Assessment in a Constructively Aligned System

John Biggs

Assessment for Learning in Higher Education
Hong Kong, 14-15 May, 2015

Assessment for Learning

Assessment affects learning in the form of the "backwash" from assessment to learning (Elton 1987) but usually for the *worse.*

"From our students' point of view, assessment always defines the actual curriculum." Ramsden (1992).

Assessment for learning means making the backwash from assessment work positively.

Can we use backwash to enhance rather than to diminish learning?

We can, but the trouble is that we have relied for too long on an inappropriate model of assessment:

The **measurement model**, borrowed from the psychology of individual differences.

The Measurement Model

Designed to measure how individuals differ:

. from each other on stable traits such as intelligence or educability; and

. from population norms on outcomes such as literacy, numeracy.

Performances must therefore be quantitatively transformed to a linear continuum to allow comparisons between students. This is the model to use when comparing or selecting students (norm-referenced, NRA).

Assumptions:

What is being measured is stable and is quantifiable.

Is normally distributed (bell curve) so that parametric statistics can be used.

The model was derived from intelligence testing, which was originally designed to measure educability. It was then assumed that intelligence was largely inherited and therefore should follow the bell curve … and so, it was assumed, should educational outcomes.

The Measurement Model in Action

Procedures

- Assessing is by "marking", i.e. counting correct points or using arbitrary ratings.
- Averaging marks across assessment tasks.
- Assessment tasks should be designed to separate the low and high level performers.
- Grading on the curve.
- Assessment separated from teaching.
- Standardized conditions, hence the timed, invigilated exam, strict deadlines, no revising or second attempts, heavy bureaucracy over procedures, common assessment tasks.
- Emphasis on decontextualized assessment tasks.

The Measurement Model in Action

Backwash

- Trees are more important than the wood.
- Ideas are equally important.
- You can skip or slack on certain areas if you are doing well elsewhere.
- Verbatim responses must gain marks.
- Success and failure depend on uncontrollable factors such as relative ability and luck.
- Assessment must be the responsibility of the teacher; peer- and self-assessment (reflection) are discouraged.

These messages to students are counterproductive

The Standards Model

Designed to assess what and how well something has been learned.

Teaching and learning are therefore **outcomes-based.**

Standards must therefore be set with **clear cut criteria,** or **rubrics**, so that performances can be assessed in terms of levels of acceptability (criterion-referenced, CRA).

Assumptions:

- We can state in advance what our **intended learning outcomes** are to be.

- We can set publicly available **criteria** to judge how well the intended learning outcomes have been met.

- The criteria (rubrics) allow **consistency** of judgment.

- Different performances can reflect the same standards.

- Assessment tasks should be aligned to what is intended to be learned, and need therefore to be assessed **qualitatively.**

The Standards Model in Action

Procedures

- Specify the intended learning outcomes (ILOs) of the unit/course being taught in terms of what students should be able to do after they have been taught.
- Choose a format and a type of assessment task that requires the student to demonstrate how well they can perform the ILOs. Standardisation is unnecessary.
- Specify criteria in these ILOs that enable teachers to judge how well these criteria have been met, and grade accordingly.
- The assessment tasks need to be "authentic" to the discipline. Paraphrasing what the teacher has said is usually not authentic.
- Frequently it is desirable to allow the students to show if they have learned unintended but desirable outcomes. Portfolios are ideal for that.

The Standards Model in Action

Backwash

- The criteria tell students what they are expected to be able to do, encouraging reflection on their own performance.
- Students readily see the relevance of authentic assessment tasks.
- They have to focus on learning and performing the whole task not pieces of it.
- Success depends on their own competence, not on luck or on the ability of others.

These messages to students are productive

What we need to do to make the standards model work

We have to change from the teachers' perspective to the *students*' perspective of assessment in the teaching/learning context

Two perspectives on the teaching/learning context:

1. The teacher's perspective

Traditionally teachers have asked: "What topics do I teach?"

Teachers': Curriculum Topics ➜ Teaching activities ➜ *Assessment*

And students have asked: "What will I be assessed on?"

Students' : *Assessment* ➜ Learning activities ➜ Outcomes

2. The students' perspective

Here the question is not "What topics do I teach?" but "What outcomes are the students to achieve?"

Teacher's: **Intended Outcomes** → **Teaching activities** → *Assessment*

Student's: *Assessment* → **Learning activities** → **Outcomes**
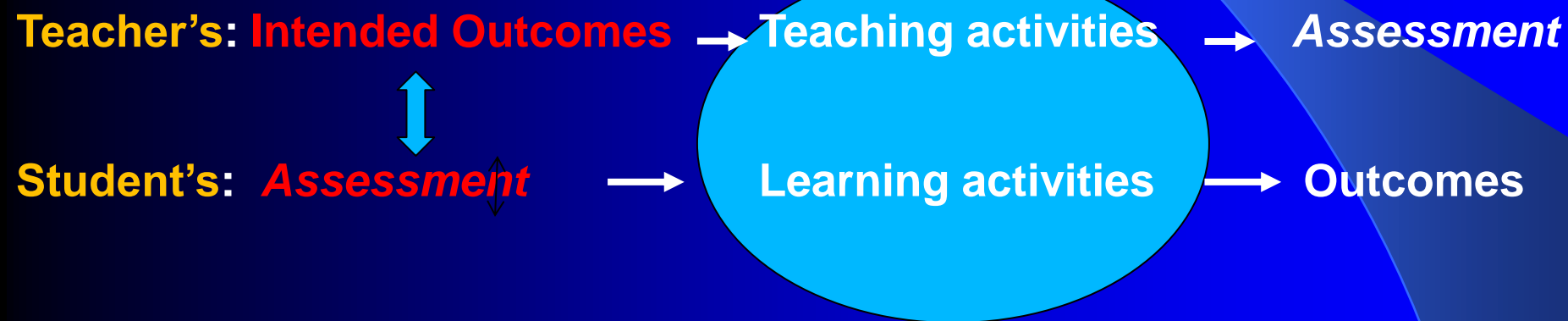
Align the assessment tasks to the intended outcomes and backwash will be positive: students will be focusing on what it is intended they should be learning.

A module in educational psychology for 82 inservice teachers

Topics taught: the psychology of learning and development as relevant to improving teaching. Assessment was originally in terms of how well the theory, and the relationship between psychology and education, were understood.
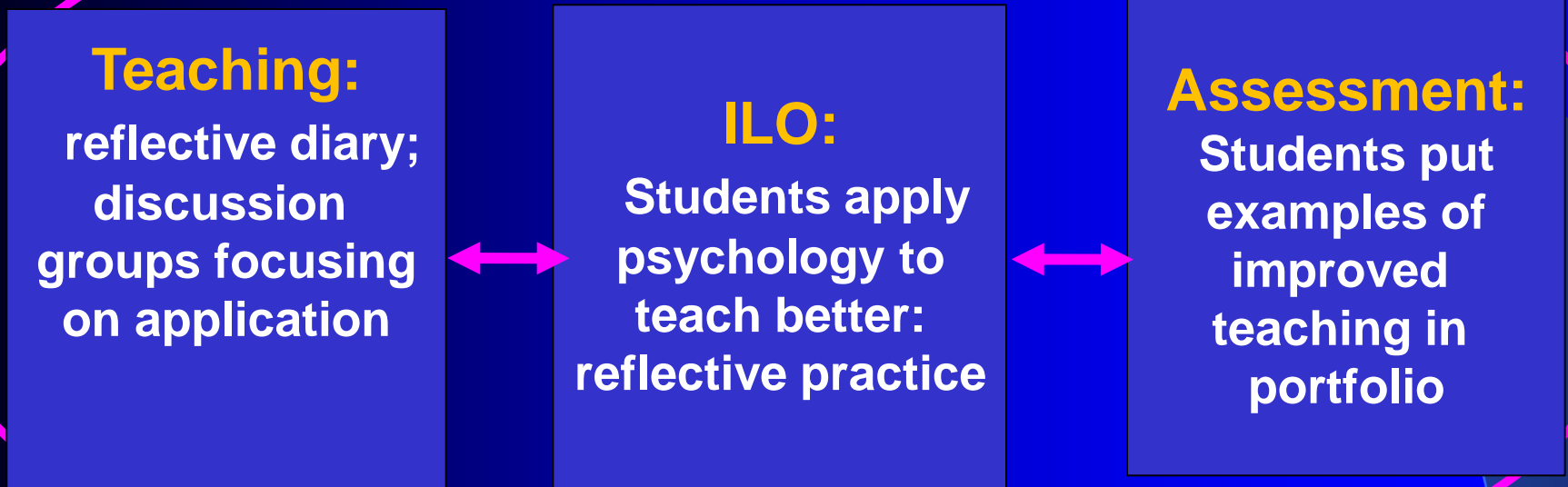
But is *this* why the module was taught ??

Shouldn't the students be telling me how psychology might be working for them, not me telling them how it should?
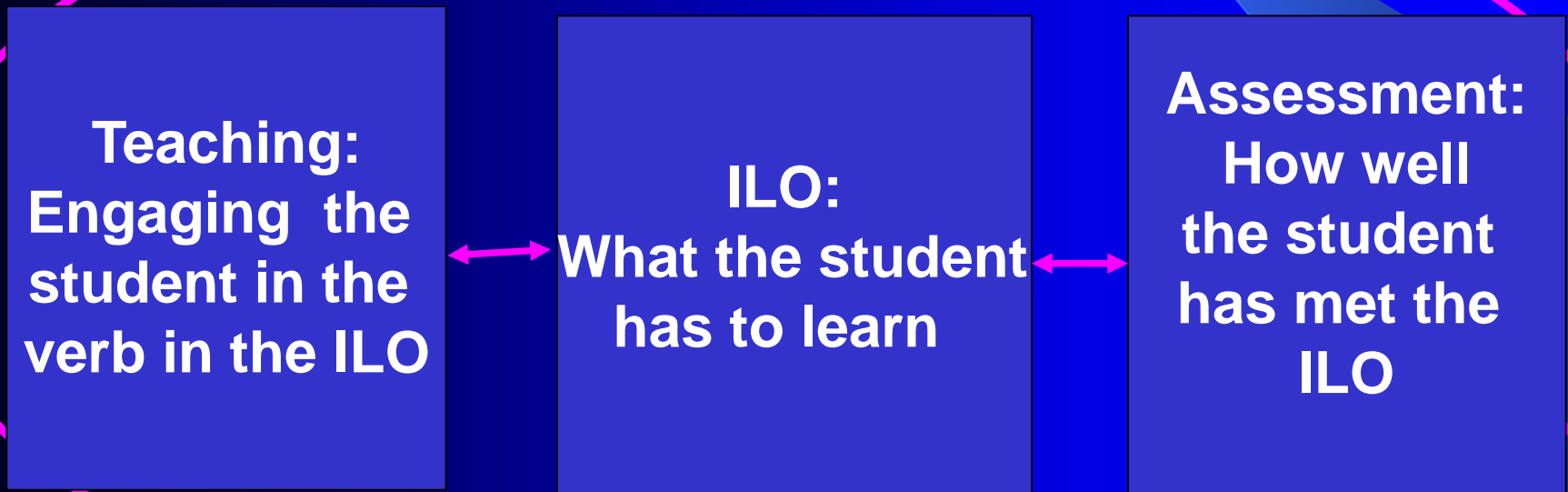
So I got my students to reflect on how psychology can be applied to their teaching and place evidence for this in a portfolio …

And thus was constructive alignment (CA) born

CA applied to teaching psychology to teachers

Teaching: reflective diary; discussion groups focusing on application

↔

ILO: Students apply psychology to teach better: reflective practice

↔

Assessment: Students put examples of improved teaching in portfolio

CA generalised, where teaching and assessment are aligned to the Intended Learning Outcome

Teaching: Engaging the student in the verb in the ILO

←→

ILO: What the student has to learn

←→

Assessment: How well the student has met the ILO

Intended Learning Outcomes (ILOs)

- **Statements of what students are expected to be able to do after studying a unit or programme.**
- **Expressed from the students' perspective, rather than as objectives, which are in terms of the teacher's perspective.**
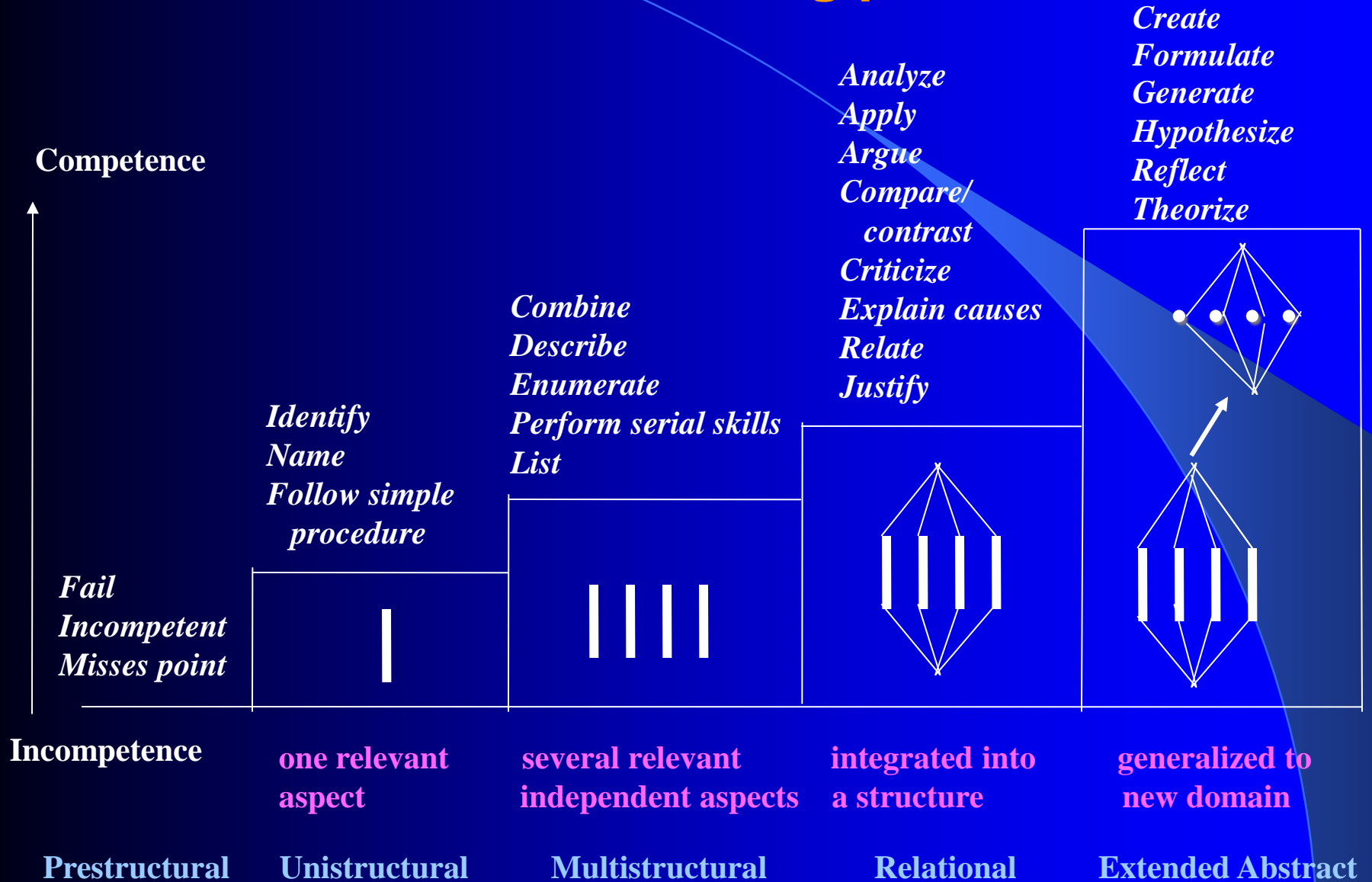
ILOs contain:

1. A **verb** denoting a level of understanding. Verbs to avoid: "understand", "demonstrate" (how?), "appreciate", "know about"
2. **Content** or topic to which the verb applies.
3. A **context** may be necessary.
4. Allows **criteria** for assessment purposes.

Eg: "*Explain* expectancy-value theory and apply to a discipline problem in the classroom."

The SOLO Taxonomy with sample verbs indicating levels of understanding/performance

Competence

Fail
Incompetent
Misses point

Identify
Name
Follow simple procedure

Combine
Describe
Enumerate
Perform serial skills
List

Analyze
Apply
Argue
Compare/ contrast
Criticize
Explain causes
Relate
Justify

Create
Formulate
Generate
Hypothesize
Reflect
Theorize

Incompetence

one relevant aspect

several relevant independent aspects

integrated into a structure

generalized to new domain

Prestructural **Unistructural** **Multistructural** **Relational** **Extended Abstract**

Procedures in designing Course ILOs

1. Decide what kind of knowledge is to be taught - *declarative* or *functioning*.

2. Select the topics to be taught.

3. Decide the levels of understanding/performance the students are expected to achieve for the different topics.

4. Ensure a clear understanding and agreement of the ILOs within the teaching team and other relevant parties, e.g. External Reviewer.

5. Communicate the ILOs to students.

Designing Teaching/Learning Activities: (TLAs) to Align with Intended Learning Outcomes

Having designed the Course ILOs, we now need to design suitable Teaching/Learning Activities that will facilitate students achieving the ILOs.

The best way to do this is to activate the verbs or learning activities embedded in the ILOs.

NB: Lectures and tutorials do not usually activate higher level verbs. There are alternatives, even in large classes.

It is important that the students enact the verb not the teacher

- **Example ILO: "*Explain* the historical evolution of the Hong Kong legal system"**

- **Teaching is specifically aimed at *activating* the verb. Thus, the students should do the explaining, not listen to the teacher doing the explaining. Students might listen to each other in pairs, and evaluate the quality of each other's explanation, providing feedback using rubrics that define aspects of a good explanation.**

- **Students should be unable to complete the assessment tasks unless they enact the same verb that is in the ILO.**

Assessment Tasks (ATs)

. Provide students the opportunity to demonstrate whether or not they have achieved the ILOs and what level their performance is in those ILOs.

. Alignment is achieved by ensuring that in performing the AT the students have to enact the verb(s) in the ILO.

. Different assessment methods (tasks) address different ILOs. There should therefore be several kinds of task.

. Provide the evidence allowing teachers to make a judgment about the level of a student's performance against the ILOs and to award a final grade.

Common ILOs	Possible Assessment Tasks
Describe	essay question, exam, oral presentation (peer assessment)
Explain	assignment, essay question exam, oral, letter-to-a-friend
Integrate	project, assignment
Analyse	case study, assignment
Apply	project, case study, experiment
Solve problem	case study, project, experiment
Design, create	project, experiment
Reflect	reflective diary, portfolio, self-assessment
Communicate	a range of oral, writing or listening tasks, e.g. presentation, debate, role play, reporting, assignment, precis, paraphrasing, answering questions etc.

Allowing for desirable but unintended outcomes

Students should be given opportunities to supply evidence of their learning that the teacher may not have thought of. Like a job application, they could put such evidence in a portfolio, but with an argument as to the case the evidence is making.

Assessments Tasks for Large Classes

MCQs are tempting but are rarely the answer because   they are unlikely to address many high level ILOs.

Here are some suggestions …

Ordered-outcomes Items

. Consists of a stem and 4-5 sub-items.

. The stem provides sufficient information (can be a figure, a diagram or a piece of written information) for a range of questions to be asked in the sub-items.

. The sub-items are ordered into a hierarchy of complexity that reflect the successive stages of learning of the concept or skill embedded in the stem.

. The SOLO taxonomy can be used as a guide for constructing the sub-items.

. Students' task is to answer all the sub-item questions based on the information given in the stem.

. Students' answers to the sub-item questions indicate the level of learning achieved in that topic.

Example of an ordered-outcome item for nursing students

SEVERITY OF ASTHMA

6 am   12 md   6 pm   12 mn   6 am

DIURNAL VARIATIONS IN SYMPTOMS OF ASTHMA
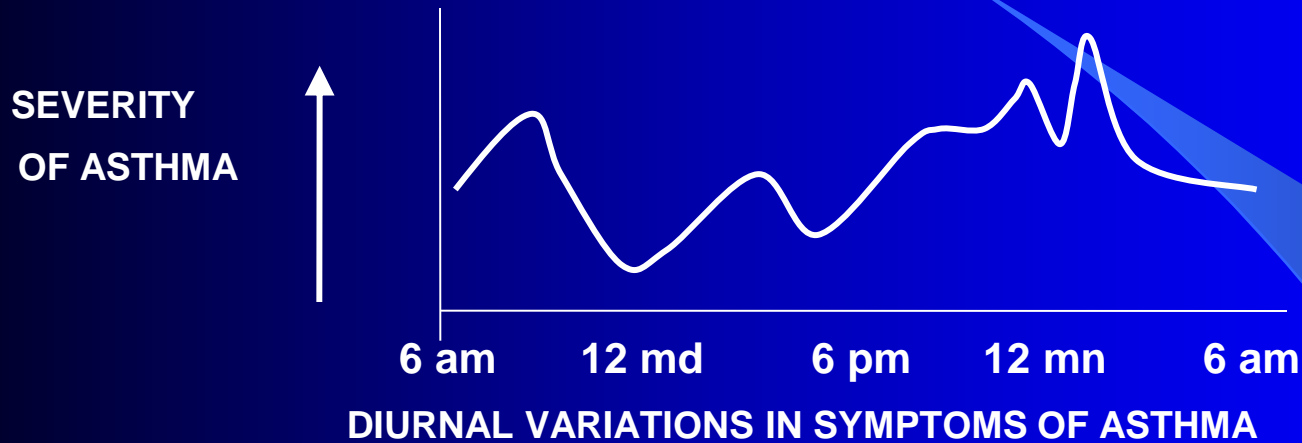
- When is the asthma attack most severe during the day?
- Is an asthmatic patient physically fitter at 1 p.m. or 8 p.m.?
- Do you expect a patient with asthma to sleep well at night? Give your reasons.
- Advise a patient with asthma how to cope with diurnal variation in symptoms.

Example of a Concept Map
For assessing the ILO "explain"

Constructive Alignment in Teaching and Learning

Students are asked to *explain* *the 3 key concepts in Constructive Alignment in teaching and learning and the relationship amongst them using a concept map.*

Example of a Venn Diagram
For assessing the ILO "explain"
Provision of professional service
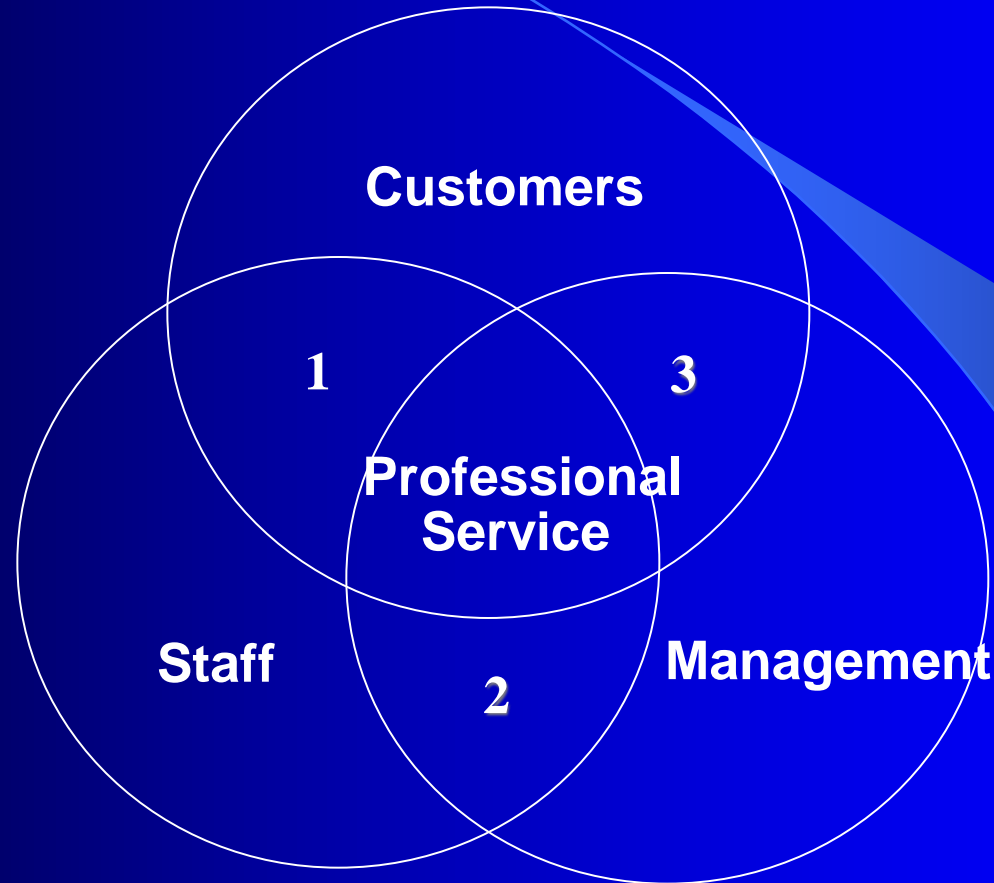
Students are asked to explain the interactions that would occur in sites 1, 2 and 3 in relation to providing a professional service.

Gobbets

. Single chunks of content which students are familiar with. It could be a paragraph of a standard text, a portion of a diagram, a video clip, or a specific detail of a design product.

. Students' task is to identify the gobbet, explain its context and its importance, its relationship to the overall picture, or whatever you would like them to comment on in relation to the big topic itself.

. Gobbets should access a bigger picture. Three gobbets can be completed in the time it takes for one essay exam question, so that to an extent you can assess both coverage and depth.

Brown, S. and Knight, P. (1994) *Assessing learners in higher education.* London: Kogan Page.

Example of a Legal Gobbet

For assessing the ILOs "argue" and "critically analyse" and

Students observe a video clip of a court room scene. They are then asked to critically analyse the argument

Gobbet for Engineering
For assessing the ILOs "describe" and "explain"

Students are asked to describe the structures and explain the role they play in the functioning of the bridge

Gobbet for Occupational Health and Safety
For assessing the ILOs "analyse" and "recommend"

Students are asked to analyse the situation, identify any potential health and safety hazards, and recommend measures to improve the situation.

Assessing quantitatively by marking

OR

Assessing qualitatively with rubrics

Assessing quantitatively (marking)

For:

- **Used to it.**
- **Seems to be the logical way to assess in certain courses.**
- **Logistically easy.**

Against:

- **Defines quality in terms of accumulating small quantities.**
- **Measurement error also accumulates, thus invalidating fine discriminations. There is no valid difference between 74 and 75, yet to the student it can make a BIG difference - an A or a B, or worse, a pass or a fail.**
- **Sends undesirable messages to students – negative backwash, as we have seen.**

Assessing qualitatively with rubrics

For:

- **Student's performance is appropriately assessed against what they are intended to learn – *criterion-referenced.***
- **Backwash is positive.**
- **The final grade tells students what they have achieved and what they need to do for a better grade.**

Against:

- **Requires a different mind-set for many teachers.**
- **Initially more work in designing ILOs, suitable assessment tasks and rubrics, but once established is probably less work than marking.**

Qualitative assessment involves making judgments against criteria (rubrics), not by counting 'marks'

- Assessment tasks reflect 'real world' performances assessed in terms of how well the tasks as a whole is performed, not in terms of marks obtained.

- The standards are externalised so that students and colleagues can see the assessment standards.

- Students can therefore see where they went wrong and what needs to be done to get a higher grade.

Deriving a Final Grade (Quantitatively)

- Award individual grades based on the grading criteria.

- Convert grades to numerals e.g. using the grade point scale.

- Combine (average) the individual grade points to arrive at a final grade point.

- Convert the final grade point back to a final letter grade.

Assessing qualitatively, collating quantitatively

	Marginal Pass D 1.00 45 - 49	Satisfactory C- C C+ 1.70 2.00 2.30 50 ----- 64	Good B- B B+ 2.70 3.00 3.30 65 --- 79	Excellent A- A 3.70 4.00 80 --- 100
Grade point/unit				
ILOs				
Explain	Able to identify and briefly write about limited points. Very little evidence of using these points to provide reasoning to why they are inter-related.	Able to identify a number relevant points with some details. Uses these points to provide a fair reasoning or causality. No evidence of a comprehensive overview of reasoning or causality.	Able to identify a full range of relevant Points with details. Supported by relevant literature. Points are organized to provide a comprehensive and cohesive reasoning or causality.	As in "Good" but provides views on possible alternative causes and/or results under changing conditions. Able to link current reasoning to situations in real-life professional contexts.
Reflect	Able to use available Information to self-evaluate and identify limited aspects of own strengths and weaknesses in a general sense. No evidence of suggestions of ways to improve performance. No evidence of theory being used in self-evaluation.	Able to use available information to self-evaluate and identify more aspects of own strengths and weaknesses in a general sense. Little application of theory in self-evaluation and limited suggestions of ways to improve performance.	Able to use available information to self-evaluate and identify the full range of own strengths and weak-nesses. Self-evaluation is based on theory. Increasingly able to suggest ways to improve performance in a specific context.	As in "Good". Able to generalize self-evaluation to beyond existing context. Suggest ways of improving perform-ance to real-life professional contest.

Deriving a Final Grade (Holistically)

Curriculum and Instruction: A subject in a course for Ed. Psychlsts.

Grading will be based on your attaining the following ILOs

1. Apply the principles of good teaching and assessment to chosen contexts.
2. Relate selected aspects of curriculum design and management to the educational system in Hong Kong.
3. Apply the content and experiences in this subject to enhance your effectiveness as an educational psychologist.
4. Show examples of your reflective decision-making as an educational psychologist.

Final grades will depend on how well you can demonstrate that you have met all the ILOs:

A   Awarded if you have clearly met all the ILOs, provide evidence of original and creative thinking, perhaps going beyond established practice.
B   Awarded when all ILOs have been met very well and effectively.
C   Awarded when the ILOs have been addressed satisfactorily, or where the evidence is strong in some ILOs, weaker but acceptable in others.
F   Less than C, work plagiarised, not submitted.

For Constructive Alignment to work:

1. Impediments to successful implementation must be removed.

2. Supports at Institution, Faculty, Departmental levels, and for individual teachers, must be put in place.

Conclusion

Assessment for learning occurs when assessment is one component in a teaching/learning system in which all components – intended learning outcomes, teaching and assessment – interact with each other in service of better learning. These components are part of the wider institutional system.

Constructive alignment is one approach to achieving such a system.

Bibliography

Biggs, J. B. and Tang, C. (2011, 4th edition) *Teaching for Quality Learning at University*, **Maidenhead, UK: Open University Press/McGraw Hill, 2007. Chapters 10, 11 and 12.**

The following URLs will be helpful

- **On writing ILOs: http://senate.gla.ac.uk/academic/ilo/guide.pdf**

- **Twelve tips for good assessment practices: http://www.cshe.unimelb.edu.au/assessinglearning/07/index.html**

- **Good assessment practices by subject: http://www.cshe.unimelb.edu.au/assessinglearning/04/index.html**

- **Assessment ideas:**

   http://celt.ust.hk/ideas/afl/Mexam/index.html

Biggs, J. *Changing Universities,* **2013. Hard copy POD at www.Lulu.com Search "Changing Universities" or email me for free PDF: jbiggs@bigpond.com.**

A Teacher's Lament and Salvation

I taught them but they didn't seem to learn.

My teaching and their learning unconnected be.

I lecture well and test at every turn

Are my students stricken with stupidity?

But then I read a book by Biggs and Tang,

To find a string of topics I'd been teaching

Had let their learning outcomes all go hang.

They themselves those outcomes should be reaching

With TLAs, their knowledge to construct.

They do their learning, I just their guide remain,

Their learning's like an orchestra I conduct.

Assessment's next, it's usually such a pain,

But when aligned a major tool for learning.

So now my salary I'm justly earning.