

Writing Learning Outcomes

Introduction — What are learning outcomes?

Learning outcomes are the skills and knowledge that a student will be able to demonstrate upon completion of the learning process.

When designing a programme of learning on an 'outcome-based' model it focuses on what the student is expected to be able to do at the end of a period of learning whether it's a single module or whole degree programme. As they are written with this in mind it should make it easier for the students to understand what is expected of them.

On a programme level, learning outcomes are very broad and relate to the knowledge and skills students have developed over the whole degree: e.g. analyse, synthesise and summarise primary and secondary information critically, to formulate and test hypotheses; evaluate the relevance and significance of data; draw conclusions.

Module learning outcomes are much more specific and as such they should determine the content, delivery and assessment of the module. They are written in the future tense and as such are statements of achievement written from the learners' perspective and therefore when the assessment for the module is written it should have one or more learning outcomes

Structure of learning outcomes

The structure of a learning outcome is usually in the following format:

Describe the structures, properties and biosynthesis of nucleic acids and their role in information storage and transfer

Verbs that define understanding

This is a specific action of how you would like the students to demonstrate their learning.
For example: Describe a process; explain the effect of; Interpret experimental data etc.

Subject of Learning

This is specific subject material you want the learning to demonstrate.
For example: basic structure of the genetic material; nature of chromosomes and the organisation of genomes; structures, properties and biosynthesis of nucleic acids.

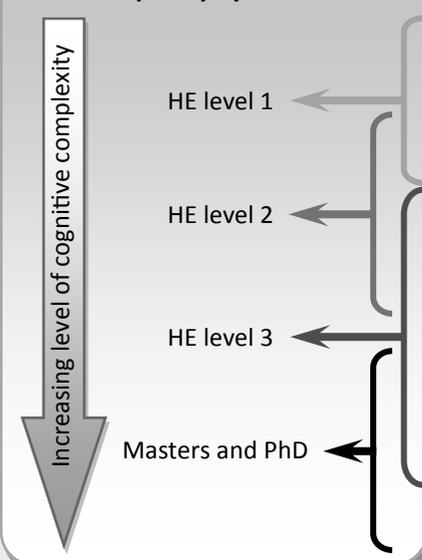
Context of Learning

This is under what context you want the learning to be demonstrated.
E.g. the context in the above example can be changed: the structures, properties and biosynthesis of nucleic acids (subject) and how they can be manipulated by biomolecular technologies (context)

Choosing action verbs by domains of learning (cognitive domain)

When writing learning outcomes it is often easier to use an action verb derived from the domains of learning outlined in Bloom's Taxonomy. This not only allows you to choose a verb which is closely linked with the assessment type but also can help with setting the learning outcome to the right level. Broadly speaking learning outcomes in the first year of study are largely made up of action verbs on the bottom of the complexity scale in Bloom's Taxonomy — the knowledge and comprehension domains. As the student progresses throughout the degree the learning outcomes' language changes to verbs higher in the learning domains

Most common level of cognitive complexity by HE level



Domain	Simple Definition	Example Verbs
Knowledge	Remembering information	Describe, Identify, List, Name, Order , Recognise, Select
Comprehension	Explaining Information	Discuss, Distinguish, Explain, Extend, Give example(s), Identify, Review
Application	Use information in new ways	Apply, Choose, Demonstrate, Illustrate, Prepare, Produce, Solve, Write
Analysis	Distinguish different parts	Analyse, Breakdown, Calculate, Compare, Identify, Relate, Test
Synthesis	Compile information into alternate solutions	Arrange, Categorise, Compose, Design, Explain, Rewrite, Summarise
Evaluation	Defend ideas or concepts	Appraise, Assess, Defend, Describe, Evaluate, Justify, Interpret, Support

Choosing action verbs by domains of learning (affective and psycho-motor domain)

Students are not only required to demonstrate cognitive skills, they are sometimes required to demonstrate their belief values or attitudes (often linked to ethical issues) or practical skills. To write learning outcomes to demonstrate these areas you can select verbs from the affective domain or psycho-motor domain respectively.

Domain	Simple Definition	Example Verbs
Affective	Perception of values	Accept, complete, perform, participate, question, solve
Psycho-motor	Developing practical skills	Assemble, Calibrate, Collect, Design, Document, Measure

Please note: do not take the suggested cognitive levels for each HE level to be the only possibility, for example analyse is often associated with higher order learning but can also be applied at lower levels in data analysis tasks. You will also notice that identify appears 3 times at different levels depending on how the verb is applied. It is also important to ensure you don't use verbs which are unclear and are open to interpretation, e.g. appreciate, know, learn and understand — these are hard to measure or observe. (Additional guidance by HE level is supplied in supplementary sheets)

Guidelines for writing learning outcomes

When writing learning outcomes it may be helpful to keep the following guidelines in mind:

- * Write in the future tense – preceded with “On successful completion of this module, students will be able to:” (write learning outcomes as bullet points after this statement).
- * Write in short clear sentences.
- * Use language to be understood by students, colleagues and external examiners – therefore avoid jargon and abbreviations and free of ambiguous words or phrases.
- * They should be achievable and measurable – this is made easier if written with what you would like the students to be able to demonstrate upon completion of the module and the assessment criteria in mind.
- * Identify the most important learning requirements — each module should contain between 4 to 6 learning outcomes, and don't try to put too much into a single learning outcome.
- * Don't try to be either too broad or specific in the learning outcomes — divide your module into topics or themes you would like the students to demonstrate and write your learning outcomes around those.

Struggling where to start?

Whether rewriting a set of learning outcomes or writing from scratch here's some tips to get you started:

1. Decide and/or examine what you are going to teach — this will formulate the modules aims and objectives. Carve this into 4 to 6 topic areas depending on credit value.
2. Decide the purpose of the teaching — what skills and knowledge do you want the students of have at the end of the module? How does this module fit in the whole degree programme? – this will help with assessment types and choosing the right action verbs.
3. Link the two together — pick a topic area and decide what is the best way to demonstrate it? If it's a practical skill—choose a psycho-motor verb; if it's cognitive based—decide how much they need to demonstrate, do they need to recall facts or process the information in some way applying or evaluating in different situations.

Checklist for writing learning outcomes

- Does each outcome start with an action verb?
- Does it describe an outcome, not a process?
- Used one action verb per learning outcome?
- Have you overused the same verb?
- Are the learning outcomes vague? Have you used verbs such as know and understand?
- Do they reflect the level of learning required?
- Check that the verbs used are appropriate.
- Are the learning outcomes observable and measurable? Can you collect accurate and reliable data for each outcome?
- Are they written in terms of what the learner does, not what the instructor does?
- Are there the appropriate number of outcomes? (don't worry about writing outcomes for transferable skills)
- Do the learning outcomes fit within programmes' learning outcomes?

Bibliography

Biggs J and Tang C (2011) *Teaching for Quality Learning at University*. What the Student Does 3rd Edition. Maidenhead UK: SRHE and Open University Press

Atherton J S (2013) Learning and Teaching; Bloom's taxonomy [On-line: UK] retrieved 21 January 2014 from <http://www.learningandteaching.info/learning/bloomtax.htm>

Jackson N, Wisdom and Shaw M (2003) Guide for Busy Academics: Using Learning Outcomes to Design. Available online at: http://www.heacademy.ac.uk/resources/detail/resource_database/id252_guide_for_busy_academics_using_learning