Aims, Objectives, Learning Outcomes and Learning Intentions. What do they all mean?

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Introduction

The signing of the Bologna Declaration in 1999 by 29 countries put the spotlight on the concept of using learning outcomes as the common language for teaching and learning in higher education. A total of 48 countries (including Ireland) have now signed this declaration. Also, the introduction of the European Qualifications Framework for Lifelong Learning (2008) based on learning outcomes provided further momentum to teaching within a learning outcomes framework at primary, secondary and tertiary education. Thus, all programmes at primary, secondary and tertiary education in EU countries and many other jurisdictions are now described in terms of learning outcomes. Similarly, all syllabi (specifications) are now written in the form of learning outcomes in these countries. Hence, learning outcomes have become the common language to describe teaching, learning and assessment within 48 countries, Many other countries around the world have aligned the way they describe their national qualifications to the Bologna Declaration and the European Qualifications Framework in order to assist with international recognition of qualifications and student mobility.

One of the main reasons for embracing the concept of learning outcomes at international level is to bring clarity and coherence to terminology used in education. Learning outcomes are clearly defined in the language of education and there is a common understanding of this term in the education literature. Some jurisdictions use the terms "learning intentions" and "success criteria" and the use of these terms in countries which have adopted a learning outcomes framework for teaching and learning has caused confusion among teachers. This article, which arose from a discussion held at a meeting of the council of the Irish Science Teachers' Association, seeks to bring clarity to the use of some key terms used widely in curriculum and syllabus (specification) design.

Aims and objectives

The aim of a programme or scheme of work is a broad general statement of teaching intention, i.e. it indicates what the teacher intends to cover over an extended period of time. For example, one of the aims of the Junior Cycle science curriculum is "to develop students' evidence-based understanding of the natural world". This is a very broad aim which teachers hope to achieve over a three-year period.

On the other hand, teaching objectives (commonly just referred to simply as objectives) tend to be more specific statements of teaching intention. For example, one of the objectives of a lesson could be to give students an appreciation of how they can contribute to sustainability through the recycling of materials.

When writing aims and objectives, we use terms such as:

- To give students an understanding of …..
- To give students an appreciation of…..
- To make students familiar with……
- To ensure that students know…….
- To enable students to experience …..
- To encourage students to …….
- To provide students with the opportunity to…….

What is a learning outcome?

The concept of learning outcomes is very clearly defined in the literature ((Morss and Murray, 2005, European Qualifications Framework 2008, ECTS Users Guide 2009, Kennedy Hyland and Ryan, 2006)

Learning outcomes are statements of what a student should know, understand and be able to do after completion of a process of learning

The "process of learning" could be a lesson (or part of a lesson) or it could be a series of lessons or an entire programme over several years. In recent times teachers have reported being confused by some topics covered during CPD courses. This confusion may be traced back to an NCCA publication *Learning Intentions and Success Criteria* (NCCA 2015). The following definition of learning outcomes was published by the NCCA:

Learning outcomes are statement in curriculum specification to describe the understanding, skills and values students should be able to demonstrate after a period of learning. (NCCA 2015 p. 22).

There are two fundamental problems with this definition. Firstly, learning outcomes are **not** confined to curriculum specifications (syllabi). As already stated, learning outcomes can be used when describing individual lessons, topics within lessons or schemes of work over an extended period of time. In addition, learning outcomes can be used to describe entire courses or programmes. These latter types of learning outcomes are often referred to as “programme learning outcomes”. In third-level institutions, short courses are often referred to as modules and the learning outcomes describing what students should know, understand and be able to do on completion of these short courses are commonly referred to as “module learning outcomes”.

One of the main reasons that learning outcomes have become the international language of education is their flexibility across all types of courses at different levels of the educational system.

The second fundamental problem with the NCCA definition is that it omits the foundation stone of Bloom’s Taxonomy, i.e. knowledge. Without knowledge, the other areas of Bloom’s Taxonomy (understanding, application, analysis, synthesis and evaluation) cannot be achieved by our students. Bloom’s Taxonomy in the cognitive (“knowing”, “thinking”) domain is summarised in Figure 1

Figure 1. Bloom proposed that our thinking can be divided into six increasingly complex levels from the simple recall of facts at the lowest level to evaluation at the highest level. Knowledge is the foundation stone of Bloom’s Taxonomy.

Unfortunately, the same incorrect definition of learning outcomes published by NCCA has been reproduced in some Junior Cycle for Teachers documentation, e.g. *Introducing the SPHE Specification Learning Log 2018 – 2019* (JCT 2018) and *Cluster Delivery 2018/19 Religious Education*.

What are the rules for writing learning outcomes?

Benjamin Bloom (1913 – 1999), Figure 2, viewed learning as a process in which we build upon our former learning to develop more complex levels of understanding. He carried out research in the development of classification of levels of thinking behaviours in the process of learning. He worked on drawing up levels of these thinking behaviours from the simple recall of facts at the lowest level up to evaluation at the highest level.

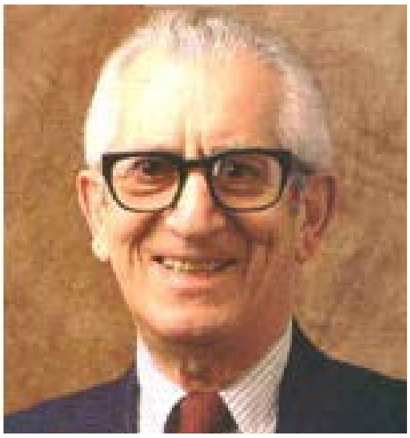


Figure 2. Benjamin Bloom

Bloom devised the toolkit for writing learning outcomes. Since learning outcomes are statements that describe observable behaviour (what a student should be able to DO), the fundamental rule is that we must use action verbs when writing learning outcomes. An action verb describes the activity that the subject of a sentence is doing.

State the law of conservation of mass. *State* is the action verb.

Explain why we need a blood system. *Explain* is the action verb.

Evaluate the effects of climate change. *Evaluate* is the action verb.

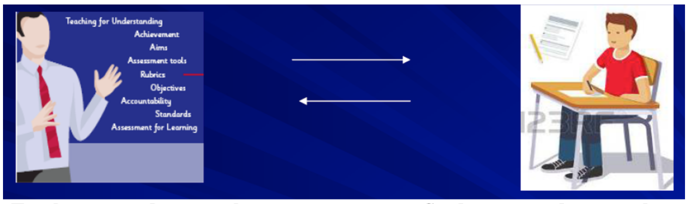
A comprehensive list of action verbs for each level of Bloom’s Taxomony is given in the freely available publication *Writing and Using Learning Outcomes A Practical Guide* (Kennedy, 2006).

The opposite type of verb to action verbs are stative verbs. Stative verbs describe a state. Some examples of stative verbs are *know*, *understand*, *appreciate*, *agree*, *imagine*, *wish* and *believe*.

Whilst action verbs are commonly used in writing learning outcomes, stative verbs should never be used in writing learning outcomes. Common mistakes used in writing learning outcomes are:

- Using the term “understand”. Instead of this term, ask the students to show their understanding by using a learning outcome that contains action verbs such as explain, discuss, illustrate or solve.
- Using the term “appreciate” in the cognitive domain. Instead of this term, ask the students to show their appreciation of a specific concept by asking them to evaluate, discuss, outline or summarise.

Since aims and objectives are written by the teacher, they are often associated with the “teacher-centred” approach to teaching and learning. However, since learning outcomes focus on what the student can DO, they are often associated with the “student-centred” approach to teaching and learning, Figure 3.



Teacher-centred approach Aims and objectives

Student-centred approach Learning outcomes

Figure 3. The teacher-centred and student-centred approaches are inextricably linked in a dynamic equilibrium in the classroom as shown by the double headed arrow

In the past, all courses were described only in terms of aims and objectives. Since words such as *know* and *understand* are rather vague, very often it was not clear what exactly was expected of students. The great advantage of having to write learning outcomes is that when we engage in the process of writing learning outcomes, this process forces us to think about our teaching, learning and assessment. It is rather like looking through the eyepiece of a microscope and observing a fuzzy image. However, focussing the microscope, which can be compared to implementing a learning outcomes framework in our teaching, displays a far clearer image.

Teaching within a learning outcomes framework

In the BSc Science Education degree programme of University College Cork, student teachers are taught how to teach within a learning outcomes framework. At the beginning of each lesson, the trainee teacher shares and discusses the teaching objectives with the students. Then as the lesson proceeds through the introductory and development phases, the learning outcomes are shared with the students and strategies are included in the lesson plan (questioning, worksheets, group work, etc) to help teacher and students assess if the learning outcomes are being achieved. This is an example of formative assessment in action. In the summary and recapitulation phase of the lesson plan, the full list of learning outcomes achieved by the students in the lesson is discussed with the class. Finally, homework is allocated to test the extent to which each student has achieved the learning outcomes (summative assessment).

The key to teaching within a learning outcomes framework involves linking each learning outcomes with an appropriate form of assessment. The active verb in the learning outcome is always a great clue to devising the appropriate form of assessment. If the assessment is properly chosen, it will provide evidence that the students have achieved the learning outcomes during the lesson.

Each student teacher on the BSc Science Education degree in UCC is visited a number of times during the year by a teaching placement tutor who supervises and supports the student teacher. All of these teaching placement tutors are highly experienced science teachers who have spent many years teaching science at secondary school level. For those of us involved in the role of teaching placement tutors, common types of question that we often ask after an observed lesson is:

Do you think that the students achieved the learning outcomes of the lesson?

What evidence do you have that students achieved these learning outcomes?

An example of the type of evidence that we look for is summarised in Table 1.

Learning Outcome	Assessment (evidence of level of achievement of the learning outcomes)
List examples of everyday acids and bases	Students completed the worksheet about acids and bases found in the home
Classify substances as acidic, basic or neutral.	In the group work, students were able to separate the acids, bases and neutral substances into different categories.
Test a variety of solutions with litmus and classify these as acidic, basic or neutral.	In the practical work activity students were able to interpret the colour changes of the litmus paper and hence were able to divide the given substances into three different groups
Investigate the pH of a variety of materials	Students were able to use the pH paper and colour chart to conclude if the solutions were highly acidic, mildly acidic, neutral, mildly basic or highly basic.

Table 1. Examples of evidence gathered during a lesson (formative assessment) to check if students have achieved the learning outcomes.

Every time we write a learning outcome, we should always have one question at the back of our minds. This question is “How can I assess this learning outcome?”, i.e. how do I know if my students have achieved the learning outcome and how can I measure the extent to which each student has achieved the learning outcome. Since learning can often be invisible, we must make it visible by asking the students to DO something to make the learning visible.

Success Criteria – what does this term mean?

The Australian Institute for Teaching and School Leadership define Success Criteria as “the measures used to determine whether, and how well, learners have met the learning intentions” (AITSL undated). The term “success criteria” is simply another term for the word “assessment”. There is no need to use the term “success criteria” when teaching within a learning outcomes framework. When teaching within this framework, we simply assess if the learning outcomes have been achieved by each student and also assess the extent to which each learning outcome has been achieved.

When training science teachers on the BScEd programme, we do not used the term “success criteria”. We simply ask the student teacher to provide the evidence that the learning outcomes have been achieved by students.

What are learning intentions?

The Australian Institute for Teaching and School Leadership (AISTL) defines learning intentions as follows:

Learning intentions are descriptions of what learners should know, understand and be able to do by the end of a learning period or unit. (AISTL, undated)

This is the same definition as the definition of learning outcomes. The Ministry of Education in New Zealand clearly states in published documentation that learning intentions and learning outcomes mean the same thing (Ministry New Zealand, undated). The interpretation of learning intention being identical to learning outcomes is also made in many other publications (Wu and Goff 2021, SCPI 2007).

The term *learning intention* is commonly used in publications on formative assessment (Black and Williams 2009, Bennett 2011, Andersson and Palm 2017). In general, it is clear from these research publications on formative assessment that the term *learning intention* may be used interchangeably with the term *learning outcome*. For example, the learning intention *Draw the skeletal system, label the parts and identify their functions* in the publication on formative assessment by Wylie and Lyle (2010) is a good example of a learning outcome.

As discussed earlier, the rules for writing learning outcomes using Bloom's Taxonomy are clearly outlined in the literature. However, there is a lack of consistency in the literature when writing learning intentions. For example, Robertson (2020) gives the statement "Understand what deforestation is" as an example of a learning intention. This author appears to be equating learning intentions with the concept of an objective rather than a learning outcome. Wu and Goff (2021) also adopt a loose interpretation of the term learning intentions and give the statement "We're going to carry on talking about shapes" as an example of a learning intention.

This lack of consistency in the writing of learning intentions may be one of the contributing factors causing difficulty for teachers in writing learning intentions as reported by Webb (2010).

In NCCA documentation the term learning intention is defined as follows:

A learning intention for a lesson or series of lessons is a statement, created by the teacher, which describes clearly what the teacher wants the students to know, understand and be able to do as a result of learning and teaching activities.
(NCCA 2015 p. 5)

Thus, the NCCA defines a learning intention as being the same as a learning outcome. The fact that learning intentions are interpreted as being the same as learning outcomes is highlighted in the above NCCA documentation by the following examples of learning intentions:

- *Decide on the most appropriate methods for conducting an investigation.*
- *Explain how reliability, fairness and safety have been considered.*

(NCCA 2015 p. 8)

However, in the same document, other learning intentions are written using the language of objectives.

- Understand the causes of the Easter Rising.
- Understand the effects of a balanced diet on health.
- Understand links between poverty and conflict.

(NCCA 2015 p. 17)

The lack of consistency in writing learning intentions is also reflected in JCT documentation. For example, in the JCT publication *Learning Log 1 Whole School CPD*, the following three statements are listed as learning intentions:

1. *Achieve greater clarity around the changes in assessment at Junior Cycle.*
2. *Understand the purpose of assessment and reporting in teaching and learning.*
3. *Appreciate how changes in assessment practices will impact on teaching and learning.*

(JCT undated, p. 6)

Item number 1 is a learning outcome and item numbers 2 and 3 are teaching objectives.

In the JCT publication *Junior Cycle for Teachers Planning using Learning Outcomes* the following two examples of learning intentions are given:

- How money flows between individuals, organisations and the government.
- Interdependent relationships and recognising how our spending impacts on individuals, organisations and the government.

(JCT undated p. 4)

The above two learning intentions are neither learning outcomes nor objectives but simply statements of content to be covered.

The distinction between learning outcomes, learning intentions and objectives are further confused in another JCT publication entitled *Whole School CPD Teaching, Learning, Assessment and Reporting*). In this document, reference is made to "identifying the learning outcomes/ intention/ targets/ objectives" ((JCT undated p. 9). This gives the impression that these terms are all the same and can be used interchangeably.

Thus, it is not surprising that the lack of a coherent approach to writing learning intentions is causing confusion among teachers. In short, whilst the rules for writing learning outcomes are very clear in the literature there is a lack of consistency in the interpretation of the term learning intentions and also in the writing of learning intentions.

Conclusions and recommendations

- The definition of learning outcomes in the literature at international level and the definition of learning intentions by government organisations in countries such as Australia and New Zealand are identical. Hence, learning outcomes and learning intentions may be used interchangeably.
- Whilst the rules for writing learning outcomes are clearly defined, there is lack of consistency of practice in the literature when writing learning intentions. Whilst most authors write learning intentions using the language of learning outcomes, some authors write learning intentions using the language of objectives.
- When teaching in the classroom within a learning outcomes framework, we recommend the use of two simple terms in lesson planning: objectives and learning outcomes. Everything that is needed in a lesson can be covered by sharing the objectives of the lesson and the learning outcomes with our students.
- As the educational system in Ireland is aligned to the Bologna Declaration and the European Qualifications Framework, we recommend that learning outcomes alone be used in the classroom for lesson planning. Using **both** the terms learning outcomes and learning intentions in lesson preparation is unnecessary and confusing.

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