



Construction and Evaluation of Test Items: Part 1

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Intended Learning Outcomes

At the end of the workshop, participants should be able to

- Explain the difference between testing, assessment and evaluation in OBE system.
- Distinguish between cognitive, affective and psychomotor domains of learning.
- Use revised Bloom's taxonomy to create effective test items.

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Activity: What do you know?

Recall your assessment practice.

- What is the purpose of giving assessment?
- What are you measuring?

Go to [menti.com](https://www.menti.com)


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Session 1

Overview of Assessment for Meeting Course Outcomes

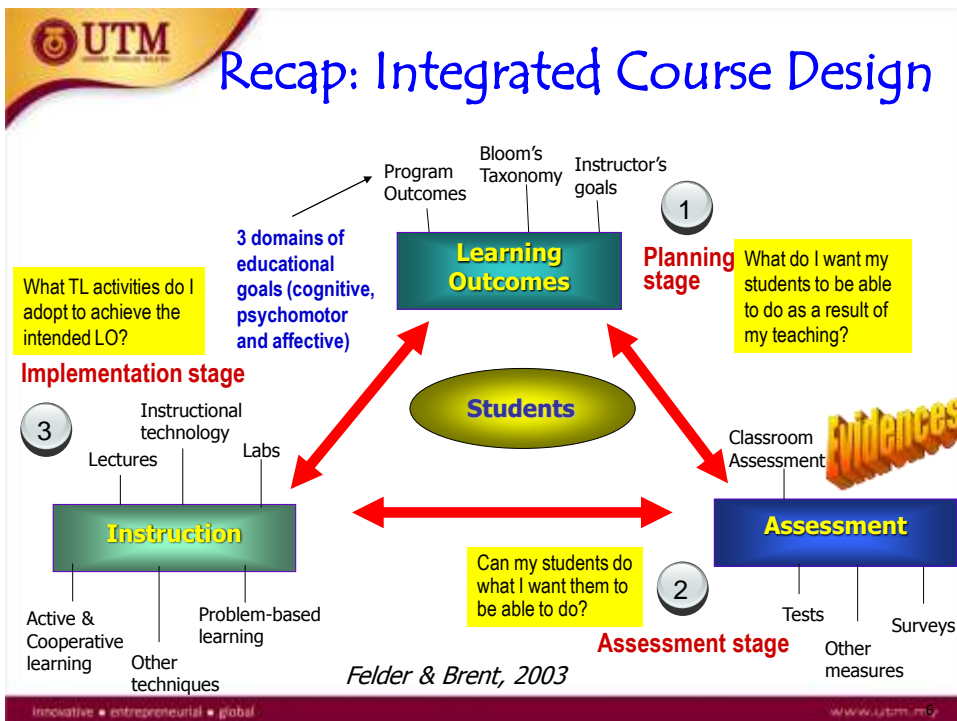
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What matters most in OBE is student learning and assessment is therefore focus on students learning outcomes.

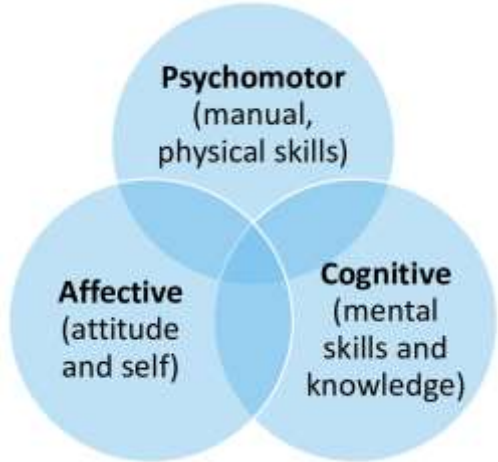
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Learning Domains




Psychomotor
(manual,
physical skills)

Affective
(attitude
and self)

Cognitive
(mental
skills and
knowledge)

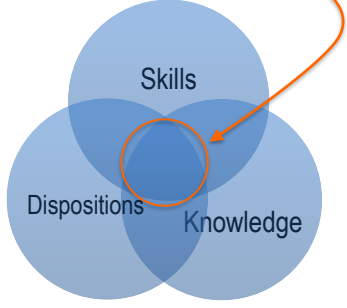
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Holistic Graduates

- Content knowledge – important factor in student success but is only part of the equation
- Holistic graduates – possess (i) sufficient breadth & depth of knowledge, (ii) a mix of strategies necessary to solve problems, think strategically, learn independently & interact with the world in a variety of contexts and (iii) the right mindset

Future-ready graduates requires knowledge, skills, and dispositions.



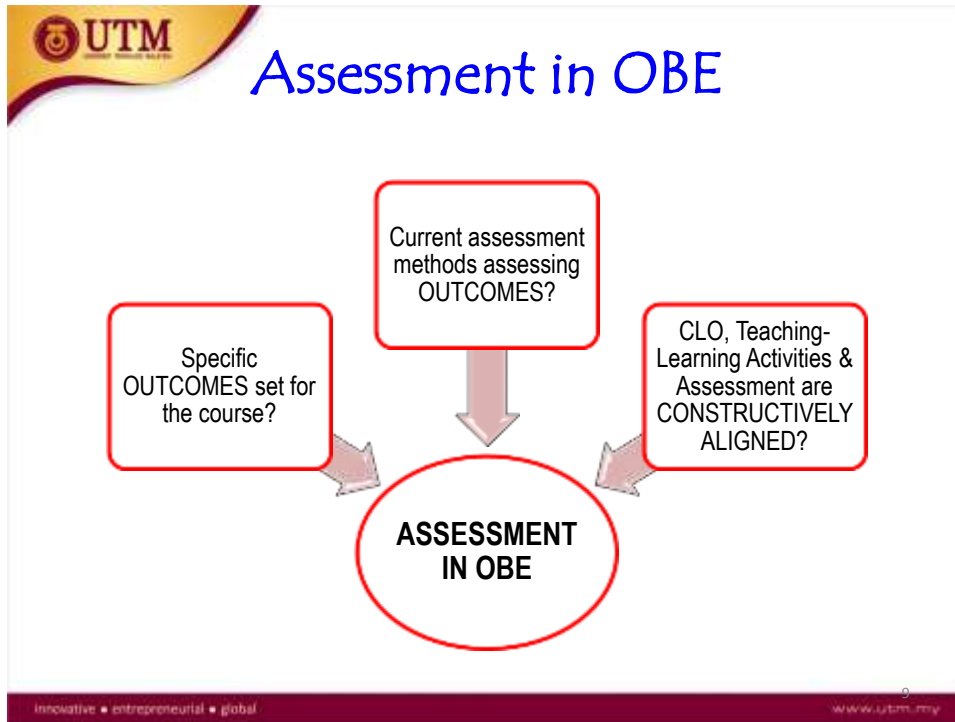
Skills

Dispositions

Knowledge

Adapted from EPIC, 2012

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Self-Reflection

Reflect on your own assessment practice.

- How do you decide on the method of assessment you used?
- How do you prepare students to achieve the LO?

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Miller's Pyramid

- Illustrates levels of learning
- Progressive development across a range of abilities

Behaviour	Performance Integrated into Practice eg through direct observation, workplace-based assessment	DOES
	Demonstration of Learning eg via simulations, lab practicals	SHOWS HOW
Cognition	Interpretation/Application eg through case presentations, essays, triple jump, project	KNOWS HOW
	Fact Gathering eg traditional true/false MCQs	KNOWS

➤ Framework of assessment – guides in assessing outcomes achievement

*Adapted from Miller, 1990
www.lo.unisa.edu.au*

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Levels of Learning & Skills Acquisition

- Tendency to focus bottom of pyramid
- Low level – assess what students know
 - Knowing & understanding content knowledge
 - Using that knowledge to reason & solve problems
- Novice & Competent
- Higher level – assess what students can do
 - show how to use the information
 - to do it in real life & not just in controlled environment
- Proficient & Expert

Guiding Questions

- What am I trying to find out about my students' learning? What learning outcomes do I want to measure?
- What kind of evidence do I need to show that my students have achieved the outcomes that I'm trying to measure?
- What kind of assessment will give me that evidence?

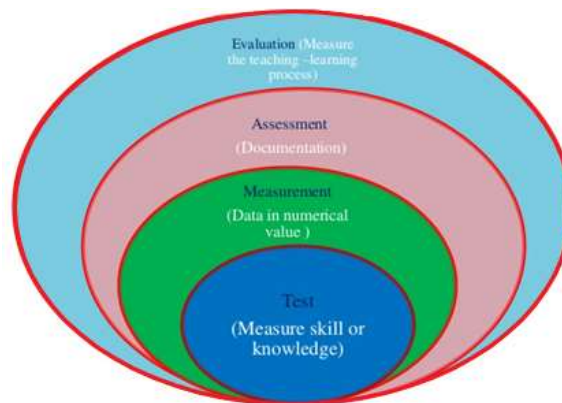
Basic Concepts in Assessment

Terms Defined

- Testing - One of the ways to make measurement
- Measurement – what are you looking to find out?
 - Think measure...
 - act of quantifying
- Assessment – how are you going to look for it?
 - act of classification
- Evaluation
 - act of passing judgement

In general...

- We measure skills or knowledge, we test the measurement, we assess learning, and we evaluate results in terms of some set of criteria or standards.



<https://www.slideshare.net/vsk84/basic-of-measurement-evaluation>

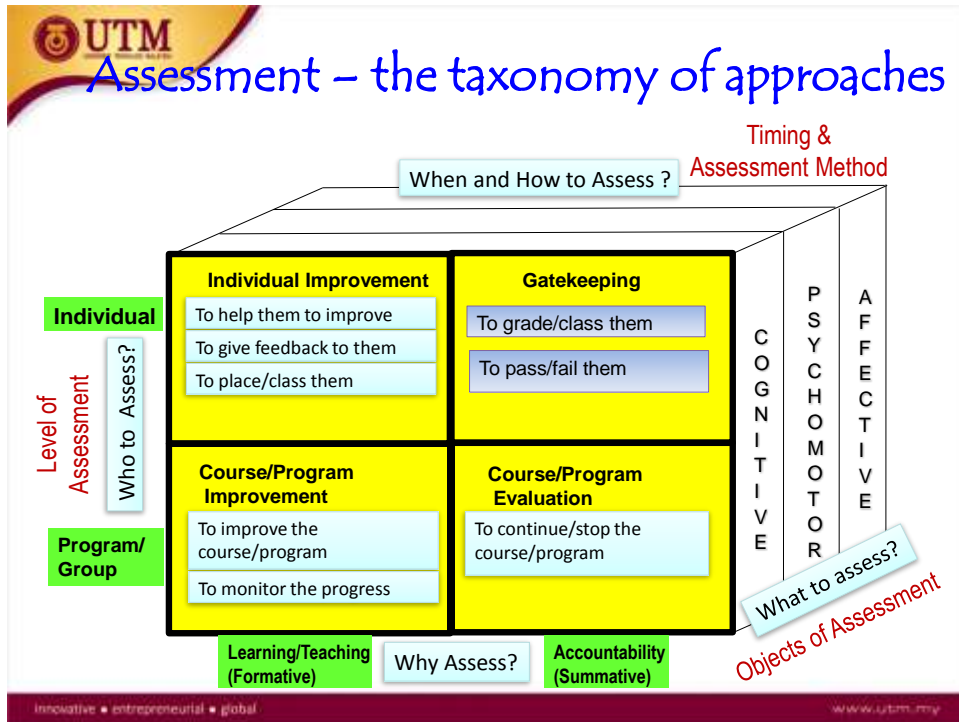
Other Assessment Terminology

- Assessment types – diagnostic, formative, summative, ipsative, norm-referenced, criterion-referenced
- Assessment methods - ways in which learning outcome will be measured eg. written work, practical, peer or self-assessment
- Assessment tools – techniques used for different assessment methods & are more specific eg. checklist
- Assessment tasks – activities students undertake to confirm outcome is achieved eg. exams, tests, essays

Methods vs Tools

- Assessment methods – strategies & techniques for collecting evidence
- Assessment tools – consist of instruments & instructions to gather & interpret evidence
- Assessment tasks – activities student undertake

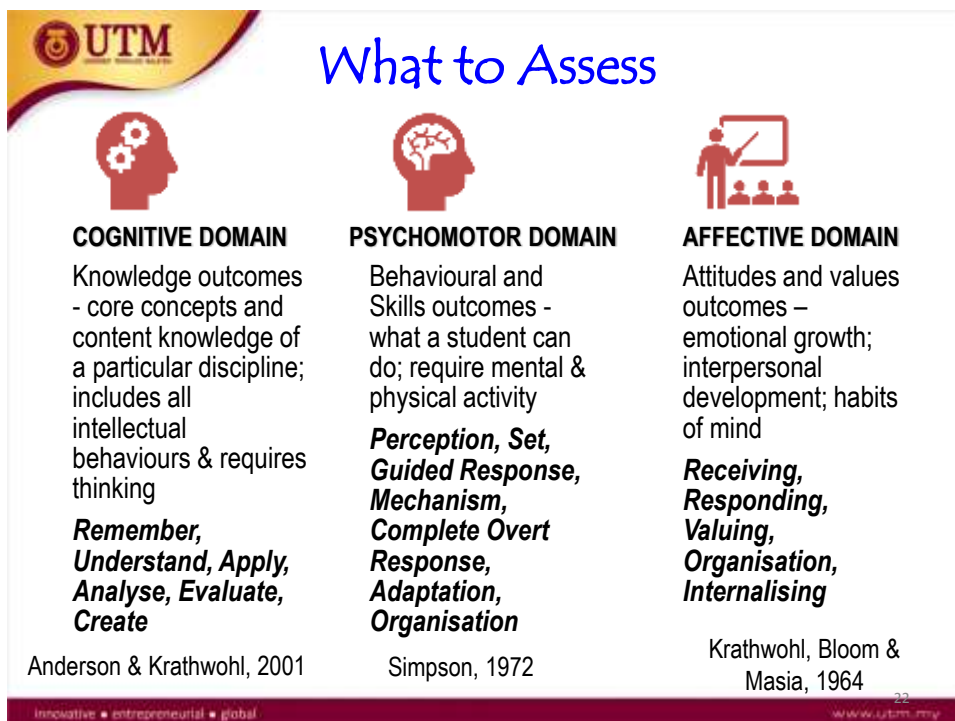
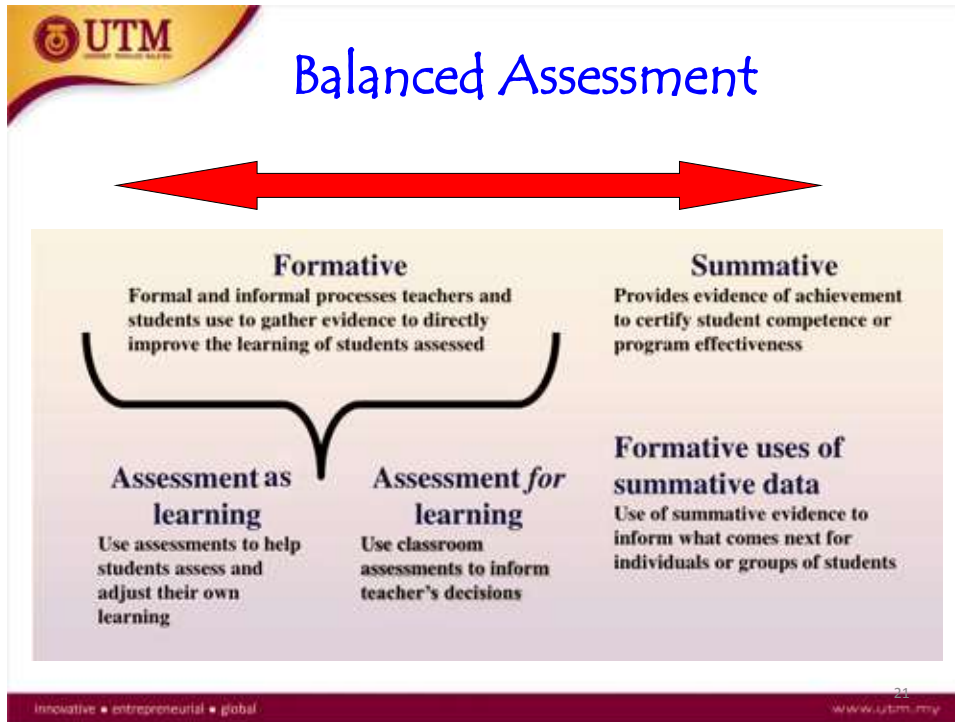





Assessment: A mechanism for change

- Outcome-Driven Process
 - focuses on the measurement of change (outcome) that has taken place based on strategies & actions implemented in the pursuit of achieving a pre-determined goal.
 - Results are used in the support of future change and improvement.







Objective Level	Action Verbs for Each Level
Evaluation	assess, evaluate, interpret, judge, rate, score, or write
Synthesis	compile, compose, design, reconstruct, or formulate
Analysis	compare, discriminate, distinguish, or separate
Application	compute, demonstrate, employ, operate, or solve
Comprehension	convert, explain, locate, report, restate, or select
Knowledge	describe, identify, name, point to, recognize, or recall

COGNITIVE DOMAIN

Characterization	assess, delegate, practice, influence, revise, and maintain
Organization	accept responsibility, adhere, defend, and formulate
Valuing	appreciate, follow, join, justify, show concern, or share
Responding	conform, greet, help, perform, recite, or write
Receiving	ask, choose, give, locate, select, rely, or use


AFFECTIVE DOMAIN

Origination	combine, compose, construct, design, or originate
Adaptation	adapt, alter, change, rearrange, reorganize, or revise
Complex Overt Response	same as guided response except more highly coordinated
Mechanism	same as guided response except with greater proficiency
Guided Response	assemble, build, calibrate, fix, grind, or mend
Set	begin, move, react, respond, start, or select
Perception	choose, detect, identify, isolate, or compare

PSYCHOMOTOR DOMAIN

The domains inform and guide the writing of effective learning outcomes and the subsequent assessment strategy.


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Examples of CLO

- Cognitive
 - Appraise the manufacturing process in developing a new food product.
- Psychomotor
 - Formulate a new food product that meet certain standards of quality.
- Affective
 - Promote a new food product by making brochures.


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“The adoption of a learning outcomes approach represents more than simply expressing learning in terms of outcomes. It entails much more due to their significant implications for all aspects of curriculum design, delivery, expression, assessment and standards”.

Adam, 2004

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Constructively Aligned L-T & Assessment

**Skills & Knowledge –
Learning Outcomes**

Tasks/Methods

Timing


Clear Criteria

Feedback/feed-forward

Active engagement of students


Smith, B. 2009

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Pitfalls...


The key principles of effective assessment and the common weaknesses of assessment systems are primarily concerned with...



...linkages between **outcomes**, the design of **assessment tasks**, **criteria**, **marking procedures** and **feedback**.

(Brown, 2001)

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Mismatches between CLO and assessment

(Cowan, 2008)

- “Students will be able to solve demanding problems”
 - Almost 50% of a final year exam paper asked questions whose model answers were word for word, and symbol for symbol, in the ppt notes
- “Students will formulate critical judgements and analyses”
 - Assessment rewarded straight regurgitation of analyses and judgements which had featured in lectures and recommended reading


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Choosing the Right Assessment

- Measurement requires transforming internal states (knowledge, skills, values) into something observable
 - observe behavior & infer the underlying knowledge, competence etc.
- Analyse the outcomes in terms of the transferable skills and attributes they represent
 - Different types of learning outcomes require different methods of assessment
 - No one single method fits all


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Activity: Match the Assessment to the Learning Outcome

Learning outcomes	Assessment?
1. Cooperatively collaborates with group members.	a) Multiple choice questions
2. Formulate a new food product	b) Prepare a 1000-word proposal
3. Identify an area for research	c) Lab-based project
4. Select appropriate tests to diagnose engine failure.	d) Make a presentation to peers


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Suitable Assessment & T-L Activities according to Domains of LO

Learning Outcomes	Teaching & Learning Activities	Assessment Tasks
Cognitive (Demonstrate: Knowledge & understanding; solving problems & developing plans; critical thinking & making judgements, designing & creating)	Lectures Tutorials Discussions Lab work Case study Exhibition	<ul style="list-style-type: none"> • Written exam. • Multiple choice tests • Essays • Log book • Practical assessment • Report
Affective (Integration of beliefs, ideas and attitudes)	Work-based Problem Group work Project work Fieldwork	<ul style="list-style-type: none"> • Interviews • Self-reflection • Peer assessment • Experiment
Psychomotor (Acquisition of physical skills: performing procedures & demonstrating techniques)	Debate/Role play Seminar Peer group presentation Research Assignment	<ul style="list-style-type: none"> • Presentation • Portfolio • Production of artefact • Poster display • Performance


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Assessing LO...

Although we are grading the task, in essence we should grade the intended learning outcomes. That is, how well did the students do in the ILO (explain...; solve...; create...)? Not how well did the students do in the assessment task (project, report, exam etc).


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Linking Outcomes & Performance Attributes/Success Criteria

- Criteria focused around knowledge & skills to be assessed.
- verbs in LO describe student action
 - assessment measure action

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Example

CLO	I'm looking for... (Verb in CLO)	My expectation... (Descriptor of the verb)	To be successful students need to... (Performance attributes/success criteria)
Expl ain...	Explain	Explain concept or scenario etc	Evaluate concept or scenario with clarity providing reasoning for your statements with examples
	Illustrate	Enhance your explanation by illustrating with examples, charts, and diagrams	Illustrations are clear, accurate and relevant, and enhanced text with examples, charts, and diagrams & referenced accurately

➤ The prompts helps you to clarify the success criteria & share with students.

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Activity

CLO	I'm looking for... (Verb in CLO)	My expectation... (Descriptor of the verb)	To be successful students need to... (Performance attributes/success criteria)

Consider a course you are currently teaching. Analyze the learning outcomes and think about what is being learned. How will students know they have learned?


35

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Does every learning outcome have to be assessed?

In theory “yes” but in practice “no”.



*“Not everything that counts can be measured.
Not everything that can be measured counts.”*

Albert Einstein

36

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Thank you