How to design learning outcomes in higher education?

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1. Content of the workshop

1. Getting acquainted
2. Presentation
3. Assignments
4. Evaluation

2. Content of the presentation

1. Background and definitions
2. Tools for designing programmes based on learning outcomes
3. Assessment of learning outcomes

2.1 Background: educational shift (1/3)

- From an input-based approach to an output-based approach
- From a teacher-centred to a student-centred approach
- From teaching objectives to learning outcomes

2.1 Background: educational shift (2/3)

- View of the educational process:
  - I: Education is an input-based process expressed in workload and length of studies (hrs, sem, years).
  - O: Education is an output-based process expressed in the knowledge and skills (to be) achieved by the learner.
- View of the employer:
  - I: What has a graduate been taught? Which diploma does s/he have?
  - O: What can a graduate do? Which knowledge and skills can this graduate bring to my organisation?

2.1 Background: educational shift (3/3)

- View of the teacher:
  - I: What do I want to teach?
  - O: What do they have to know and be able to do (in my discipline / specialisation, in the labour market)?

- View on the degree:
  - I: Proof of participation and successful completion of a programme
  - O: Recognition of achieved learning outcomes

2.1 Background: definitions

INTENDED LEARNING OUTCOMES:

"statements of what a learner is expected to know, understand and/or be able to do at the end of a period of learning

TEACHING OBJECTIVES:

"specific statements of teaching intention which indicate the subjects that a teacher intends to cover in a block of learning"

2.1 Background: more definitions

COMPETENCES:

"combinations of attributes in terms of knowledge and its application, skills, responsibilities and attitudes a person has to perform in a professional context"

ASSESSMENT CRITERIA:

"descriptions of what the learner is expected to do in order to demonstrate that a learning outcome has been achieved"

2.1 Background: Bologna (1999) declaration

- commits countries to strive to “the most competitive and dynamic knowledge-based economy in the world".

- seeks to “enhance the attractiveness and competitiveness of higher education institutions in Europe by the creation of the European Higher Education Area by 2010”.

2.1 Background: Benefits of learning outcomes

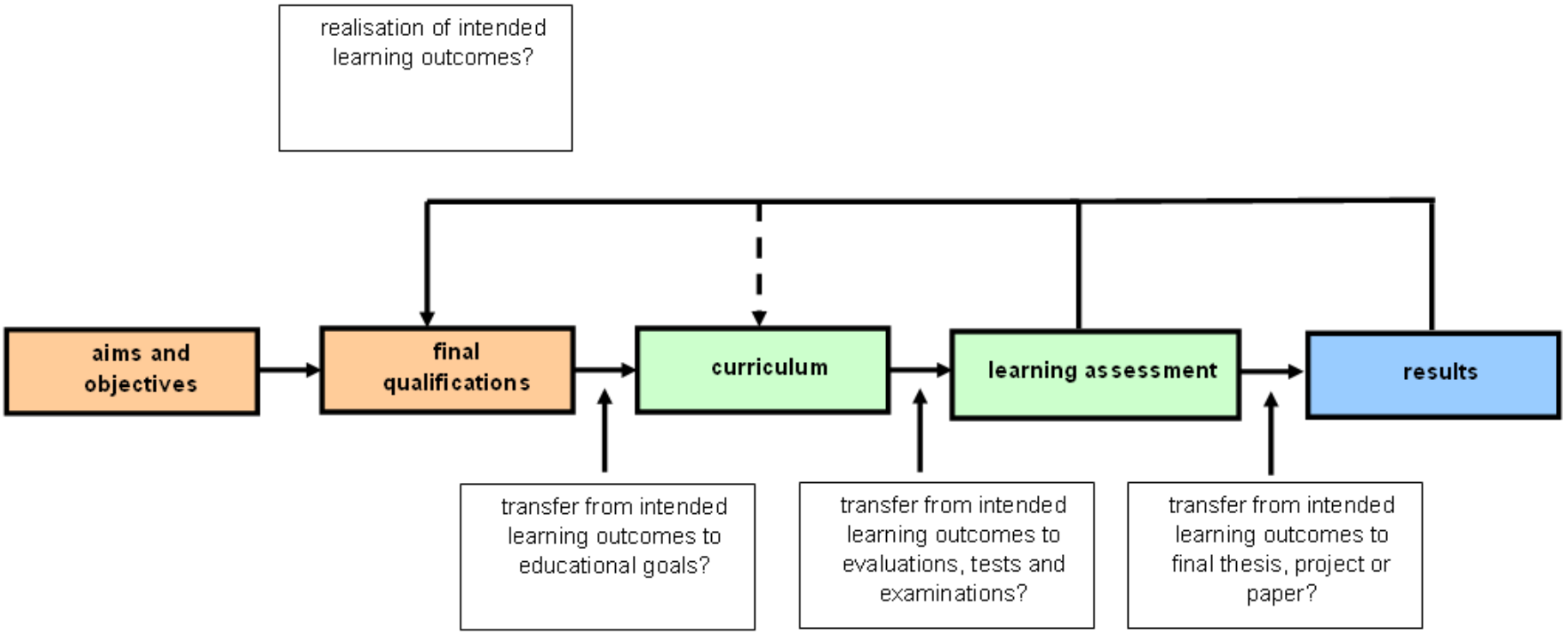
- Consciousness of intended results: cooperation between teachers
- Increased transparency
- Growing possibility for internationalization
- Life long learning
- Limiting individualisation

2.2 Background: Schematic overview of the NVAO frameworks

- Intended learning outcomes
  - Generic learning outcomes (~Dublin descriptors)
  - Orientation (professional or academic)
  - Subject- / discipline-specific learning outcomes

- Achieved learning outcomes
  - Methodology of student assessments
  - Evaluation of actual students' work

Schematic overview of the NVAO frameworks for (initial) accreditation



Preconditions: staff, services, internal quality assurance system and conditions for continuity.
Based on: IOWO / Radboud University Nijmegen, 2005.

2.2 Tools: Linking the overall learning outcomes of the programme to modules

	Programme level					
	Learning outcome 1	Learning outcome 2	Learning outcome 3	Learning outcome 4	Learning outcome 5	Learning outcome 6
Module 1	x		x		x	
Module 2		x		x		x
Module 3						
Module 4	x	x			x	
Module 5				x		
Module 6	x					x

2.2 Tools: Checklist on designing modules

1. Identify the aims of the module
2. Write the intended learning outcomes
3. Design the assessment tasks
4. Define the threshold assessment criteria
5. Develop the study methods
6. Improve the module

2.2 Tools: Characteristics of good learning outcomes

- The specified action must be performed by the learners.
- The specified action must be observable. (What action is s/he to take?)
- The specified action must be measurable. (Which result must come from the action?)

2.2 Tools: Key sentences in writing good learning outcomes

Start **programme outcomes** with the phrase:

- ‘A successful learner from this programme will be able to …’

Start **module outcomes** with the phrase:

- ‘On successful completion of the module, students will be able to …’
  or even better:
  ‘On successful completion of the module, **you** will be able to …’

2.2 Tools: Types of learning outcomes (1/3)

- Generic skills: transferable

- Practical skills: subject- / domain-specific

2.2 Tools: Types of learning outcomes (2/3)

Examples of generic learning outcomes

On successful completion of the module, students will be able to:

- Work effectively as part of a team.
- Reflectively evaluate their own learning and personal planning processes.

2.2 Tools: Types of learning outcomes (3/3)

Examples of practical learning outcomes

On successful completion of the module, students will be able to:

- Express themselves in writing for different professional and academic audiences.
- Employ appropriate ICT skills in order to forecast demographic trends.

2.2 Tools: Taxonomy of Bloom

1. Knowledge (lowest level)
2. Comprehension
3. Application
4. Analysis
5. Synthesis
6. Evaluation (highest level)

2.2 Tools: Examples and action verbs in relation to Bloom's taxonomy (1/6)

Knowledge: ability to recall data or remember facts without necessarily understanding them.

Examples: Recite a policy. Quote prices from memory to a customer. Knows the safety rules.

Key words: defines, describes, identifies, knows, labels, lists, matches, memorises, names, outlines, recalls, recognizes, repeats, reproduces, selects, states, tells.

2.2 Tools: Examples and action verbs in relation to Bloom's taxonomy (2/6)

Comprehension: ability to understand and interpret learned information

Examples: Rewrites the principles of test writing. Translates an equation into a computer spreadsheet.

Key words: associates, comprehends, converts, defends, differentiates, distinguishes, estimates, explains, extends, generalizes, gives examples, infers, interprets, paraphrases, predicts, rewrites, summarizes, translates.

2.2 Tools: Examples and action verbs in relation to Bloom's taxonomy (3/6)

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

Examples: Use a manual to calculate an employee's vacation time. Apply laws of statistics to evaluate the reliability of a written test.

Key words: applies, changes, computes, constructs, demonstrates, discovers, manipulates, modifies, operates, predicts, prepares, produces, relates, shows, solves, uses.

2.2 Tools: Examples and action verbs in relation to Bloom's taxonomy (4/6)

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

Examples: Troubleshoot a piece of equipment by using logical deduction. Gathers information from a department and selects the required tasks for training.

Key Words: analyzes, breaks down, compares, contrasts, debates, deduces, diagrams, deconstructs, differentiates, discriminates, distinguishes, identifies, illustrates, infers, outlines, relates, selects, separates.

2.2 Tools: Examples and action verbs in relation to Bloom's taxonomy (5/6)

Synthesis: ability to put parts together, with emphasis on creating a new meaning or structure.

Examples: Write a company operations or process manual. Design a machine to perform a specific task.

Key words: categorizes, combines, compiles, composes, creates, devises, designs, develops, explains, generates, integrates, modifies, organizes, plans, rearranges, reconstructs, relates, reorganizes, revises, rewrites, summarizes.

2.2 Tools: Examples and action verbs in relation to Bloom's taxonomy (6/6)

Evaluation: ability to judge the value of ideas or material for a given purpose.

Examples: Select the most effective solution. Hire the most qualified candidate. Explain and justify a new budget.

Key words: appraises, compares, concludes, contrasts, criticizes, critiques, defends, describes, discriminates, evaluates, explains, interprets, justifies, relates, summarizes, supports, validates, values.

2.2 Tools: Linking intended learning outcomes to assessment

	Assessment tasks and criteria			
	1	2	3	4
Learning outcome 1	x			
Learning outcome 2	x			
Learning outcome 3		x		x
Learning outcome 4		x		x
Learning outcome 5			x	x
Learning outcome 6			x	x

2.3 Assessment: Using grading assessment criteria in order to motivate students

- **learning outcomes:** minimum requirements to pass a module

- **grading criteria:** indicate what a student must demonstrate to achieve a higher grade

2.3 Assessment: Example of grading criteria

Learning outcome	Assessment criteria:				
	Fail		Pass		First
By the end of the module, students will be able to: use evidence appropriately in support of an argument.	Unsubstantiated or invalid conclusion, based on anecdotes and generalizations only	Limited evidence of finding and conclusions supported by the literature and theory	Evidence of findings and conclusions grounded in theory or literature	Good development shown in arguments based on theory or literature and beginnings of synthesis	Analytical and clear conclusions well grounded in theory and literature, showing development of new concepts

2.3 Assessment: Rubrics

"Rubrics are a critical and vital link between assessment and instruction. They operationalize quality in our minds so we can more effectively teach and lead."

2.3 Assessment: Example of a rubric

Performance Element	Level 3	Level 2	Level 1	Point value
Representation	Explains in great detail how the model represents a real life object, idea, or event.	Explains in some detail how the model represents a real life object, idea, or event.	Explains with minimal detail how the model represents a real life object, idea, or event.	
Similarities	Skilfully explains similarities and differences between the model and the real thing.	Explains similarities and differences between the model and the real thing with some detail. Or explains only one of the categories.	Does not demonstrate satisfactory knowledge of similarities and differences between the model and the real thing.	
Creativeness	Uses a variety of resources to creatively represent the object, idea, or event in model form.	Uses a few different resources to adequately represent the object, idea, or event in model form.	Uses minimal resources to haphazardly represent the object, idea, or event in model form.	
Communication	Uses the model as a tool to skilfully communicate his or her learning or ideas to others. Refers to specific science concepts and details.	Uses the model as a tool to communicate learning. Speaks in generalizations or has few supporting details.	Does not use the model as a tool to communicate learning or has little information about the topic to convey to others.	

3 Assignments

1 Creating overall learning outcomes for a higher education programme

2 Creating learning outcomes for a module

4 Evaluation

- How can you use learning outcomes in your organisation?

- Which information and tools of these workshop are the most useful to design learning outcomes in your programme?

Literature on learning outcomes

- Dr Declan Kennedy, Writing and Using Learning Outcomes, A practical guide, University College Cork, Ireland
- American Association of Law Libraries

  http://www.aallnet.org/prodev/outcomes.asp/
- UCE Birmingham Guide to Learning Outcomes

  http://www.ssdd.uce.ac.uk/outcomes/
- University of Tasmania

  http://www.utas.edu.au/tl/supporting/developing/unitoutline/docs/Learning_outcomes.doc
- http://www.rubrics.com/