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# **Guide to Writing Learning Outcomes**

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## Introduction

This document is intended to provide guidance in the writing of appropriate programme and module learning outcomes. It begins by explaining what learning outcomes are and the benefits of using them for both staff and students. It distinguishes between programme and module learning outcomes and gives examples of each. It also provides guidance on how to write learning outcomes and link them to the assessment criteria.

### 1. What are Learning Outcomes?

A **programme learning outcome** is a statement of what the learner is expected to know, understand or be able to do on successful completion of the entire programme. The National Qualifications Authority of Ireland (NQAI) has published a national framework of qualifications in which they define a set of programme learning outcomes at each award level. As of 2004, all DIT programme learning outcomes must conform to these NQAI standards (Details in Section 3).

A **module learning outcome** is a statement of what the learner is expected to be able to do on successful completion of the module in order to demonstrate their knowledge, understanding, skills and/or competences (Details in Section 4).

### 2. Why Use Learning Outcomes?

Learning outcomes can provide a useful guide to inform potential candidates and employers about the programme and ensure consistency of outcomes across subjects and disciplines.

Learning outcomes can also help

- guide students in their learning, in that they explain what is expected of them
- staff to focus on exactly what they want students to achieve in terms of knowledge, skills and competences
- staff in choosing appropriate learning, teaching and assessment strategies
- both staff and students in monitoring progress.

### 3. Programme Learning Outcomes

The National Qualifications Authority of Ireland (NQAI) has established a national framework of qualifications in order to bring coherence to the award system and relate all education and training awards to each other. It has established clearly defined standards about the quality of awards and about what a learner can be expected to achieve for each award. The framework introduces a new approach to the meaning of an award in that it recognises learning outcomes – what a person with an award knows, can do and understands – rather than content or time spent on a programme. As of 2004, all DIT programme learning outcomes must conform to these NQAI standards.

The framework has a structure of ten levels with each level based on specified standards of knowledge, skills and competence. These standards define the outcomes to be achieved by learners seeking to gain awards at each level. Levels 6 to 10 are relevant to DIT, as shown in Table 1.

Level	Award
6	Higher Certificate
7	Ordinary Bachelor Degree
8	Honours Bachelor Degree / Higher Diploma
9	Postgraduate Diploma / Masters Degree
10	Doctoral Degree

Table 1: NQAI award levels relevant to DIT

Each of these levels is defined by a set of learning outcomes which are categorised into three strands (knowledge, know-how & skill, and competence) which are further divided into sub-strands, as shown in Table 2.

For example, at Level 8, under Knowledge – Kind, the NQAI require that a successful graduate of an Honours Bachelor Degree programme should

“have a detailed knowledge and understanding in one or more specialised areas, some of it at the current boundaries of the field(s).”

Strand	Sub-strand	Description
Knowledge	Breadth	How extensive is the learner's knowledge?
	Kind	What nature or quality of knowing has the learner engaged in?
Know-How & Skill	Range	How extensive are the physical, intellectual, social and other skills demonstrated by the learner?
	Selectivity	How complicated are the problems that the learner can tackle using the skills acquired and how does a learner tackle them?
Competence	Context	In what contexts is a learner able to apply his / her knowledge and skills?
	Role	How much responsibility can the learner take, personally and in groups, for the application of his / her knowledge and skills?
	Learning to Learn	To what extent can the learner identify the gaps in his / her learning and take steps to fill those gaps?
	Insight	How far has the learner integrated the intellectual, emotional, physical and moral aspect of his / her learning into his / her self-identity and interaction with others?

Table 2: NQAI Strands and sub-strands for Programme Learning Outcomes

When designing or reviewing an honours degree programme, it should be evident from the programme learning outcomes in the programme document that a successful graduate would achieve the required NQAI learning outcomes. Therefore, when writing learning outcomes for a programme it is advisable to organise them into these strands and where possible into the sub-strands. A summary of Levels 6 to 10 with their relevant required learning outcomes is provided in Appendix B.

### 3.1 Writing Programme Learning Outcomes

A [programme learning outcome](#) is a statement of what the learner is expected to know, understand or be able to do on successful completion of the entire programme. Start programme learning outcomes with the phrase:

[On successful completion of this programme the graduate will...](#)

This phrase can be followed by 'know', 'understand' and 'be able to' or equivalent phrases such as 'have knowledge of' or 'have an understanding'. Such phrases are

inherently broad as they recognise the learning outcomes of an entire programme. They differ from module learning outcomes in that module learning outcomes are written to clearly indicate how the students will demonstrate their knowledge, understanding, skill or competence.

### *3.2 Examples of Programme Learning Outcomes*

Some examples at Award Level 8 are provided here under the three NQAI learning outcome strands.

#### *Knowledge*

On successful completion of this programme the graduate will:

- have detailed knowledge and understanding of a wide range of business disciplines and the manner in which these are combined in the overall process of business management
- have a good understanding of Mathematics, Statistics and their applications.

#### *Know-How and Skill*

On successful completion of this programme the graduate will:

- be able to analyse business problems and propose solutions
- be able to confidently engage in and successfully resolve building services engineering projects in both the technical and managerial aspects and communicate effectively their resolution.

#### *Competence*

On successful completion of this programme the graduate will:

- have an appreciation of the necessity of national and global sustainable development
- be able to apply concepts and skills learnt in a variety of contexts
- be able to research management issues and solutions to issues
- appreciate the importance of professional development and of the resources available to keep up to date with new developments in business management
- be able to work independently
- be able to work effectively in a team

- be able to take responsibility for his/her own learning
- be able to learn from experiences gained in different contexts
- have insights into the dynamics of the management function in the business world
- demonstrate the ability to comprehend multiple perspectives.

#### **4. Module Learning Outcomes**

A module learning outcome is a statement of what the learner is expected to be able to do on successful completion of the module to demonstrate their knowledge, understanding, skills and/or competences. Module learning outcomes focus on learning rather than teaching, and they do not specify what the lecturer or tutor can provide but what the learner can demonstrate. They should define what a student must be able to do in order to pass the module. It is important to bear in mind when drafting module learning outcomes that all learning outcomes should be assessable. Also, when writing module learning outcomes, it is important to give consideration to how the module fits into an overall programme.

##### *4.1 Writing Module Learning Outcomes*

Start module outcomes with the phrase:

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

These phrases should then be followed by action verbs so that students are able to demonstrate that they have learned and hence achieved the outcomes. If possible, you should avoid using the words 'know', 'understand' or 'appreciate' as these tend to be rather vague. Instead, think of what the students should be able to do in order to demonstrate they have gained the required knowledge, understanding or appreciation. When learning outcomes are devised which use words such as 'know' and 'understand', it is not clear to the students the level of understanding or amount of knowledge required to successfully complete the module.

Different verbs can be used to demonstrate different levels of learning. For instance, in an introductory module where the aim for the student might be to gain knowledge and develop a basic understanding, the learning outcomes may require the students to be able to define, recall, list, describe, explain or discuss. For a more advanced module where the aim might be to develop a thorough understanding, the learning outcomes may require the students to be able to formulate, appraise, evaluate, estimate or construct. As students progress through a programme it would be expected that the learning outcomes would reflect the progressive nature of their learning. See Appendix A for a list of verbs that may be used in writing learning outcomes to capture the different levels of learning and understanding.

#### *4.2 Example of Module Learning Outcomes*

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

- Identify a wide variety of learning and teaching methods that may be employed effectively in higher education
- Discuss the theories of learning that underpin their teaching approach
- Explain the role of accounting information in organisations
- Identify effective on-line marketing strategies and incorporate them into a marketing plan
- Identify and critically evaluate the strategic options available to enterprises
- Design an interactive website for use by undergraduates
- Apply theory critically to analyse professional experience
- Analyse key managerial issues in a particular industry or company and propose appropriate managerial solutions to the situation
- Outline a personal critical philosophy of curriculum development
- Derive a relationship between the period of oscillation and the spring constant for an oscillating spring
- Work as part of a team in analysing consumer issues in a commercial or non-commercial context
- Develop effective and efficient self-directed study skills
- Evaluate the impact of their clinical intervention in a case

**TIPS WHEN WRITING LEARNING OUTCOMES:**

- Be realistic - take into account prior knowledge, available time and the learning opportunities
- Avoid learning outcomes that are too broad or too narrow in scope
- Avoid using the verbs “know”, “understand” or “learn” as they are vague and subject to interpretation
- You can use open-ended learning outcomes to allow for creativity such as “apply theory critically to analyse a ‘given situation’”
- Be as succinct and as concise as possible
- Keep the number of learning outcomes to a manageable number
- Use language that students can understand
- Ensure that learning outcomes are assessable

**5. Linking Learning Outcomes to Assessment**

Learning outcomes define the minimum requirements expected of a student to successfully pass the module. The actual level of attainment and achievement can only be determined by the assessment method and in particular the assessment criteria.

*Example 1*

Consider the following learning outcome:

On successful completion of the module, students will be able to present the findings of their experimental work through an oral presentation.

To what extent a student achieves the following learning outcome can only be determined if a presentation is used as the assessment method in conjunction with appropriate assessment criteria.

*Example 2*

Similarly, consider the following learning outcome:

On successful completion of the module, students will be able to critically evaluate research literature.

The extent to which the student is required to critically evaluate and what is actually required from the student can only be determined by the assessment method and criteria. For example the use of multiple-choice questions may be inappropriate to assess a student’s skills at critical evaluation.

Therefore, a well-designed module should show clear alignment between the learning outcomes and the assessment methods used on the module. In the case of the

previous learning outcome related to presentation skills, the assessment method should obviously be an actual presentation itself. This type of alignment requires the use of appropriate assessment methods and teaching strategies that enable the students to achieve the required outcomes.

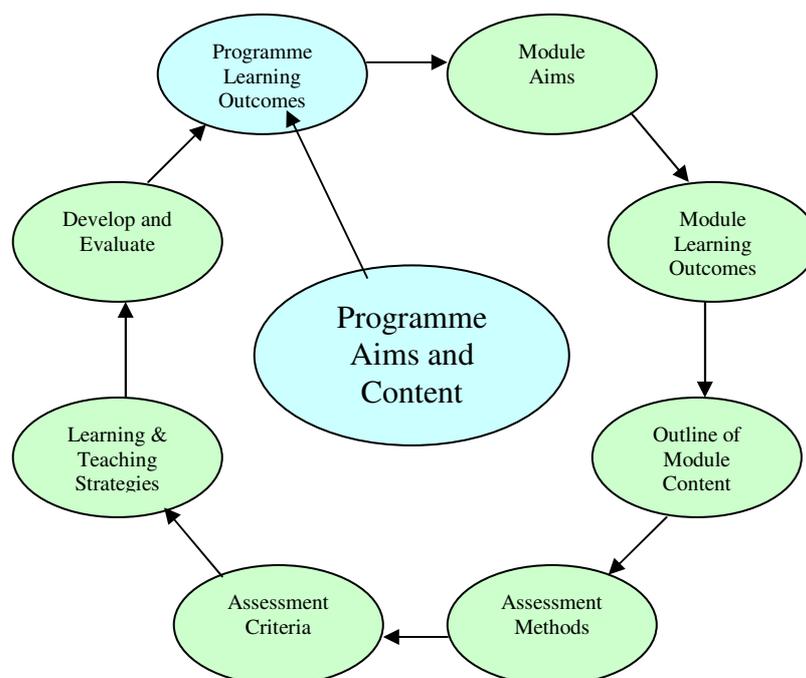


Figure 1: Module design process

Alignment can be achieved at modular level by following the curriculum design process shown in Figure 1. The aims of the overall programme determine what content needs to be covered and therefore determine what individual modules will make up the programme. The broad programme outcomes define the context for the individual modules. At module level the first step is to outline the aims of the module followed by determining the learning outcomes and an outline of the content<sup>1</sup>. When these outcomes have been devised it is then possible to choose appropriate assessment methods followed by defining the assessment criteria that will be used to grade the level of achievement. Appropriate learning and teaching strategies can then

<sup>1</sup> In the outcome-based curriculum design process the focus is on the learning outcomes rather than the curriculum content but it may be helpful to outline the content as part of the process.

be chosen or developed to enable and support the students to reach the required outcomes. Evaluation of the whole process, at both module and programme level, enables development of the individual programme modules, in all these aspects to ensure that achievement of the individual module learning outcomes contribute collectively to the overall broad programme outcomes.

## SOURCES

Mager, RF (1984) *Preparing Instructional Objectives* (2nd edn), Pitman Learning Inc. California.

Gronlund, NE (1978) *Stating Objectives for Classroom Instruction* (2nd edn) Collier Macmillan Pub. London.

Biggs, J (2001) *Teaching for Quality Learning at University*, Open University Press, Great Britain.

Moon, J (2002) *The Module and Programme Development Handbook*, Kogan Page, London.

Bloom, B S, ed. (1956) *Taxonomy of Educational Objectives: The Cognitive Domain*. David McKay, New York

Moon, J (2002) *How to Use Level Descriptors*. London:

Quality Assurance Agency (2001) *The Framework for Higher Education Qualifications in England, Wales and Northern Ireland*.

National Qualifications Authority of Ireland (2003) *National Framework of Qualifications. A framework for the development, recognition and award of qualifications in Ireland*. Dublin: NQA1

## APPENDIX A

In 1956 Benjamin Bloom led a group of educational psychologists who developed a classification of levels of intellectual behaviour important in learning. He identified 6 levels, knowledge, comprehension, application, analysis, synthesis and evaluation. In writing learning outcomes it can be helpful to have verb examples that represent intellectual activity on each level.

### **Verbs that can be used to give evidence of knowledge:**

Define, describe, list, outline, recognise, relate, state, write, measure, match, recount, extract, identify, show, name.

### **Verbs that can be used to give evidence of understanding:**

Summarise, describe, compare, classify, contrast, convert, discuss, distinguish, identify, estimate, explain, formulate, give examples of, interpret, translate, express, illustrate, discuss, predict, present, translate, select.

### **Verbs that can be used to give evidence of application:**

Apply, assess, change, choose, demonstrate, discover, calculate, explain how, illustrate, predict, prepare, produce, relate, show, solve, examine, verify, compute, construct, change, classify, experiment, solve.

### **Verbs that can be used to give evidence of analysis:**

Analyse, separate, categorise, order, compare, conclude, contrast, criticise, diagnose, explain, connect, differentiate, distinguish, examine, justify, infer.

### **Verbs that can be used to give evidence of synthesis:**

Account for, argue, combine, compose, conclude, create, derive, develop, formulate, generalise, generate, substitute, integrate, modify, order, organise, plan, propose, design, invent, restate, report, revise, select, summarise, synthesise, teach, tell.

**Verbs that can be used to give evidence of evaluation:**

Appraise, value, decide, determine, grade, recommend, select, discriminate, choose, compare, conclude, criticise, defend, evaluate, judge, justify, rank, value, assess, summarise, criticise, rate.

**Verbs that can be used to give evidence of problem solving:**

Solve, resolve, choose, identify, propose, plan, justify, assess, formulate, describe a course of action, devise, suggest options.

**Verbs that can be used to give evidence of communication:**

Communicate, express, explain, respond, debate, defend, outline, examine, tell, teach, tutor, present, summarise.

The above lists are by no means definitive and are provided as suggestions only.

Biggs Solo Taxonomy (2001) suggest that there are different levels of understanding and some verbs for each level of this taxonomy are given below:

<i>Minimal Understanding:</i>	basic facts – memorise, identify, recognise.
<i>Descriptive Understanding:</i>	knowing about several topics – describe, list, classify.
<i>Integrative Understanding:</i>	relating facts together and understanding basic theory – integrate, analyse, apply.
<i>Extended understanding:</i>	going beyond what is taught and dealing creatively with new situations – apply in new contexts, generate, reflect.

**APPENDIX B****National Framework of Qualifications****Grid of Level**

	<b>LEVEL 6</b>	<b>LEVEL 7</b>	<b>LEVEL 8</b>	<b>LEVEL 9</b>	<b>LEVEL 10</b>
<b>Knowledge Breadth</b>	Specialised Knowledge in a broad area	Specialised knowledge across a variety of areas	An understanding of theory, concepts and methods pertaining to a field (or fields) of learning	A systematic understanding of knowledge, at, or informed by, the forefront of a field of learning	A systematic acquisition and understanding of a substantial body of knowledge which is at the forefront of a field of learning
<b>Knowledge Kind</b>	Some theoretical concepts and abstract thinking, with significant underpinning theory	Recognition of limitations of current knowledge and familiarity with sources of new knowledge; integration of concepts across a variety of areas	Detailed knowledge and understanding in one or more specialized areas, some of it at the current boundaries of the field(s)	A critical awareness of current problems and/or new insights, generally informed by the forefront of a field of learning	The creation and interpretation of new knowledge, through original research, or other advanced scholarship, of a quality to satisfy review by peers
<b>Know-how and Skill Range</b>	Demonstrate comprehensive range of specialized skills and tools	Demonstrate specialized technical, creative or conceptual skills and tools across an area of study	Demonstrate mastery of a complex and specialized area of study skills and tools; use and modify advanced skills and tools to conduct closely guided research, professional or advanced technical activity	Demonstrate a range of standard and specialized research or equivalent tools and techniques of enquiry	Demonstrate a significant range of the principal skills, techniques, tools, practices and/or materials which are associated with a field of learning; develop new skills, techniques, tools, practices and/or materials
<b>Know-how and Skill Selectivity</b>	Formulate responses to well defined abstract problems	Exercise appropriate judgement in planning, design, technical and/or supervisory functions related to products, services, operations or processes	Exercise appropriate judgement in a number of complex planning, design, technical and/or management functions related to products, services operations or processes, including resourcing	Select from complex and advanced skills across a field of learning; develop new skills to a high level, including novel and emerging techniques	Respond to abstract problems that expand and redefine existing procedural knowledge
<b>Competence Context</b>	Act in a range of varied and specific contexts involving creative and non routine activities; transfer and/or technical or creative skills to a range of contexts	Utilise diagnostic and creative skills in a range of functions in a wide variety of contexts	Use advanced skills to conduct research, or advanced technical or professional activity, accepting accountability for all related decision making; transfer and apply diagnostic and creative skills in a range of contexts	Act in a wide and often unpredictable variety of professional levels and ill-defined contexts	Exercise personal responsibility and largely autonomous initiative in complex and unpredictable situations, in professional or equivalent contexts
<b>Competence Role</b>	Exercise substantial personal autonomy and often take responsibility for the work of others and/or for allocation of resources; form, and function within multiple complex and heterogeneous groups	Accept accountability for determining and achieving personal and/or group outcomes; take significant or supervisory responsibility for the work of others in defined areas of work	Act effectively under guidance in a peer relationship with qualified practitioners; lead multiple, complex and heterogeneous groups	Take significant responsibility for the work of individuals and groups; lead and initiate activity	Communicate results of research and innovation to peers; engage in critical dialogue; lead and originate complex social processes
<b>Competence Learning to Learn</b>	Learn to evaluate own learning and identify needs within a structured learning environment; assist others in identifying learning needs	Take initiative to identify and address learning needs and interact effectively in a learning group	Learn to act in variable and unfamiliar learning contexts; learn to manage learning tasks independently, professionally and ethically	Learn to self-evaluate and take responsibility for continuing academic/professional development	Learn to critique the broader implications of applying knowledge to particular contexts
<b>Competence Insight</b>	Express an internalized, personal world view, reflecting engagement with others	Express an internalized, personal world view, manifesting solidarity with others	Express a comprehensive, internalized personal worldview, manifesting solidarity with others	Scrutinise and reflect on social norms and relationships and act to change them	Scrutinise and reflect on social norms and relationships and lead action to change them

Note: The outcomes at each level include those of all the lower levels in the same sub-strand.

Source: NQAI National Framework of Qualifications Page 17.