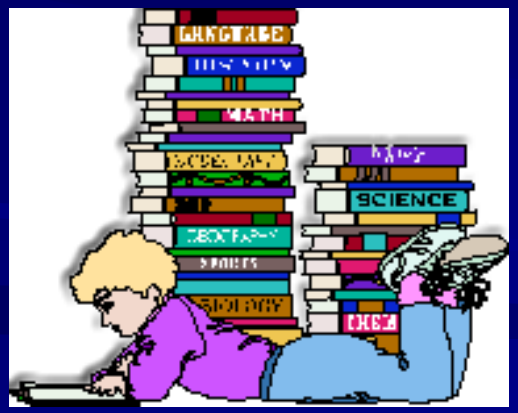
PROFILES

Professional Reflection Oriented Focus on Inquiry-based Learning and Education through Science

Working towards a common language for PROFILES modules



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Berlin
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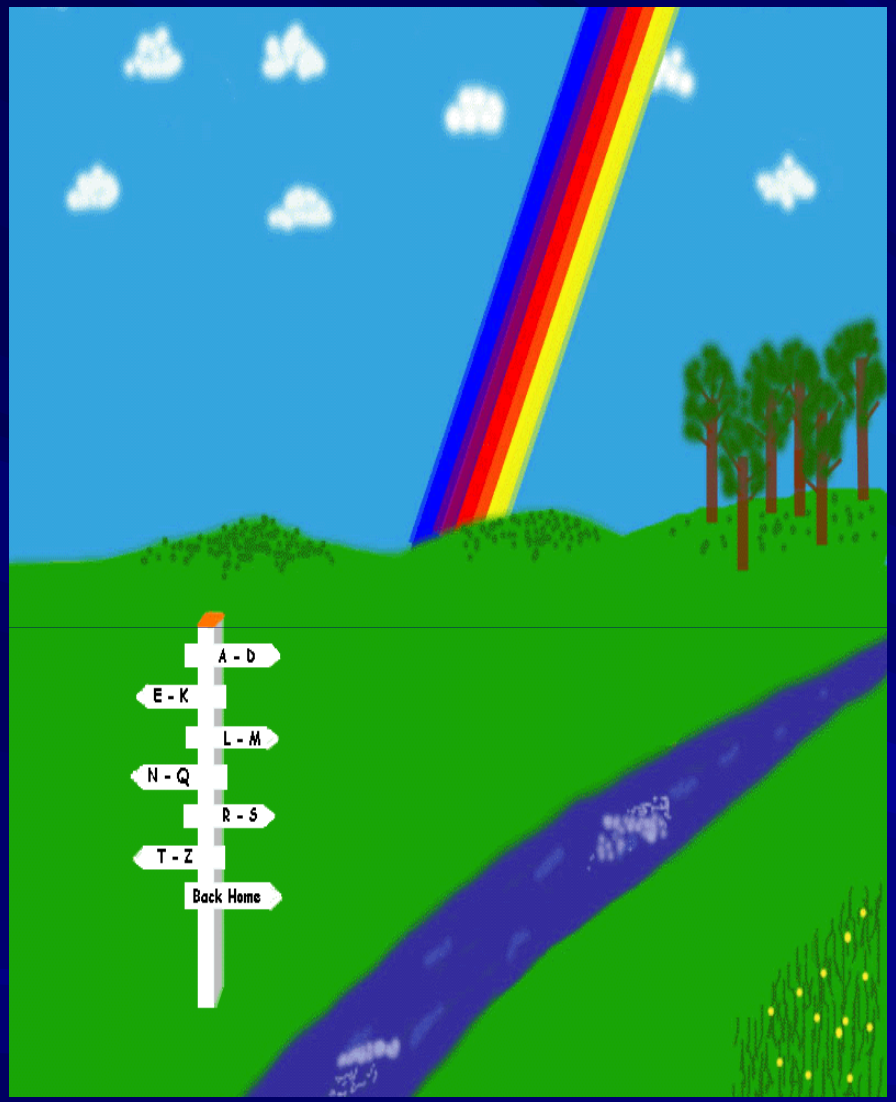


1. What are Learning Outcomes?
2. How do I write Learning Outcomes?
3. What are the benefits of Learning Outcomes?
4. How do I link Learning Outcomes, Teaching and Learning Activities and Assessment in PROFILES modules?
5. How are Learning Outcomes and Competences related?

What are learning outcomes?

- Learning Outcomes are specific statements of what students should know and be able to do as a result of learning (Morss and Murray, 2005)
- Learning outcomes are statements of what is expected that a student will be able to DO as a result of a learning activity….(Jenkins and Unwin).
- Learning outcomes are explicit statements of what we want our students to know, understand or to be able to do as a result of completing our courses. (Univ. New South Wales, Australia)
- "Learning outcomes are statements that specify what learners will know or be able to do as a result of a learning activity. Outcomes are usually expressed as knowledge, skills or attitudes". (American Association of Law Libraries).
- Learning outcomes are an explicit description of what a learner should know, understand and be able to do as a result of learning. (Learning and Teaching Institute, Sheffield Hallam University)

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 lesson, 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.

Aims and Objectives

- The Aim of a module or programme is a broad general statement of teaching intention, i.e. it indicates what the teacher intends to cover in a programme, module or learning activity.
- Example of aim: To give students an introduction to organic chemistry
- The objective of a module or programme is a specific statement of teaching intention, i.e. it indicates one of the specific areas that the teacher intends to cover.
- Examples of objectives:

1. Give students an appreciation of the unique nature of carbon and it ability to bond to other carbon atoms.
2. To give students an understanding of the concept of hybridisation.
3. To ensure that students know some characteristic properties of alkanes and alcohols.
4. To make students familiar with a range of families of organic compounds: alkanes, alcohols, carboxylic acids and esters.

- Aims are general and long term and refer to a series of lessons or unit of work (module).
- Objectives are more specific and short term.

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.

• Aims: Give broad purpose or general intention of the module.
• Objectives: Information about what the teaching of the module hopes to achieve.
• Learning outcomes are not designed to replace the traditional way of describing teaching and learning but to supplement it.

The language of aims and objectives

- To give students an understanding of …..
- To make students familiar with……
- To ensure that students know…….
- To enable students to experience …..
- To encourage students to …….
- To provide students with the opportunity to……..

etc.

Focus on Learning Outcomes – Bologna

- Bologna Agreement signed in Bologna, Italy in 1999 by 29 countries. A total of 46 countries have now signed up to this agreement.
- The overall aim of the Bologna Agreemen the efficiency and effectiveness of higher Europe in terms of academic standards of quality assurance standards.
- One of the main features of this process is improve the traditional ways of describing and qualification structures.

Bologna, Italy (1999)

What countries have signed the Bologna Agreement?

European Union - all 27 countries

Austria
Belgium
Bulgaria
Cyprus
Czech Republic
Denmark
Estonia
Finland
France
Germany
Greece
Hungary
Ireland
Italy
Latvia
Lithuania
Luxembourg
Malta
Netherlands
Poland
Portugal
Romania
Slovakia
Slovenia
Spain
Sweden
United Kingdom

Non-European Union

Albania
Andorra
Armenia
Azerbaijan
Bosnia and Herzegovina
Croatia
Georgia
Holy See
Iceland
Liechtenstein
Montenegro
Moldova
Norway
Macedonia
Russia
Serbia
Switzerland
Turkey
Ukraine

What is the Bologna Process all about?

- Setting up of European Higher Education Area (EHEA) to ensure the increased international competitiveness of the European system of higher education.
- The Bologna Process is not based on a European Union initiative. The agreement is between both EU and non-EU countries.
- Setting up of system to make it easier to understand the description of qualifications and qualification structures.
- Every student graduating will receive a ***Diploma Supplement*** describing the qualification that the student has received. The purpose of the Diploma Supplement is to improve transparency and facilitate recognition. A standard format will be used to help compare qualifications and make them easier to understand. The Diploma Supplement will also describe the content of the qualification and the structure of the higher education system in which it was issued.

Learning Outcome in Bologna Process

- 'Ministers encourage the member States to elaborate a framework of comparable and compatible qualifications for their higher education systems, which should seek to describe qualifications in terms of workload, level, **learning outcomes**, competences and profile. They also undertake to elaborate an overarching framework of qualifications for the European Higher Education Area.'

  Berlin Communique 2003

- 'We adopt the overarching framework for qualifications in the EHEA, comprising three cycles (including, within national contexts, the possibility of intermediate qualifications), generic descriptors for each cycle based on **learning outcomes** and competences, and credit ranges in the first and second cycles.'

  Bergen Communique 2005

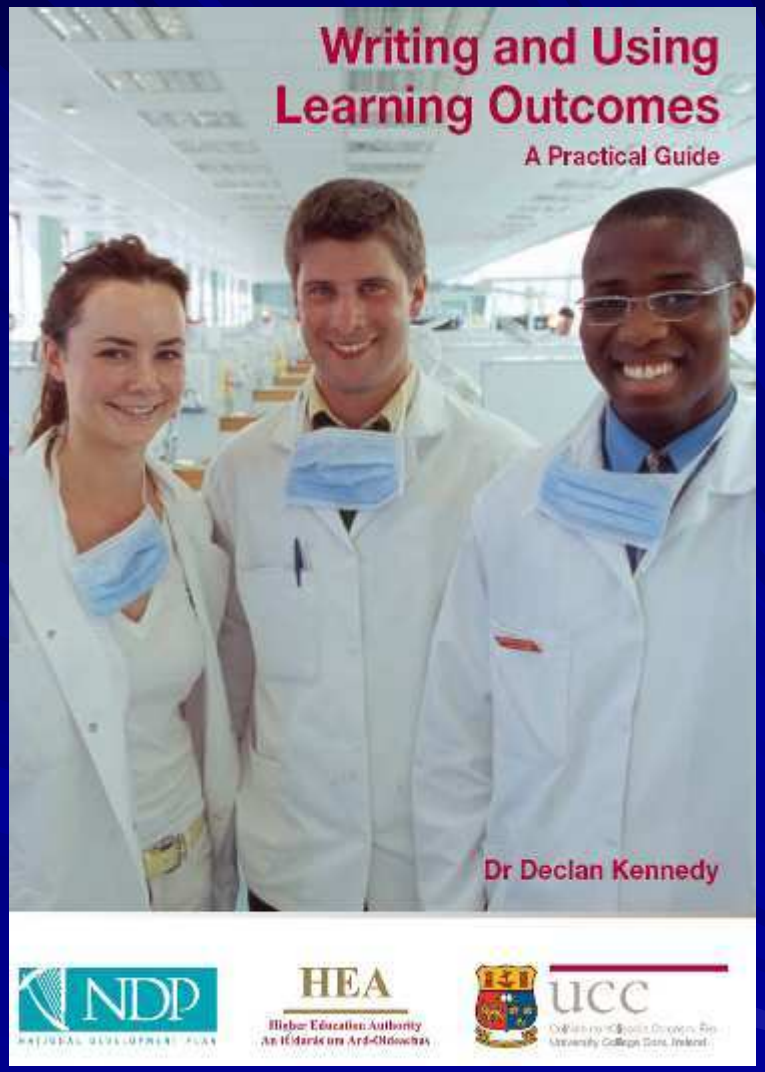
- ‘We underline the importance of curricula reform leading to qualifications better suited both to the needs of the labour market and to further study. Efforts should concentrate in future on removing barriers to access and progression between cycles and on proper implementation of ECTS based on **learning outcomes** and student workload.’
- ‘Qualifications frameworks are important instruments in achieving comparability and transparency within the EHEA and facilitating the movement of learners within, as well as between, higher education systems. They should also help HEIs to develop modules and study programmes based on **learning outcomes** and credits, and improve the recognition of qualifications as well as all forms of prior learning.’
- ‘We urge institutions to further develop partnerships and cooperation with employers in the ongoing process of curriculum innovation based on **learning outcomes**.’
- ‘With a view to the development of more student-centred, outcome-based learning, the next [Stocktaking] exercise should also address in an integrated way national qualifications frameworks, **learning outcomes** and credits, lifelong learning, and the recognition of prior learning.’

London Communiqué 2007

Bologna Process:

- As a step towards achieving greater clarity in the description of qualifications, by 2010 all modules and programmes in third level institutions throughout the European Union must be written in terms of learning outcomes.
- “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”.

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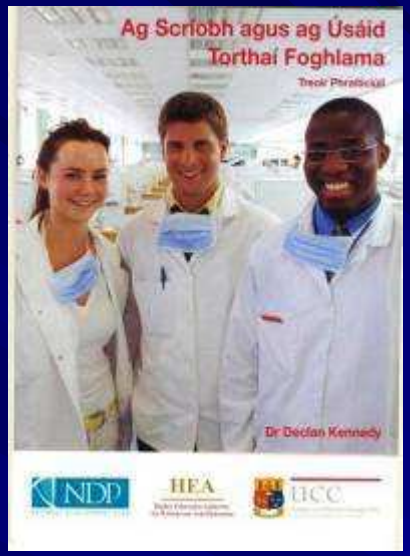
Lernergebnisse (Learning Outcomes) in der Praxis
Ein Leitfaden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Dr Declan Kennedy
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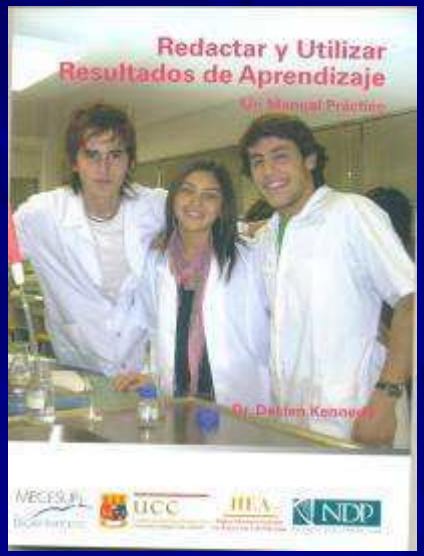
Redactar y Utilizar Resultados de Aprendizaje
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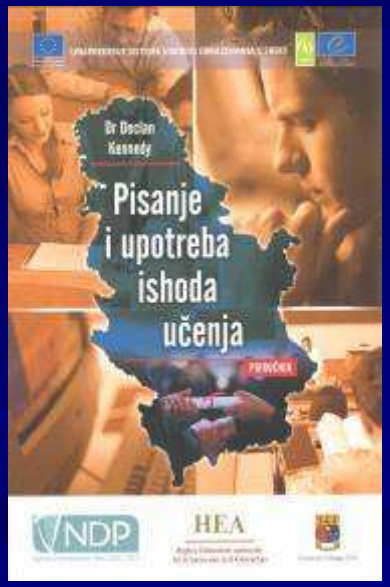
Dr Declan Kennedy
Pisanje i upotreba ishoda učenja
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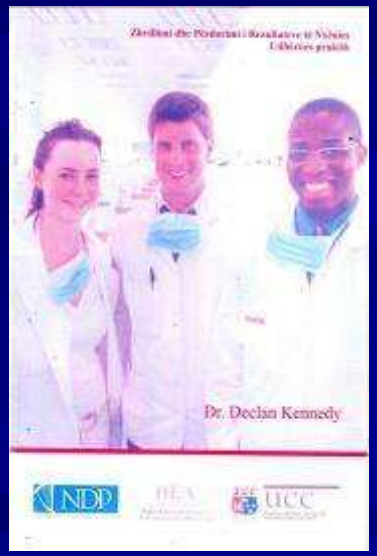
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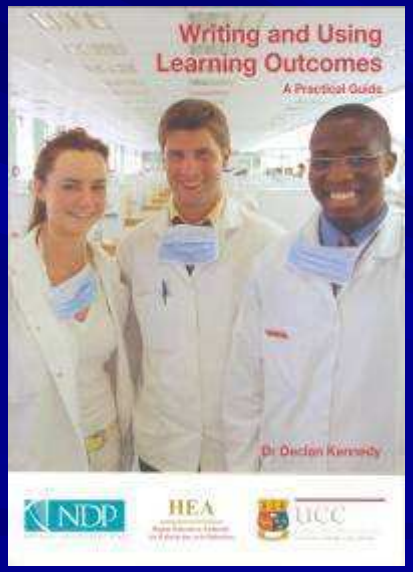
Writing and Using Learning Outcomes
A Practical Guide
Dr Declan Kennedy
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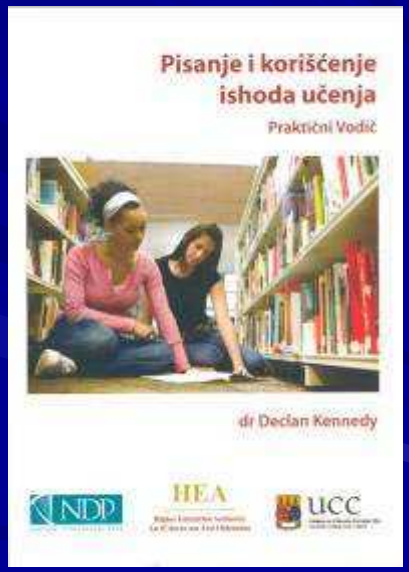
Pisanje i korišćenje ishoda učenja
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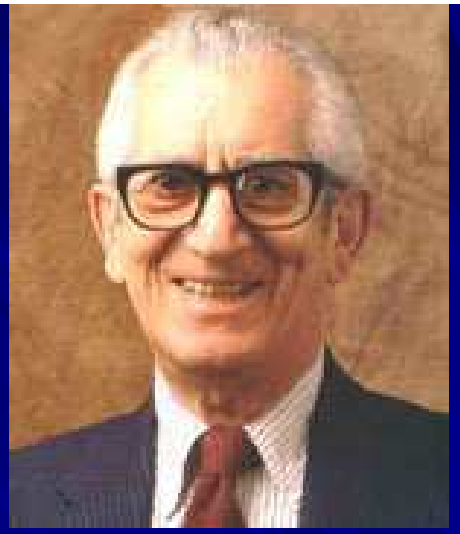
How do I write Learning Outcomes?

Benjamin Bloom (1913 – 1999)

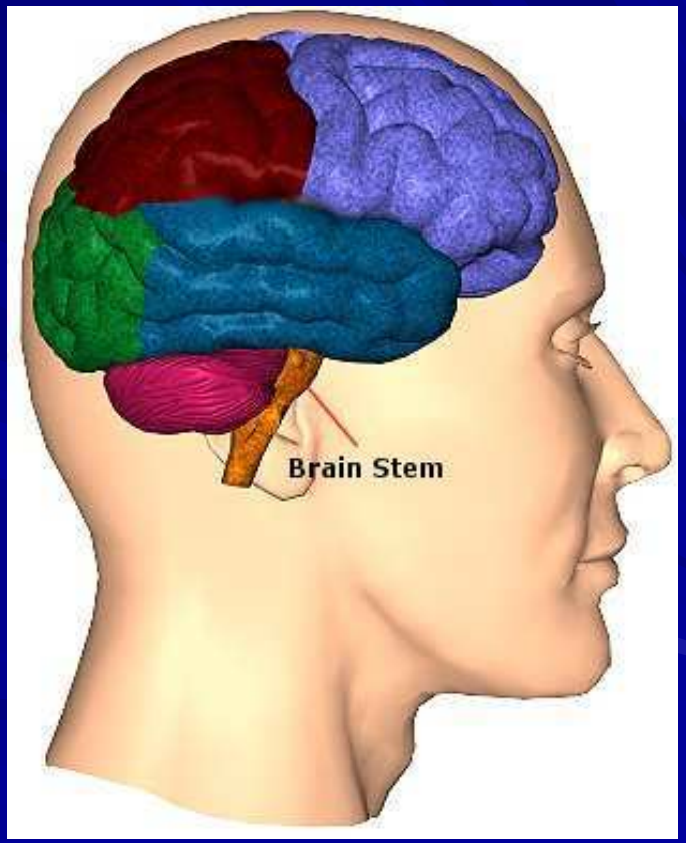


- He looked on learning as a process – we build upon our former learning to develop more complex levels of understanding
- Carried out research in the development of classification of levels of thinking behaviours in the process of learning. PhD University of Chicago in 1942.
- Worked on drawing up levels of these thinking behaviours from the simple recall of facts at the lowest level up to evaluation at the highest level.

Bloom's Taxonomy of Educational Objectives

- Bloom's taxonomy (1956) is a very useful aid to writing learning outcomes.
- The taxonomy consists of a hierarchy of increasingly complex processes which we want our students to acquire.
- Provides the structure for writing learning outcomes
- Bloom's Taxonomy is frequently used by teachers in writing learning outcomes as it provides a ready made structure and list of verbs.

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



- This area is commonly called the **cognitive ("knowing" or "thinking") domain** (involving thought processes).
- Bloom suggested certain verbs that characterise the ability to demonstrate these processes.
- These verbs are the key to writing learning outcomes.
- The list of verbs has been extended since his original publication.
- The "toolkit" for writing learning outcomes!

1. Knowledge - ability to recall or remember facts without necessarily understanding them

- Use action verbs like:

  Arrange, collect, define, describe, duplicate, enumerate, examine, find, identify, label, list, memorise, name, order, outline, present, quote, recall, recognise, recollect, record, recount, relate, repeat, reproduce, show, state, tabulate, tell.

Examples: Knowledge

- *Recall* genetics terminology: homozygous, heterozygous, phenotype, genotype, homologous chromosome pair, etc.
- *Identify* and consider ethical implications of scientific investigations.
- *Describe* how and why laws change and the consequences of such changes on society.
- *List* the criteria to be taken into account when caring for a patient with tuberculosis.
- *Define* what behaviours constitute unprofessional practice in the solicitor – client relationship.
- Outline the history of the Celtic peoples from the earliest evidence to the insular migrations.
- *Describe* the processes used in engineering when preparing a design brief for a client.
- Recall the axioms and laws of Boolean algebra.

2. Comprehension - ability to understand and interpret learned information

- Use action verbs like:

Associate, change, clarify, classify, construct, contrast, convert, decode, defend, describe, differentiate, discriminate, discuss, distinguish, estimate, explain, express, extend, generalise, identify, illustrate, indicate, infer, interpret, locate, predict, recognise, report, restate, review, select, solve, translate.

Examples: Comprehension

- ***Differentiate*** between civil and criminal law
- ***Identify*** participants and goals in the development of electronic commerce.
- ***Discuss*** critically German literary texts and films in English.
- ***Predict*** the genotype of cells that undergo meiosis and mitosis.
- ***Translate*** short passages of contemporary Italian.
- Convert number systems from hexadecimal to binary and vice versa.
- ***Explain*** the social, economic and political effects of World War I on the post-war world.
- ***Classify*** reactions as exothermic and endothermic.
- ***Recognise*** the forces discouraging the growth of the educational system in Ireland in the 19th century.
- ***Explain*** the impact of Greek and Roman culture on Western civilisation.
- ***Recognise*** familiar words and basic phrases concerning themselves….when people speak slowly and clearly.

3. Application: ability to use learned material in new situations, e.g. put ideas and concepts to work in solving problems

- Use action verbs like:

Apply, assess, calculate, change, choose, complete, compute, construct, demonstrate, develop, discover, dramatise, employ, examine, experiment, find, illustrate, interpret, manipulate, modify, operate, organise, practice, predict, prepare, produce, relate, schedule, select, show, sketch, solve, transfer, use.

Examples application

- *Construct* a timeline of significant events in the history of Australia in the 19th century.
- *Apply* knowledge of infection control in the maintenance of patient care facilities.
- *Select* and employ sophisticated techniques for analysing the efficiencies of energy usage in complex industrial processes.
- *Show* proficiency in the use of vocabulary and grammar, as well as the sounds of the language in different styles…..
- *Relate* energy changes to bond breaking and formation.
- *Modify* guidelines in a case study of a small manufacturing firm to enable tighter quality control of production.
- *Show* how changes in the criminal law affected levels of incarceration in Scotland in the 19th century.
- *Apply* principles of evidence-based medicine to determine clinical diagnoses.

4. Analysis: ability to break down information into its components, e.g. look for inter-relationships and ideas (understanding of organisational structure)

- Use action verbs like:

Analyse, appraise, arrange, break down, calculate, categorise, classify, compare, connect, contrast, criticise, debate, deduce, determine, differentiate, discriminate, distinguish, divide, examine, experiment, identify, illustrate, infer, inspect, investigate, order, outline, point out, question, relate, separate, sub-divide, test.

Examples: Analysis

- *Analyse* why society criminalises certain behaviours.
- *Compare* and contrast the different electronic business models.
- *Categorise* the different areas of specialised interest within dentistry.
- *Debate* the economic and environmental effects of energy conversion processes.
- *Identify* and *quantify* sources of errors in measurements.
- *Calculate* gradient from maps in m, km, % and ratio.
- Critically *analyse* a broad range of texts of different genres and from different time periods.
- *Compare* the classroom practice of a newly qualified teacher with that of a teacher of 20 years teaching experience.
- Calculate logical functions for coders, decoders and multiplexers.

5. Synthesis - ability to put parts together

- Use action verbs like:

Argue, arrange, assemble, categorise, collect, combine, compile, compose, construct, create, design, develop, devise, establish, explain, formulate, generalise, generate, integrate, invent, make, manage, modify, organise, originate, plan, prepare, propose, rearrange, reconstruct, relate, reorganise, revise, rewrite, set up, summarise.

Examples: Synthesis

- *Recognise* and formulate problems that are amenable to energy management solutions.
- *Propose* solutions to complex energy management problems both verbally and in writing.
- Assemble sequences of high-level evaluations in the form of a program.
- Integrate concepts of genetic processes in plants and animals.
- *Summarise* the causes and effects of the 1917 Russian revolutions.
- *Relate* the sign of enthalpy changes to exothermic and endothermic reactions.
- *Organise* a patient education programme.

6. Evaluation: Ability to judge value of material for a given purpose

- Use action verbs like:

  Appraise, ascertain, argue, assess, attach, choose, compare, conclude, contrast, convince, criticise, decide, defend, discriminate, explain, evaluate, interpret, judge, justify, measure, predict, rate, recommend, relate, resolve, revise, score, summarise, support, validate, value.

Examples: Evaluation

- Assess the importance of key participants in bringing about change in Irish history
- Evaluate marketing strategies for different electronic business models.
- Appraise the role of sport and physical education in health promotion for young people.
- Predict the effect of change in temperature on the position of equilibrium…
- Summarise the main contributions of Michael Faraday to the field of electromagnetic induction.

Bloom Revisited: Anderson and Krathwohl (2001)

Bloom (1956)

- Knowledge
- Comprehension
- Application
- Analysis
- Synthesis
- Evaluation

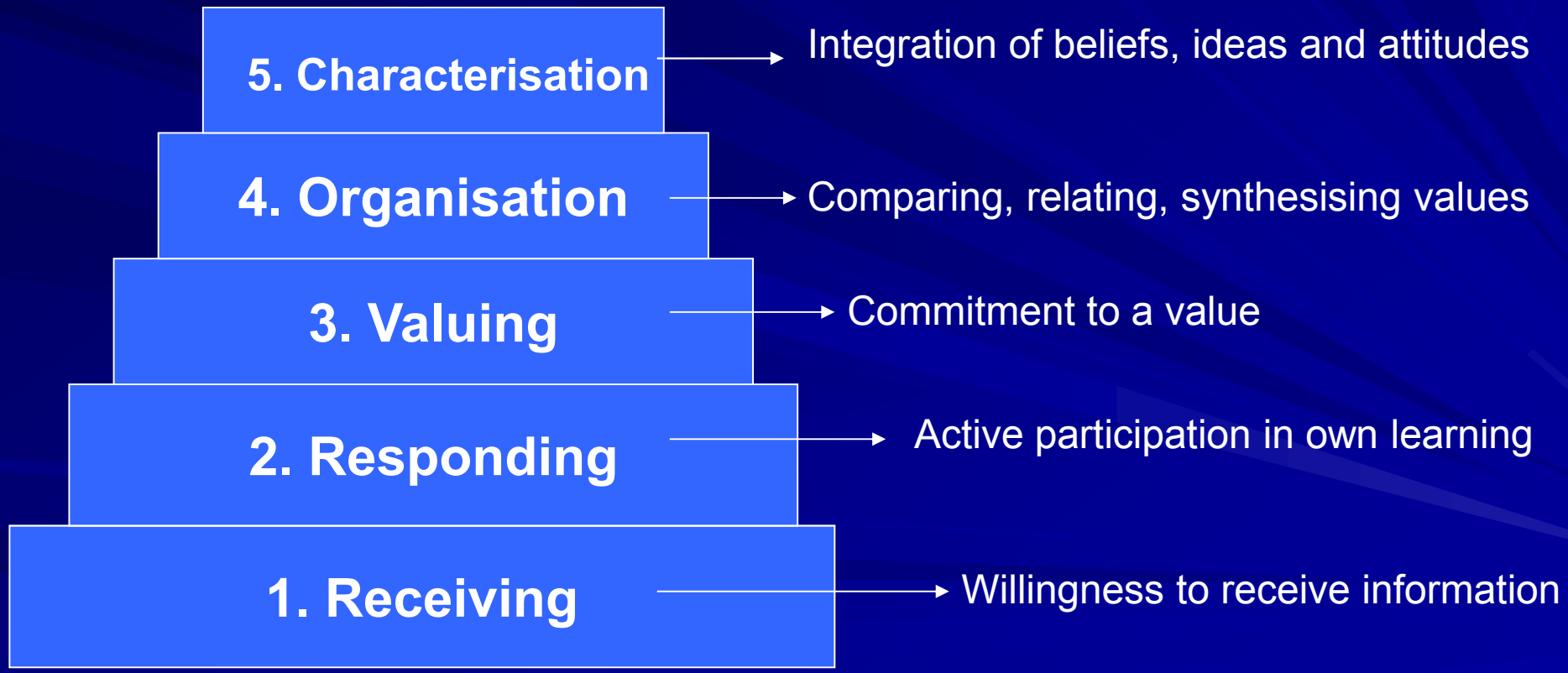
Anderson and Krathwohl (2001)

- To remember
- To understand
- To apply
- To analyse
- To evaluate
- To create

Analysis, Synthesis, Evaluation – Higher Order Thinking Skills

Two other domains in Bloom's Taxonomy

AFFECTIVE DOMAIN ("Feeling") concerned with value issues : involves attitudes.



Active verbs for affective domain

Appreciate, accept, assist, attempt, challenge, combine, complete, defend, demonstrate (a belief in), discuss, dispute, embrace, follow, hold, integrate, order, organise, join, share, judge, praise, question, relate, share, support, synthesise, value.

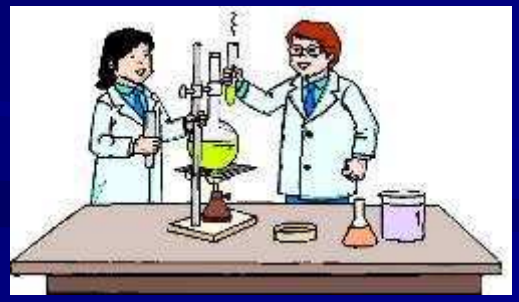
Examples of Learning Outcomes in Affective Domain

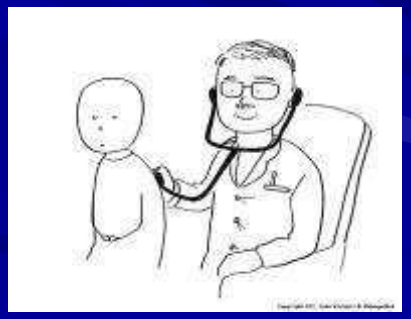
- Accept the need for professional ethical standards.
- Appreciate the need for confidentiality in the professional client relationship.
- Display a willingness to communicate well with patients.
- Relate to participants in an ethical and humane manner.
- Resolve conflicting issues between personal beliefs and ethical considerations.
- Embrace a responsibility for the welfare of children taken into care.
- Participate in class discussions with colleagues and with teachers.

PSYCHOMOTOR ("Doing") DOMAIN:

Work never completed by Bloom.

Involves co-ordination of brain and muscular activity. Active verbs for this domain: bend, grasp, handle, operate, perform, reach, relax, shorten, stretch, differentiate (by touch), perform (skilfully).





Laboratory skills

- *Operate the range of instrumentation specified in the module safely and efficiently in the chemistry laboratory.*
- *Perform titrations accurately and safely in the laboratory.*
- *Construct simple scientific sketches of geological features in the field.*

Clinical Skills

- Perform a comprehensive history and physical examination of patients in the outpatient setting and the general medical wards, excluding critical care settings.
- Perform venipuncture and basic CPR.

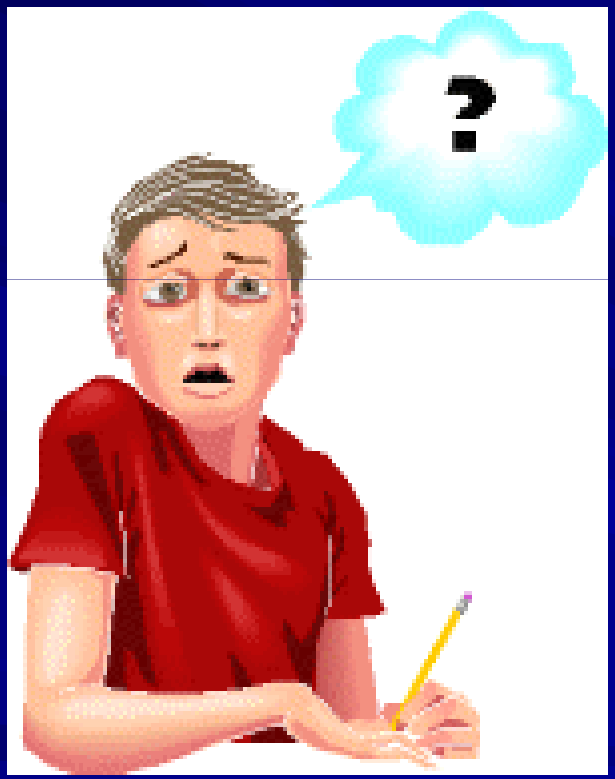
Presentation skills

- Deliver an effective presentation.
- Demonstrate a range of graphic and CAD communication techniques.
- Perform basic voice and movement tasks (theatre studies).

Words of advice …..

- “The key word is DO and the key need in drafting learning outcomes is to use active verbs”. (Jenkins and Unwin, Fry et al.)
- “They [Learning Outcomes] are statements describing observable behaviour and therefore must use ‘action verbs’”… Words like “appreciate” and “understand” do not help students because there are so many interpretations of their meaning. It is more transparent and helpful to be specific about expectations (Morss and Murray).
- Avoid verbs like “know”, “understand”, “be familiar with”, “be exposed to” (Osters and Tiu)
- “Try to avoid ambiguous verbs such as “understand”, “know”, “be aware” and “appreciate”. (Sheffield Hallam Guide).
- “Care should be taken in using words such as ‘understand’ and ‘know’ if you cannot be sure that students will understand what it means to know or understand in a given context” (Univ NSW).
- Certain verbs are unclear and subject to different interpretations in terms of what action they are specifying…… These types of verbs should be avoided: know, become aware of, appreciate, learn, understand, become familiar with. (American Association of Law Libraries).

What are the benefits and potential problems of Learning Outcomes?

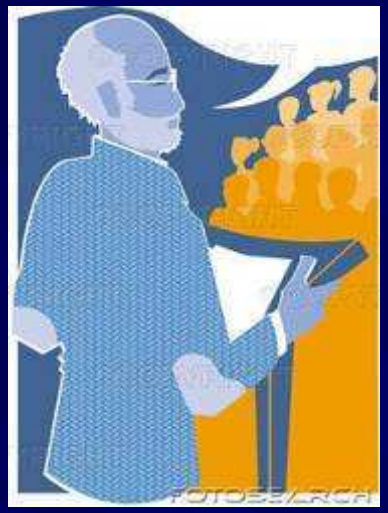


"Learning outcomes represent what is formally assessed and accredited to the student and they offer a starting point for a viable model for the design of curricula in higher education which shifts the emphasis form input and process to the celebration of student learning"

(Allan J, 1996)

The benefits of Learning Outcomes

- Help to explain more clearly to students what is expected of them and thus help to guide them in their studies – motivation and sense of purpose
- Help teachers to focus more clearly on what exactly they want students to achieve in terms of knowledge and skills.
- Help teachers to clarify their thinking about what they want to achieve and the common language of learning outcomes helps to facilitates discussion with colleagues.
- Helps to define the assessment criteria more effectively.



How do I link Learning Outcomes to Teaching and Learning Activities and Assessment?

"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, assessement and standards".

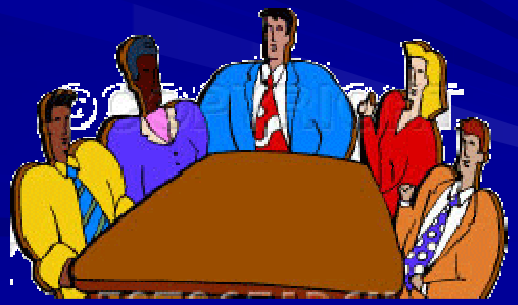
Adam S, 2004

Assessment of Learning Outcomes

- Having designed modules in terms of learning outcomes, we must now find out if our students have achieved these intended 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?*
- Therefore, 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.

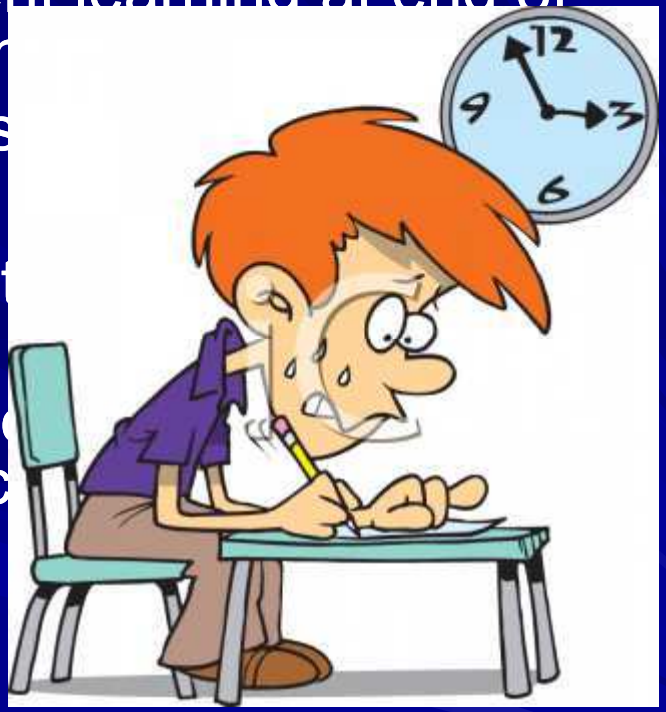
Formative Assessment

- 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 – Assessmen
- Sums up achievement – no other us
- Generates a grade or mark.
- Usually involves assessment using t examination.
- Only a sample of the Learning Outc cannot assess all the Learning Outc



Continuous Assessment

- A combination of summativ
  assessment.
- Usually involves repeated s
  assessments.
- Marks recorded.
- Little or no feedback given.

“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
- *Portfolio :* combination of techniques

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

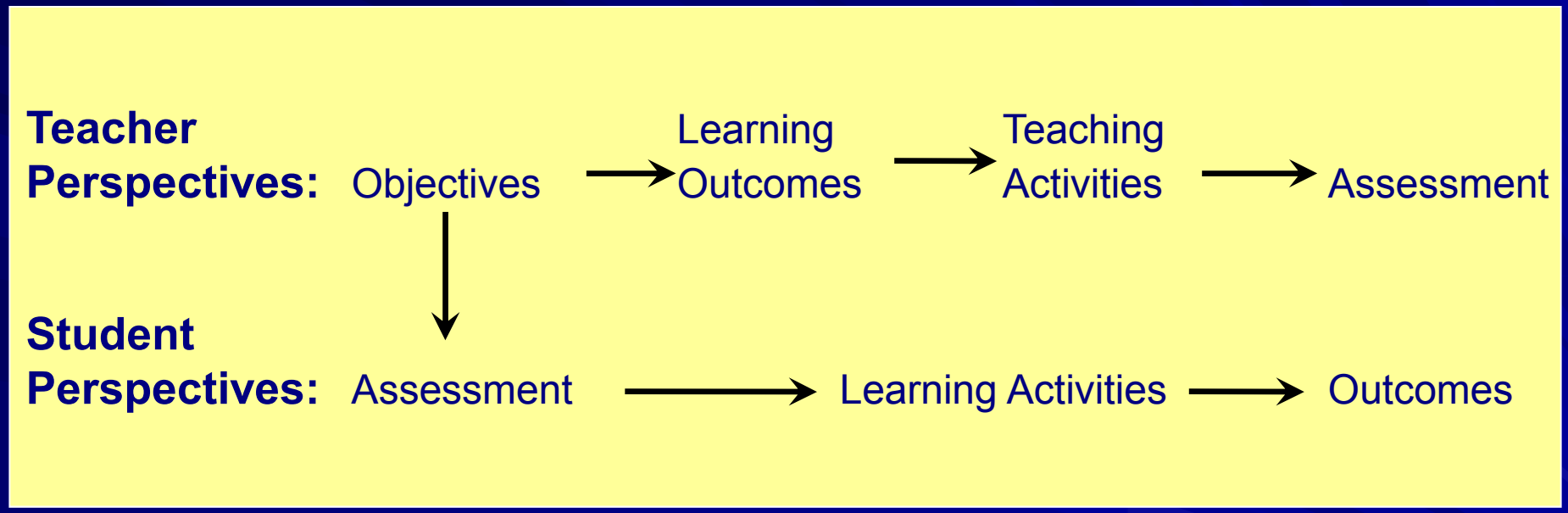
- Important to ensure that there is alignment between teaching methods, learning outcomes and assessment criteria.
- Clear expectations on the part of students of what is required of them are a vitally important part of students' effective learning (Ramsden, 2003)
- This correlation between teaching, learning outcomes and assessment helps to make the overall learning experience more transparent and meaningful for students.
- For the good teacher, learning outcomes do not involve a "paradigm shift".

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

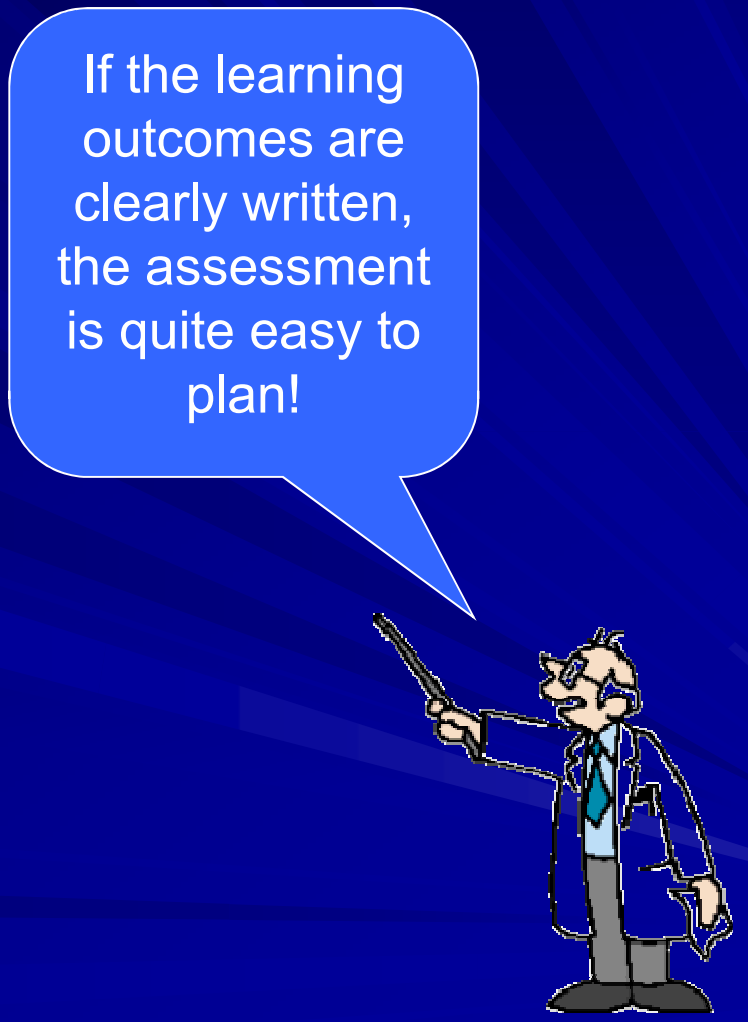
- Alignment refers to what the teacher does in helping to support the learning activities to achieve the learning outcomes.
- The teaching methods and the assessment are aligned to the learning activities designed to achieve the learning outcomes.
- Aligning the assessment with the learning outcomes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

- Constructive alignment is the deliberate linking within curricula of aims, learning outcomes, learning and teaching activities and assessment.
- Learning Outcomes state what is to be achieved in fulfilment of the aims.
- Learning activities should be organised so that students will be likely to achieve those outcomes.
- Assessment must be designed such that students are able to demonstrate that they have met the learning outcomes.
- Constructive alignment is just a fancy name for “joining up the dots”.

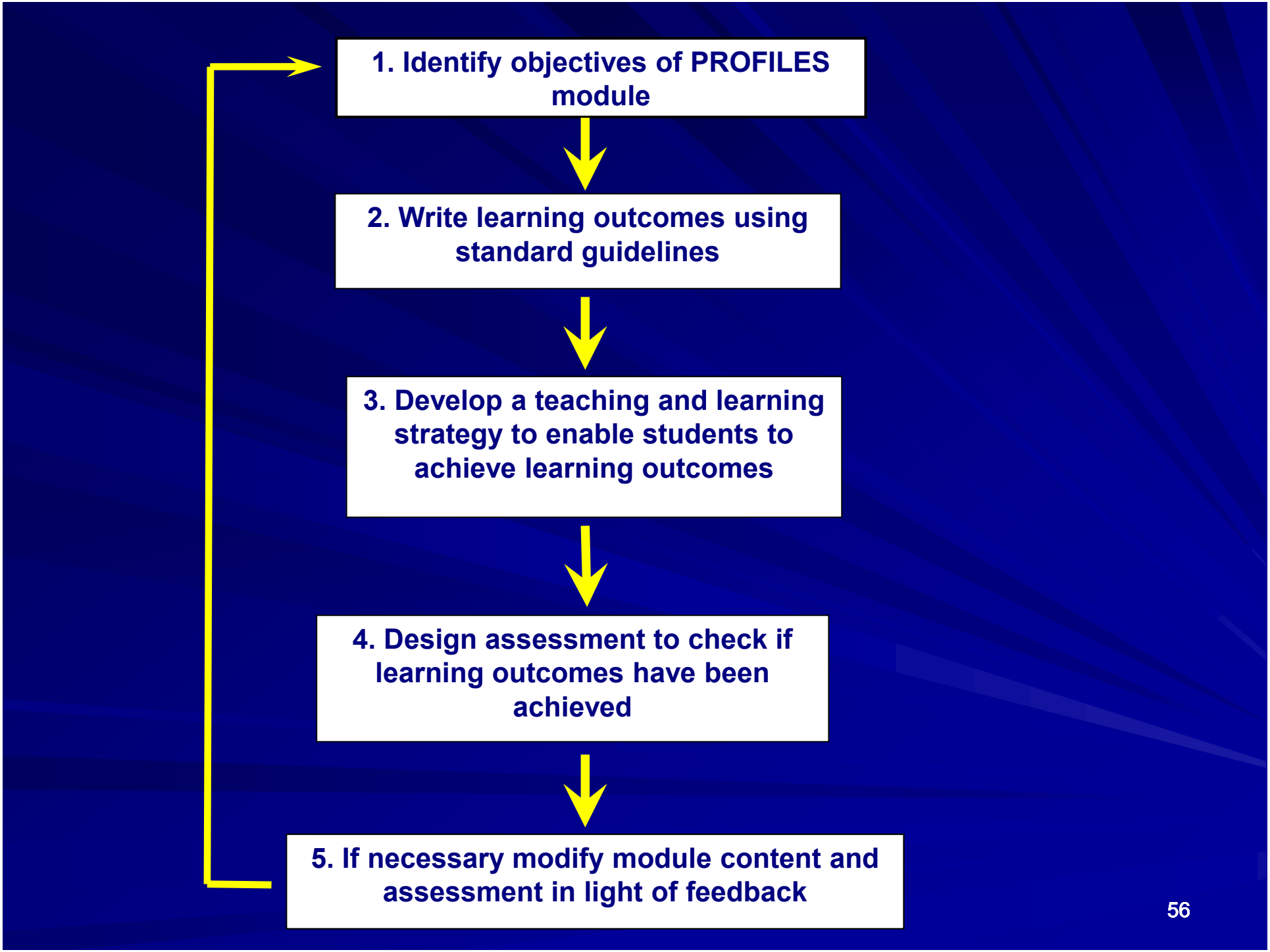
(Morss and Murray, 2005)

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



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)**


1. Identify objectives of PROFILES 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

"Writing Learning Outcomes is a Process not an Event"

Learning Outcomes and Competences – How are they related?

"The relationship between learning outcomes and competences is a complex area – the subject of some debate and no little confusion".

(Adam, 2004)

Some Introductory Points

- There is considerable confusion in the literature with regard to the meaning of the term *competence* and the relationship between competences and learning outcomes.
- Competence is also written as competency (Plural: competences, competencies).

Competence - what does this term mean?

- It is difficult to find a precise definition for the term competence. The situation is summarised by Winterton et al (2005) as follows:

"There is such confusion and debate concerning the concept of 'competence' that it is impossible to identify or impute a coherent theory or to arrive at a definition capable of accommodating and reconciling all the different ways that the term is used.

(Winterton et al., 2005)

Competence in terms of Skill

- “Some take a narrow view and associate competence just with skills acquired by training” - Adam (2004)
- “Competence probably replaces, albeit at a more sophisticated level, the concept of skills. That doesn’t necessarily make it easier to understand what competencies are, let alone how they are to be recognised” - Brown and Knight (1995).

Competence – a broad definition

Competence is “a dynamic combination of attributes, abilities and attitudes. Fostering these competences is the object of educational programmes. Competences are formed in various course units and assessed at different stages. They may be divided into subject-area related competences (specific to a field of study) and generic competences (common to any degree course)”.

The ECTS Users’ Guide (2005)

Competences	A dynamic combination of cognitive and metacognitive skills, knowledge and understanding, interpersonal, intellectual and practical skills, ethical values and attitudes. Fostering competences is the object of all educational programmes. Competences are developed in all course units and assessed at different stages of a programme. Some competences are subject-area related (specific to a field of study), others are generic (common to any degree course). It is normally the case that competence development proceeds in an integrated and cyclical manner throughout a programme.

ECTS Users' Guide (2009)

Competences in Nursing

(Miller et al)

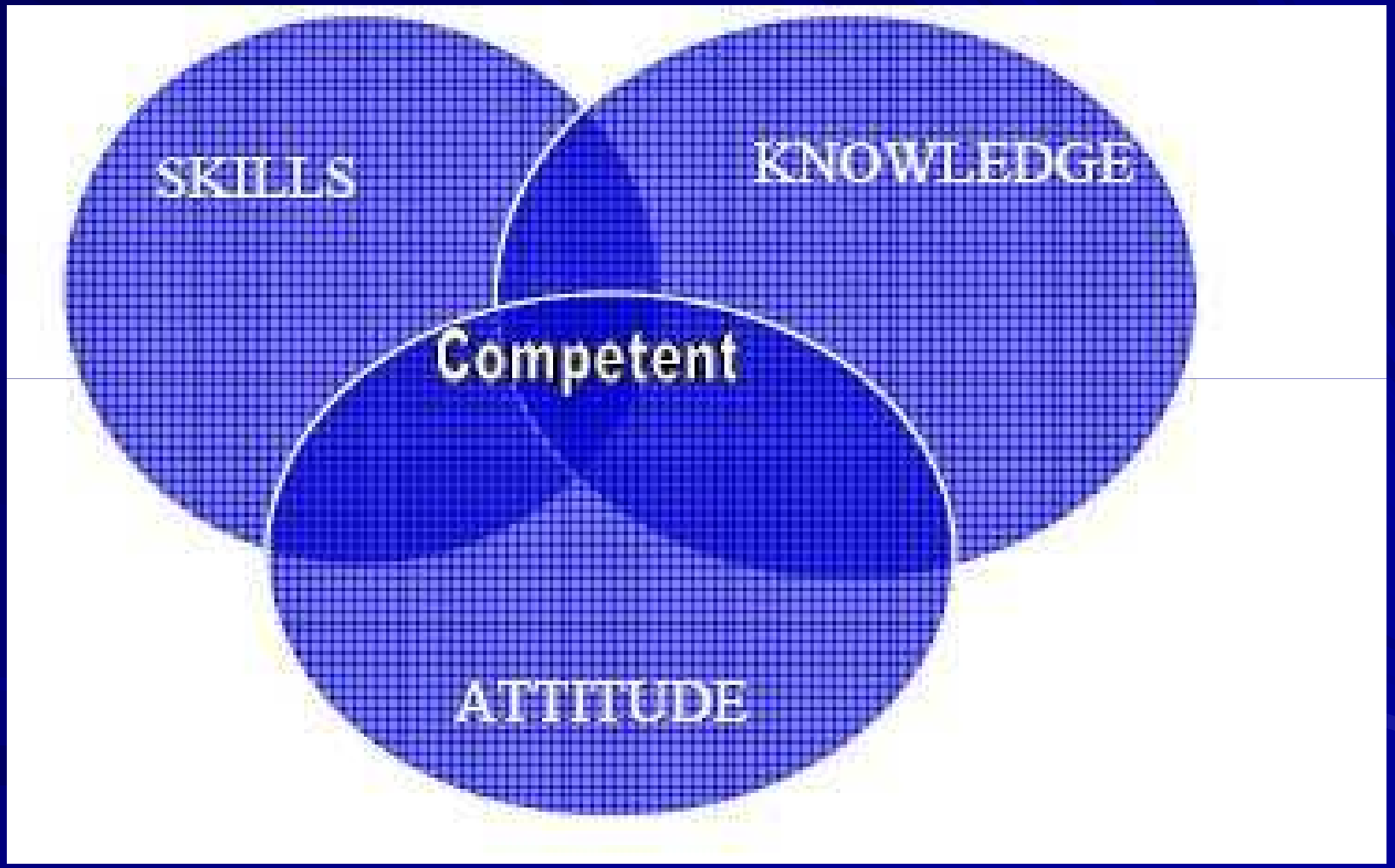
Miller et al discuss two types of competences:

- Narrow view and equate competence with performance, i.e. the ability to perform nursing tasks.
- Broader view of competence in terms the ability of the nurse to integrate cognitive, affective and psychomotor skills when delivering nursing care.

Competence and Competency

- Some authors (Boam and Sparrow, 1992; Hendry, Arthur and Jones 1995; Mitrani, Dalziel and Fitt, 1992; Smith, 1993) use the term competency (plural competencies) when referring to occupational competences.
- However, other authors treat the terms competence and competency as being synonymous (Brown, 1993, 1994; McBeath, 1990).
- Hartle (1995) describes competency as a characteristic of an individual that has been shown to drive superior job performance and refers to visible competencies of knowledge and skills as well as underlying elements of competencies such as characteristics and motives.
- Elkin (1990) associates competences with micro-level job performance and competencies with higher management attributes.

- Burgoyne (1988) distinguishes “being competent” (meeting the demands of the job) from “having competencies” (possessing the necessary attributes to perform competently).
- Woodruffe (1991) describes competency as “an umbrella term to cover almost anything that might directly or indirectly affect job performance”. He attempts to distinguish between competence and competency by describing competence as aspects of the job which an individual can perform with competency referring to a person’s behaviour that underpins competent performance


SKILLS
KNOWLEDGE
Competent
ATTITUDE

Relating competences, objectives and learning outcomes

- The relationship between competences, objectives and learning outcomes is discussed by Hartel and Foegeding (2004) in area of Food Engineering.
- In this paper they define competence as “a general statement detailing the desired knowledge and skills of students graduating from our course or program”.

Competence:

- The student should be able to use the mass and energy balances for a given food process.

Objectives:

- Understand scope of mass balances in food processing systems.
- Understand appropriate use of mole fractions and mass fractions in mass balances

Learning outcomes:

- Describe the general principles of mass balances in steady state systems.
- Draw and use process flow diagrams with labels on flow streams for mass balance problems.
- Solve mass balance problems associated with food processing operations.
- Design and solve mass balances for complex process flow systems, including batch mixing problems, multiple stage flow problems, problems with multiple inflows and outflows, recycle streams and multiple components, and processes where chemical reactions take place.

Hartel and Foegeding (2004)

- The learning outcomes written by Hartel and Foegeding specify precisely what it is expected that the students will be able to do in order to demonstrate that they have acquired this particular competence.


Small is beautiful.
Competence is not a matter of size.
Fiduciaire Fernand Faber

Competence – a “fuzzy” concept (Van der Klink and Boon)

- Van der Klink and Boon (2002) describe competence as a “fuzzy concept”
- On the positive side they state it is a “useful term, bridging the gap between education and job requirements”.

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Competencies: the triumph of a fuzzy concept

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Abstract: This article investigates the current popularity of the concept of competencies. After a brief exploration of perspectives on the concept of competencies, a study will be presented that was conducted in order to gain more insight into the backgrounds of the current status of this concept and to investigate competency-based practices. The study investigated the applications in enterprises and higher education. The last section summarises the main findings and raises some issues that need further elaboration.

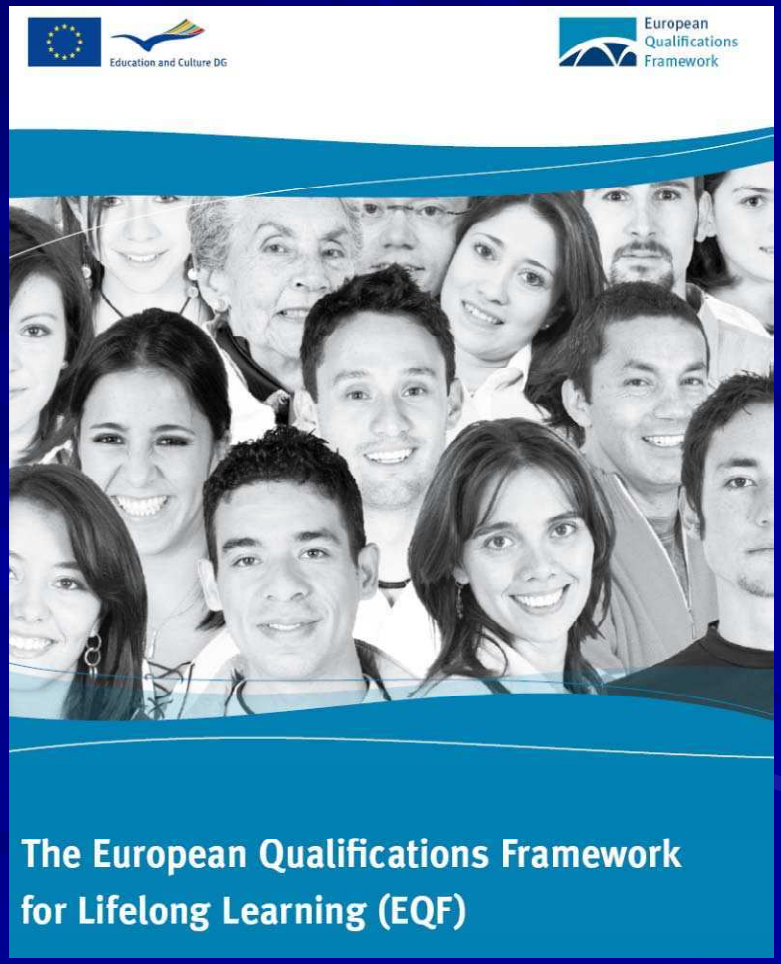
Van der Klink and Boon (2002) attempt to trace the different interpretations of the concept of competence within the educational systems of various countries:

There is considerable confusion about what competency actually means… First, differences can be observed between nations along the lines of different national educational policies and different types of relations between education and the labour market, many of which have an historic origin. In the British approach it refers to the ability to meet the performance standards for functions and professions such as those developed for National Vocational Qualifications (NVQs) in the UK. In the USA, competencies refer to the skills, knowledge and characteristics of persons, that is traits, motives and self-concept, which contribute to performance excellence. ….. More than in the UK or the USA, the German perspective stresses a holistic view of competency. It is not just a random collection of skills and knowledge. Competencies are defined as integrated action programmes that enable individuals to perform adequately in various job contexts within a specific profession

(Van der Klink and Boon, 2002)

European Qualifications Framework for Lifelong Learning (EQF)

- Adopted by EU in 2008.
- A common European reference framework that links together the qualification systems of EU countries.
- A “Translation Device” to make qualifications easier to understand.
- Has 8 levels with a set of descriptors for each level. These descriptors describe the learning corresponding to each level under the heading of knowledge, skills and competence.



- The European Qualifications Framework for Lifelong Learning defines competence as follows: "**Competence" means the proven ability to use knowledge, skills and personal, social and / or methodological abilities, in work or study situations and in professional and personal development**. In the context of the European Qualifications Framework, competence is described in terms of responsibility and autonomy. (EQF 2008).
- The above definition is quoted in the ECTS Users Guide (2009) as is summarised as EQF interpreting competence as "the capacity to transfer knowledge into practice".
- Advice – if you have to write competences use the language of learning outcomes to describe competences.

THE EUROPEAN QUALIFICATIONS FRAMEWORK FOR LIFELONG LEARNING

DESCRIPTORS DEFINING LEVELS IN THE EUROPEAN QUALIFICATIONS FRAMEWORK (EQF)

		KNOWLEDGE	SKILLS	COMPETENCE
Each of the 8 levels is defined by a set of descriptors indicating the learning outcomes relevant to qualifications at that level in any system of qualifications.		In the context of EQF, knowledge is described as theoretical and/or factual.	In the context of EQF, skills are described as cognitive (involving the use of logical, intuitive and creative thinking) and practical (involving manual dexterity and the use of methods, materials, tools and instruments).	In the context of EQF, competence is described in terms of responsibility and autonomy.
LEVEL 6**	The learning outcomes relevant to **Level 6** are	→ advanced knowledge of a field of work or study, involving a critical understanding of theories and principles	→ advanced skills, demonstrating mastery and innovation, required to solve complex and unpredictable problems in a specialised field of work or study	→ manage complex technical or professional activities or projects, taking responsibility for decision-making in unpredictable work or study contexts → take responsibility for managing professional development of individuals and groups
LEVEL 7***	The learning outcomes relevant to **Level 7** are	→ highly specialised knowledge, some of which is at the forefront of knowledge in a field of work or study, as the basis for original thinking and/or research → critical awareness of knowledge issues in a field and at the interface between different fields	→ specialised problem-solving skills required in research and/or innovation in order to develop new knowledge and procedures and to integrate knowledge from different fields	→ manage and transform work or study contexts that are complex, unpredictable and require new strategic approaches → take responsibility for contributing to professional knowledge and practice and/or for reviewing the strategic performance of teams
LEVEL 8****	The learning outcomes relevant to **Level 8** are	→ knowledge at the most advanced frontier of a field of work or study and at the interface between fields	→ the most advanced and specialised skills and techniques, including synthesis and evaluation, required to solve critical problems in research and/or innovation and to extend and redefine existing knowledge or professional practice	→ demonstrate substantial authority, innovation, autonomy, scholarly and professional integrity and sustained commitment to the development of new ideas or processes at the forefront of work or study contexts including research

THE EUROPEAN QUALIFICATIONS FRAMEWORK FOR LIFELONG LEARNING

DESCRIPTORS DEFINING LEVELS IN THE EUROPEAN QUALIFICATIONS FRAMEWORK (EQF)

		KNOWLEDGE	SKILLS	COMPETENCE
Each of the 8 levels is defined by a set of descriptors indicating the learning outcomes relevant to qualifications at that level in any system of qualifications.		In the context of EQF, knowledge is described as theoretical and/or factual.	In the context of EQF, skills are described as cognitive (involving the use of logical, intuitive and creative thinking) and practical (involving manual dexterity and the use of methods, materials, tools and instruments).	In the context of EQF, competence is described in terms of responsibility and autonomy.
LEVEL 3	The learning outcomes relevant to Level 3 are	→ knowledge of facts, principles, processes and general concepts, in a field of work or study	→ a range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools, materials and information	→ take responsibility for completion of tasks in work or study → adapt own behaviour to circumstances in solving problems
LEVEL 4	The learning outcomes relevant to Level 4 are	→ factual and theoretical knowledge in broad contexts within a field of work or study	→ a range of cognitive and practical skills required to generate solutions to specific problems in a field of work or study	→ exercise self-management within the guidelines of work or study contexts that are usually predictable, but are subject to change → supervise the routine work of others, taking some responsibility for the evaluation and improvement of work or study activities
LEVEL 5*	The learning outcomes relevant to Level 5 are	→ comprehensive, specialised, factual and theoretical knowledge within a field of work or study and an awareness of the boundaries of that knowledge	→ a comprehensive range of cognitive and practical skills required to develop creative solutions to abstract problems	→ exercise management and supervision in contexts of work or study activities where there is unpredictable change → review and develop performance of self and others

Learning Outcomes and Competences

Declan Kennedy / Áine Hyland / Norma Ryan

Abstract

There is wide variation in the literature regarding the interpretation of the meaning of the term competence. This interpretation ranges from a description of competence in terms of performance and skills acquired by training to a broad overarching view that encompasses knowledge, understanding, skills, abilities and attitudes. Due to the lack of clarity of the concept of competence, assessment of competences can be very difficult. Some authors warn against associating competence exclusively with skills, others distinguish between the terms competence and competency whilst others treat these terms as being synonymous. The essential problem appears to be that these terms are liberally used as general terms to refer to various aspects of job performance without any attempt being made to give precise definitions of the terms. While various efforts have been made to arrive at a single definition of the term competence, no agreement has been reached and there is still wide variation of meaning between various cultures and between different professions. This is in contrast to the clear definition of the concept of learning outcomes found in the literature. It is recommended that if the term competence is being used, the definition of competence being used in the particular context should be stated and also that competences should be written using the vocabulary of learning outcomes.

Conclusions

- There is no single definition of the term competence. Descriptions of the term competence range from that of a broad overarching attribute to that of a very specific task. This is in contrast with the clear definition of the concept of a learning outcome found in the literature .
- One of the big problems encountered when using competences is that there does not appear to be any clear guidelines on how they should be written. In contrast to this, the guidelines for writing learning outcomes are very clearly laid out in the literature.
- In general, if someone achieves a Learning Outcome they reach a level of competence. Competence may be viewed as a result of achieving a set of Learning Outcomes in the workplace.
- Achieving of Learning Outcomes is a stage on a way to becoming competent, i.e. Learning Outcomes and Competences can complement each other but we must be careful how we define competences.

"One of the reasons for the debate about the usefulness of managerial competence may be the soft focus and blurred edges of the term 'competence'. Social science has the habit of taking a word from our common vocabulary and altering the meaning by it adoption as a technical or academic term. This process is still happening to 'competence' and a common consensus has yet to be established as to what the word should mean when used in management applications.

(Brown, 1994)

Recommendations

- It is obvious from the literature that within certain professions, the term competence has a shared meaning. Hence, there is no problem with using the concept of competence since there is a common understanding of its meaning among the members of that profession.
- The problem arises when the term competence is used in a general context without defining what is meant by the term.
- Given the considerable confusion in the literature, if the term competence must be used, then its meaning needs to be clearly defined for the context in which it is being used.

- Therefore, in order to avoid confusion it is recommended that when using the term competence, the following guidelines should be followed:

1. State the definition of competence that is being used in the particular context.
2. To ensure clarity of meaning, write competences using the vocabulary of learning outcomes, i.e. express the required competence in terms of the students achieving specific programme learning outcomes or module learning outcomes.

- Since there is not a common understanding of the term competence, learning outcomes have become more commonly used than competences when describing what students are expected to know, understand and/or be able to demonstrate at the end of a module or programme.
- The “fuzziness” of competences disappears in the clarity of learning outcomes!

That's all Folks. Hope you learned something about Learning Outcomes!

References

- Adam, S. (2004) *Using Learning Outcomes*: *A consideration of the nature, role, application and implications for European education of employing learning outcomes at the local, national and international levels*. Report on United Kingdom Bologna Seminar, July 2004, Herriot-Watt University.
- Allan, J (1996) Learning Outcomes in Higher Education. Studies in Higher Education, 21 (1) 93 - 108
- Boam, R. and Sparrow, P. (Eds) (1992) *Designing and achieving competency*, London: McGraw-Hill
- Boni A and Lozano F (2007) The generic competences: an opportunity for ethical learning in the European convergence in higher education. Higher Education 54: 819 – 831.
- Baume, D. (1999). *Specifying Aims and Learning Outcomes* Milton Keynes: Open University.
- Biggs J, (2003) Aligning Teaching and Assessing to Course Objectives. *Teaching and Learning in Higher Education: New Trends and Innovations*. University of Aveiro, 13 – 17 April 2003
- Biggs, J. (2005) Teaching for Quality Learning at University (2003). Wiltshire: Open University Press ISBN 0335211682
- Bingham, J. (1999) *Guide to Developing Learning Outcomes*, The Learning and Teaching Institute Sheffield Hallam University, Sheffield.
- Black, P and William, D (1998) Inside the Black Box: Raising Standards through Classroom Assessment, London: Kings College.

- Bloom, B. S., Engelhart, M., D., Furst, E.J, Hill, W. and Krathwohl, D. (1956) *Taxonomy of educational objectives. Volume I: The cognitive domain.* New York: McKay.
- Bloom, B.S., Masia, B.B. and Krathwohl, D. R. (1964). *Taxonomy of Educational Objectives Volume II : The Affective Domain..* New York: McKay.
- Brown, R.B. (1993) 'Meta-competence: a recipe for reframing the competence debate', *Personnel Review*, 22(6): 25-36.
- Brown, R.B. (1994) 'Reframing the competency debate: management knowledge and meta-competence in graduate education', *Management Learning*, 25(2): 289-99.
- Burgoyne, J. (1988a) *Competency Based Approaches to Management Development*, Lancaster: Centre for the Study of Management Learning.

- Capel, S, Leask, M and Turner, T (1997). Learning to Teach in the Secondary School. London: Routledge.
- Chambers, D.W. (1994). Competencies: a new view of becoming a dentist. *J Dent Education* (58) 342-345
- Cockerill, T. (1989) 'The kind of competence for rapid change', *Personnel Management*, September, 52-56
- Council of Europe, Seminar on Recognition Issues in the Bologna Process, Lisbon, 2002. Available at: http://www.coe.int
- Dave, R H (1975) *Developing and Writing Behavioural Objectives* (R J Armstrong, ed.) Educational Innovators Press
- Donnelly, R and Fitzmaurice, M. (2005). Designing Modules for Learning . In: *Emerging Issues in the Practice of University Learning and Teaching*, O'Neill, G et al. Dublin : AISHE.

- Dooley, K. E., Lindner, J. R., Dooley, L. M. and Alagaraja, M. (2004). Behaviorally anchored competencies: evaluation tool for training via distance., *Human Resource Development International*, 7(3): 315-332.
- Elkin, G. (1990) 'Competency-based human resource development', *Industrial and Commercial Training*, 22(4): 20-25
- ECTS Users' Guide (2005) Brussels: Directorate-General for Education and Culture. Available online at: http://ec.europa.eu/education/programmes/socrates/ects/doc/guide_en.pdf
- ECTS Users' Guide (2009). Available at *ec.europa.eu/education/lifelong-learning-policy/doc/**ects**/**guide**_en.pdf*
- European Commission (2008) European Qualifications Framework for Lifelong Learning
- Fry, H., Ketteridge, S., Marshall (2000) *A Handbook for Teaching and Learning in Higher Education*. London: Kogan Page.
- Fung M, Lee W and Wong S () A new measure of generic competencies.
- Gibbs, A, Kennedy D and Vickers A (2012) Learning Outcomes, Degree Profiles, Tuning Project and Competences. Journal of the European Higher Education Area 15 (5) 71 – 87

- Hartel, .R.W. and E.A. Foegeding (2004). *Learning: Objectives, Competencies, or Outcomes*. Journal of Food Science Education, (3) 69 – 70.
- Hartle, F. (1995) *How to re-engineer your Performance Management Process*, London: Kogan Page
- Hendry, C., Arthur, M.B. and Jones, A.M. (1995) *Strategy through People: Adaptation and Learning in the Small-Medium Enterprise*, London: Routledge.
- HETAC (2006) *Explanatory Guidelines on the Direct Application to HETAC for a Named Award*. Dublin: Higher Education and Training Awards Council.
- Huba, M.E. & Freed, J. E. (2000). Learner-centered assessment on college campuses. Shifting the focus from teaching to learning. Needham Heights, MA: Allyn & Bacon.
- Jarvis, P. (1985) The sociology of adult and continuing education. London: Croom Helm.
- Jenkins, A. and Unwin, D. *How to write learning outcomes*. See the following URL:

http://www.ncgia.ucsb.edu/education/curricula/giscc/units/format/outcomes.html

- Kendall Phillips L. (1994) The Continuing Education Guide: the CEU and Other Professional Development Criteria. Iowa: Hunt Publishing.
- Kennedy D, Hyland A and Ryan N (2006) Writing and using Learning Outcomes, Bologna Handbook, Implementing Bologna in your Institution, C3.4-1, 1 – 30.
- Kennedy, D (2007) *Writing and Using Learning Outcomes – A Practical Guide*. Quality Promotion Unit, University College Cork. Available from www.NAIRTL.ie
- Kennedy D, Hyland A and Ryan N (2009) Learning Outcomes and Competences, Bologna Handbook, Introducing Bologna Objectives and Tools, B2.3-3, 1 – 18.
- McBeath, G. (1990) Practical Management Development: *Strategies for Management Resourcing and Development in the 1990s*, Oxford: Blackwell
- Messick, S. (1975) The standard problem: meaning and values in measurement and evaluation. American Psychologist October 1975 : 955-966
- Messick, S. (1982) Abilities and Knowledge in Educational Achievement Testing: The Assessment of Dynamic Cognitive Structures. Princeton: New Jersey: Education Testing Service.
- Miller, C, Hoggan, J., Pringle, S. and West, C. (1988) Credit Where Credit's Due. Report of the Accreditation of Work-based Learning Project. Glasgow. SCOTVEC.
- Mitriani, A., Dalziel, M and Fitt, D. (1992) *Competency Based Human Resource Management*, London: Kogan Page.

- Moon, J. (2002). The module and Programme Development Handbook. Kogan Page: London.
- Morss, K and Murray R (2005) Teaching at University. London: Sage Publications ISBN 1412902975
- Neary, M. (2002). Curriculum studies in post-compulsory and adult education. Cheltenham: Nelson Thornes.
- Oliver et al (2008). Curriculum structure: principles and strategy. European Journal of Dental Education. (12) 74 – 84.
- Ramsden, P (2005) *Learning to teach in Higher Education*, London: Routledge.
- Shuell, T. J. (1986) Cognitive conceptions of learning. Review of Educational Research, 56, 411 – 436.
- Smith, B. (1993) 'Building managers from the inside out: competency based action learning', *Journal of Management Development*, 12, 1: 43-8
- Tate, W. (1995) Developing Managerial Competence: A Critical Guide to Methods and Materials, London: Gower.
- Training Agency (1989) Development of Accessible Standards for National Certification Guidance: Note No. 1 Sheffield Employment Department/Training Agency.

- Van der Klink, M and Boon, J. (2002) Competencies: The triumph of a fuzzy concept. *International Journal Human Resources Development and Management*, 3(2), 125 – 137.
- Winterton J, Delamare-Le Deist F and Stringfellow E (2005) Typology of knowledge, skills and competences: clarification of the concept and prototype. CEDEFORP: Tolouse. Available at: http://www.ecotec.com/europeaninventory/publications/method/CEDEFOP_typology.pdf
- Wolf, A. (1989) Can competence and knowledge mix? In J. W Burke (ed). Competency-based Education and Training. Lewes: Falmer Press.
- Woodruffle, C. (1991). Competent by any other name., *Personnel Management,* September, 30-31.

References – Web Sites

Bologna Working Group on Qualifications Frameworks (2004). Report on "A Framework for Qualifications of the European Higher Education Area".

Bologna Process Stocktaking London 2007. Available at:
www.ond.vlaanderen.be/hogeronderwijs/**bologna**/documents/WGR**2007**/**Stocktaking**_report**2007**.pdf

DeSeCo projet : http://www.deseco.admin.ch/

ECTS Users' Guide (2005) Brussels: Directorate-General for Education and Culture. Available online at:
http://ec.europa.eu/education/programmes/socrates/ects/doc/guide_en.pdf

ECTS Key Features: http://www.bologna.msmt.cz/files/ECTSKeyFeatures.pdf
National Qualifications Frameworks Development and Certification – Report from Bologna Working Group on Qualifications Frameworks. May 2007
http://www.ond.vlaanderen.be/hogeronderwijs/bologna/documents/Working_group_reports_2007.htm

Framework website**:** **www.nfq.ie**

National Qualifications Authority of Ireland**:** **www.nqai.ie**

OECD; http://www.oecd.org/dataoecd/47/61/35070367.pdf

Tuning Educational Structures in Europe: http://tuning.unideusto.org/tuningeu/

Verification of Compatibility of Irish National Framework of Qualifications with the Framework for Qualifications of the European Higher Education Area - Summary of Final Report – November 2006
http://www.nqai.ie/en/International/VerificationofCompatibilityofIrishNationalFrameworkofQualifications/File,1797,en.doc

www.bologna.ie