Writing Learning Outcomes

A guide for academics
Version 2

UNIVERSITY *OF* LIMERICK
OLLSCOIL LUIMNIGH

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Foreword

The aim of the Bologna Agreement (1999) and the ongoing subsequent work of the The aim of the Bologna Agreement (1999) and the ongoing subsequent work of the Bologna process is to improve the effectiveness and efficiency of higher education in Europe in the context of a common European Higher Education Area. As part of this process, all third level institutions throughout the EU are being asked to write their programmes and modules in terms of learning outcomes in preparation for a changeover to the student-centred European Credit Transfer System (ECTS).

Learning outcomes are statements of what a student is expected to know, understand and/or be able to demonstrate or have acquired on successful completion of their studies. Learning outcomes represent a move away from traditional models of learning, which emphasise inputs such as content and teaching hours, to a more modern 'student-centred' approach, which emphasises outputs in terms of student competences. Not all learning outcomes are measurable.

Learning outcomes form a critical part of the Bologna education reform. At an international level they contribute to the mobility of students by facilitating the recognition and improving the transparency of qualifications, thereby simplifying credit transfer. At a local level they lead to improved curriculum design by strengthening the relationship between teaching, learning and assessment.

This document has been prepared to help you, the teaching faculty of the University of Limerick, to write learning outcomes for the programmes and modules you teach.

Section 1 describes some of the background developments leading to the use of learning outcomes and looks at their purpose and characteristics at the programme level. Section 2 explains how to write learning outcomes at the module level for different levels of learning and includes examples for each level. This section also includes sample learning outcomes from each UL college – many thanks to Conor Carroll, Roland Tormey, Ann Ledwith, Tina O'Toole, Ita Richardson, Cian O'Neill and Ann MacPhail for their very useful contributions to this section.

In writing this document, extensive use was made of UCC's handbook on the subject – *Writing and Using Learning Outcomes: A Practical Guide* (Kennedy 2007). I wish also to acknowledge the support provided by Gráinne O'Donovan.

Dr. John O'Brien
Associate Vice President Academic

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Section 1

Writing Learning Outcomes
at Programme Level

1. The Big Picture

To understand the context within which the proposed changes to programmes and modules are been undertaken it is useful to look at the bigger picture which involves the Bologna Process and the establishment of a National Framework of Qualifications.

Bologna Process

In May 1998 the ministers in charge of higher education of France, Italy, the United Kingdom and Germany signed the so-called Sorbonne Declaration (Sorbonne 1998) on the "harmonisation of the architecture of the European Higher Education System" at the Sorbonne University in Paris. Other European countries later subscribed to the Declaration.

The Sorbonne Declaration focused on

- a progressive convergence of the overall framework of degrees and cycles in an open European area for higher education
- a common degree level system for undergraduates (Bachelor's degree) and graduates (Master's and doctoral degree)
- enhancing and facilitating student and teacher mobility (students should spend at least one semester abroad); removing obstacles for mobility and improving recognition of degrees and academic qualifications

The following Ministerial meetings have been held at which the Bologna Process has progressed:

- Bologna 1999
- Prague 2001
- Berlin 2003
- Bergen 2005
- London 2007

There are currently 10 Action Lines in the Bologna process:

- Promoting the attractiveness of the European Higher Education Area (EHEA)
- Adoption of a system of easily readable and comparable degrees
- Adoption of a system essentially based on two cycles (now 3 cycles)
- Establishment of a system of credits
- Promotion of mobility
- Promotion of European co-operation in quality assurance
- Promotion of the European dimension in higher education
- Lifelong learning
- Higher education institutions and students
- Doctoral studies and the synergy between the EHEA and the ERA (European Research Area)

National Framework

"The NFQ was introduced in 2003 as a system of ten levels, based on standards of knowledge, skill and competence, which incorporates awards made for all kinds of learning, wherever it is gained. School, further education and training (FETAC) and higher education and training (DIT, universities, HETAC) awards all included." (NFQ 2007)

The framework structure (NFQ 2006) is presented below:
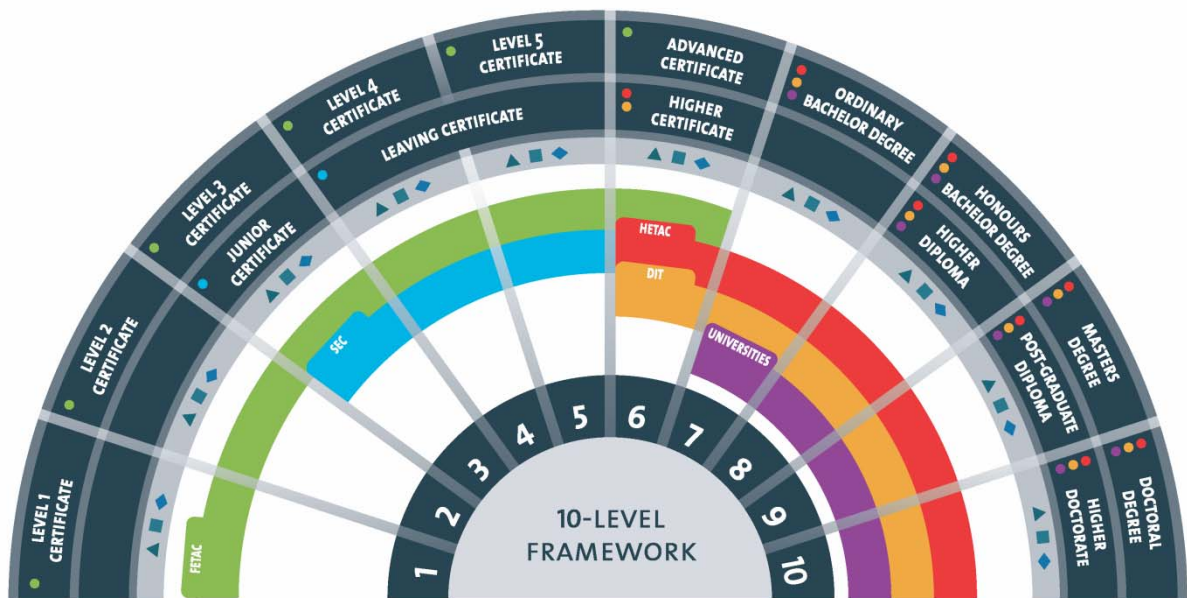
ECTS Compliance

ECTS was included in the Bologna process in 1999 and developed from a transfer system to a credit accumulation system and was linked to the concept of learning outcomes and competences. One full year of student time was assigned 60 credits. The number 60 was chosen because it was divisible by 2, 3, 4, 5, and 6 to allow for varying periods of study in one academic year.

2. Programme Learning Outcomes

What Are Learning Outcomes?

> *Learning outcomes are statements of what a student is expected to know, understand and/or be able to demonstrate after completion of a process of learning.*
>
> (ECTS Users' Guide, 2005)

The Difference between Aims, Objectives and Learning Outcomes

"Aims are broad purposes or goals whereas objectives are specific steps that take us from where we are towards our goal. Objectives are intentions in measurable terms and are stated as intentions of the tutor. Learning outcomes are what result from a learning process. They are specific measurable achievements and are stated as achievements of the student. Learning outcomes should specify the minimum acceptable standard for a student to be able to pass a module or course (threshold level).

Clearly stated learning outcomes can

- help students understand what is expected of them
- help staff focus on precisely what they want students to achieve

(University of Sussex)

Advantages and Disadvantages of Learning Outcomes

The following extract provides a summary.

"The introduction of learning outcomes is, and has always been, subject to much disagreement and has raised much passion in educationalists. It is clear that they can have both positive and negative consequences and the problems associated with their introduction should not be underestimated. The following is a brief review of the main issues that are normally raised, associated with the advantages and disadvantages of their introduction.

Those who have reservations about the adoption of learning outcomes approaches have expressed two main concerns: (i) basic conceptual/philosophical objections and (ii) practical/technical objections.

In terms of philosophy, the objections follow the view that higher education learning cannot be constricted and/or reduced to a series of learning outcomes that inhibit and prescribe the learning process. Academic study is by definition open-ended and the detailed specification of outcomes is antithetical to the traditional university function. Proponents of this view often emphasise the distinction between higher education and vocational education and training, the latter being more suited to a learning outcomes approach due to the skills and competence-based nature of such courses. Academic study, it is suggested, is different in nature and cannot be limited to a skill/competence-based approach that creates a target-led culture focused on ticking boxes. Learning outcomes are viewed as an attack on the liberal conception of education, which diminishes the teacher to

facilitator and stifles the diversity of education by reducing it to a crass instrumentalist approach.

The practical/technical objections to learning outcomes are associated with their formulation and implementation. The implementation of learning outcomes is a formidable task that involves a huge staff-development process as well as cost implications in terms of time and money. It is a massive undertaking to transform all curricula to be expressed in terms of outcomes and this often takes years to accomplish. In addition, there can be a high degree of staff resentment and disagreement concerning the detailed process of identifying, writing and implementing learning outcomes – and the consequential changes to teaching, learning and assessment. Furthermore, various technical problems arise concerning the nature and detail of the approach to outcomes adopted. It is argued that learning outcomes written as threshold statements can limit learning and stifle creativity as well as dumb-down teaching. Learning outcomes can be over-described and under-described (too specific or too general). Their development requires the existence of some sort of framework of qualifications descriptors, levels and level descriptors within a qualifications framework. Finally, it is sometimes the case that the move to learning outcomes, which is often linked to the introduction of credits and modular frameworks, leads to module/unit overload as too much is crammed into a restricted time period for learning.

The advantages of adopting learning outcomes exist at several levels in terms of benefits for the: (i) course/module designer; (ii) quality assurance and standards; (iii) learners; and (iv) national and international educational transparency.

In terms of course and module design the use of explicit learning outcome statements can help ensure consistency of delivery across modules or programmes. They are also said to aid curriculum design by clarifying areas of overlap between module/programme/qualifications. Learning outcomes help course designers to determine precisely the key purposes of a course, how components of the syllabus fit and how learning progression is incorporated. Highlighting the crucial relationship between teaching, learning and assessment (criteria and grading) improves course design and the student experience. Learning outcomes promote reflection on assessment, and the development of assessment criteria and more effective and varied assessment.

The benefits to quality assurance relate to how learning outcomes increase transparency and the comparability of standards between and within qualifications. Outcomes-based qualifications possess greater credibility and utility than traditional qualifications. They play a key role (nationally and potentially internationally) by acting as points of reference for establishing and assessing standards.

Learners benefit from a comprehensive set of statements of exactly what they will be able to achieve after successful study. They provide learners with clear information that can help them with their choice of module/unit/programme/ qualification to study and can lead to more effective learning. They also benefit employers, higher education institutions and civil society in general by clearly

articulating the achievement and attributes associated with particular qualifications.

Internationally, learning outcomes contribute to the mobility of students by facilitating the recognition of their qualifications and improving the transparency of qualifications and thus simplifying credit transfer. They also provide a common format for different forms of delivery (e.g. distance, work-based, non-formal and experiential learning) and have significant capacity to link vocational educational and training and higher education. This is important when there are now an increasing number of national and international initiatives to promote lifelong learning. Learning outcomes can assist the creation of multiple progression routes through and between different the educational systems.

It must be stressed that the positive and negative aspects above are a summary representation of the general claims that are made about learning outcomes. In practice, many of the objections can be overcome, providing that learning outcomes are developed with care and sensitivity. Much depends on how they are constructed and whether (and how) they include knowledge, skills, abilities/attitudes and understanding. Badly constructed, narrow and limiting learning outcomes are not appropriate for higher education where creativity and imaginative leaps are highly valued." (Adam 2004)

It is fundamental to teaching to appreciate that it is the student that determines what s/he learns not the teacher. This is the idea behind the constructive alignment theory of learning.

> *"Constructive alignment is a design for teaching calculated to encourage deep engagement. In constructing aligned teaching, it is first necessary to specify the desired level or levels of understanding of the content in question. Stipulating the appropriate verbs of understanding helps to do this. These verbs then become the target activities that students need to perform, and therefore for teaching methods to encourage, and for the assessment tasks to address, in order to judge if or to what extent the students have been successful in meeting the objectives. This combination of constructivist theory and aligned instruction is the model of constructive alignment."*
>
> (Biggs 2006)

In the process of writing learning outcomes at the programme level it is worth bearing in mind that third level education endeavours to prepare students for jobs that do not yet exist using technology not yet invented and for solving problems that we yet don't know are problems. Graduates of the future need broad knowledge of the disciplines with profound knowledge at the frontiers of a discipline.

NFQ Learning Outcomes at the Programme Level

Learning outcomes at the different levels at which the university offers programmes of study are provided by the NQAI and are summarised as follows (NQAI 2003):

Level 7

Learning outcomes at this level relate to knowledge and critical understanding of the well-established principles in a field of study and the application of those principles in different contexts. This level includes knowledge of methods of enquiry and the ability to critically evaluate the appropriateness of different approaches to solving problems. The outcomes include an understanding of the limits of the knowledge acquired and how this influences analyses and interpretations in a work context. Outcomes at this level would be appropriate to the upper end of many technical occupations and would include higher technicians, some restricted professionals and junior management.

Level 8

Innovation is a key feature of learning outcomes at this level. Learning outcomes at this level relate to being at the forefront of a field of learning in terms of knowledge and understanding. The outcomes include an awareness of the boundaries of the learning in the field and the preparation required to push back those boundaries through further learning. The outcomes relate to adaptability, flexibility, ability to cope with change and ability to exercise initiative and solve problems within their field of study. In a number of applied fields the outcomes are those linked with the independent, knowledge-based professional. In other fields the outcomes are linked with those of a generalist and would normally be appropriate to management positions.

Level 9

Learning outcomes at this level relate to the demonstration of knowledge and understanding which is the forefront of a field of learning. The outcomes relate to the application of knowledge, understanding and problem-solving abilities in new or unfamiliar contexts related to a field of study. The outcomes are associated with an ability to integrate knowledge, handle complexity and formulate judgements. Outcomes associated with this level would link with employment as a senior professional or manager with responsibility for the work outputs of teams.

Level 10

Learning outcomes at this level relate to the discovery and development of new knowledge and skills and delivering findings at the frontiers of knowledge and application. Further outcomes at this level relate to specialist skills and transferable skills required for managing such as the abilities to critique and develop organisational structures and initiate change.

Each level is described under eight types of learning outcomes: knowledge – *breadth*, knowledge – *kind*, know-how and skill – *range*, know-how and skill – *selectivity*, competence – *context*, competence – *role,* competence – *learning to learn*, competence – *insight*.

University of Limerick Programme Learning Outcomes

The eight types described in the national framework have been integrated into five for the purpose of describing University of Limerick programme learning outcomes. These are as follows:

1. Knowledge – breadth and kind

2. Know-how and skill – range and selectivity
3. Competence – context and role
4. Competence – learning to learn
5. Competence – insight

Guidelines for Writing Programme Learning Outcomes

The following is a list of guidelines to assist you in writing learning outcomes for programmes. Treat the list as just that – a set of guidelines rather than a set of hard and fast rules.

- Aim for 6 to 10 outcomes per programme.
- Begin with an active verb.
- Try to use just one verb per learning outcome.
- Ensure that each learning outcome is acquirable.
- Include overarching outcomes, e.g. formulate hypotheses, analyse data, draw conclusions.
- Include applicable generic (transferable) skills, e.g. communication & presentation skills, teamwork, management of information, problem solving.
- Include only the minimum essential outcomes.

Sample Programme Learning Outcomes

1. MA in Business Management

On successful completion of this programme, it is expected that students will be able to:

1. Identify the fundamental principles underpinning modern management within a variety of organisational settings.
2. Analyse business process interdependencies.
3. Apply the fundamental concepts and practices of management accounting and finance in a business setting.
4. Demonstrate managerial ability through the application of communication and personal effectiveness skills.
5. Apply appropriate professional skills in a variety of business settings.
6. Critically evaluate key issues in the field of communication theory.
7. Explore issues that impact the management and handling of organisational strategy.
8. Develop and apply business skills to decision-making and problem-planning in a business environment.
9. Conceptualise, research and write reviews of specific areas of investigation.

2. MA in Community Music

On successful completion of this programme, it is expected that students will be able to:

1. Demonstrate an understanding of the principles and key themes of community music.
2. Display communication and facilitating skills and techniques as community musicians.
3. Display musical competencies in community and ensemble contexts.
4. Engage in practitioner-based research and contribute to the growth of research in community music in Ireland.
5. Contribute to the dissemination of research findings throughout the wider realm of community music.
6. Provide a research foundation for themselves as community musicians who may wish to pursue doctoral research at a later stage in their career.
7. Self direct a performance-based or academic course of study.
8. Demonstrate entrepreneurial skills as appropriate to the community musician.

3. BSc in Information Systems

On successful completion of this programme, it is expected that students will be able to:

1. Demonstrate an understanding of information systems as used in a range of contexts.
2. Construct models of social, biological and economic phenomena and use these models to derive software solutions.
3. Exhibit a strong sense of professionalism in a range of contexts.
4. Use technology effectively and efficiently to meet business goals and requirements.
5. Demonstrate communication and social skills at all stages of software solution development and deployment.
6. Acquire new technical specifics with confidence and certainty over a lifelong career.

Section 2

Writing Learning Outcomes
at Module Level

3. Module Learning Outcomes

> *Learning outcomes are statements of what a student is expected to know, understand and/or be able to demonstrate after completion of a process of learning.*
>
> (ECTS Users' Guide, 2005)

An identifiable process of learning can be said to have taken place on completion of a single module. Therefore, for the purposes of articulating learning outcomes in the context of this document, modules will be the key unit of analysis.[1]

Learning outcomes are clear statements of what the student is expected to achieve at the end of the module and how s/he is expected to demonstrate that achievement. Here are some examples of module learning outcomes[2]:

- Develop criteria for the evaluation of information sources.
- Determine the accuracy, relevance and comprehensiveness of information sources.
- Identify inaccurate and misleading information.
- Assess the quality of the process and products of personal information-seeking.
- Devise strategies for revising, improving and updating self-generated knowledge.

Purpose of Learning Outcomes

It is often the case that module aims and objectives are written in a way that places the emphasis on the teaching. Learning outcomes place the emphasis on the learner by:

- Making it clear to students what is expected of them
- Making it clear to teachers what students are expected to learn in their own and other modules
- Eliminating the need to assess student knowledge and skills at the start of a module
- Helping teachers to select the most appropriate teaching strategy for the intended learning outcomes, e.g. lecture, seminar, tutorial, group work, discussion, student presentation, laboratory work
- Helping teachers to select the most appropriate assessment style to assess the achievement of the learning outcomes, e.g. project, essay, performance assessment, multiple-choice questions, end-of-term examination

Elements of Learning Outcomes

Each learning outcome contains an action verb followed by the object of the verb followed by a phrase that gives the context[3], e.g. "Create a parametric model of a machine component." The learning outcome may also contain a more specific condition

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[1] Learning outcomes can also be written at programme level.
[2] Taken from Kennedy, D. (2007) *Writing and Using Learning Outcomes*, Cork: Quality Promotion Unit, UCC.
[3] Kennedy, D. (2007) *Writing and Using Learning Outcomes*, Cork: Quality Promotion Unit, UCC.

of performance, e.g. "using SolidWorks software". However, specifying detailed conditions of performance in learning outcomes is not always necessary, and may restrict flexible, responsive approaches to teaching a particular subject. It is therefore more appropriate to give that level of detail in the assessment questions.

The list of learning outcomes for each module is preceded with the introductory phrase "On successful completion of this module, students should be able to:" Keeping this phrase in mind will help you as you conceptualise and articulate learning outcomes in your own modules and subject areas.

Characteristics of Learning Outcomes

Well-written learning outcomes include the following characteristics:

- They specify what the student must be able to do.
- They are achievable within the time and resource limitations of the module.
- The specified action is assessable (i.e. observable and measurable).

Writing Learning Outcomes

For each module you teach, you need to write approximately six learning outcomes that match the module content, teaching strategies and assessment. (The literature advises five to nine inclusive.) The greater the synergy between learning outcomes, teaching strategies and assessment techniques, the more successful the learning process is likely to be.

Based on the nature of the content and the position of the module within the programme of study, you need to decide on the type of behavioural outcome you expect to see from students during assessment. A module may focus predominately on one type of learning or may include a mixture of domains.

Domains of Learning

Learning outcomes can specify behaviour in one of three domains: cognitive, affective or psychomotor.

- Cognitive: involves thought processes, e.g. understanding, analysing, evaluating
- Affective: involves attitudes, feelings and values, e.g. appreciating, accepting
- Psychomotor: involves physical skills, e.g. performing, assembling, dismantling

The Cognitive Domain

Benjamin Bloom (1913–1999) developed a classification of levels of thinking in the cognitive domain. The system, known as Bloom's Taxonomy, classifies thinking behaviours during the learning process. As depicted below, the taxonomy builds on the simple knowledge of facts at the lowest level to evaluation at the highest level.
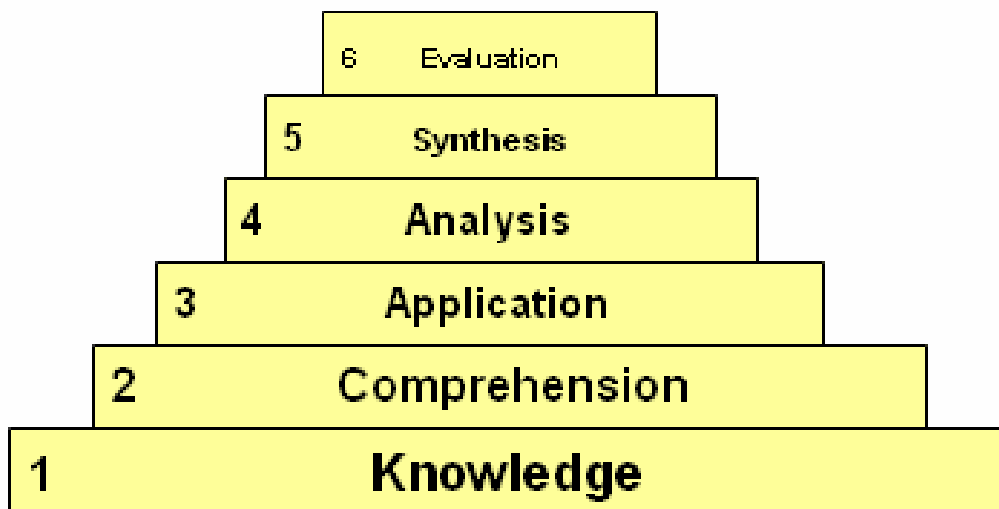
In simple terms, this is what it means to be able to operate at each level of the cognitive domain:

- Knowledge: you know something

- Comprehension: you understand what you know

- Application: you can take something from one context and use it in another

- Analysis: you can break something down

- Synthesis: you can create something new as a result of analysis

- Evaluation: you can pass judgement on something

When writing learning outcomes in the cognitive domain, you need to decide which level of thinking behaviour you want your students to be able to demonstrate as a result of learning. Once you've decided the level, there is a set of suitable action verbs from which to choose for that level. These verbs are listed in the following sections. Please note that the lists are not exhaustive. Also, it is inevitable that some verbs may be associated with more than one level. Keep in mind that the classifications are not completely categorical. When writing learning outcomes, it is useful to be tolerant of a certain amount of overlap and ambiguity and to avoid the feeling that you have to exercise unequivocal precision with the drafting of every objective.

Knowledge

Knowledge may be defined as the ability to recall facts without necessarily understanding them. Action verbs used to assess knowledge include:

Arrange	Enumerate	Name	Recite	Reproduce
Collect	Examine	Order	Recognise	Select
Count	Find	Outline	Recollect	Show
Define	Identify	Present	Record	State
Describe	Label	Point	Recount	Tabulate
Draw	List	Quote	Relate	Tell
Duplicate	Match	Recall	Repeat	Write

Here are some examples of knowledge-based learning outcomes[4]:

- List the criteria to be taken into account when caring for a patient with tuberculosis.
- Identify ethical implications of scientific investigations.
- Describe the processes used in engineering when preparing a design brief for a client.

Comprehension

Comprehension may be defined as the ability to understand and interpret learned information. Action verbs used to assess comprehension include:

Associate	Decode	Explain	Indicate	Restate
Change	Defend	Express	Infer	Rewrite
Clarify	Describe	Extend	Interpret	Review
Classify	Differentiate	Extrapolate	Locate	Select
Compute	Discriminate	Generalise	Paraphrase	Specify
Construct	Discuss	Give examples	Predict	Solve
Contrast	Distinguish	Identify	Recognise	Summarise
Convert	Estimate	Illustrate	Report	Translate

Here are some examples of comprehension-based learning outcomes[5]:

- Differentiate between civil and criminal law.
- Predict the genotype of cells that undergo meiosis and mitosis.
- Explain the social, economic and political effects of World War 1 on the post-war world.

Application

Application may be defined as the ability to use learned material in new situations, e.g. put ideas and concepts to work in solving problems. Action verbs used to assess application include:

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[4] Taken from Kennedy, D. (2007) *Writing and Using Learning Outcomes*, Cork: Quality Promotion Unit, UCC.
[5] Taken from Kennedy, D. (2007) *Writing and Using Learning Outcomes*, Cork: Quality Promotion Unit, UCC.

Add	Compute	Experiment	Operate	Select
Apply	Construct	Find	Organise	Show
Assess	Demonstrate	Graph	Plot	Simulate
Calculate	Develop	Illustrate	Practise	Sketch
Change	Discover	Interpret	Predict	Solve
Choose	Divide	Interview	Prepare	Subtract
Classify	Dramatise	Manipulate	Produce	Transfer
Collect	Employ	Map	Relate	Translate
Complete	Examine	Modify	Schedule	Use

Here are some examples of application-based learning outcomes[6]:

- Construct a timeline of significant events in the history of Australia in the 19th century.
- Select and employ sophisticated techniques for analysing the efficiencies of energy usage in complex industrial processes.
- Apply principles of evidence-based medicine to determine clinical diagnoses.

Analysis

Analysis may be defined as the ability to break down information into its component parts, e.g. look for inter-relationships, patterns, trends, ideas; understand organisational structure; make inferences; find evidence to support generalisations. Action verbs used to assess analysis include:

Analyse	Connect	Differentiate	Group	Point out
Appraise	Contrast	Discover	Identify	Question
Arrange	Criticise	Discriminate	Illustrate	Relate
Break down	Debate	Distinguish	Infer	Recognise
Calculate	Deduce	Divide	Inspect	Separate
Categorise	Detect	Draw conclusions	Investigate	Simplify
Classify	Determine	Examine	Order	Subdivide
Compare	Develop	Experiment	Outline	Test

Here are some examples of analysis-based learning outcomes[6]:

- Analyse the criminalisation of certain behaviours.
- Compare and contrast the different electronic business models.
- Deduce the economic and environmental effects of energy conversion processes.

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[6] Adapted from Kennedy, D. (2007) *Writing and Using Learning Outcomes*, Cork: Quality Promotion Unit, UCC.

Synthesis

Synthesis may be defined as the ability to put parts together, e.g. create new patterns or structures or propose alternative solutions. Action verbs used to assess synthesis include:

Argue	Construct	Generalise	Order	Reconstruct
Arrange	Create	Generate	Organise	Relate
Assemble	Design	Group	Originate	Reorganise
Categorise	Develop	Integrate	Plan	Revise
Collect	Devise	Invent	Prepare	Rewrite
Combine	Establish	Make	Prescribe	Set up
Compile	Explain	Manage	Propose	Summarise
Compose	Formulate	Modify	Rearrange	Synthesise

Here are some examples of synthesis-based learning outcomes[7]:

- Organise a patient education programme.
- Propose verbal and written solutions to complex energy management problems.
- Devise a three-year business plan for a start-up company.

Evaluation

Evaluation may be defined as the ability to judge the value of material for a given purpose, e.g. present and defend opinions; identify strengths/weaknesses; make convincing arguments. Action verbs used to assess evaluation include:

Appraise	Consider	Discriminate	Monitor	Score
Ascertain	Contrast	Estimate	Predict	Select
Argue	Convince	Explain	Persuade	Standardise
Assess	Criticise	Evaluate	Rank	Summarise
Attach	Critique	Grade	Rate	Support
Award	Decide	Interpret	Recommend	Test
Choose	Defend	Judge	Relate	Validate
Compare	Detect	Justify	Resolve	Value
Conclude	Determine	Measure	Revise	Verify

Here are some examples of evaluation-based learning outcomes[7]:

- Assess the importance of key participants in bringing about change in Irish society.
- Evaluate marketing strategies for different electronic business models.
- Predict the effect of temperature change on the position of equilibrium.

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[7] Taken from Kennedy, D. (2007) *Writing and Using Learning Outcomes*, Cork: Quality Promotion Unit, UCC.

The Affective Domain

The affective domain is concerned with issues relating to the emotional component of learning and ranges from the basic willingness to receive information to the integration of beliefs, values, ideas and attitudes.

Action verbs used to assess learning in the affective domain include:

Acknowledge	Combine	Display	Justify	Relate
Act	Complete	Dispute	Listen	Report
Adhere	Conform	Embrace	Order	Resolve
Ask	Co-operate	Follow	Organise	Respond
Accept	Defend	Hold	Participate	Share
Answer	Demonstrate	Initiate	Practise	Show
Assist	Differentiate	Integrate	Share	Support
Attempt	Discuss	Join	Praise	Synthesise
Challenge		Judge	Question	Value

Here are some examples of learning outcomes in the affective domain[8]:
- Display a professional commitment to ethical practice.
- Resolve conflicting issues between personal beliefs and ethical considerations.
- Relate well to students of all abilities in the classroom.

The Psychomotor Domain

The psychomotor domain mainly emphasises physical skills involving co-ordination of the brain and muscular activity. The psychomotor domain is commonly used in areas like laboratory science subjects, health sciences, art, music, engineering, drama, physical education and sport sciences.

Action verbs used to assess learning in the psychomotor domain include:

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[8] Taken from Kennedy, D. (2007) *Writing and Using Learning Outcomes*, Cork: Quality Promotion Unit, UCC.

Adapt	Choreograph	Dismantle	Handle	Organise
Adjust	Combine	Display	Heat	Perform (skilfully)
Administer	Construct	Dissect	Manipulate	Present record
Alter	Copy	Drive	Identify	Refine
Arrange	Design	Estimate	Measure	Shorten
Assemble	Deliver	Examine	Mend	Sketch
Balance	Detect	Execute	Mime	Stretch
Bend	Demonstrate	Fix	Mimic	React
Build	Differentiate (by touch)	Grasp	Mix	Test
Calibrate		Grind	Operate	Use

Here are some examples of learning outcomes in the psychomotor domain:

- Demonstrate proficiency in selected cardiovascular endurance (CVE) activities and resistance training (RT) methods.

- Perform an 'exercise to music' routine that includes a warm-up, developmental and cool-down phase.

- Construct and test a simple circuit using a digital multimeter, a DC power supply and a 'breadboard'.

Guidelines for Writing Learning Outcomes

The following is a list of guidelines to assist you in writing learning outcomes for your modules. Treat the list as just that – a set of guidelines rather than a set of hard and fast rules. For example, while the second guideline says to try to use one verb only, you may sometimes find it more logical to run two closely related actions into one learning outcome, such as "Compare and contrast…" or "Construct and test…".

- Begin with an active verb.

- Try to use just one verb per learning outcome.

- Ensure that each learning outcome is assessable, i.e. observable and measurable.

- Avoid vague terms like know, understand, learn, be familiar with – these verbs are not observable or measurable, which means they are difficult to assess with clarity and precision.

- Avoid complicated sentences. If necessary use more than one sentence for clarity. Bear in mind that a learning outcome does not need to be as specific as an assessment question.

- Aim for about six learning outcomes per module.

- When writing learning outcomes in the cognitive domain, avoid overuse of knowledge- and comprehension-based verbs. Try to include some outcomes based on application, analysis, synthesis and evaluation.

Sample Learning Outcomes

The following learning outcomes were kindly written by seven UL faculty members specifically for inclusion in this training document.

Faculty of Education & Health Sciences

3rd Year Module

Department: Education and Professional Studies
Programme: BSc in Education
Module Title: Education and Society in Ireland
Module Code: EN4005
Semester: Autumn of 3rd Year
Lecturer: Roland Tormey

On successful completion of this module, students should be able to:
- Describe the main changes in educational policy and practice in Ireland since 1920.
- Identify the forces which have contributed to the shape of educational policy and practice in this period.
- Identify the relevance of historical developments in educational policy and practice to their own educational contexts.
- Evaluate the relative contributions of the social, cultural, economic and political factors to educational change.
- Develop and convey clear and logical arguments with respect to Irish educational policy.

1st Year Module

Department: Physical Education and Sport Sciences
Programme: BSc Physical Education
Module Title: Health Related Activity/Aquatics
Module Code: PY4041
Semester: Autumn of 1st Year
Lecturer: Cian O'Neill

On successful completion of this module, students should be able to:
- Identify critical issues pertaining to the safe selection, structuring and planning of content for exercise instruction.
- Demonstrate proficiency in selected cardiovascular endurance (CVE) activities and resistance training (RT) methods.
- Choreograph an 'exercise to music' routine that includes an effective warm-up, developmental varied-intensity movement patterns, and an appropriate cool-down.
- Design an exercise programme based on CVE and RT training modalities for an asymptomatic population.
- Analyse and critically evaluate technical performance in RT methods, providing appropriate feedback and assistance where relevant.
- Identify the varied physical attributes of a given population and of how selected modes of exercise may be more appropriate for a particular sub-population.

- Relate well to peers in a variety of pedagogic contexts, such as independent and interdependent teaching and learning situations.

3rd Year Module

Department: Physical Education and Sport Sciences
Programme: BSc Physical Education
Module Title: Youth Sport and Policy
Module Code: PY4026
Semester: Spring of 3rd Year
Lecturer: Ann MacPhail

On successful completion of this module, students should be able to:
- Identify characteristics and trends in the development of youth sport and define those most pertinent to the Irish context.
- Discuss the relationship between theories underpinning youth sport participation with observations in a youth sport/physical activity context.
- Critically appraise current Irish youth sport provision in schools and the community.
- Articulate the role of the Irish Sports Council and the National Coaching and Training Centre in youth sport strategies.
- Identify specific connections between international strategies and policies related to youth sport participation.
- Identify the existing pillars (physical education, extra-curricular sport and sport outside school) and the relationship between them and implications for physical education teachers.

Faculty of Arts, Humanities & Social Sciences

2nd Year Module

Department: Languages and Cultural Studies
Programme: BA in Language and Cultural Studies
Module Title: Introduction to Literary Theory
Module Code: EH4003
Semester: Autumn of 2nd Year
Lecturer: Tina O'Toole

On successful completion of this module, students should be able to:
- Identify key movements in literary theory.
- Recognise theorists associated with these movements.
- Classify different theoretical positions within this framework.
- Apply theoretical readings to primary literary texts.
- Compare and contrast different theoretical positions in verbal and written forms.

Kemmy Business School

4th Year Module

Department: Management and Marketing
Programme: Bachelor of Business Studies
Module Title: Selling and Sales Management
Module Code: MK4457
Semester: Autumn of 4th Year
Lecturer: Conor Carroll

On successful completion of this module, students should be able to:
- Differentiate between sales and marketing strategies.
- Appraise the forces impacting selling and sales management.
- Critically evaluate modern selling and sales management concepts, techniques, strategies and theories.
- Apply personal selling skills in numerous situations and business contexts.
- Propose sales solutions to complex scenarios.
- Demonstrate personal selling skills and abilities such as negotiation, communication, project management, problem-solving and teamwork skills.

Faculty of Science & Engineering

1st Year Module

Department: Manufacturing and Operations Engineering
Programme: Bachelor of Engineering Science
Module Title: Manufacturing Integration
Module Code: IE4711
Semester: Autumn of 1st Year
Lecturer: Ann Ledwith

On successful completion of this module, students should be able to:
- Generate documents within Microsoft Word and apply commonly used formatting techniques.
- Use MS Excel to analyse, calculate, sort, graph and format spreadsheet data.
- Generate professional-looking presentations using MS PowerPoint.
- Write clearly laid-out, properly referenced, well-structured and formatted technical reports.
- Find reading list material using the UL library catalogue, do a literature search using the UL library's databases, e-journals and library catalogue, and correctly manage references.

4th Year Module

Department: Manufacturing and Operations Engineering
Programme: Bachelor of Engineering Science
Module Title: Project Planning and Control
Module Code: IE4248
Semester: Spring of 4th Year
Lecturer: Ann Ledwith

On successful completion of this module, students should be able to:
- Conduct an economic analysis of a project based on life cycle costs and use this information to determine which of a set of projects is potentially the most profitable.
- Initiate and plan projects by developing project charters, project scope statements, work breakdown structures and organisational breakdown structures.
- Calculate critical paths and use PERT techniques to determine the probability of completing a project within a given time.
- Evaluate optimum project durations by crashing or levelling projects either manually or using appropriate software.
- Use the Earned Value method to control project cost and schedule.
- List the nine areas of project management defined in the Project Management Body of Knowledge (PMBOK) and describe how these might apply in managing engineering projects.

4th Year Module

Department: Computer Science and Information Systems
Programme: BSc in Computer Systems
Module Title: Software Quality
Module Code: CS4157
Semester: Spring of 4th year
Lecturer: Ita Richardson

On successful completion of this module, students should be able to:
- Given a set of functional and non-functional requirements, devise a set of test cases that will satisfy a software testing strategy.[9]
- Apply appropriate software metrics to a software development project and interpret the result in relation to the project under study.
- Apply graphically based software reengineering techniques to construct modules within existing systems.
- Interpret a software process assessment in narrative and graphical format.
- Debate the concept of quality and different types of software quality and defend the concepts of product and process quality.
- Recognise and describe one software process model and the process categories within that model (e.g. Software Process Improvement and Capability dEtermination Model, SPICE).

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[9] This one reads better by starting with the conditional clause; the outcome verb is 'devise'.

4. References and Further Reading

Adam, S. (2004) 'Using learning outcomes', The Scottish Government Research [online], available at: http://www.scotland.gov.uk/Publications/2004/09/19908/42704 [accessed 26 May 2008].

Biggs, J. (2003) 'Aligning teaching and assessing to course objectives', paper presented at *Teaching and Learning in Higher Education: New Trends and Innovations*', University of Aveiro, 13–17 April 2003.

Directorate-General for Education and Culture (2005) *ECTS Users' Guide: European Credit Transfer and Accumulation System and the Diploma Supplement* [online], available at: http://ec.europa.eu/education/programmes/socrates/ects/doc/guide_en.pdf [accessed 26 May 2008].

Gosling, D. and Moon, J. (2001) *How to Use Learning Outcomes and Assessment Criteria*, 3rd ed., London: SEEC Office.

Kennedy, D. (2007) *Writing and Using Learning Outcomes*, Cork: Quality Promotion Unit, UCC. (Many other references are included at the end of the handbook. A copy of the handbook is available from your department administrator or can be ordered from the Quality Promotion Unit at UCC.)

National Qualifications Authority of Ireland (2003) *National Framework of Qualifications: A Framework for the Development, Recognition and Award of Qualifications in Ireland* (*Determinations for the Outline National Framework of Qualifications* [online], available at http://www.nqai.ie/publications_by_topic.html#fn [accessed 26 May 2008].

National Qualifications Authority of Ireland (2003) *National Framework of Qualifications: A Framework for the Development, Recognition and Award of Qualifications in Ireland (Policies and Criteria for the Establishment of the National Framework of Qualifications* [online], available at http://www.nqai.ie/publications_by_topic.html#fn [accessed 26 May 2008].

University of Sussex, Teaching and Learning Development Unit (2008) *Course and Programme Design: Frequently Asked Questions (FAQs)* [online], available at: http://www.sussex.ac.uk/tldu/1-3-8-6.html [accessed 26 May 2008].