ROYAL ROADS UNIVERSITY

The Essentials of Learning Outcomes

Introduction – The "What?"

What is a learning outcome?

Learning outcomes are clear, plain language descriptors of knowledge and performance tasks. In other words, learning outcomes state the skills and knowledge that the learner is expected to demonstrate. Often the learning outcome will indicate what specifically will be assessed to determine success. Ideally, a learning outcome should be measurable and achievable. However, not all learning outcomes will be easy to measure; often some of the most important outcomes are challenging to measure.

Some RRU programs use the term "competency" instead of, or interchangeably with, "learning outcomes".

Purpose – The "Why?"

Why use learning outcomes?

Learning outcomes guide the selection and coordination of appropriate content, learning activities, and assessment strategies that promote the overall learning process. Instructors measure students' learning – and the level of competency achieved – against the intended result (the learning outcome). Learners' performance is assessed against criteria, rather than against other learners.

Learning outcomes can help with questions and issues such as the following:

For instructors	What skills and knowledge do I want the learners to demonstrate? How do I grade fairly?
For learners	What am I expected to learn, and demonstrate to my peers and instructors? I've been fairly successful in my professional work, but I would like to have a greater understanding of what I'm doing well and where I can improve. My marks seem to be good…so why did I get an IP?
For employers	If I were to hire a graduate of this program, what knowledge and skills could I expect them to demonstrate?
For program administrators	Learning outcomes help inform other instructors and colleagues of the competencies and knowledge areas that are addressed by each course, and the program as a whole.

Learning outcomes bring transparency, fairness, and flexibility to curriculum design, delivery, and assessment. The following list, while not exhaustive, is an explanation of why we value the outcomes approach. It:

- Makes explicit the purpose of the course or module
- Helps instructors select and design materials more effectively by providing a framework for instruction
- Helps instructors select a teaching strategy that is matched to the outcome
- Ensures that assessments are based on the knowledge and skills delivered
- Provides a "level playing field" of assessment (of performance) in multiple-cohort or cross-disciplinary courses or programs
- Provides a means to measure whether or nor learning has occurred through conducting several assessments, over time, against the learning outcome
- Allows transferable (e.g. workplace) skills to be evaluated in the context of any course or module
- Provides flexibility in changing or adapting course content to better meet the needs of the learners, while maintaining the same learning outcomes (collaborative learning) (Boydell 2002).

Application – The "How?"

How are learning outcomes used at Royal Roads University?

Learning outcomes describe knowledge that graduates of RRU will attain or the performance tasks that they will be able to accomplish upon completion of their course or program of studies. The outcomes represent a high level of integration and application of knowledge, skills, attitudes and values to complex real world situations. In many ways, the RRU outcomes-based approach is a promise to learners, employers, and external quality reviewers, that graduates will have demonstrated competency in all of the areas identified in their programs.

Within the context of the university, the goal of the learning outcomes philosophy of education is to assist learners to acquire, integrate and apply the requisite learning so that it may be transferable to real-life situations.

The development of learning outcomes differs between the various Royal Roads programs, and it is important that you identify which learning outcomes will be evaluated in your course. Some programs will assign the learning outcomes that must be assessed in each course. In other programs, you have some flexibility to select the learning outcomes from the program's list.

If you are selecting learning outcomes:

- Keep the end in mind. What knowledge, skills and attitudes do you want learners to demonstrate in the course and the assignments?
- You may find yourself feeling that there are many critical and related skills in your course, and you might be unsure how many outcomes are appropriate. There is no hard and fast rule on the number of learning outcomes, although instructional designers recommend no more than 2-3 for a minor assignment, no more than 3-5 for a major assignment, and no more than 6-7 per course. More outcomes can lead to fragmentation in marking, leaving learners and instructors unsure where how to focus and how to accurately assess progress

The categories of learning and the hierarchy of knowledge

Learning outcomes can address a wide range of levels of learning. The level of learning is important for both the learning outcomes and the assessment. Taxonomies of learning – such as that designed by educator Benjamin Bloom – assist instructional designers, faculty, and learning facilitators to be intentional and consistent in their approach to the learning cycle.

In the 1950's, Bloom and his colleagues grouped learning into three major categories: cognitive, affective and psychomotor. *Cognitive learning* is centered on knowledge and cognitive processes, and generally is comprised of facts, terminology and analysis of elements. *Affective learning* centers on values and value systems; for example, an openness to or awareness of selected ideas, valuing of ideas, and integrating values into a total world philosophy. The *psychomotor* domain of learning involves eye-hand coordination and any other physical component of performance.

Cognitive learning tends to dominate higher education. Bloom's hierarchy of cognitive learning outlines six levels: recall (knowledge), comprehend, apply, analyze, synthesize, evaluate. You may hear this hierarchy simplified/consolidated to three levels: recall, apply, evaluate.

Why do we need to consider levels of learning?

There will be a range of skills and knowledge areas that you want learners to demonstrate, at different levels during the course. When creating or applying learning outcomes, it is helpful to frame the outcome and assessment criteria in terms that describe what the learners will be able to know or do, and choose verbs that indicate the hierarchical level at which the learning is to take place.

So what does this mean to you as an instructor? For example, if the outcome is at the 'recall' level, the learning activity and assessment should also be at the 'recall' level. You can add your subject matter specifics to design activities and the assessment criteria that support your learning outcomes.

The table below looks at one way that instructors could think about aligning outcomes, activities, and assessment.

Level	**Activities/practice during the course**	**Example assessment – and there are many other examples!**
Recall/foundational (e.g. define, describe, cite, locate)	For example: learners have an opportunity to learn necessary terminology and practise using it appropriately	Multiple choice, short answer, quiz
Application (e.g. apply, interpret, compare)	Activities would provide opportunities for learners to practise applying the theories to new contexts and the assessment would again provide opportunities to apply the theories to new contexts	The assessments you can choose from are varied, perhaps an exam, paper, presentation, case study, and/or simulation.
Evaluation (e.g. assess, evaluate, integrate, create)	The class would provide opportunities for learners to compare and contrast theories or situations and evaluate them, providing justifications that integrate theories and other applications.	The assessment would enable learners to evaluate a theory or piece/body of work in a similar manner, using a variety of methods, which might include discussions, exams, essays, debates, simulations, and/or problem-based learning activities.

As you can imagine, at all levels there are a variety of ways to 'teach' to the outcomes. We encourage experiential learning where the learners are actively engaged and encouraged to apply their own expertise. Varying the learning opportunities helps to meet the needs of all learners and encourages them to expand their ability to work in different learning styles, be it reflective, observational, oral, etc.

As your course progresses, you can increase the complexity (e.g. level) of learning activities and assessment strategies; assessments that require higher-level skills such as synthesis and evaluation will often occur more frequently towards the end of the course.

The list of verbs on the following 2 pages will help to frame and coordinate the learning outcomes, learning activities, assessment strategies and criteria for successful learning achievement.

COGNITIVE DOMAIN (KNOWLEDGE)

Simple → **Complex**

Knowledge	Comprehension	Application	Analysis	Synthesis	Evaluation
Cite	Compute	Apply	Analyze	Arrange	Appraise
Count	Describe	Calculate	Appraise	Assemble	Assess
Define	Discuss	Demonstrate	Calculate	Collect	Choose
Draw	Explain	Dramatize	Categorize	Compose	Compare
List	Express	Employ	Compare	Create	Criticize
Name	Identify	Examine	Contrast	Design	Estimate
Record	Locate	Illustrate	Debate	Formulate	Evaluate
Relate	Report	Interpret	Diagram	Integrate	Judge
Repeat	Restate	Operate	Differentiate	Manage	Measure
Underline	Review	Practice	Examine	Organize	Rank
	Tell	Schedule	Inventory	Plan	Revise
	Translate	Sketch	Question	Prescribe	Score
		Solve	Test	Propose	Select
		Use			

The hierarchical steps in the cognitive domain

AFFECTIVE DOMAIN (ATTITUDES)

Simple → **Complex**

Receiving	Responding	Valuing	Organization	Characterization
Accept	Behave	Accept	Codify	Internalize
Attend	Complete	Balance	Discriminate	Verify
Develop	Comply	Believe	Display	(Formal instruction
Receive	Cooperate	Defend	Favour	does not address)
Recognize	Discuss	Devote	Judge	
Reply	Examine	Influence	Order	
	Obey	Prefer	Organize	
	Observe	Pursue	Relate	
	Respond	Seek	Systematize	
		Value	Weigh	

The hierarchical steps in the affective domain

PSYCHOMOTOR DOMAIN (SKILLS)

Simple → **Complex**

Perception	Set	Guided Response	Mechanism	Overt Response	Adaptation	Origination
Distinguish	Adjust	Copy	Adjust	Calibrate	Adapt	Construct
Hear	Approach	Determine	Build	Coordinate	Build	Create
See	Locate	Discover	Illustrate	Demonstrate	Change	Design
Smell	Place	Duplicate	Indicate	Maintain	Develop	Produce
Taste	Position	Imitate	Manipulate	Operate	Supply	
Touch		Inject	Mix			
			Set up			

The hierarchical steps in the psychomotor domain

An Overview of Assessment

Now that you've determined your learning outcomes, what is your next step? In all likelihood, you will be figuring out how you will assess against those outcomes. The sections below will introduce you to the process of determining appropriate assessment techniques that provide measurable results that you can check against your learning outcomes.

Writing and using assessment criteria

Learners' performance is judged against a set of criteria which has been predefined and transparent. In educational terminology, this is often called "criterion-referenced assessment". Assessment criteria should be derived from the learning outcome. Generally speaking, assessment criteria should be as precise as possible; they should describe evidence that is observable; and they should describe only that which is essential to demonstrate achievement of the learning outcome.

Assessment criteria should describe characteristics of a product wherever possible. Where it is necessary to describe the characteristics of actions/activities, critical aspects of the context in which actions/activities are demonstrated, should be defined. More generally, one should avoid specifying procedures and methods unless these are specified in the learning outcome.

Sample learning outcomes and assessment criteria

Past or Present Royal Roads Examples

Outcome	**Sample assessment criterion**
Communicate in writing	A structure is used that makes it easy for the audience to identify the main points and ideas. The text is legible, accurate and conforms to the grammatical conventions that match the purpose and expectations of the audience. A varied vocabulary and sentence structure is used to convey particular effects. An appropriate tone is used to suit the degree of formality required or in observation of any conventions.
Model values and practices that encourage trust, knowledge sharing, empowerment and mutual success.	Interacts effectively with all other learners in team, group and class work. Listens carefully, provides and receives feedback as part of learning, encourages alternative views, encourages everyone to participate fully.
The learner will be able to evaluate the effectiveness of his/her own actions within a leadership context of their choice.	The learner is able to respond sensitively to a variety of feedback sources within the working context.

Achieving consistency in grading within a course or program, with one of more instructors, can be challenging. Instructors may find it useful to develop a **rubric,** for their own use and/or to share with colleagues and learners, which describes the performance levels for each assessment criterion. A sample rubric for the last example in the table above might be:

The learner is able to respond sensitively to a variety of feedback sources within the working context.
4 - Is sensitive to a wide variety of feedback. Responds promptly when the current approach is not working. Seeks out advice and responses from knowledgeable sources.
3 - Is aware of major sources of feedback. Responds and adjusts when correction is needed. Listens to the

advice of others.
2 - Is insensitive to some important sources of feedback. Responds and adjusts when correction is needed. Listens to the advice of others.
1 - Ignores major sources of feedback. Responds negatively to unfavourable information.

Conclusion

The body of scholarship on the learning outcomes approach and outcomes-based assessment is substantial, but we hope that this brief introduction provides a helpful overview. If you have any questions, the Centre for Teaching and Learning, your program director and experienced colleagues, and instructional designers would be pleased to help.

Resources

Teaching at Royal Roads University: Learning Outcomes – look under "Resources/Centre for Teaching and Learning/CTL Resources/Teaching at RRU Faculty Guidebooks"

Tony Boydell. July 2002. Outcomes-based learning and assessment at Royal Roads University (draft). Contact Tony Boydell for a copy of this article.

If you would like more information regarding learning outcomes, please take the time to progress through the self-paced online course "The Learning Outcomes Approach", found under "Training Opportunities" on the Teaching at Royal Roads University website: http://learn.royalroads.ca/teaching.

The Centre for Teaching and Learning is grateful to individuals who contributed their ideas to this document, including Heather Seaman, Alice MacGillivray, Graham Debling, and Tony Boydell.