

Bloom's revised taxonomy

Contents

Bloom's taxonomy	1
Bloom's taxonomy	1
Bloom's revised taxonomy.....	2
Why use Bloom's revised taxonomy?	4
Writing learning outcomes	4
Bloom's revised taxonomy and learning outcomes.....	6
Keywords, objectives, activities and outputs.....	9
References	12

Bloom's taxonomy

Bloom's taxonomy (named after Benjamin Bloom and later revised by Anderson and Krathwohl) is a classification of learning skills that is often used in education. When writing learning objectives or outcomes, it provides a means of expressing these in clear language.

Bloom's taxonomy

In the 1950s educators were looking at the learning process in order to identify ways in which we learn. In 1956 Bloom and his colleagues suggested that there are three domains (areas) of learning:

- the cognitive - focuses on the intellect, knowledge and thinking
- the affective - focuses on feeling, emotions and attitudes
- the psycho-motor - focuses on the physical and motor skills (completed later by RH Dave).

Bloom's taxonomy (Bloom 1956) is a classification of lower to higher order thinking (or learning) skills centring upon the **cognitive domain**, which is the most commonly used domain in education.

Bloom's revised taxonomy

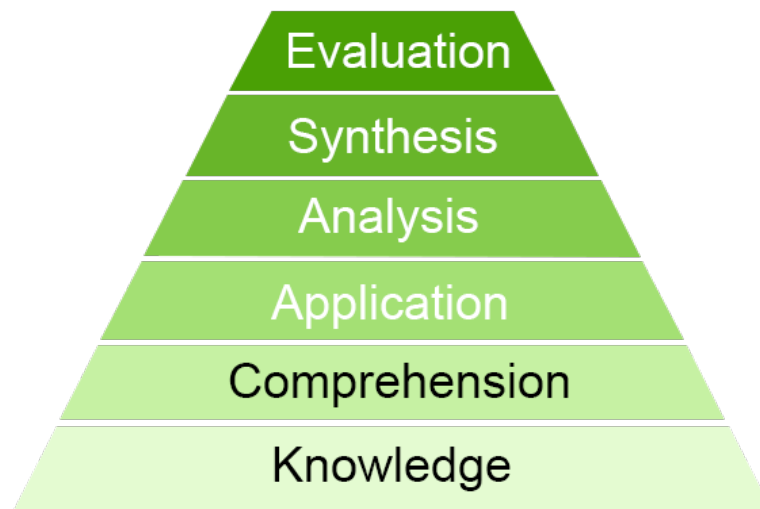


Figure 1: Bloom's taxonomy: the cognitive domain

Six levels of intellectual behaviour in learning are organised into a hierarchy of skills from the less to the more complex; these show the progression from lower to higher order thinking skills.

Bloom's taxonomy is often depicted as a pyramid showing a progression from 'knowledge' to evaluation'.

Higher order thinking skills

Based on learning taxonomies is the belief that some types of learning require more cognitive processing than others. These are the higher order thinking skills (HOTS), also known as higher order learning skills.

The higher order thinking skills include critical, reflective and creative thinking. These skills are more generic in nature than lower order thinking skills (LOTS) and can be regarded as transferable. In other words, they can be activated when we encounter unfamiliar situations, problems or questions.

Bloom's revised taxonomy

Anderson and Krathwohl (2001) revised Bloom's taxonomy using verbs instead of nouns. This was to emphasise the **active** nature of learning, placing the **emphasis on a learner's thinking processes** rather than on behaviours.

Bloom's revised taxonomy

Anderson and Krathwohl also reversed the top two levels of Bloom's taxonomy so that creating was at the top. Evaluating and creating can be seen as complementary and complex skills requiring the ability to analyse.

Bloom's revised taxonomy is a useful starting point for considering active learning and the progression to higher order learning skills.

When using the taxonomy, it is important to realise that an activity may encompass more than one level.

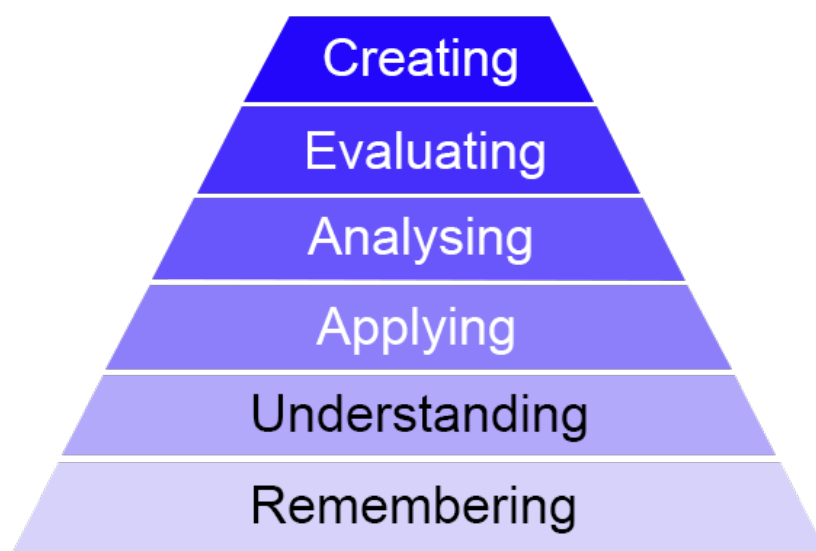


Figure 2: Bloom's taxonomy as revised by Anderson and Krathwohl

Active learning and higher order thinking skills

"When using active learning students are engaged in more activities than just listening. They are involved in dialog, debate, writing, and problem solving, as well as higher-order thinking, e.g., analysis, synthesis, evaluation. "

(Bonwell and Eison 1991)

Active learning leads to the development of the higher order thinking skills (HOTS) associated with independent learning. Higher order thinking skills enable learners to apply knowledge to new situations and create new knowledge.

See [Higher Order Thinking Skills: Definition, Teaching Strategies, Assessment](#) for a more in depth discussion.

Bloom's revised taxonomy

Why use Bloom's revised taxonomy?

"...higher ordering thinking skills...helps learners make connections between past and new learning, creates new pathways, strengthens existing pathways, and increases the likelihood that the new learning will be consolidated and stored for future retrieval."

(Sousa 2005: 259)

"Higher order thinking skills are necessary for the successful development of every person - in personal and professional terms, as well as for the social and economic development of the society. It is the University where these skills can broadly unfold."

(Hadzhikoleva et al. 2019: 242)

Using the revised taxonomy to provide clear objectives for learners will help them develop connections between past and new learning. Learners need to be supported in this process and the taxonomy enables tutors to guide development and learning.

Providing clear learning objectives:

- reduces ambiguity and confusion
- focuses attention on a learning activity
- signals the level of complexity of activities
- enables students to understand what is expected of them
- helps learners and tutors measure and assess progress.
- provides a clear route of progression to higher order thinking skills.

Assessment

Familiarity with Bloom's terminology used in learning objectives and outcomes will assist learners when they encounter these same phrases in assessments. Learners will recognise the nature of what they are being asked to do and, therefore, be in a much better position to apply higher order thinking skills and prior knowledge.

See the [SCQF level descriptors](#) for generic outcomes for each of the SCQF levels.

Writing learning outcomes

Bloom's revised taxonomy

Learning outcomes are statements that clearly specify what students will have achieved and be able to do by the end of a learning activity or course. Learner-centred, they provide a means of guiding learners in their learning while also being able to specify and measure their achievements.

When writing learning outcomes, it is important that outcomes are:

- specific
- measurable
- achievable.

As learning outcomes should be specific, measurable and achievable, avoid using words that are vague and cannot be measured, such as 'understand', 'appreciate', 'believe', 'learn' and 'become familiar with'.

Follow the guidance provided in the [SCQF Credit Rating Criteria Explained](#) (from page 9) and use Bloom's revised taxonomy to help you write learning outcomes.

Before writing the learning outcomes, you should also consider the following:

1. What should the learner be able to do at the end of the learning activity?
2. What knowledge, skill or abilities should the student be able to demonstrate?
3. What will learners need to be able to do to demonstrate what they have learned?

Bloom's revised taxonomy shows the progression from lower order to higher order thinking skills. Similarly, an effective course will provide opportunities to apply increasingly complex concepts. Please also note, it is possible that learners will move through the levels of the taxonomy several times during a course of study as they meet new and more complex concepts.

Learning outcomes may cover more than one level of Bloom's taxonomy. For example:

- You will be able to **apply** legal and ethical principles to the **development** of a code of conduct.

Bloom's revised taxonomy

Bloom's revised taxonomy and learning outcomes

Bloom's revised taxonomy provides a framework that will enable you to identify the cognitive levels of learning as well as providing examples of clear, precise language to write learning outcomes.

The structure of a learning outcome

Introduction + verb + object + modifier (as appropriate).

Example – Level 1: remembering

Introduction

On completion of/at the end of this module/unit/topic/activity, you/learners will be able to

Verb	Object	Modifier
arrange	the food items from high to low	in order of their calorific values.
describe	the identifying features of	the main rock groups.
label	a diagram of	the eye.

Example – Level 2: understanding

Introduction

On completion of/at the end of this module/unit/topic/activity, you/learners will be able to

Verb	Object	Modifier
compare and contrast	different weather systems	using computer generated data.
interpret	construction engineering principles	as applied to structural drawings.
summarise	the key behaviourist theories	in relation to an early education environment.

Example – Level 3: applying

Introduction

On completion of/at the end of this module/unit/topic/activity, you/learners will be able to

Bloom's revised taxonomy

Verb	Object	Modifier
apply	legal and ethical principles	to the development of a code of conduct.
prepare	an economic forecast	based on current market conditions.
conduct	a complete check of	equipment.

Example – Level 4: analysing

Introduction

On completion of/at the end of this module/unit/topic/activity, you/learners will be able to

Verb	Object	Modifier
catalogue	legal and ethical principles	in a care environment.
determine	the key elements of	a sound business plan.
differentiate between	management and leadership.	
plot	a graph	to show the connectivity between components.

Example – Level 5: evaluating

Introduction

On completion of/at the end of this module/unit/topic/activity, you/learners will be able to

Verb	Object	Modifier
evaluate	the financial viability of	a business.
review and assess	legal judgements	in property law.
Identify and justify	appropriate courses of action	in relation to specific industrial disputes.

Example – Level 6: creating

Introduction

On completion of/at the end of this module/unit/topic/activity, you/learners will be able to

Verb	Object	Modifier
create	a protocol	for conducting an job interview.
develop	an action plan	to implement a communications policy.
formulate	sound arguments	on the value of intercession in cases of

Bloom's revised taxonomy

Bloom's revised taxonomy

Keywords, objectives, activities and outputs

Bloom's keywords will enable you to write outcomes/objectives for learners. You may also include specific activities that enable learners to practice/demonstrate what they have learned and also outputs for these activities. Examples for each level are shown here.

Download a PDF on [Using Bloom's revised taxonomy](#) which provides: keyword descriptions, objective examples for keywords and a table of activities and outputs

Remembering

Keywords	arrange, define, describe, identify, label, list, locate, memorise, name, select, state
Assessment/activity objective example	Arrange the fruits below from high to low in order of their calorific values.
Activity suggestions	quiz, 'Googling', labelling diagrams/charts/ pictures, quoting laws/ procedures, brainstorming
Examples of outputs	definition, fact chart, social bookmarking, mind map, glossaries, list, recording

Understanding

Keywords	clarify, classify, compare, contrast, distinguish, explain, estimate, exemplify, generalise, interpret, paraphrase, predict, reword, summarise, translate
Assessment/activity objective example	Compare and contrast the climate of the Isles of Lewis and of Shetland.
Activity suggestions	interpret or explain a given scenario, advanced 'Google' searches, matching/ predicting exercises, discussion board posts
Examples of outputs	summary, classification, paraphrases, activity report, diaries, drawing, collage, recording, photograph, blogs, annotating texts

Bloom's revised taxonomy

Applying

Keywords	apply, calculate, carry out, classify, conduct, construct, implement, modify, organise, perform, prepare, produce, provide, react, relate, respond to, restructure, translate, use
Assessment/activity objective example	Identify a suitable location where a tourist in the Highlands without their own transport could be based. Provide reasons for your choice of location.
Activity suggestions	constructing an argument, presenting a solution, reporting on an activity/event, modifying a diagram, interviewing, collaborative online work and editing, using Googlemaps
Examples of outputs	diagram, sculpture, photograph, forecast, illustration (textual/graphic), project, cartoon, filmstrip, interview, simulation, film, wikis, presentation

Analysing

Keywords	analyse, break down, catalogue, compare, deconstruct, discriminate between, divide, examine, execute, extrapolate, implement, integrate, measure, plot, quantify, produce a graph/diagram, select, show, use, value
Assessment/activity objective example	Select two leadership styles and provide examples of situations when they might best be employed. Provide references to support your choice.
Activity suggestions	surveys, identifying constituent parts or functions, identifying requirements, distinguish between facts and inferences
Examples of outputs	survey/poll/questionnaire, wiki, model, argument, report, advertisement, checklist, chart, academic abstract, spreadsheet

Bloom's revised taxonomy

Evaluating

Keywords	appraise, argue, assess, combine, defend, determine, evaluate, hypothesise, investigate, justify, organise, present a case for, report on, review, test, judge, monitor
Assessment/activity objective example	Review the financial options available when implementing a commercial takeover for the scenario provided. Perform a risk analysis for each option in relation to the scenario.
Activity suggestions	group discussion/report, debate, review options, performing a SWOT analysis, carrying out a risk analysis, posting comments on blog entries, assessing resources
Examples of outputs	editorial, case study, news item, video or audio report, presentation, critique, recommendation

Creating

Keywords	assemble, build, compose, create, design, develop, formulate, generate, establish, integrate, modify, organise, originate, propose, revise, plan
Assessment/activity objective example	Analyse the main meals offered in the student canteen in relation to their health benefits or otherwise. Suggest alternative meals so as to create healthier options. Justify the reasons for your choices.
Activity suggestions	developing plans/procedures, devising new methods, creating new approaches/systems, brainstorming
Examples of outputs	set of rules or standards, play/poem/song, article, video, podcast, project, publication, plan, model

Bloom's revised taxonomy

References

- Anderson, L. and Krathwohl, D. (eds.) (2001) *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives*. New York: Longman
- Bloom, B. S. (ed.) (1956) *Taxonomy of Educational Objectives, the classification of educational goals*. New York: McKay
- Bonwell, C. and Eison, J. (1991) *Active Learning: Creating Excitement in the Classroom*. AEHE-ERIC Higher Education Report No. 1. Washington, D.C.: Jossey-Bass
- Center for Advancement of Learning and Assessment, Florida State University Higher Order Thinking Skills: Definition, Teaching Strategies, Assessment.
- Churches, A. (2010) *Educational Origami blog*. Available from <<http://edorigami.edublogs.org/>> [1 November 2010]
- Churches, A. (2010) 'Bloom's Digital Taxonomy Resources.' *Educational Origami*. Available from <<http://edorigami.edublogs.org/blooms-digital-taxonomy/>> [9 November 2018]
- Hadzhikoleva, S., Hadzhikolev, E. and Kasakliev, N. (2019) 'Using Peer Assessment to Enhance Higher Order Thinking Skills'. *TEM Journal* [online] 8(1), 242–247. Available from <https://login.eor.uhi.ac.uk/login?url=https://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=135048143&site=ehost-live&scope=site>
- SCQF (2015) SCQF Handbook. Available from <https://scqf.org.uk/media/1125/scqf_handbook_web_final_2015.pdf> [9 November 2018]
- SCQF (n.d.) SCQF Level Descriptors. Available from <<https://scqf.org.uk/about-the-framework/interactive-framework/>> [9 November 2018]
- SCQF (2015) The Scottish Credit and Qualifications Framework. Available from <<https://scqf.org.uk/>> [9 November 2018]
- SCQF (n.d.) SCQF Credit Rating Criteria Explained: Learning Outcomes, Notational Learning Hours and Assessment. Available from <<https://scqf.org.uk/media/1130/criteria-explained-final-web-oct-2017.pdf>> [9 November 2018]
- Smyth, K., Bruce, S., Fotheringham, J. and Mainka, C. (2011) *Benchmark for the use of technology in modules*. Edinburgh: Edinburgh Napier University
- Sousa, D. A. (2005) *How the Brain Learns* 3rd edition. SAGE Publications