Kong Baptist University

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Plenary Session 1

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Outline

1. Design for Evidence Collection to aid the Assessment of Whether and How Students have achieved the Learning Outcomes

2. Importance of Learning and Outcomes Achievement at the Course Level – A Showcase of a selection of Numeracy Courses at HKBU

3. Pilot of Outcomes Assessment to Collect Evidence of Students’ Attainment of the Programme Intended Learning Outcomes (PILOs) and HKBU’s Graduate Attributes (GAs).
Part I

Design for Evidence Collection
**Strategic Theme 1**
Enhancement of quality assurance for teaching and learning

**Strategic Actions:**
- Enhance quality assurance mechanism
- Continuous improvement in curriculum quality
- Strengthen staff development
- Raise students' proficiency in English and Putonghua
- Foster and ensure graduate attributes
- Increase intake of quality students
- Increase student satisfaction in learning
**WPE@HKBU**

**embodied by the 7 Graduate Attributes**

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
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<tbody>
<tr>
<td>Citizenship</td>
<td>Be responsible citizens with an international outlook and a sense of ethics and civility;</td>
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<tr>
<td>Knowledge</td>
<td>Have up-to-date, in-depth knowledge of an academic specialty, as well as a broad range of cultural and general knowledge;</td>
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<tr>
<td>Learning</td>
<td>Be independent, lifelong learners with an open mind and an inquiring spirit;</td>
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<tr>
<td>Skills</td>
<td>Have the necessary information literacy and IT skills, as well as numerical and problem-solving skills, to function effectively in work and everyday life;</td>
</tr>
<tr>
<td>Creativity</td>
<td>Be able to think critically and creatively;</td>
</tr>
<tr>
<td>Communication</td>
<td>Have trilingual and biliterate competence in English and Chinese, and the ability to articulate ideas clearly and coherently;</td>
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<tr>
<td>Teamwork</td>
<td>Be ready to serve, lead and work in a team, and to pursue a healthy lifestyle.</td>
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A Design to collect evidence to showcase students’ achievement of learning outcomes

Evidence Collection Initiative (ECI)

- Course Embedded Assessment (CEA)
- Formative Review Exercise (FRE)
- Aggregated CEA
- Learning Experience Inventory - Programme (LEI-P)
- ETS Proficiency Profile Academic Proficiency Test
- LEI-P/ Personal & Social Responsibility Inventory

Identification of strengths and weaknesses
- Discussion on possible interventions
- Recommendations for continuous T&L improvements

Evidence for Programme review & Quality assurance

Evidence of Student's Achievement

- Course Level
- Program Level
- University Level

Direct Measurement
Indirect Measurement

Note:
* Can be used for the completion of Section C of the Annual Programme Quality Assurance (QA) Report
* FRE uses the Learning Experience Inventory-Course (LEI-C) and Study Process Questionnaire (SPQ) at the course level
^ FRE uses the Learning Experience Inventory-Programme (LEI-P) at the programme & university levels
Outcomes-Based Teaching & Learning (OBTL)

Macros

- Programme Intended Learning Outcomes (PILOs)
  - What do I want my students to learn?
  - What do I know about my students?

Micros

- Course Intended Learning Outcomes (CILOs)
- Teaching and Learning Activities (TLAs)
  - How can I facilitate that learning?
- Assessment Methods (AMs)
  - How do I know that learning does happen?

Learning Centred
• Under OBTL, the learning outcomes for courses/activities programmes and Graduate Attributes are aligned through curriculum mapping, in which the TLAs and AMs are all matched to the CILOs; i.e. *constructive alignment*

• Therefore, assessments at course/activity, programme and institutional levels are **not isolated**, but rather **integrated**.

• University’s **QA Mechanisms** principally rely on the assessments at course/activity level to provide evidence in ascertaining how well the Programme Outcomes and Graduate Attributes have been achieved.

• **Course/activity assessment** represents the **mainstay** for the programme/institutional outcomes assessment.
Part II
Learning and Outcomes Achievement at Course Level
HKBU Graduate Attributes

Have the necessary information literacy and IT skills, as well as **numerical and problem-solving skills**, to function effectively in work and everyday life.
To complete a Full Circle

HKBU Graduate Attributes

GE Programme Intended Learning Outcomes

Individual Numeracy Course ILO

Course Embedded Assessment

My job
Eva’s job
GE PILO: Numeracy

- Manipulate the **tools** of **Mathematics** for exploring quantitative relationships;
- Apply mathematical reasoning to **identify, model** and **solve** relevant problems in our society;
- Explain the **interrelationships** between everyday phenomena and Mathematics.

🪐 Course ILOs for each Numeracy course
Our Challenges

• Targeting **ALL freshmen**
  – Some has basic high school math skill only
  – No calculus, No linear algebra, Limited statistics

• Achieve all ILOs in **one course**
  – DON’T compromise and teach simple 1+1
  – DON’T want pointless formula in students’ heads
What We Need

• Carefully selected math topics and concepts that guide students to **learn deeply**.
• Non-specialist friendly reading materials that students can **enjoy**.
• Pedagogies to enhance critical **thinking** skill that benefit students for **life**.
• Stimulating class activities that help students **achieve** the **learning outcomes**.
Numeracy Enhancement Center

HKMS Texts in General Education
Using eTools for CEA

• Up/Download is the least important

• Submit answers via eTools
  – Auto marking is possible to some questions
  – Evidence collection for future use

• Make homework fun
  – Multiple attempts (less pressure)
  – Randomize questions (fewer copycats)
  – Motivation to get a better or full mark
Other eTools we use

• iQlickers™
  – Collect students’ inputs instantly
• MC, short question, One minute papers
Digital handwritten notes

To review: - Big Oh - Final review
- Taylor's error - HW8 maybe

Set up integral for finding volume.

Method of Slice/Disc

Shell

Want: Vol of a ball
Our new platform...
Feedback from Students

• “The lecturer actually gave us daily example so as to motivate us to learn more in this course”
• “The course gives more practical skills then traditional calculation-only math”
• “The course introduces some difficult concepts in simple ways. It is easy for me to understand”
• “The course is easy to understand-the materials are related to real life situation - allow students to better understand the manipulation of statistics in the real world”
• “The maths are not the usual maths that we met before, still it is interesting”
• “A lot of inspiring earthly matters are being discussed in class, made us know a lot about our surroundings”
• “It motivates us to think about an issue in a different ways”
Part III
Outcomes Assessment – A Pilot
The Evidence Collection Initiative (ECI)

Course Embedded Assessment* (CEA)
Formative Review Exercise* (FRE)
Aggregated CEA*
Learning Experience Inventory - Programme* (LEI-P)
ETS Proficiency Profile Academic Proficiency Test
LEI-P* Personal & Social Responsibility Inventory

Identification of strengths and weaknesses
Discussion on possible interventions
Recommendations for continuous T&L improvements

Evidence for Programme review & Quality assurance

Evidence of Student’s Achievement
Course Level
Program Level
University Level

Direct Measurement
Indirect Measurement

Note:
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Programme Outcomes Assessment based on the ECI

What do we want to learn from the exercise?
- Direct adoption of *Graduate Attributes (GAs) Rubrics* in assessment
- How to use both Direct and Indirect Measures
- How to use *Bb Learn and Outcomes System* (Bb Outcomes) for POA
- How to aggregate the results from Direct and Indirect Measures

Process
- **Assessment Framework**
  - In line with Evidence Collection Initiative (ECI)
- **Assessment Plan**
  - Direct and Indirect Measures
- **Assessment Result and Reports**
  1. Results of Direct Measures
  2. Summarized results of Indirect Measures
  3. Triangulate results from different levels
<table>
<thead>
<tr>
<th>HKBU GAs</th>
<th>Name of the Rubric created</th>
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<td><strong>CITIZENSHIP</strong></td>
<td>ETHICAL REASONING&lt;br&gt;BE RESPONSIBLE CITIZENS WITH AN INTERNATIONAL OUTLOOK AND A SENSE OF ETHICS AND CIVILITY.</td>
</tr>
<tr>
<td><strong>KNOWLEDGE</strong></td>
<td>INTERDISCIPLINARY KNOWLEDGE&lt;br&gt;DISCIPLINARY EXPOSURE&lt;br&gt;HAVE UP-TO-DATE, IN-DEPTH KNOWLEDGE OF AN ACADEMIC SPECIALTY, AS WELL AS A BROAD RANGE OF CULTURAL AND GENERAL KNOWLEDGE.</td>
</tr>
<tr>
<td><strong>LEARNING</strong></td>
<td>LIFELONG LEARNING&lt;br&gt;SELF-DEVELOPMENT/SPirituality&lt;br&gt;BE INDEPENDENT, LIFELONG LEARNERS WITH AN OPEN MIND AND AN INQUIRING SPIRIT</td>
</tr>
<tr>
<td><strong>SKILLS</strong></td>
<td>INFORMATION LITERACY&lt;br&gt;TECHNOLOGICAL LITERACY&lt;br&gt;PROBLEM-SOLVING&lt;br&gt;QUANTITATIVE REASONING&lt;br&gt;HAVE THE NECESSARY INFORMATION LITERACY AND IT SKILLS, AS WELL AS NUMERICAL AND PROBLEM-SOLVING SKILLS, TO FUNCTION EFFECTIVELY IN WORK AND EVERYDAY LIFE.</td>
</tr>
<tr>
<td><strong>CREATIVITY</strong></td>
<td>CRITICAL THINKING&lt;br&gt;CREATIVE THINKING&lt;br&gt;BE ABLE TO THINK CRITICALLY AND CREATIVELY.</td>
</tr>
<tr>
<td><strong>COMMUNICATION</strong></td>
<td>ORAL COMMUNICATION&lt;br&gt;WRITTEN COMMUNICATION&lt;br&gt;HAVE TRILINGUAL AND BILITERATE COMPETENCE IN ENGLISH AND CHINESE, AND THE ABILITY TO ARTICULATE IDEAS CLEARLY AND COHERENTLY.</td>
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<tr>
<td><strong>TEAMWORK</strong></td>
<td>TEAM BUILDING&lt;br&gt;HEALTH AWARENESS&lt;br&gt;BE READY TO SERVE, LEAD AND WORK IN A TEAM, AND TO PURSUE A HEALTHY LIFESTYLE.</td>
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Direct Measure: A Pilot Process

1. Adopting instructors-agreed Graduate Attributes (GAs) Rubrics
   ✓ Numeracy: *Quantitative Reasoning*
   ✓ VML: *Ethical Reasoning*

2. Using *Bb Outcomes*

3. *Selecting* mature student works by instructors and *sampling* via *Bb Outcomes* (*student names kept anonymous*)

4. Assessing student works by GAs Rubrics in System;
   • *Instructors still used their course rubrics to grade (or also can adopt GAs Rubrics)*;
   • *Outcome assessment result will not affect their grading results.*

5. System generates consolidated result for each outcome assessed.
Indirect Measure: FRE

- **Study Process Questionnaire (SPQ)**
  - Conducted at the beginning (SPQ1) and the end (SPQ2) of the semester

- **Learning Experience questionnaire for courses**
  - Conducted at the end of the semester

- **Qualitative interviews**
  - Conducted at the end of the semester

*Questionnaires are administered online using a survey tool, Qualtrics*
Outcomes Assessment is on-going, based on which, we need to keep monitoring and improving both the curriculum and co-curricular activities.

1. But the different eTools collecting different data requires a lot of effort in collection, analysis & consolidation, how can the eTools be integrated to help?
2. Relatively early in the OBTL and the 4-year curriculum implementation, are we ready for outcomes assessment?
3. Can eTools really help teachers OR are teachers ready to deploy eTools?
4. Outcomes assessment – Quality Assurance or Quality Enhancement or both?
Association of American Colleges and Universities (AACU) – VALUE Rubrics
http://www.aacu.org/value/rubrics/index.cfm
Association for the Assessment of Learning in Higher Education (AALHE) – Assessment Resources
http://course1.winona.edu/shatfield/air/rubrics.htm


“Rubric Use AND Development” http://www.bused.org/rsabe/rsabe05.pdf
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Thank You!
Special thanks to all colleagues in CHTL