A learning outcomes approach to Radiography Education
Developing assessable learning outcomes

This presentation is intended for use by a group of radiography educators in a workshop environment
Before you start

- Make sure you have with you the following items:
  - Your radiography curriculum
  - Several module outlines including module content and assessment
  - Copy of your learning & teaching strategy
Main Aim

To assist course developers in ensuring a clear alignment between learning outcomes, teaching and learning methods, and assessment in the programmes they design.
Context
- learning outcomes approach

✦ The development of a Programme Specification
✦ Framework for HE Qualifications
✦ Benchmark statements
✦ Scholarship & research regarding good practice to underpin LTA methods - Constructive Alignment
What is a Programme Specification?

‘A programme specification is a concise description of the intended outcomes of learning from a higher education programme, and the means by which these outcomes are achieved and demonstrated’

UK Quality Assurance Agency Guidelines p.3
What is a framework for HE qualifications?

Please click on the following link created February 2005 by the Bologna Working Group on Qualifications Framework

Be aware that this is a very large document and may take some time to load
What are Benchmark Statements?

Benchmark statements describe the attributes, skills and capabilities that a graduate with an honours degree in a specific subject might be expected to have. Each statement has been written by a group of academics and other specialists (such as representatives from professional bodies, industry and commerce) from the subject area.

UK QAA 2005
Approaches to curriculum design

Traditionally curriculum design has always started with

- **Course content**, which is then used to decide:
  - the teaching method (i.e. how the content will be covered)
  - and subsequently how it will be assessed
Approaches to curriculum design

- The ‘outcomes-based’ approach has emerged over the last few decades where the focus is on,
- **not** the content that the student should have accumulated,
- **but** what they are able to **do** by the end of the programme/unit or module.
Constructive Alignment

- This approach was developed by Prof John Biggs (Biggs, 1999) as the underpinning concept behind the development of programme specifications, declarations of intended learning outcomes (ILOs) and assessment criteria, and the use of criterion based assessment.

- Please visit this UK Higher Education Academy for more information.
  - Click here on Constructive Alignment
Diagram of Constructive Alignment

Learning outcomes

Teaching/learning activities

Expressed as verbs that the students have to enact
verbs chosen to reflect level

Assessment tasks

evaluate how well outcomes are demonstrated

Adapted from Biggs, J (1999) Teaching for quality learning at University OU Press
Understanding level descriptors

Please click onto this link which provides a description of levels used by the HENRE co-ordinating institution

Click here
Activity 1 Understanding of level descriptors

- Working with a partner, try to apply level descriptors to your subject at a specific level. Just one or two examples each.

  e.g. radiographic anatomy level 1,

  - Knowledge: a knowledge of the main concepts in the field of bony anatomy of the upper limb

  - Analysis: can analyse different dose requirements with reference to key concepts of radiation absorption in bones of the upper limb
Module Development 1.

Identify aim of the module

Level descriptors

Translate level descriptors into subject descriptors

Activity 2 Deciding on the aim of the module (unit)

An aim is a statement of general teaching intention. It may also include information regarding such things as coverage, content and relationship to other learning.

For example:

The aim of this module is to further develop students’ understanding of the mechanisms of causation of likely injuries occurring in the upper limb (shoulder to digits)
Module Development 2.

- *Writing intended learning outcomes (ILOs)*
a. What are learning outcomes?

The UK Quality Assurance Agency (QAA) does not stipulate the categories of outcomes in detail but lists:

Knowledge and Understanding
Skills and other attributes

These broad categories are used in some Programme Specifications but you may wish to break the latter part down into:

- **Key skills**: communication, numeracy, the use of information technology and managing own performance, problem solving and working with others
- **Cognitive skills**, such as an understanding of methodologies or ability in critical analysis;
- **Subject specific skills**, such as professional skills, laboratory skills, practical skills etc. etc.

(from Dearing report)
b. Writing learning outcomes

- **Be written in the future tense**

- **Identify important learning requirements or major achievement by the students. They should not include lots of curriculum detail**

- **Be limited to between 5 & 8 for a module (unit) otherwise you are specifying too much detail which will be inflexible and unmanageable when you come to assess it**

- **Be essential: achievement of each learning outcome is essential to pass the module. It should set the threshold (pass level) standard**
b. Writing learning outcomes continued

- Be achievable and realistic. *This is what students accepted onto the course should be able to achieve not what the best students can achieve*

- Be assessable (measurable)

- *Use language which the student can understand*

- Relate to explicit level descriptors

adapted from Gosling & Moon, & Oxford Brookes University
**Intended Learning outcomes (ILOs)** can be written for:

Additional learning that students may gain from a module, but which isn’t essential to pass the module (This can show itself in the marking criteria where students can obtain higher grades for going beyond the threshold requirements)
c. Notes continued

There may be aspects of anticipated learning in a module, often to do with general learning skills, which, unless they are to be assessed will not usually be specified for each module.

- e.g. work independently
  - manage own time
  - work effectively with others
d. Example of a learning outcome

A learning outcome should include:
1. A verb: What the person should be able to do
2. Word/s that describe on what or with what the learner is acting
3. Word/s that indicate the nature of the performance required

*Example:* Be able to critically reflect on his/her placement experience such that s/he can describe their learning in general terms and make appropriate changes to their working practice

**Key:**
- what they can do
- on what the learner is acting
- the nature of the performance required
Activity 3 Reflecting on learning outcomes

Using the description of a module you are familiar with, look at the aim and learning outcomes

Consider the extent to which they meet:
Criteria for writing outcomes
Clarity and appropriateness regarding level

Try to rewrite one or two if possible taking into account the use of appropriate verbs and level descriptors.
All learning at whatever level can be expressed in terms of outcomes to be demonstrated.

Modules of learning are described in terms of their learning outcomes and assessment criteria.

These, rather than the mode of delivery, form the basis upon which they are assigned a specified number of credits at a given level.
e. Principles regarding ILOs-continued

- Any given module can be assigned to only one level

- Learning outcomes should be as clear and unambiguous as possible

- Learning outcomes identify the essential learning to be achieved to merit the award of credit

(from Gosling & Moon 2002)
e. Principles regarding ILOs continued

- Assessment criteria should specify how satisfactory performance of the module’s learning outcomes are to be demonstrated.

- Assessment criteria should encourage learning at the appropriate level.

- Learning outcomes should enable employers, schools, parents, prospective students and others to understand the achievements and attributes of students who have successfully completed a given programme of study.
An outcomes-based approach should contribute to international mobility of students by facilitating comparability of standards between qualifications framework for higher education.

An outcomes-based approach should facilitate student and graduate mobility and help identify potential progression routes, particularly in the context of lifelong learning.
e. Principles regarding ILOs—continued

- An outcomes-based approach should facilitate student and graduate mobility and help identify potential progression routes, particularly in the context of lifelong learning.

- Identifying learning outcomes should assist higher education institutions (HEIs), their external examiners (UK HEIs) and external quality assurance reviewers to assure quality and standards, by providing an important point of reference for setting and assessing standards.
Module Development 3

Identify aim of the module

Write learning outcomes of module

Design assessment task/s

Define threshold assessment criteria

Translate level descriptors into subject descriptors

Level descriptors

Provide incentive for higher achievement through grading assessment criteria

Module Development 3
Assessment design & criteria

- Assessing different types of outcome
  - i.e. fit for purpose

- (e.g. you cannot include teamwork skills, problem solving, writing for different audiences in outcomes, if you assess with an essay and an unseen exam)
Assessing different types of learning

“The range of assessment methods to choose from is much wider than is often realised. Yet more than 80% of assessment in Universities comprises essays, reports, and the more traditional time-constrained exams” (Brown et al 1996).

They have also tended to emphasise ‘knowing’ over ‘doing’ and have tended to assess a fairly limited range of skills.

Increasing the range of assessment tasks is not that difficult if a little imagination is used and an effort is taken to consider how any task combines a range of different skills and knowledge.
Module Development 4

- Identify aim of the module
- Write learning outcomes of module
- Design assessment task/s
- Define threshold assessment criteria
- Develop a teaching strategy to enable learners to reach the learning outcomes/assessment criteria

Level descriptors
- Translate level descriptors into subject descriptors
- Provide incentive for higher achievement through grading assessment criteria
- Define threshold assessment criteria

From Gosling & Moon (2002) How to use learning outcomes and assessment criteria 3rd edn SEEC
Module Development 4. Developing a learning & teaching strategy

- At an early stage, the details of the learning & teaching strategy may only be worked out at general level.

- e.g. mixture of classroom activity, directed learning tasks and independent study.
Learning & Teaching Strategy

Strategy might involve:

- work based learning
- supported distance learning
- combination of large & small group sessions
- problem-based learning
- visits
- field study
- independent group work
Key aspects in choosing a strategy

What is important, is that the teaching strategy is fit for its purpose. For example, if the learning outcomes include demonstration of skills (e.g. problem solving), then the teaching strategy must provide the opportunity for the student to learn about the skill, practice the skill (ideally receiving formative feedback) and demonstrate it.
Key aspects in choosing a strategy

- In addition, the teaching strategy should take into account the factors that promote high quality learning:
  
  e.g. clear structure to the curriculum, interaction, activity, clear motivational context
Key aspects, continued

- The teaching strategy needs to pay attention to resources available for teaching the programme (staffing, accommodation, equipment, etc)

- The teaching strategy needs to relate to the level of the student, encouraging greater independence in learning as students progress up the levels.

(e.g. significant contact with staff is likely to aid retention of students at level 1 and courses may wish to determine their teaching strategy for different modules across a programme with that in mind)
Module Development

Level descriptors

Translate level descriptors into subject descriptors

Identify aim of the module

Write learning outcomes of module

Design assessment task/s

Define threshold assessment criteria

Develop a teaching strategy to enable learners to reach the learning outcomes/ assessment criteria

Provide incentive for higher achievement through grading assessment-criteria

Develop the module and rethink it

From Gosling & Moon (2002) How to use learning outcomes and assessment criteria 3rd edn SEEC
STAGE 6 Develop the module & rethink it

- Deliver the module & evaluate it in terms of the intended learning outcomes
- Make any necessary modifications following your reflection
Activity 4

- Work on your own or with a colleague
- Take one of the outcomes that you worked on before and note some ideas about how you could assess the learning
- Particularly think about assessment tasks that might encompass several of the ILOs
- Think about the timing of assessment in the module
Module Development

Identify aim of the module

Write learning outcomes of module

Design assessment task/s

Define threshold assessment criteria

Develop a teaching strategy to enable learners to reach the learning outcomes/assessment criteria

Level descriptors

Translate level descriptors into subject descriptors

Provide incentive for higher achievement through grading assessment criteria

Develop the module and rethink it

From Gosling & Moon (2002) How to use learning outcomes and assessment criteria 3rd edn SEEC
References & Bibliography

- Biggs J 1999 Teaching for Quality Learning at University SRHE & Open University- revised 2003
- Biggs J 2003 Aligning Teaching and Assessment to curriculum objectives LTSN Centre
- Bloxham S 2003 Matching outcomes to LTA methods UCSM
- Gosling & Moon 2001 How to use learning outcomes and assessment criteria SEEC
- www.qaa.ac.uk
HENRE

• HENRE is thematic network co-financed by the European Commission and co-ordinated by St Martin’s College, UK

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