

On the learning curve:

Institutional Efforts in Implementing Outcome-Based Approach in Student Learning

Angela Ho, Ph.D.

Head, Educational Development Centre

The Hong Kong Polytechnic University

Hong Kong



A critical reflection on concrete experience

Sharing

- how PolyU **conceptualised** its outcome-based approach to curriculum development, teaching, learning and assessment
- **what** PolyU attempted to do and **how** we did it
- **lessons learnt** from our accomplishments and setbacks/challenges
- from the perspective of an **educational developer** supporting the initiative



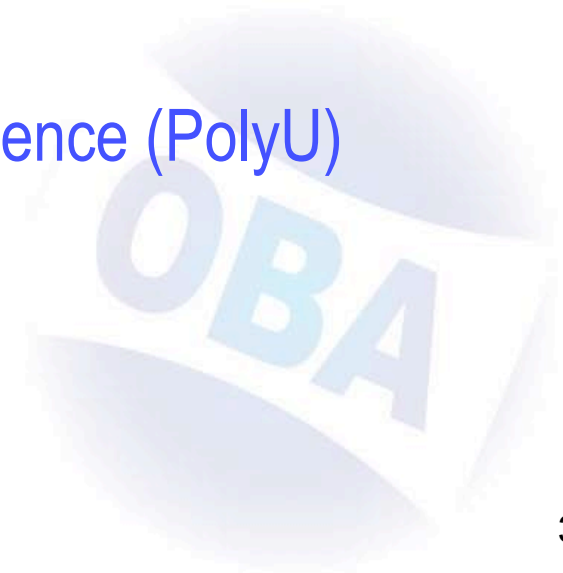
This presentation

Part 1

'Learning Outcomes' in Higher Education:
The Hong Kong Context

Part 2

Implementing 'Learning Outcomes':
The Hong Kong Polytechnic University Experience (PolyU)

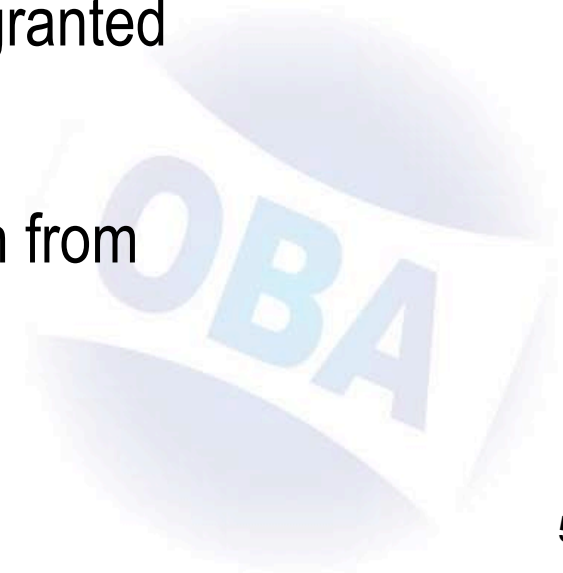


‘Learning Outcomes’ in Higher Education: The Hong Kong Context



Accreditation and quality assurance in higher education in Hong Kong

- **University Grants Committee (UGC)** advises HK Government on development & funding of higher education in HK
- **Quality Assurance Council (QAC)**, newly established conducts quality audits under the auspices of UGC
- **Publicly funded universities / institution** are granted self-accrediting status
- Some programmes would seek accreditation from **professional associations**



‘Learning outcomes’ initiatives steered by UGC

- Developing and extending 3- year undergraduate programmes to 4-year by 2012
- Promoting outcome-based approaches for ‘improvement and enhancement in student learning and teaching quality’

‘Cement’ outcomes into the 4-year curriculum’
[UGC communication]



Focus of Quality Audits: from process to outcomes

- 1995-1997 – 1st TLQPR
Teaching and Learning Quality **Process** Review
- 2001-2003 – 2nd TLQPR
- 2008-2010 – QAC Quality Audit
*‘Particularly concerned with the ways institutions **articulate** and **measure** the **student learning outcomes** they expect or aspire to’*
[Draft QAC Audit Manual June 2007, p.9]



Implementing 'Learning Outcomes': The Hong Kong Polytechnic University Experience



PolyU's endeavour in outcome-based education

- PolyU took the initiative instead of being imposed externally
The Curriculum Revision Exercise 2004
- Primary goal – quality enhancement
'The ultimate purpose of this curriculum revision is to enhance the quality of our programmes.' [Guidelines for Curriculum Revision, p.6]
- Concerted institutional effort
- On the learning curve
 - Conceptualising
 - Broadening our scope
 - Piloting new practices



Outcome-based approach to student learning: 4 essential elements

Define
intended learning outcomes

Design curriculum, teaching,
learning & assessment
to support attainment of outcomes

Mapping & Alignment

Collect data on student
attainment of outcomes

Outcomes Assessment

Use data to inform
improvement of programmes



- 1. Intended learning outcomes derived from PolyU's mission and strategic objectives**



Pertaining to academic programmes & student development

- **Mission**

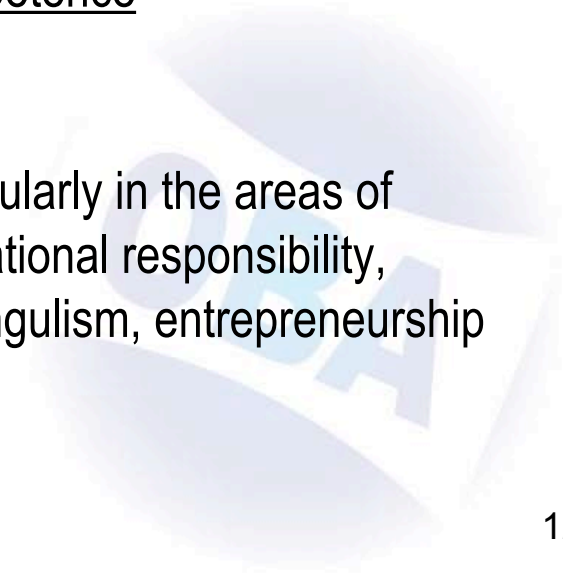
'Academic Excellence in a Professional Context' through programmes that are application-oriented and produce graduates who can apply theories in practice.

- **Role statement**

Emphasizes high value-added education, with a balanced approach leading to the development of all round students with professional competence

- **Strategic Objective 1**

To enhance the all-round development of students, particularly in the areas of global outlook, critical and creative thinking, social and national responsibility, cultural appreciation, life-long learning, biliteracy and trilingulism, entrepreneurship and leadership.



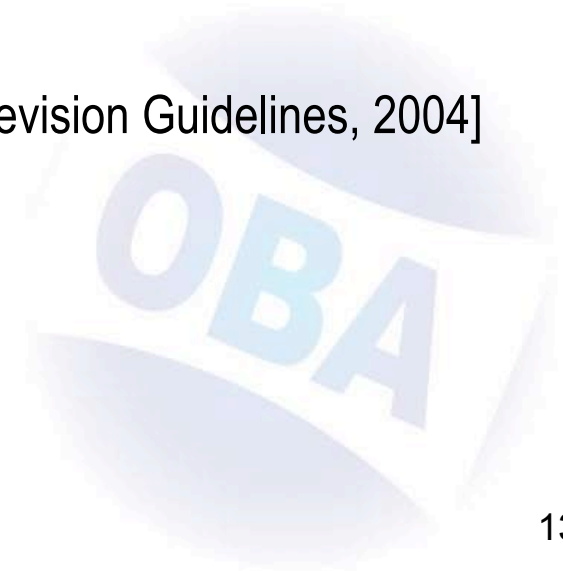
Overarching outcomes for PolyU programmes: All-round students with professional competence

Programme outcomes and subject outcomes required to encompass

- Professional / academic knowledge and skills
- Attributes for all-roundedness



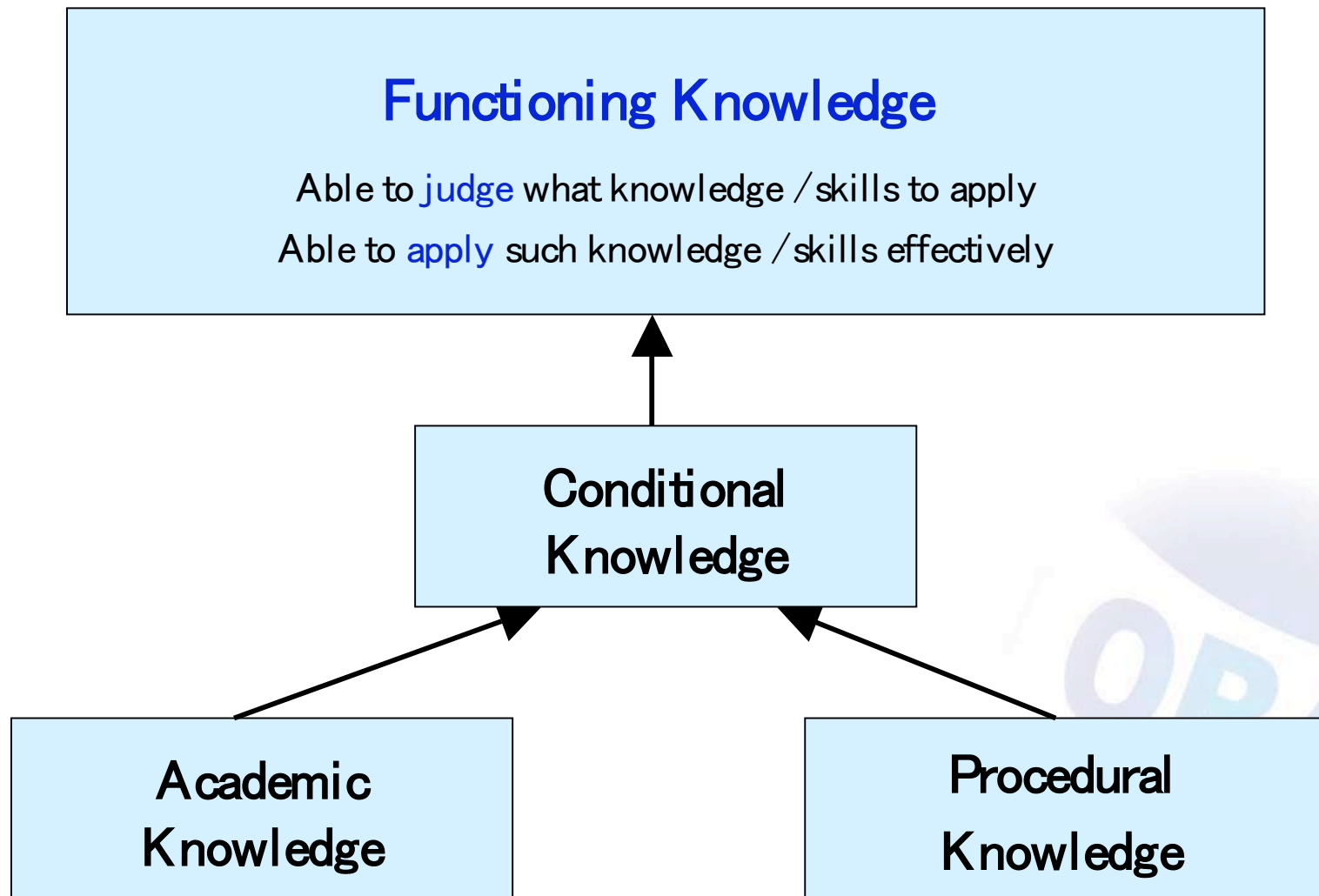
[Curriculum Revision Guidelines, 2004]



2. Clarifying learning outcomes as 'professional competence'



Functioning knowledge (Biggs)



Professional competence in programme outcomes

- Concept largely accepted by programme leaders
- Departments consulted with employers / field professionals on the competences expected of their graduates
- Most programmes articulated good programme outcomes for emerging professionals in their field
- An example from Faculty of Business ...

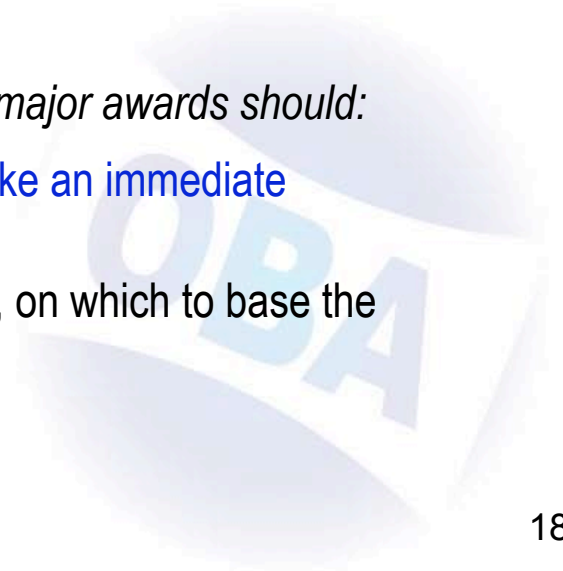


PolyU BBA scheme outcomes

1. **Communicate verbally** in English and Putonghua at a level of effectiveness sufficient for a business presentation or general conversation with a mono-lingual speaker of each language;
2. **Communicate in writing** in English and in Chinese, at a level of effectiveness sufficient for general business communication;
3. **Demonstrate** a global outlook and an understanding of cultural diversity, as evidenced by an understanding of globalization, the dimensions along which cultures vary and the implications of both for business;
4. **Identify** and **invoke mechanisms** for the stimulation of creative thinking in the business setting;
5. **Identify** and **resolve** ethical issues as they arise generally and in the specific business settings for which they are being prepared;
6. **Use** current information technology effectively and evaluate new technologies as they emerge;
7. **Analyze** business situations and problems by applying conceptual frameworks drawn from Accounting, Economics, Behavioural Science, Law and Quantitative Methods;

PolyU BBA scheme outcomes *(continued)*

- Carry out and act upon self-appraisal and reflective thinking, in the areas of creativity, teamwork, leadership, career selection and learning to learn;
- Apply basic financial theories, analyze financial reports and understand the operation of financial markets;
- Identify and analyze the means by which value is created in goods and services and delivered to users.
- Conceptualize and act upon the group and individual dynamics that exist within organizations
- Identify and analyze those aspects of the domestic and global business environment that set the 'parameters of choice' within which business organizations set objectives and take actions
- *In addition students graduating from specific full programme and major awards should:*
- Have sufficient professionally-specific skills and knowledge to make an immediate contribution to the organization in which they are first employed.
- Have a foundation of professionally-specific skills and knowledge, on which to base the process of continuous professional development.



3. Mapping programme outcomes to subject outcomes



Common misalignments between subject outcomes and programme outcomes


	Programme outcomes	Subject outcomes
a	In terms of <u>professional competence</u> e.g. apply, solve, design, decide	Mainly in terms of <u>academic knowledge</u> , e.g. know, understand (<i>content focus</i>)
b	The professional competence implies <u>higher level understanding & higher level intellectual skills</u> , e.g. analyse, evaluate	Commonly, overuse of action verbs for <u>lower level understanding</u> , e.g. describe, identify

Addressing misalignment (a):

From knowledge to competence

“For what purpose do the students need to know this?”

PolyU subject: BRE 419 Value Management *(With acknowledgements to Professor Geoffrey Shen)*

Old version	Revised outcome statements
<p>1. <u>Understand</u> the concepts of Value Management with emphasis on Function Analysis and Life-Cycle Costing.</p>	<p>1. <u>Understand</u> the Value Management methodology</p> <p>2. <u>Conduct</u> function analysis and life-cycle costing for a project or part of a project</p>
<p>1. <u>Understand</u> the use of Value Management in different phases of a project life-cycle</p>	<p>1. <u>Organise & manage</u> Value Management workshops in different phases of a project life cycle</p>
<p>1. <u>Apply</u> VM to construction company business situations and technical situations.</p> <p>2. <u>understand</u> and <u>apply</u> VM problem solving techniques as a management tool.</p>	<p> <u>Ensure value for money for projects</u> by <u>applying</u> value management tools in business situation or technical situations of a construction company</p>

Addressing misalignment (b):

Levels of Understanding

“What do you mean by understanding in your subject?”

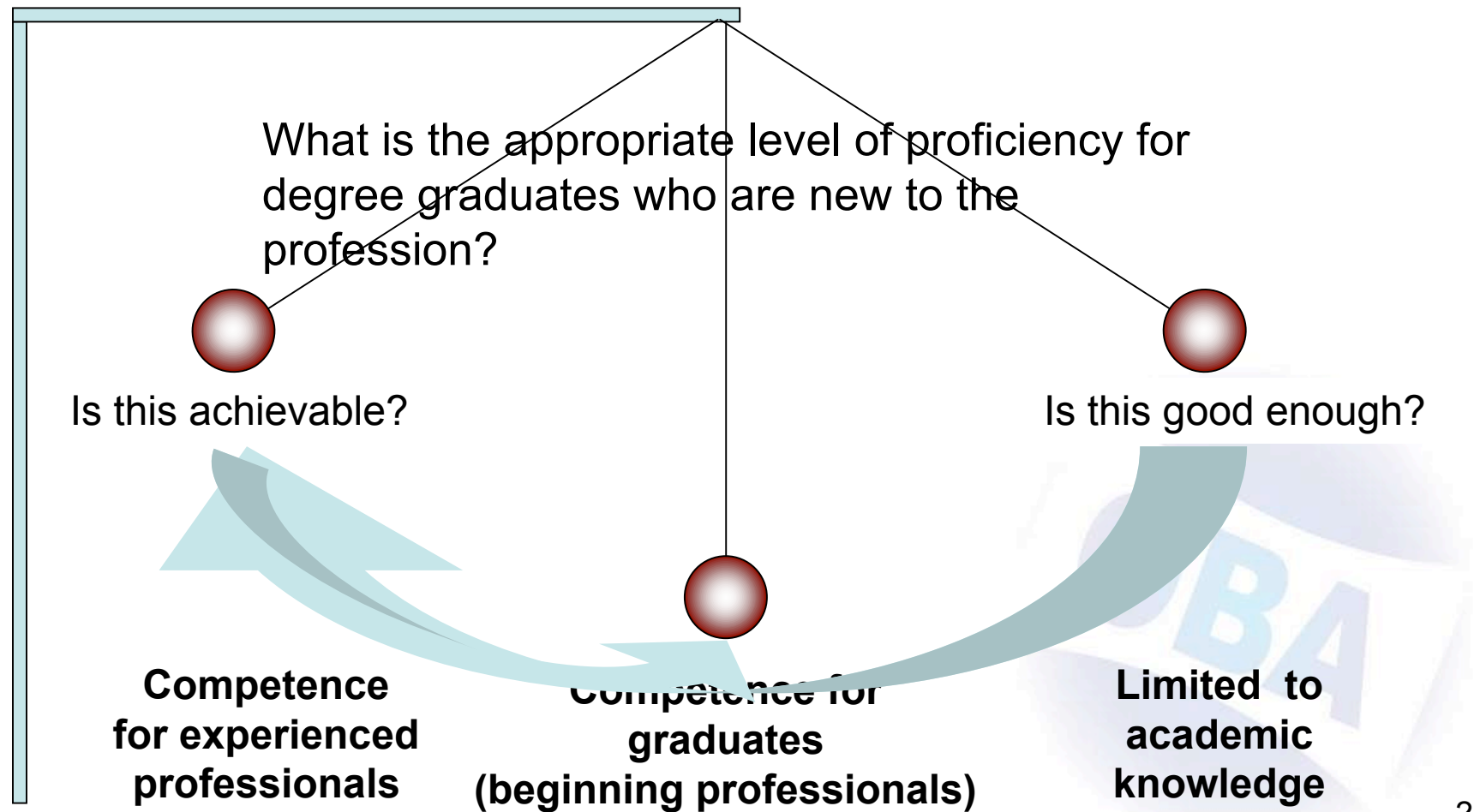
Qualitative learning outcome	Extended abstract understanding	Relate to other information & theories e.g. generalize, criticize, hypothesize, reflect
	Relational understanding	See relationship among facts taught e.g. compare, contrast, explain cause, relate, apply, analyse
Quantitative learning outcome	Knowing more facts	Recall a mass of information e.g. identify, list, describe, combine, do algorithms

(simplified from Biggs' SOLO Taxonomy)

4. Setting appropriate standards and criteria



Standard of learning outcomes: Beware of 'pendulum effect':



Standard of professional competence for graduates entering the profession

Experienced professionals	Graduates
Able to <u>exercise professional decision</u> in the consideration, evaluation, and justification of feasible alternatives <u>in complex situations</u>	Able to <u>evaluate alternatives</u> and <u>justify feasible solutions</u> for <u>real-life problems</u>
Able to <u>handle</u> the challenges and <u>contribute</u> to developments of the profession	Be <u>aware</u> of the challenges and developments of the profession and able to cope with them through continuous professional development

Adopting criterion-referenced assessment

Specifying criteria and levels of performance

Creative Expression of Meaning of Caring

Criteria	Excellent/Good	Pass	Fail
Construction of meaning of caring <ul style="list-style-type: none"> ▫ application of theories ▫ reflection on personal experience and perception ▫ awareness of contextual factors 	<ul style="list-style-type: none"> ▫ <i>Integrate</i> theory(ies) / concept(s) with personal experience / perception to form a <i>coherent</i> meaning ▫ The meaning contains <i>thought provoking</i> elements which is evident of <i>critical review</i> of theories and personal experience ▫ Demonstrate a <i>careful</i> thought of contextual factors 	<ul style="list-style-type: none"> ▫ <i>Evident of linking</i> personal experience /perception with <i>relevant</i> theory(ies) but <i>lack coherence</i> in integration ▫ The meaning mainly communicates a <i>descriptive</i> account of an incident, <i>lacks evidence of critical reflection</i> ▫ <i>Ignore or miss out</i> some contextual factors 	<ul style="list-style-type: none"> ▫ <i>No evidence of relating</i> personal experience /perception with theories or <i>illogical</i> linking of them ▫ The meaning is <i>faulty</i>, e.g. incomplete, unreasonable ▫ <i>Fail to consider</i> important contextual factors
Depiction and creation	Adopt a <i>creative</i> approach to present the personal meaning with its <i>essence captured</i> ; can <i>stimulate</i> the audience generating new insights of meaning of caring.	<i>Attempt</i> to adopt a <i>creative</i> approach to present the personal meaning but <i>lack clarity</i> in focus; the audience has difficulties in understanding its main idea.	Use <i>traditional</i> methods and techniques to present the ideas; little or no attempt to go beyond conventions; present the personal meaning <i>ambiguously</i> ; <i>fail to communicate the meaning</i> to the audiences.

(With acknowledgements to Betty Chun, School of Nursing, PolyU)

Design Thinking

Student Name:		Subject: SD2000 Design Thinking		Level: 2	Semester: 1	
Assessment Criteria	Outstanding / Excellent	Very Good / Good	Wholly Satisfactory / Satisfactory	Barely Adequate / Weak	Fail	Sub-total Grade Point
1. Experiments (Learning by doing) 25%	Exhibited courage to leave comfort zones and test existing boundaries, conventions and rules for unknown possibilities.	Demonstrated openness to experiment with new approaches and challenge conventions.	Experimented with a number of different approaches, techniques & materials to solve problems but did not go beyond conventions.	Some attempts to experiment, but the approaches, techniques & materials used are limited and lacked diversity.	No or little evidence of attempted experiment.	0.00
2. Versatility of thinking (Ability to solve problems by using different styles of thinking) 25%	A high level of flexibility to generate diverse ideas by thinking analytically and laterally.	Generated ideas of a diverse nature by thinking analytically and laterally.	Generated some ideas to solve problems but most are based on a similar style of thinking.	Only a few ideas generated with barely any diversity in style of thinking.	No or little evidence of diversity in style of thinking.	0.00
3. Independent learning (Self-motivation in furthering knowledge, skills and interests) 25%	Furthering knowledge through analysis and interpretation of issues discussed, using information from a range of sources.	Compared and contrasted information from various sources with own interpretation relating to issues discussed.	Some discussion of issues raised in class, drawing on a few sources of information.	Only little discussion of issues raised in class, drawing on few sources of information.	No or little discussion of issues raised in class.	0.00
4. Critical reflection (Ability to evaluate own process of learning to make improvements) 25%	Analysed and critically reflected upon own learning experience, and found new paths for further development.	Discussed own learning experience with evidence of a critical approach.	Gave a discussion of learning experience, but the account was generally descriptive without critical or alternative comments.	Some attempts to discuss own learning experience, which remains descriptive and superficial.	Simply recorded the activities done in class without reflection.	0.00

(With acknowledgements to the Design Thinking Subject Team, School of Design, PolyU)

5. Striving to achieve the institutional outcome of 'all-round development' for students



Institutional concerted efforts to developing all-roundedness

1. All-round development ***stipulated*** to be embedded in academic programmes (from 2005/06)
2. Work-integrate education ***mandatory*** for all full-time undergraduate programmes (from 2005/06)
3. A wide range of extra-curricular activities organised by Student Affair Office & Faculties / Departments for ***voluntary participation***



Programme / subject outcomes include attributes for all-roundedness

Strong reaction from academic staff:

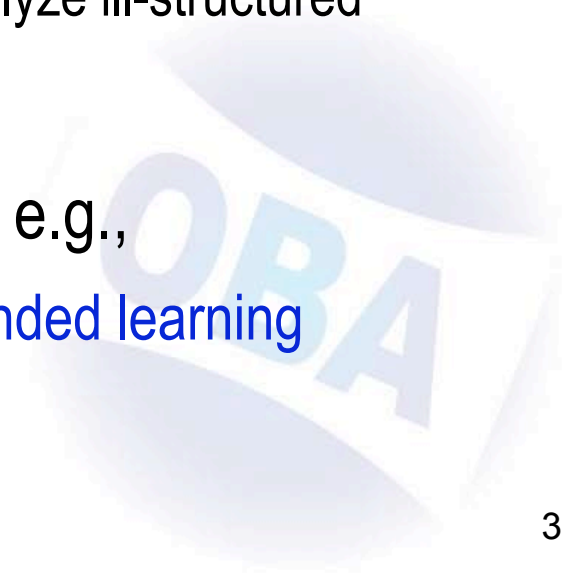
- Why are these generic skills relevant to my programme/subject?
- Whose responsibility to cultivate all-roundedness?
- Not our expertise to teach generic skills ...
- Not even enough room for professional stuff, how to squeeze in generic skills...

Still a long way towards buy-in & effective implementation by academic staff.



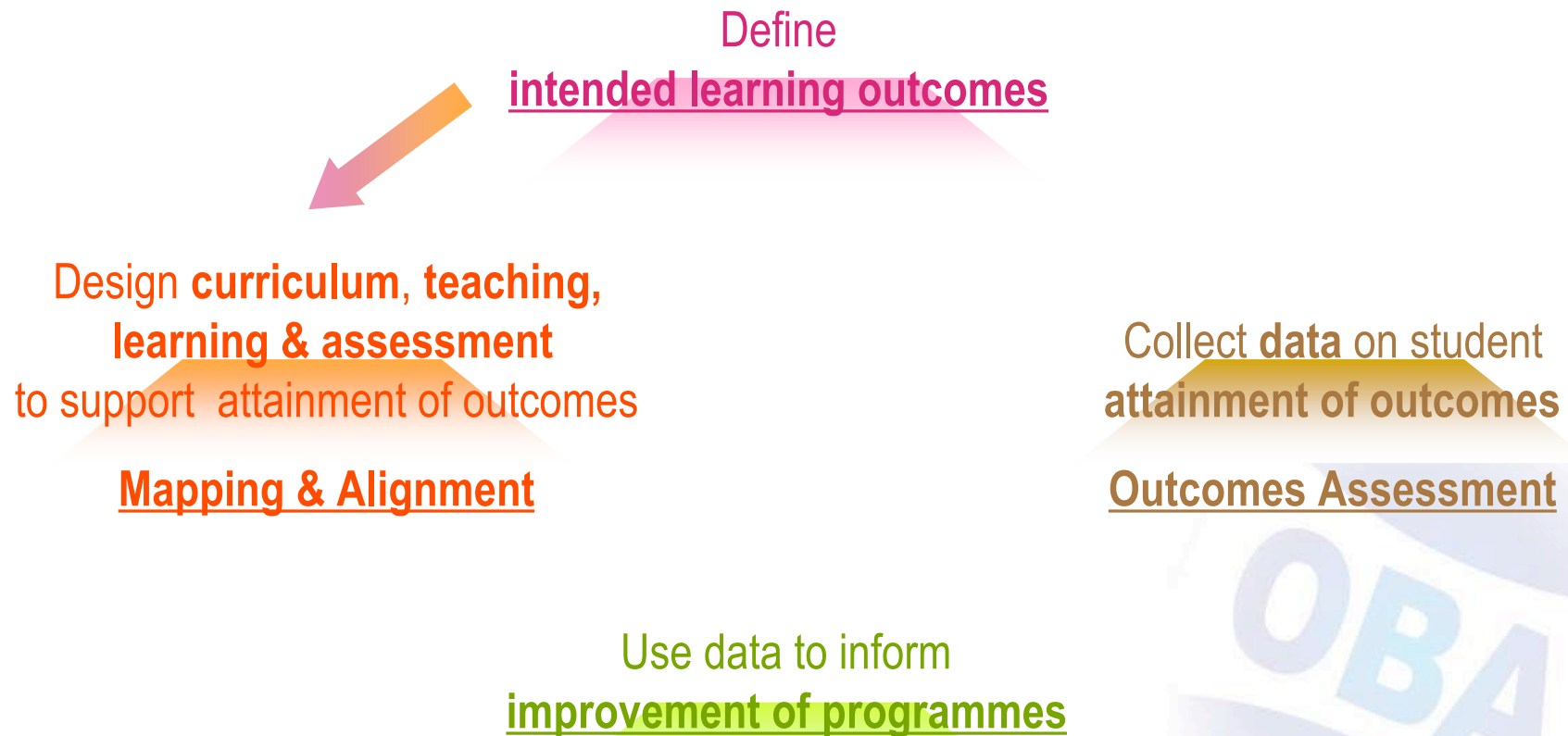
Conceptualising about generic outcomes in programmes and subjects

- ‘Generic competence in a professional context’, e.g.,
 - *Communication skill*
Prepare technical reports and present the information in a way understandable to non-experts
 - *Critical thinking*
Apply critical thinking skills to identify and analyze ill-structured problems in a discipline
- *Intended VS incidental* learning outcomes, e.g.,
 - teamwork & problem solving skills as **intended learning outcomes** for group projects



PolyU's approach to student learning outcomes

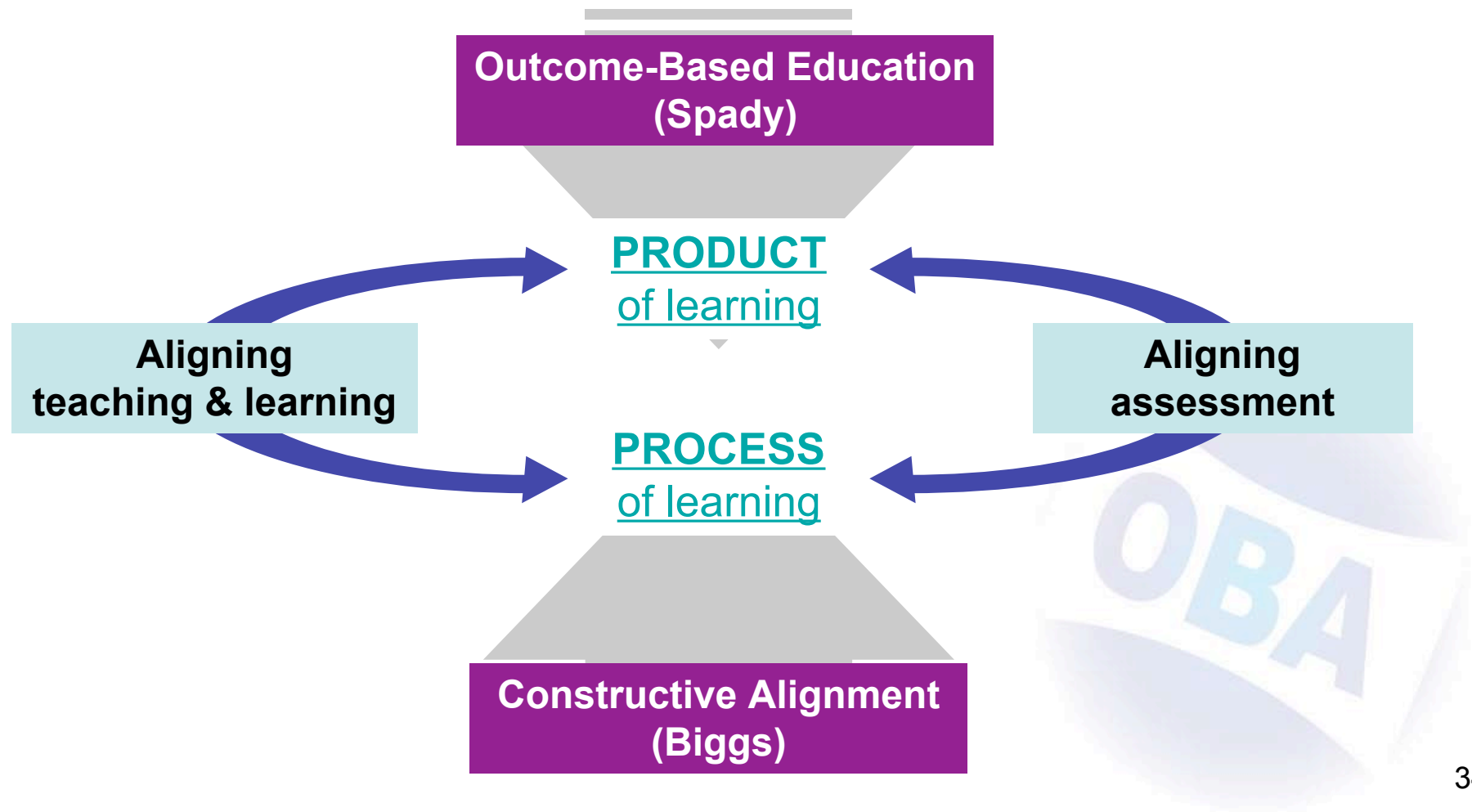
(emphasis on classroom level Quality Enhancement)



6. Aligning teaching, learning and assessment with intended learning outcomes



Quality programme design informed by a duet of educational philosophies



Programme documents include ...

For each subjects

- Description of major teaching & learning methods with **justification** that they are conducive to the attainment of intended subject outcomes
- Description of major assessment methods with **justification** that they are suitable for assessing the intended subject outcomes



7. Including a curriculum map in programme submission



Curriculum map

		Subject Code				
Programme Outcomes		HK123	HK124	HK125	HK126	HK127
1	To design a system, component, or process to meet desired needs		I A		R A	
2	To identify and solve applied science problems	I		I	R A	

Key: I = Introduced; R = Reinforced; A = Assessed



Curriculum mapping

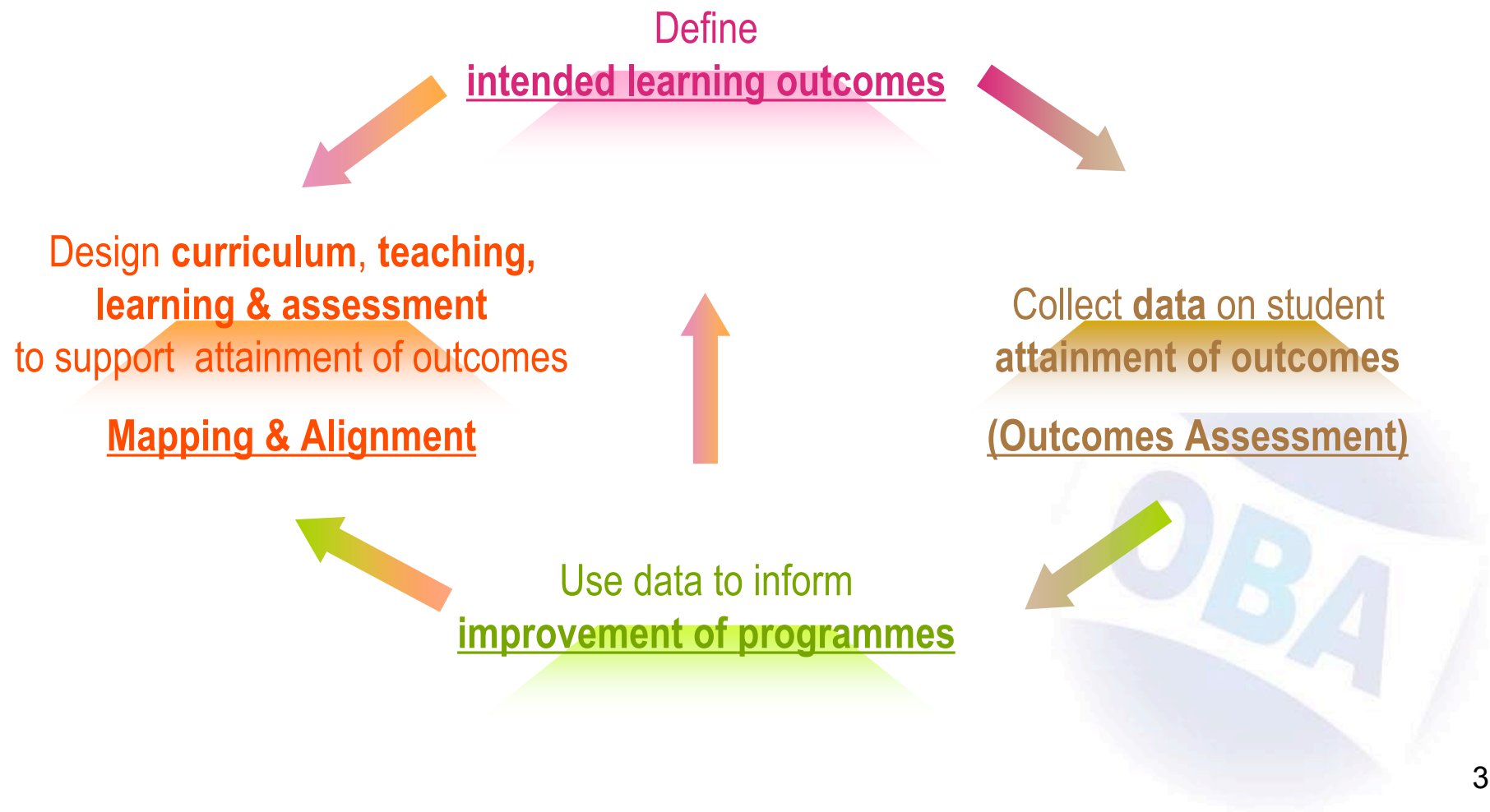
Provides a *holistic view* of

- the **extent** that each intended outcome will be **taught and assessed** in the programme
- the **progressive development** of each programme outcome via the different subjects at different stages
- allowing **gaps** (e.g. under-addressed outcomes) and other **problems** (e.g. over-represented outcomes) to be identified



PolyU's approach to student learning outcomes

(parallel efforts on Quality Enhancement & Quality Assurance)



8. Building an outcome-focused QA and feedback loop



Critical review of existing QA system

The existing system

- Elaborated QA system in place
 - ✓ Programme planning, approval, validation
 - ✓ Programme re-validation
 - ✓ Annual Business Plan
 - ✓ Annual QA Report
 - ✓ Annual Departmental Academic Advisor review
 - ✓ Departmental Assessment (6-yearly)
 - ✓ Institutional strategy and action planning
- Focus of planning / reviews / reports and Performance Indicators (PIs) more about input, output & process

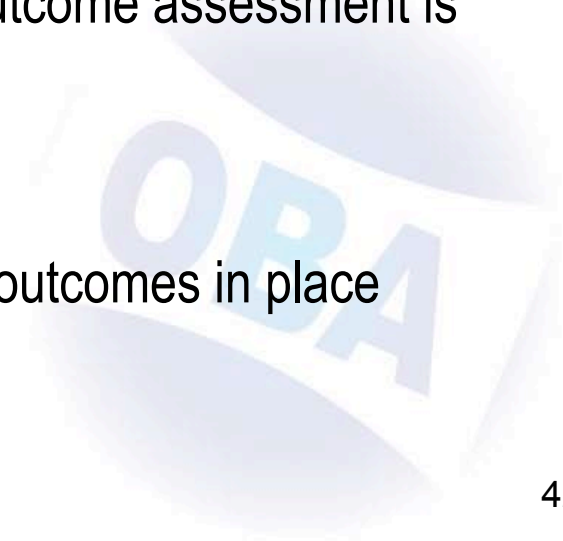
Direction of development

- Sharpen focus on learning outcomes & alignment for all QA components
- Explicit requirement on using outcome data to inform programme improvement



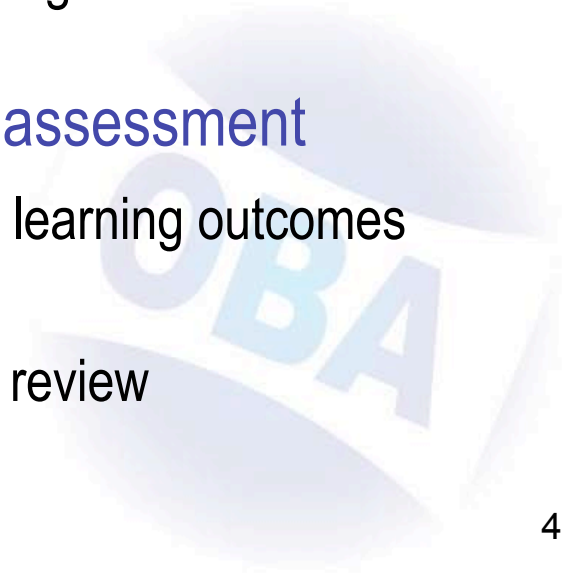
Critical review of existing assessment practices

- **Subject-level outcomes assessment**
 - quite a number of good practices for assessing professional competences, to further develop authentic assessment methods
 - not adequate attention to assessing generic competences
- **Programme-level outcomes assessment**
 - need to develop programme-level outcome assessment strategies
 - still a lot of guidance about programme-level outcome assessment is needed
- **Institution-level outcomes assessment**
 - indirect measures for assessing major generic outcomes in place
 - need more and better direct measures

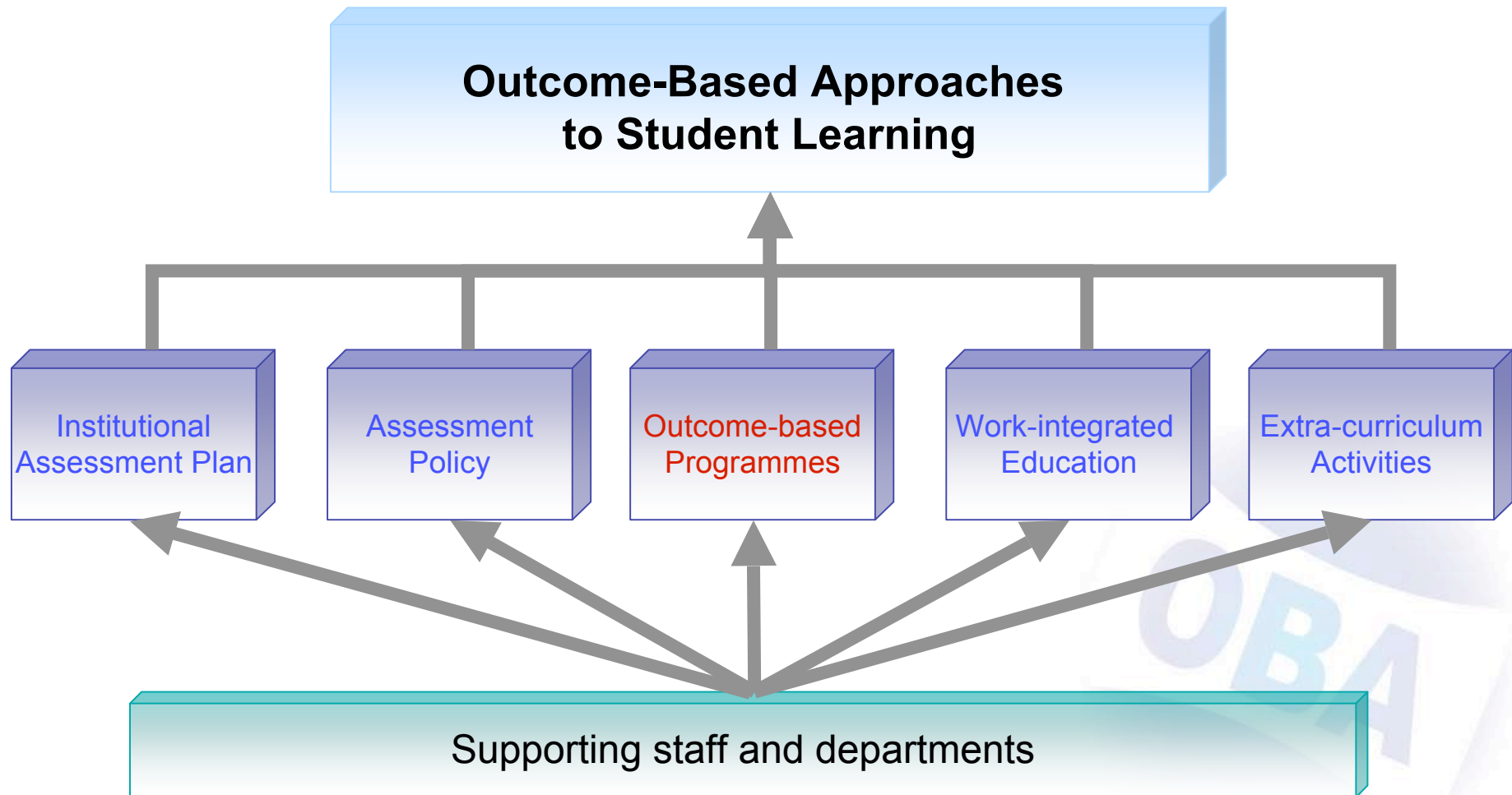


Proposal to develop a two-tier student learning outcome assessment plan

- Programme outcomes assessment as the 'CORE': – *focused on programmes, owned by departments*
 - develop programme outcomes assessment plan
 - pilot programme outcomes assessment methods
e.g. e-portfolio, capstone projects
 - review outcomes assessment data to improve programmes
- Supplemented by institution-level outcomes assessment
 - collect multiple evidences on broad overarching learning outcomes with direct & indirect measures
 - central University committee to steer, monitor & review



Concerted institutional effort



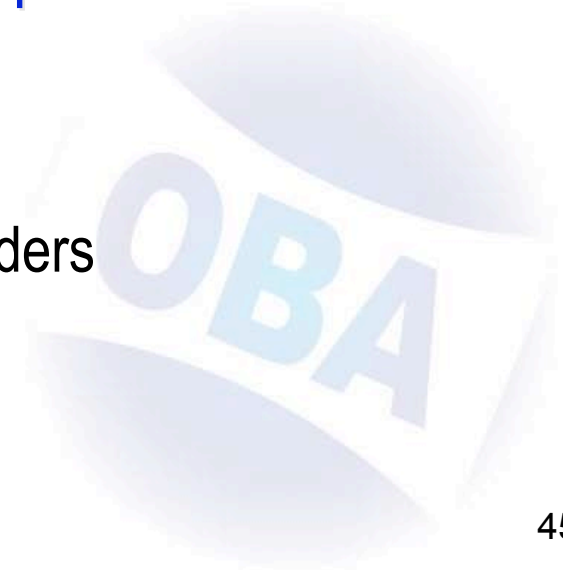
Supporting staff & departments

Senior Management via VP[AD] – Steer and fund

- Provide leadership in steering the development
- Set up Working Group on OBE
- Appoint OBE Champions
- Provide funding support

Educational Development Centre – Offer support

- Offer workshops / short courses,
- Develop resource / reference materials
- Provide consultation services to programme leaders
- Provide in-kind support to academic staff
- Conduct Teaching Development Projects

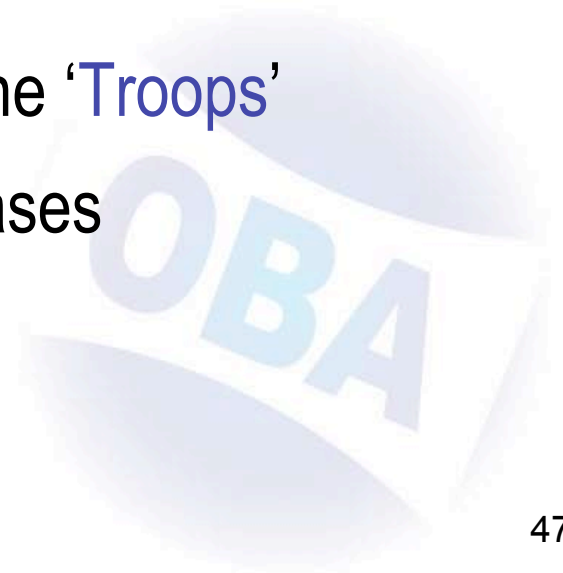


9. Reflections



Issues pertinent to the success (or otherwise) of the implementation of 'learning outcomes'

- Shared understanding and vision
- Know-how
- Workload & motivation
- Time for the new paradigm to 'sink in'
- Ownership by staff at all levels – need to involve both the 'Generals' and the 'Troops'
- Sustained efforts throughout different phases
- DON'T see it as a paper exercise



Educational change is a complex learning (and unlearning) process for all involved, not an event.

(Scott, 2000)

