Aligning Learning Outcomes, Learning Activities and Assessment.

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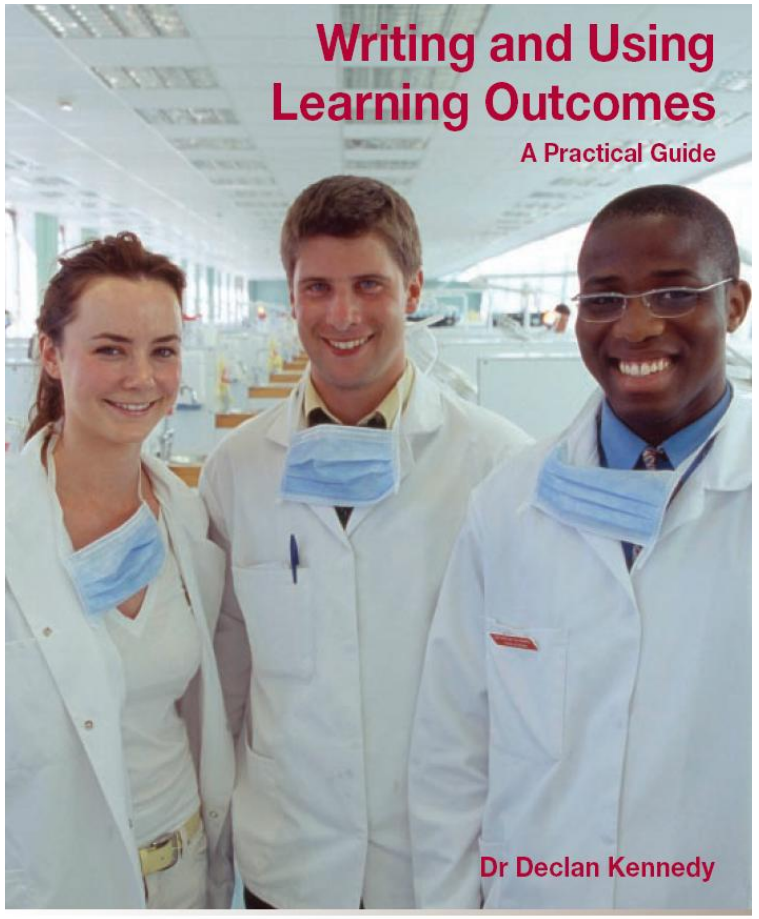
- “Learning outcomes represent one of the essential building blocks for transparency within higher education systems and qualifications” Bologna Working Group, p.18 (December 2004)
- Major contribution of exemplar material from staff taking “Postgraduate Certificate / Diploma in Teaching and Learning at Higher Education”.
- To date, translated into Irish, Spanish, German, Albanian, Serbian, Russian, Lithuanian.



NDP NATIONAL DEVELOPMENT PLAN
HEA Higher Education Authority An tÚdarás um Ard-Oideachas
ucc Coláiste na hOllscoile Corcaigh, Éire University College Cork, Ireland

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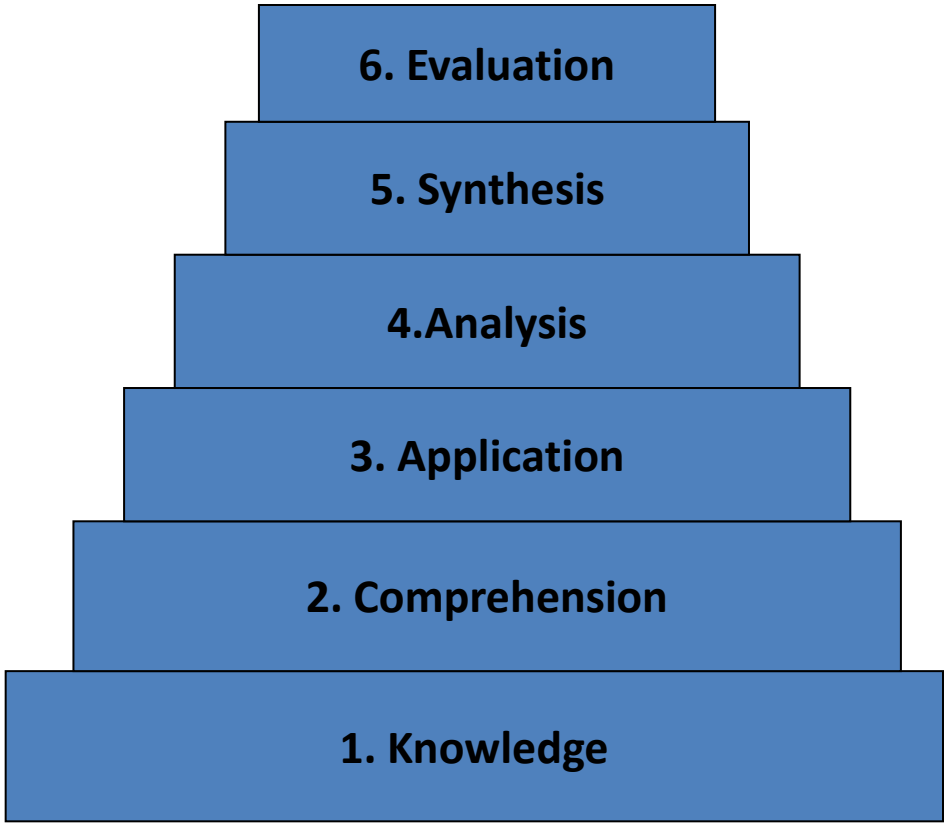
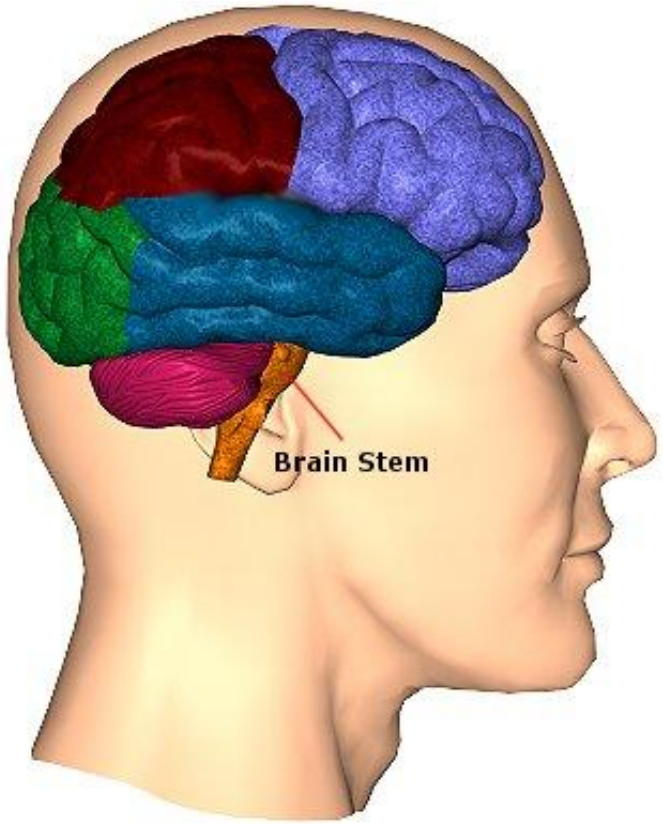
Working Definition

Learning outcomes are statements of what a student should know, understand and/or be able to demonstrate after completion of a process of learning

- The learning activity could be, for example, a lecture, a module or an entire programme.
- Learning outcomes must not simply be a “wish list” of what a student is capable of doing on completion of the learning activity.
- Learning outcomes must be simply and clearly described.
- **Learning outcomes must be capable of being validly assessed.**

Bloom (1956) proposed that knowing is composed of six successive levels arranged in a hierarchy.





From the definition of Learning Outcome we see:

- Emphasis on the learner.
- Emphasis on the learner's ability to do something.

- **Focus on teaching – aims and objectives and use of terms like *know, understand, be familiar with*.**
- **Outcomes: Focus on what we want the student to be able to do - use of terms like define, list, name, recall, analyse, calculate, design, etc.**

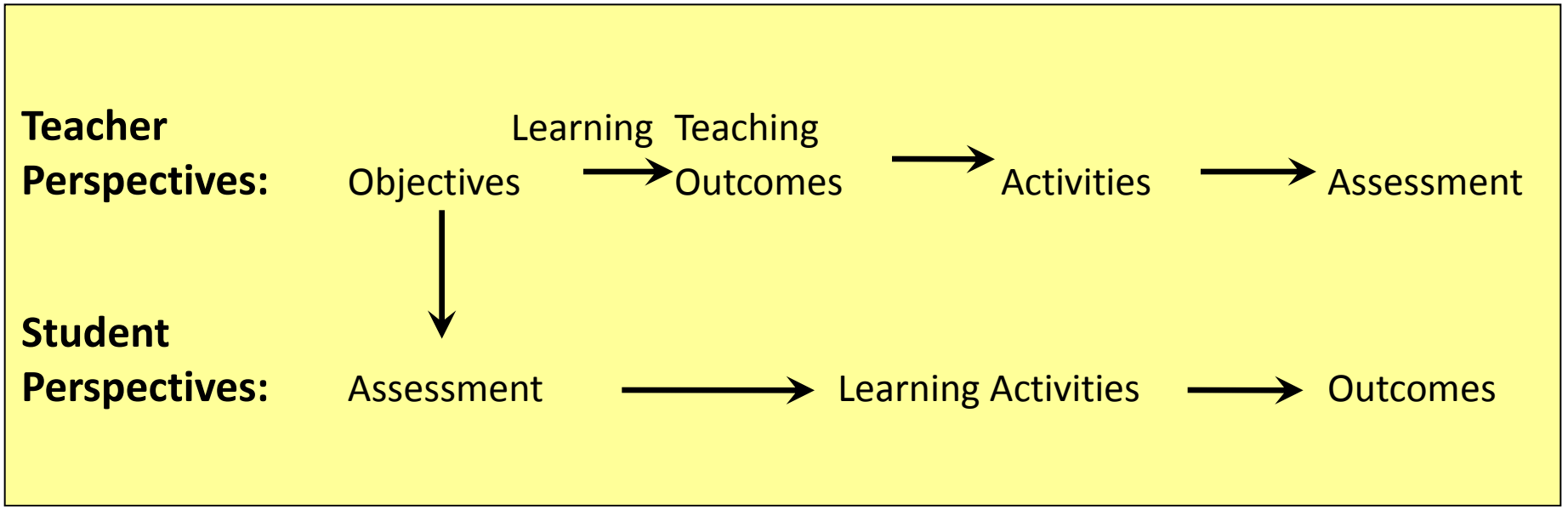
- Important to ensure that there is alignment between teaching methods, learning outcomes and assessment criteria.
- Clear expectations on the part of students of what is required of them are a vitally important part of students' effective learning (Ramsden, 2003)
- This correlation between teaching, learning outcomes and assessment helps to make the overall learning experience more transparent and meaningful for students.

Teaching for understanding

Learning outcomes

There is a dynamic equilibrium between teaching strategies and Learning Outcomes.

It is important that the assessment tasks mirror the Learning Outcomes since, as far as the students are concerned, the assessment *is* the curriculum: "From our students' point of view, assessment always defined the actual curriculum" (Ramsden, 1992).
Biggs (2003) represents this graphically as follows:



"To the teacher, assessment is at the end of the teaching-learning sequence of events, but to the student it is at the beginning. If the curriculum is reflected in the assessment, as indicated by the downward arrow, the teaching activities of the teacher and the learner activities of the learner are both directed towards the same goal. In preparing for the assessment, students will be learning the curriculum" (Biggs 2003)

“Constructive Alignment” (Biggs, 2005)

Constructive

- The students construct understanding for themselves through learning activities. “Teaching is simply a catalyst for learning” (Biggs).
- “If students are to learn desired outcomes in a reasonably effective manner, then the teacher’s fundamental task is to **get students to engage in learning activities that are likely to result in their achieving those outcomes…**. It is helpful to remember that what the student does is actually more important in determining what is learned than what the teacher does” (Shuell, 1986)

Alignment

- Alignment refers to what the teacher does in **helping to support the learning activities to achieve the learning outcomes.**
- The teaching methods and the assessment are aligned to the learning activities designed to achieve the learning outcomes.
- Aligning the assessment with the learning outcomes means that students know how their achievements will be measured.

Assessment of Learning Outcomes

- *How will I know if my students have achieved the desired learning outcomes? How will I measure the extent to which they have achieved these learning outcomes?*
- We must consider how to match the method of assessment to the different kinds of learning outcomes e.g. a Learning Outcome such as "Demonstrate good presentation skills" could be assessed by the requirement that each student makes a presentation to their peers.
- When writing learning outcomes the verb is often a good clue to the assessment technique.
- How can we design our examination system so that it tests if learning outcomes have been achieved?

Misconceptions about Assessment

- "**A view of teaching as the transmission of authoritative knowledge** has little space to accommodate the idea that different methods of assessment may be appropriate for the evaluation of different parts of the subject matter or that assessment techniques themselves should be the subject of serious study and reflection. In such a conception, lecturers see teaching, learning and assessment as tenuously related in a simple linear sequence".
- "**Assessment is something that follows learning**, so there is no need to consider its function as a means of helping students to learn through diagnosing their errors and misconceptions and reinforcing their correct understanding".
- "**Assessment, like teaching, is something done to students** ….Assessment classifies the students on the criterion of how well they have absorbed the data thus transmitted. What could be simpler?"

(Ramsden, 2005)

Formative Assessment

- Assessment **FOR** learning – gives feedback to students and teachers to help modify teaching and learning activities, i.e. helps inform teachers and students on progress being made.
- Assessment is integrated into the teaching and learning process.
- Clear and rich feedback helps improve performance of students (Black and Williams, 1998).
- Usually carried out at beginning or during a programme, e.g. coursework which gives feedback to students.
- Can be used as part of continuous assessment, but some argue that it should not be part of grading process (Donnelly and Fitzmaurice, 2005)

Summative Assessment

- Assessment that summarises student learning at end of module or programme – Assessment OF Learning.
- Sums up achievement – no other use.
- Generates a grade or mark.
- Usually involves assessment using the traditional examination.
- Only a sample of the Learning Outcomes are assessed – cannot assess all the Learning Outcomes.

Continuous Assessment

- A combination of summative and formative assessment.
- Usually involves repeated summative assessments.
- Marks recorded.
- Little or no feedback given.

Assessment as Assidere

- *"Assessment is the process of gathering and discussing information from multiple and diverse sources in order to develop a deep understanding of what students know, understand and can do with their knowledge as a result of their educational experiences"* (Huba and Freed, 2000)
- "A way of finding out what our students know, understand and can do"

Some questions re Assessment

- Why is assessment such a big issue in higher education at the moment?
- How best can we balance assessment FOR learning with assessment OF learning (formative and summative purposes)
- How do we make sure our method of assessment is doing the job we want it to do?
- **What assessment techniques can we use to measure different types of learning outcomes?**
- **How can we improve exams so that they test higher order skills?**
- **Why have we been so traditional in assessment and not willing to make imaginative moves in area of assessment?**
- Are we afraid to move into new areas of assessment in case we are accused of “dumming down” the standards?

Trends in assessment

Traditional

- Examinations
- Lecturer-led
- Product assessment
- Vague criteria
- Content
- Individual

Changing approaches

- Course work
- Student-led
- Explicit criteria
- Skills
- Group

Purposes of assessment

- *Educational* : feedback, diagnosis, motivation, guidance, learning support
- *Managerial* : selection, grading, certification, progression, professional recognition, maintaining standards.

“Techniques” of assessment

- *Written:* tests, examinations, assignments
- *Practical:* skills testing; lab/workshop practice
- *Oral:* interviews, various formats
- *Aural:* listening tests
- *Project work:* individual/group; research/design
- *Field work:* data collection and reporting
- *Competence testing:* threshold standards
- *Portfolio :* combination of techniques

Common assessment techniques in Higher Education

- Paper/thesis
- Project
- Product development
- Performance
- Exhibition
- Case study.
- Clinical evaluation
- Oral exam
- Interview
- Research assignment
- Portfolio
- **Others??**

Interrogating our assessment

- Have we included a good balance of learning outcomes in our modules? *(e.g. Bloom's Taxonomy)*
- How do we know if students have achieved the intended learning outcomes: is there a good match between learning outcomes and assessment?
- Balance between formative and summative purposes? Between Continuous and/or terminal?
- How can we improve assessment so that it tests the intended learning outcomes?

A good balance of learning outcomes

Typical learning outcomes in higher education

- Knowledge, comprehension, application, analysis, synthesis, evaluation, etc. (Bloom)
- Problem solving
- Working alone and in teams; personal and interpersonal skills
- Communications; “information literacy”. The teacher no longer has command of all the information. The old transmission model of teaching based on certainty – encourage students to use information technology creatively and imaginatively.

Which of these are included in your courses? Are all of them assessed?

Example of Matching the Assessment to the Learning Outcome

Learning outcomes

1. Demonstrate good presentation skills.
2. Formulate food product
3. Identify an area for research
4. Identify signs and symptoms of MS in a patient

Assessment?

a) Multiple choice questions

b) Prepare a 1000-word research proposal

c) Lab-based project

d) Make a presentation to peers

A first step - improving exams

- Work with colleagues to draft questions
- Decide what you really want to test
- Don’t keep measuring the same things
- Include data in questions: reduce memory
- Show what assessment criteria will be used
- Make a clear marking scheme
- Give feedback to students and colleagues

Giving feedback to students

- Make it quick, clear and focussed
- Relate it to the assessment criteria and learning outcomes
- Use rubrics or formal marking schemes to show how well the requirements are met.
- Learning Outcomes are usually written at threshold level.
- Steps in feedback:
  - Affirm what is done well
  - Clarify: ask questions about specific aspects
  - Make suggestions for improvement
  - Give guidance about what the student needs to do next

I cannot tell you what a first class honours is but I will know it when it see it!

Assessing your assessment – is it doing the job you want it to do? Is it comprehensive?

	Assessment Task 1 e.g. Written Exam	Assessment Task 2 e.g. Project	Assessment Task 3 e.g. Presentation	Assessment Task 4 e.g. Lab work
Learning Outcome 1 **Describe…**				
Learning Outcome 2 **Investigate..**				
Learning Outcome 3 **Demonstrate..**				

To what extent has each Learning Outcome been achieved?

- Not a question of “yes” or “no” to achievement of Learning Outcomes.
- Rubric: A grading tool used to describe the criteria which are used in grading the performance of students.
- Rubric provides a clear guide as to how students’ work will be assessed.
- A rubric consists of a set of criteria and marks or grade associated with these criteria.

Linking learning outcomes and assessment criteria.

Learning outcome	Assessment criteria				
	Grade 1	Grade 2 : 1	Grade 2 :2	Pass	Fail
On successful completion of this module, students should be able to: Summarise evidence from the science education literature to support development of a line of argument.	Outstanding use of literature showing excellent ability to synthesise evidence in analytical way to formulate clear conclusions.	Very good use of literature showing high ability to synthesise evidence in analytical way to formulate clear conclusions.	Good use of literature showing good ability to synthesise evidence in analytical way to formulate clear conclusions	Limited use of literature showing fair ability to synthesis e evidence to formulate conclusio ns.	Poor use of literature showing lack of ability to synthesise evidence to formulate conclusions

Rubric by Dr. Heidi Goodrich-Andrade, Educational Leadership, Vol. 57 Number 5 February 2000

Instructional Rubric for a Persuasive Essay

Criteria	Gradations of Quality			
	4	3	2	1
The claim	I make a claim and explain why it is controversial.	I make a claim but don't explain why it is controversial.	My claim is buried, confused, and/or unclear.	I don't say what my argument or claim is.
Reasons in support of the claim	I give clear and accurate reasons in support of my claim.	I give reasons in support of my claim, but I overlook important reasons.	I give 1 or 2 weak reasons that don't support my claim and/or irrelevant or confusing reasons.	I don't give reasons in support of my claim.
Reasons against the claim	I discuss the reasons against my claim and explain why it is valid anyway.	I discuss the reasons against my claim but neglect some or don't explain why the claim still stands.	I say that there are reasons against the claim, but I don't discuss them.	I don't acknowledge or discuss the reasons against my claim.
Organization	My writing has a compelling opening, an informative middle, and a satisfying conclusion.	My writing has a beginning, a middle, and an end.	My organization is rough but workable. I may sometimes get off topic.	My writing is aimless and disorganized.
Voice and tone	It sounds like I care about my argument. I tell how I think and feel about it.	My tone is OK, but my paper could have been written by anyone. I need to tell how I think and feel.	My writing is bland or pretentious. There is either no hint of a real person in it, or it sounds like I'm faking it.	My writing is too formal or informal. It sounds like I don't like the topic of the essay.
Word choice	The words that I use are striking but natural, varied, and vivid.	I make some fine and some routine word choices.	The words that I use are often dull or uninspired or sound like I'm trying too hard to impress.	I use the same words over and over. Some words may be confusing.
Sentence fluency	My sentences are clear, complete, and of varying lengths.	I have well-constructed sentences. My essay marches along but doesn't dance.	My sentences are often awkward, run-ons, or fragments.	Many run-on sentences and sentence fragments make my essay hard to read.
Conventions	I use correct grammar, punctuation, and spelling.	I have a few errors to fix, but I generally use correct conventions.	I have enough errors in my essay to distract a reader.	Numerous errors make my paper hard to read.

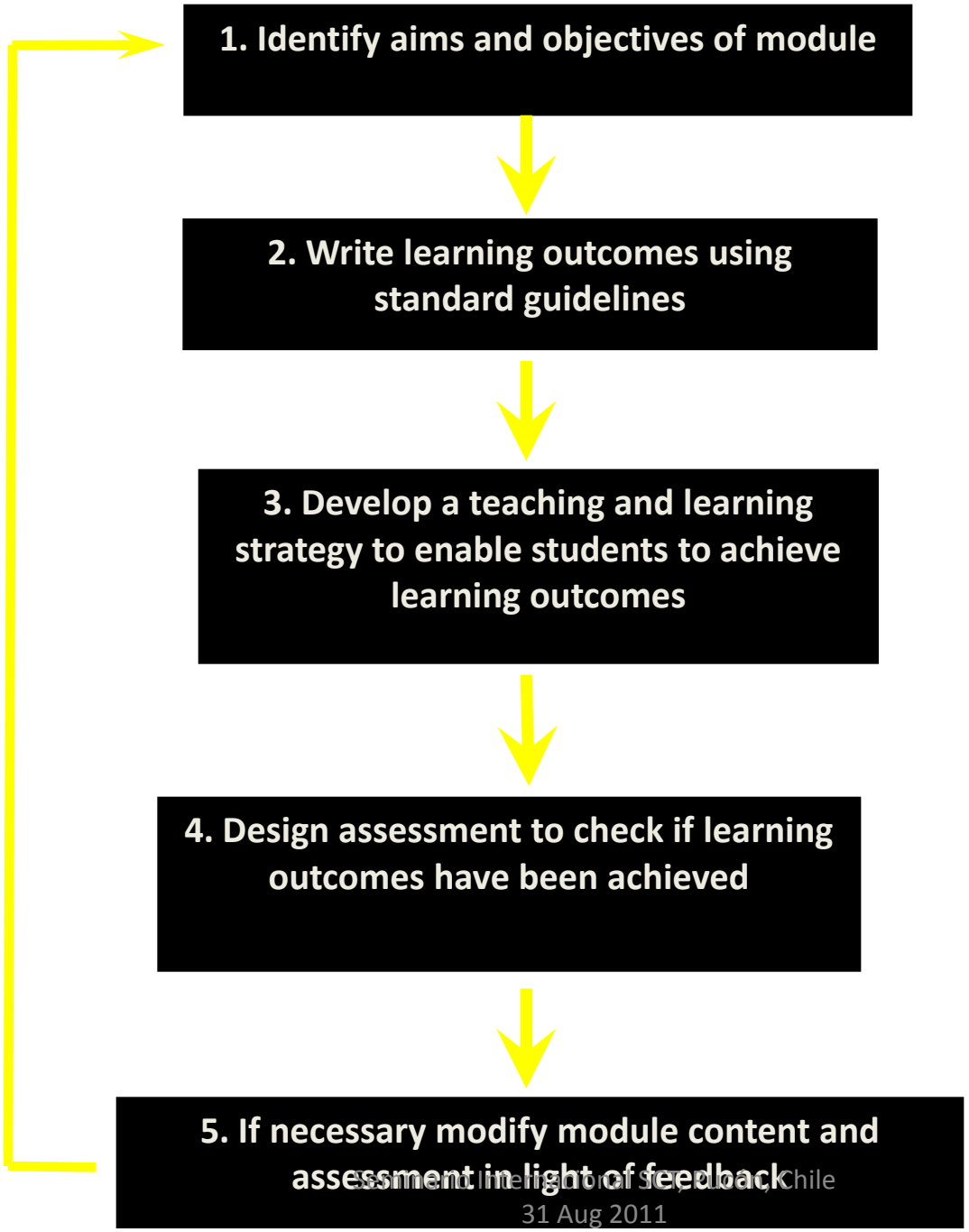
Linking Learning Outcomes, Teaching and Learning Activities and Assessment

Learning Outcomes	Teaching and Learning Activities	Assessment
Cognitive (Demonstrate: Knowledge, Comprehension, Application, Analysis, Synthesis, Evaluation) Affective (Integration of beliefs, ideas and attitudes) Psychomotor (Acquisition of physical skills)	Lectures Tutorials Discussions Laboratory work Clinical work Group work Seminar Peer group presentation etc.	•End of module exam. •Multiple choice tests. •Essays. •Reports on lab work and research project. •Interviews/viva. •Practical assessment. •Poster display. •Fieldwork. •Clinical examination. •Presentation. •Portfolio. •Performance. •Project work. •Production of artefact etc.

Learning outcomes Module ED2100	Teaching and Learning Activities	Assessment 10 credit module Mark = 200
Cognitive •Recognise and apply the basic principles of classroom management and discipline. •Identify the key characteristics of high quality science teaching. •Develop a comprehensive portfolio of lesson plans	Lectures (12) Tutorials (6) Observation of classes (6) of experienced science teacher (mentor)	End of module exam. Portfolio of lesson plans **(100 marks)**
Affective •Display a willingness to co-operate with members of teaching staff in their assigned school. •Participate successfully in Peer Assisted Learning project	Participation in mentoring feedback sessions in school (4) Participation in 3 sessions of UCC Peer Assisted Learning (PAL) Programme. Peer group presentation	Report from school mentor End of project report. **(50 marks)**
Psychomotor •Demonstrate good classroom presentation skills •Perform laboratory practical work in a safe and efficient manner.	Teaching practice 6 weeks at 2 hours per week. Laboratory work	Supervision of Teaching Practice Assessment of teaching skills **(50 marks)**

Steps involved in linking Learning Outcomes, Teaching and Learning Activities and Assessment

1. Clearly define the learning outcomes.
2. Select teaching and learning methods that are likely to ensure that the learning outcomes are achieved.
3. Choose a technique or techniques to assess the achievement of the learning outcomes.
4. Assess the learning outcomes and check to see how well they match with what was intended


1. Identify aims and objectives of module
2. Write learning outcomes using standard guidelines
3. Develop a teaching and learning strategy to enable students to achieve learning outcomes
4. Design assessment to check if learning outcomes have been achieved
5. If necessary modify module content and assessment in light of feedback

Does every learning outcome have to be assessed?

- In theory “yes” but in practice “no”.
- In some cases they have to be assessed, e.g. licence to practice (e.g. medicine) or to perform essential tasks (e.g. aircraft pilot).
- When assessment is limited purely to an examination paper, it may not be possible to assess all the Learning Outcomes in such a short space of time – sampling of Learning Outcomes.
- Even if all the Learning Outcomes are assessed on an examination paper, due to choice of questions, a student may not be assessed on all of them.

SoTL Movement, Hutchings, 2004:1

- The work of Ernest Boyer (1990) and others at the Carnegie Foundation for the Advancement of Teaching (Shulman, Huber, Hutchings, Bass…) identifies teaching as one of the 4 scholarships, giving it parity of esteem with research. Teaching itself is researchable, forming an integral part of researching the disciplines we are teaching from the perspective of our students' learning.
- SoTL is a movement whose core habits and commitments include: "that teaching is intellectual work, that student learning poses challenging problems that require careful investigation, that rich evidence about learning needs to guide thoughtful improvement and that the important work of learning and teaching should not be allowed to "disappear like dry ice" (Shulman, 1993) but be made visible, sharable and useful to others"- just like all good research.

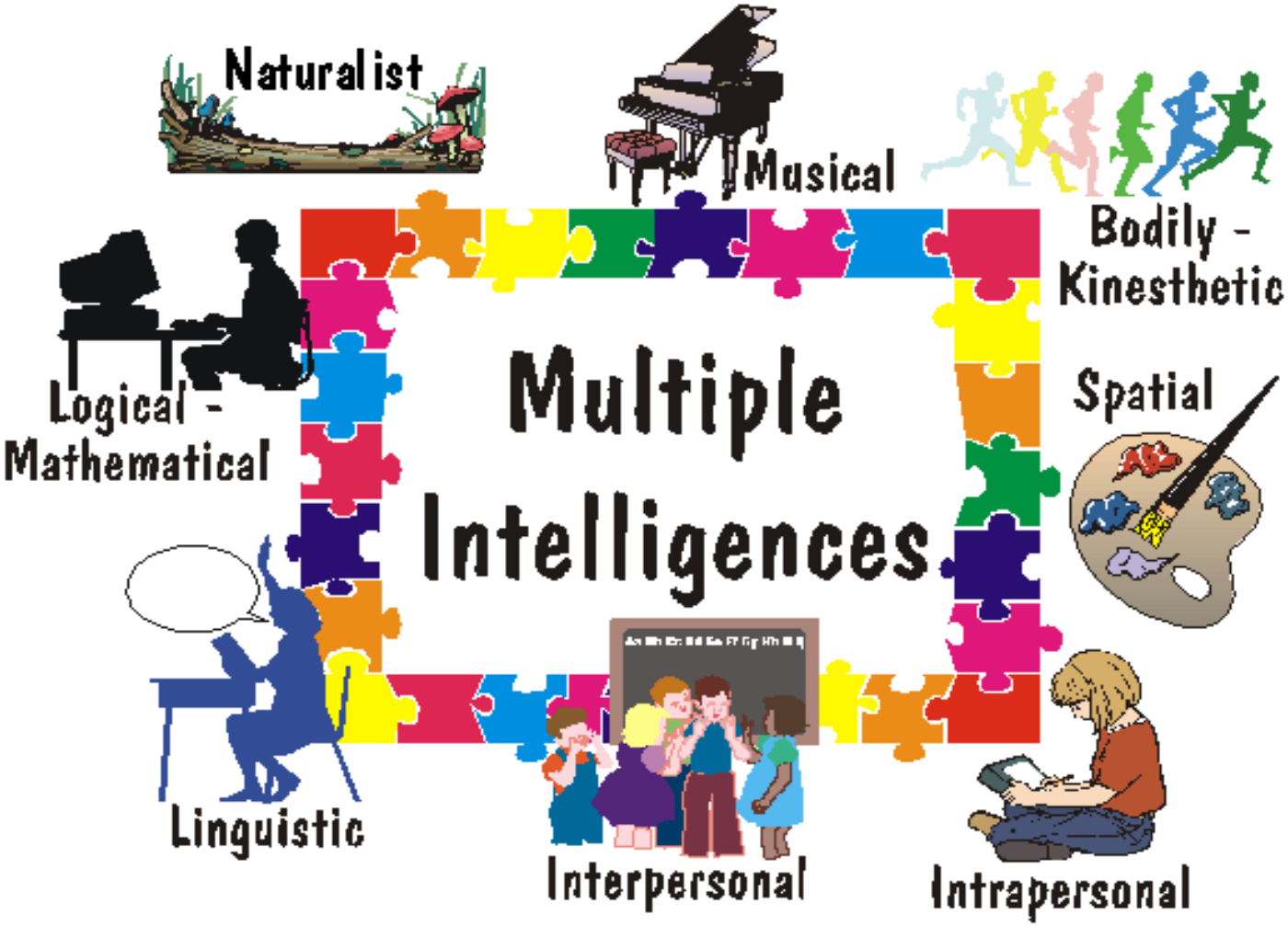
Scholarship of Teaching and Learning (SoTL)

- SoTL can align well with Learning Outcomes and their assessment, which can be used to gather evidence about the most important research question: **How do we know what our students know and understand?**
- My claim is that Learning Outcomes and their assessment can be a key step in the process of researching our teaching and our students' learning and in being open and accountable

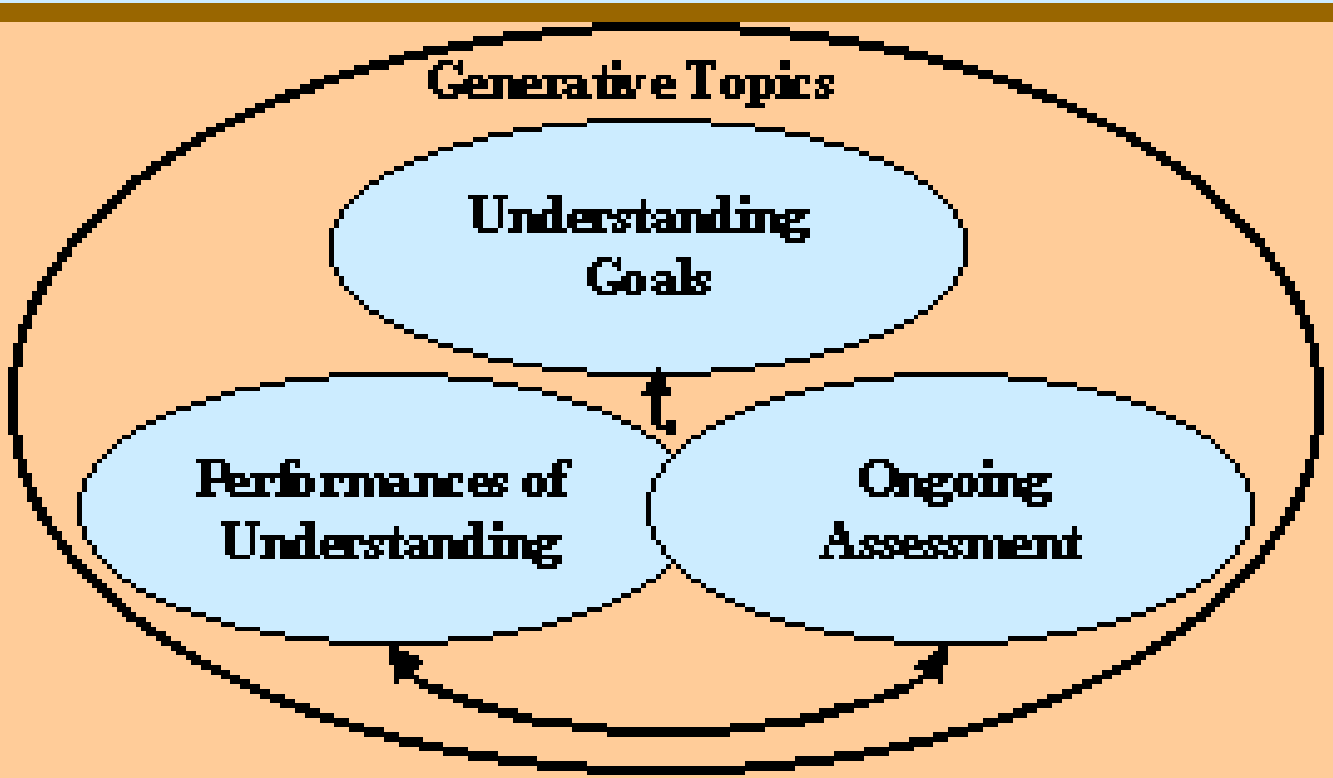
Your own Research Question re Assessment

- Look at a module/course you are teaching
- What are the Learning Outcomes?
- What are the current Assessment modes utilised?
- What questions do you have about this?
- How much freedom do you have to make any changes?
- What changes would you like to make?
- What feedback have you had from students/colleagues?

Multiple Intelligences



Teaching for Understanding



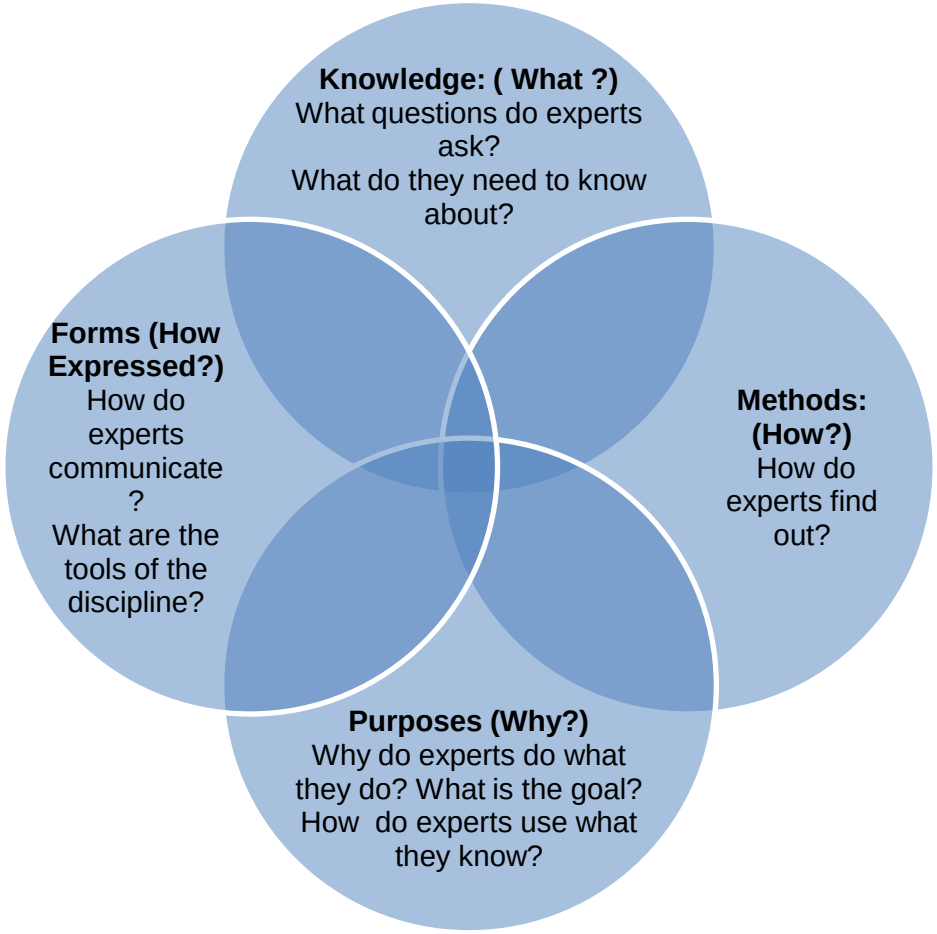
Teaching for Understanding and Learning Outcomes

- The TfU model, developed at the Project Zero Classroom, at the Harvard Graduate School of Education in the mid 1990's, through the work of Howard Garner, David Perkins and their research teams, provides a powerful way to think about Learning Outcomes holistically, in terms of
- **Generative Topics:** central to the discipline, accessible, exciting, making multiple connections across courses
- **Understanding Goals:** public, interrogative, holistic and specific (at module level)– they give us the big picture
- **Performances of Understanding** –what the students do to demonstrate and develop understanding
- **Ongoing assessment:** continuous feedback to students about their performances

Defining understanding (Chapter 2, Perkins, in Wiske (1998), *TfU: Linking Research with Practice)*

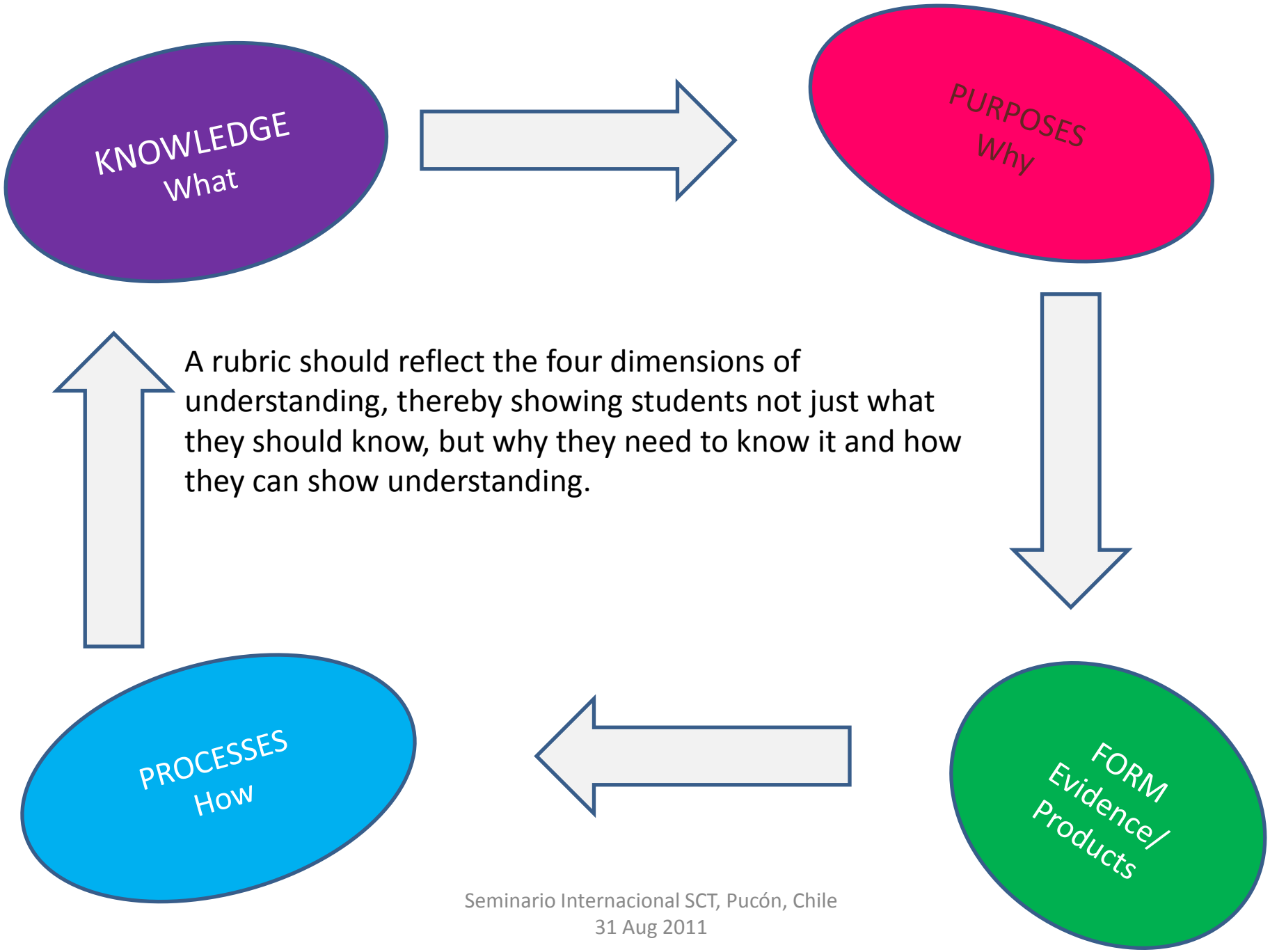
- Understanding is defined here as the " ability to think and act flexibly with what one knows".
- Learning for understanding, then, is about "learning how to learn": like learning to hold a good conversation- you have to be part of it - or to improvise jazz- you must play along- rather than about rote learning. It's active learning.
- This is the kind of learning needed to assess the higher order thinking of good Learning Outcomes:
- What can the students do to demonstrate their understanding?
- The doing of understanding and of Learning Outcomes is a process of learning how to learn and of assessing this.

The Dimensions of Disciplinary Understanding embedded in each Discipline



A Disciplinary Framework as a context for thinking about Learning Outcomes

- **Knowledge** – the conceptual frameworks of the discipline
- **Methods** – how experts think in the discipline
- **Purposes** – why this topic is worth studying? – how the expert gains ownership of it
- **Forms** – how is understanding represented in the various genres of the discipline? : reports, articles, tables, theses, symbols, artistic forms
- **These dimensions of understanding should be represented in the range of Learning Outcomes we use.**



A rubric should reflect the four dimensions of understanding, thereby showing students not just what they should know, but why they need to know it and how they can show understanding.

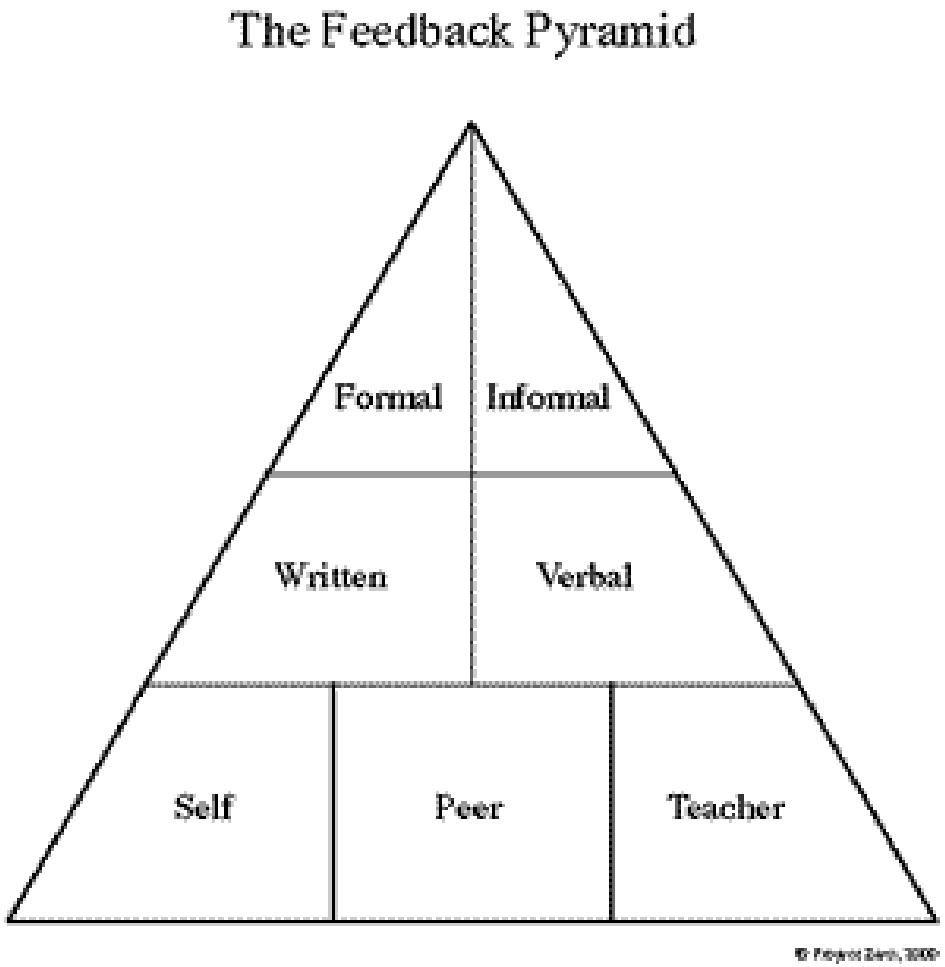
Learning Outcomes and the Higher Order thinking of the Disciplines

- My research indicates that our learning outcomes can focus overly on the **Knowledge dimension** and on narrow types of the **Form dimension** (the exam question, the essay, the template)– we need to create assessments that also test the learning outcomes of the **methodologies and purposes** at the heart of the discipline – revealed in the higher order thinking of Bloom's taxonomy- through Learning Outcomes that test analysis, synthesis and evaluation and that reveal a variety of **Forms** for the students to work in-such as reflective portfolios, scenarios, work-based learning.
- We need a variety of active learning approaches and assessment methods to make the most of our outcomes.

Summary: Assessment

- Norm referenced standardised tests are generally used to assess students in relation to a class norm. Limitations?
- Criterion referenced assessment tends to focus on either behavioural or subject-centred approaches or both. This should include clear learning intentions, and through the use of self evaluation and peer evaluation, seek to empower the student to realise his/her own learning needs. Making Criteria public?
- Ipsative assessment is linked with qualitative and authentic assessment, as its primary focus is on the development and progression of the student in relation to his/her earlier levels of attainment rather than class norms. This form of assessment has the added benefit of being done in a **meaningful way for the student, in the natural setting of the student's classroom, where the student is an active participant in the assessment process.** Cultural shift for all?

Feedback Pyramid



Assessment – Assidere - should be:

Valid: gives useful information to guide learning *(aligned with learning outcomes)*

Reliable: *should test what it sets out to test*

Fair and Authentic: credible, addresses enduring issues in a real life manner – fair in our culture

Engaging: provokes interest, persistence, satisfaction – is motivational

Challenging: promotes as well as measures learning

Respectful: reveals uniqueness of learners; free of bias

Responsive: provides feedback to learners and promotes improvement

Formative**:** Ongoing – informs teaching

Normative: Setting and achieving a class norm

Summative: End of term/year

Criterion referenced: Setting out in a public manner the criteria to be used for assessment

Peer Assessment: Student to Student – must build up a culture of positive peer assessment over time

Self (ipsative) Assessment: Giving students the opportunity to show how they see their own work – needs lots of support to make everyone confident enough to do this

Grades – sometimes seen as the only type of assessment

Our students as graduates

- What do we wish our graduates to be capable of when they leave university?
- Gardner (1999) talks of school graduates who will need to be *highly literate, flexible, capable of troubleshooting/ problem-finding, adaptable to changing roles*
- Are they capable of this when they leave school and come to University? Are they capable of this when they leave University?If not – why not?
- Black *et al* (2003) state that *establishing good formative assessment practices requires that most teachers made significant changes. This involves extra work and risk taking*
- **Using a variety of assessment methods to test flexible module and programme Learning Outcomes is one way to ensure that we put the focus on what students can do after their degree.**

Making the most of Learning Outcomes in the Assessment process

- If assessment is seen to be a fundamental part of the learning process, it will not suffice to confine our comments on a student's work to a superficial level. Students must receive authentic and rich feedback if they are to learn from the process of their work, and must become more reflective as they seek to evaluate their own work.
- The process of reflection is vital if they are to develop the ability to problematise and to be adaptable.
- Our Learning Outcomes needs to reflect the in-depth nature of learning and to reflect the complexity of the discipline and of the real world. Do our course work assignments reflect this ??

Classroom Assessment Techniques

Assessment should be:

- Learner centred: inclusive, acknowledging diversity
- Linked to learning outcomes
- Linked to performances of understanding or active learning methods
- Multiplicity of modes, techniques, formats to suit different learners
- Transparent, fair and equitable to all users
- Valid, authentic and reliable

Use classroom assessment techniques for

1. Formative purposes: quick feedback to learners and teacher about how well the learning outcomes are being achieved
2. Summative purposes: test lower order skills (recall of information, basic concepts); use terminal exams for higher order thinking skills (application, evaluation)
3. Coursework – where we can be creative.

Choosing the Right Technique: Angelo and Cross 1993, Chapter 7.

- Background Knowledge Probe: to determine the most effective starting point for a new lesson, elicit levels of prior knowledge (2-3 open ended questions or series of short-answer questions)
- Misconception/Preconception Check: Surfacing the misconceptions. Consider the most important misconceptions/ areas of troublesome knowledge in your topic. Generate a questionnaire for students focused on these areas
- Focused Listing: Shows how students can define or describe the central tenets of a topic. Write a word/brief phrase about the topic and ask students to write a list of related words (3 mins – 10 words). This allows you to re-focus your teaching.

Effective Classroom Assessment Techniques (continued)

- Empty Outlines: Create an outline of your lecture/presentation and ask students to fill it in – allows you to check what you taught with what was caught
- Memory Matrix: 2 dimensional diagram (rows/columns) used to organise information and illustrate relationships
- Minute Paper: Students must evaluate and generate a question
- Muddiest Point: provides information on what students find least clear
- **Caveats to use (over-use) of each of the above!**

Assessment and LOs

Assessment should help to develop:

- Complex thinking: using a variety of reasoning strategies
- Good Habits of Mind/Thinking Routines: self-regulation and organisation, critical and creative thinking

How do we go about this?

- What real-life, sometimes ill-defined problems will students need to solve? Design assessments round these
- What meaningful tasks can I identify?
- How successfully have we formulated learning outcomes for our programmes and is assessment linked to learning outcomes?
- What kinds of outcomes are most often/least often assessed? Why?
- What changes can YOU make in your assessment practice? How will you do it?

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