

Notes on writing module intended learning outcomes

Stephen Bostock

This is written as guidance for teaching staff.

A. Once upon a time, courses specified 'Aims and Objectives'. Both tended to be from the teacher's perspective and to be about content. While it is still fine to have programme or module aims (the broad intentions of the programme/module) we have replaced objectives with intended (or expected) learning outcomes (ILOs). This is not just a change of label, but a radically different description - from the learner's perspective rather than the teacher's perspective. So writing ILOs is difficult, but worth it for the clarity they give to students, and to teaching and to assessing.

B. ILOs tell us (students, staff, the university etc.) what any student who passes will be able to do. There are several important features:

1. An active verb¹ describing the visible activity students will be capable of, for example, to analyse, describe, design, appraise, critique, recall, recognise, predict, explain, compare, apply). The verb describes the cognitive ability (and, possibly, mechanical skill) the student has gained. All ILOs thus implicitly start with, 'The successful students will be able to...'.
Examples: describe a flower's components using technical terms; describe the major sources of renewable energy; describe the order of geological epochs; describe Pythagoras' Theorem; describe Darwin's theory of evolution as it was first published; describe interviewing techniques in social research; describe the scientific method as conceived by Karl Popper; describe criteria for adoption of abused children; describe the world-view of Kierkegaard; describe your personal strengths and weaknesses in essay-writing; describe your philosophy of teaching. Clearly, the same verb can have varied significance depending on the discipline and on the content being 'processed' by the student.
2. There may be an adverb or phrase qualifying the verb, for clarity. For example, criticize constructively, solve efficiently.
3. There will be a noun or phrase that is the knowledge being processed or manipulated by the verb. This might be simple facts, concepts and theories, procedures, or self-knowledge.
4. There may be a qualifying phrase that clarifies the way in which the learning outcome is demonstrated or the level of performance expected in it. For example: *use the Rydberg equation to predict the wavelengths of electronic transitions; analyse contemporary approaches to human resource management through current theoretical principles; explain the significance of twin studies in the field of the genetics of human intelligence.*

C. Here are some examples of module ILOs for various levels and disciplines.

¹ Active is not used here in a grammatical sense but in the sense of a learning activity which is visible and thus assessable.

1. Analyse and evaluate the UK laws, policies and institutions of illegal drugs control
2. Evaluate 20th century theories of scientific method
3. Assess the role of the criminal justice system in the control of cannabis use
4. Compare and contrast behaviourism and cognitivism as theories explaining human learning
5. Summarise the key concepts of XXXXX
6. Identify and classify common woodland trees
7. Explore alternative models of health care provision in Europe and North America
8. Evaluate information web sites against usability principles
9. Articulate evaluative reflections on the design issues and principles, development methods and tools they have used
10. Select appropriate analytical techniques and procedures in relation to a given problem
11. Design, plan and critically evaluate practical investigations including the selection of appropriate techniques and procedures
12. Calculate standard thermodynamic quantities for chemical processes from tabulated thermodynamic and electrochemical data
13. Predict rate laws from analysis of simple model reaction mechanisms
14. Analyse the symmetry properties of molecules using group theory
15. Rationalise structure, electronic spectra and magnetic behaviour of transition metal complexes.

D. There are obviously questions for the appropriate breadth, scale, specificity and number of ILOs. There are ILOs at different levels: programme, module, and even lecture or session. Clearly, they become more specific in that order. Module ILOs are not the same as examination or assignment questions, but these are just one stage more specific than module ILOs. Examination and assignment questions should be clearly the instantiations of module ILOs in a specific context.

In the other (generic) direction, the 'level descriptors' of the QAA or SEEC are even broader² - they describe the general characteristics of outcomes of different years of full time study in HE, regardless of subject, so they are *not* suitable as module ILOs just by bolting on some module content. A common example of the mis-use of level descriptors, derived from a QAA level descriptor, is, 'gain a critical awareness of X'. *Awareness* is too superficial and *critical* is ambiguous (see G below) and (in my view) incompatible with mere awareness.

Thus, there is no simple, generic, discipline-universal relation between the year of study (level descriptors) and the appropriate verbs of a module's learning outcomes – how could there be?

E. Module ILOs are written for a particular academic level (e.g. undergraduate level 4, first year), in the context of the programme specification and its

² For level descriptors at QAA see section 4 of <http://www.qaa.ac.uk/academicinfrastructure/FHEQ/EWNI08/default.asp> and for alternative ones at SEEC see www.seec.org.uk

intended outcomes for that level. Programme specifications are themselves written in the context of (QAA) 'level descriptors' that describe in general terms the types of learning outcomes at each level in any programme. The wording of learning outcomes in programme specifications and level descriptors are not suitable for module ILOs, they are too general. Module ILOs are more specific. The next layer down in specificity are specific assessments (exam questions, assignments), the assessment criteria for which are derived from the module ILOs.

F. Those of you familiar with 'Bloom's taxonomy' of learning outcomes will recognise the verb in an ILO (see B.1) as classifiable into one of the six categories in a taxonomy of such verbs: recall, understand, apply, analyse, synthesize and evaluate. This is a sequence of increasing complexity. However, it is not possible to generalise these six categories to levels in every programme, such as, recall and understand for UG level 1, apply and analyse for UG level 2, etc. As stated above, the meaning of a single verb, and the sophistication of the thinking it entails, will vary with the discipline, context, and the 'content' being processed by the verb. If you are not familiar with Bloom, don't read it; read the update in Anderson and Krathwohl, 2001. A table based on Anderson and Krathwohl (table 5.1) is summarised at the end of this document as a help in finding appropriate verbs for your ILOs.

G. The word *understand* in a module ILO is too general to be helpful. In this context it is not a verb but a category of verbs (in the schemes of both Bloom and Anderson). If you feel like writing *understand*, stop and ask, what *exactly* does *understand* mean here? What would a student need to do to demonstrate this particular understanding?

Nor does it help to make the ILO more visible by adding a rubric such as, *the student will demonstrate understanding of* The word *demonstrate* merely refers to the fact that the outcome must be assessable, but it does not clarify what is going to be assessable – *understanding* is still too vague. To be assessed, students will have to do something more specific, so the ILO should tell us (and them) what that is.

H. The word *critical* is over-used by academics and misunderstood by students. Different disciplines use it to mean subtly different things - pity the poor dual honours student! Try to avoid it: is it really needed for clarity? What would *uncritical* mean here - if it is meaningless, then *critical* is probably meaningless or unnecessary.

So, from the comments above, you can see that 'Students will have a critical awareness of the French Revolution (or whatever)' is poor as an ILO.

I. ILOs are a statement of threshold outcomes - a bare pass - not of excellent performance, modal performance or a 2(i). You should provide a separate description, and/or examples, of excellent performance to which students can aspire. (Your assessment criteria should also do this for the assessed work.)

J. There are criticisms of ILOs and it is true that they can be used badly. They can be too numerous and detailed (6 should be plenty for a 15 or 20 credit module), fragmenting learning into 'bites'. Don't let this happen; we can write better ILOs! As long as we can devise valid assessments for them, and

support students in learning them, we can write the ILOs we really want students to achieve. (Assuming they are appropriate for the module, programme, level, etc.) For example, we rarely include the 'affective domain' in outcomes - commitment, value, ethics, empathy etc. But in some subjects these are important aspects of programmes and even of modules. And we can devise assessments to judge attainment of them.

K. Alignment: good ILOs can be understood by all the students as the guide to what they are trying to achieve in the module. Teaching and learning activities should be clearly derived from the need to achieve the ILOs, and the assessments should clearly test the achievement of the ILOs. This is called 'constructive alignment' and is the cornerstone of course design. Without it, students will ask, 'is this assessed?' and ignore your lectures or handouts if they don't believe it will help in the assessment. Quite right, too! Therefore, assess the explicit ILOs that you support students in achieving through your teaching.

The most general, and perhaps the best, assessment task is: 'Demonstrate to me that you have achieved the ILOs.' This may work well at postgraduate and professional levels, with individual student support, although in large undergraduate modules it may not be practical.

Dr Stephen Bostock, first made public 24 Sep 2009 and last edited Jan 2012

Acknowledgements:

I have read many accounts of learning outcomes and no doubt internalised many ideas and phrases. If any are reproduced here without acknowledgement, please accept my apologies. Thanks to Dave McGarvey for some example ILOs and to Peter Grannell for corrections and helpful challenges.

Reference:

A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives by Lorin W. Anderson, David R. Krathwohl, Peter W. Airasian, and Kathleen A. Cruikshank, 2001, New York: Longman

Anderson and Krathwohl 2001 (Table 5.1)

- used as verbs for module or classroom learning outcomes.

This sequence replaces that of Bloom et al. in their *Taxonomy of Educational Objectives*.

1. Category: Remember

includes

Recognize, identify

Recall, retrieve

2. Category: Understand

– this is a category with many possibilities so the word ‘understand’ itself is too vague. Try one of the constituent verbs.

Interpret, clarify, paraphrase, represent, translate, transform

Exemplify, illustrate, instantiate, find an example

Classify, categorize

Summarize, abstract, generalize

Infer, conclude, extrapolate, interpolate, predict

Compare, contrast, map, match, detect correspondence

Explain, model

3. Category: Apply

Execute, perform, apply

Implement, use

4. Category: Analyze

Differentiate, discriminate, distinguish, focus on, select

Organize, find coherence, integrate, outline, parse, structure, fit

Attribute, deconstruct, determine the intent or view, analyze

5. Category: Evaluate

Check, coordinate, detect, monitor, test, audit

Critique, judge, appraise, evaluate

6. Category: Create

Generate, hypothesize

Plan, design, devise

Produce, construct, invent, create

Another useful source is **Bennett's Thirty Verbs**, found to be useful by teachers, summarised in the Hybrid Learning Model (HLM) at <http://cetl.ulster.ac.uk/elearning/hlm.php>

Access
Analyse
Apply
Assess
Coach
Construct/Produce/Create
Critique
Debate
Decide
Describe
Design
Discuss
Explain
Explore
Evaluate
Interpret
Justify
Monitor
Observe
Perform
Practice
Predict
Present
Question
React/Respond
Refine
Reflect
Report
Represent
Research
Resolve
Review

Final note: you could always try a thesaurus!