

CENTRE FOR TEACHING AND LEARNING

Developing Effective Learning Outcomes

A Practical Guide

Prepared by

Dr. Klodiana Kolomitro
Centre for Teaching and Learning

Dr. Katrina Gee
Biomedical and Molecular Sciences

May 2015

An Outcomes-Based Education Model

In recent years there has been a paradigm shift from focusing on the body of information and what is intended from the instructor, to what students have learned and can demonstrate at the end of a learning experience. Several educators have advocated for this “learner-centered approach” (McCombs & Whistler, 1997; Weimer, 2002; Pillay, 2002), arguing that “what and whether students learn successfully is more important than when and how they learn something” (Spady, 1994, p. 8).

The principal question asked of the student or the graduate will therefore no longer be: “what did you do to obtain your degree?” but rather “what can you do now that you have obtained your degree?” (Purses, Council of Europe, 2003)

With the implementation of the new *Quality Assurance Framework Ontario Council of Academic Vice-Presidents’ Quality Assurance Framework* (2010), Ontario universities adopted a learner-centered, outcomes-based educational model. The quality assurance framework aims to “demystify the knowledge, skills, and competencies to be acquired through the chosen educational program” (Lennon, 2010, p. 7), add transparency in communicating students’ accomplishments, and create pathways to increase the mobility of students within education systems and institutions, nationally and internationally. In 2011, Queen’s University *Quality Assurance Processes (QUQAPs)*, processes by which academic programs are approved and reviewed, was approved by Senate. The goal is to ensure that Queen’s existing and new undergraduate, graduate and professional programs continue to offer students learning experiences that are transformational, inspiring, and intellectually challenging.

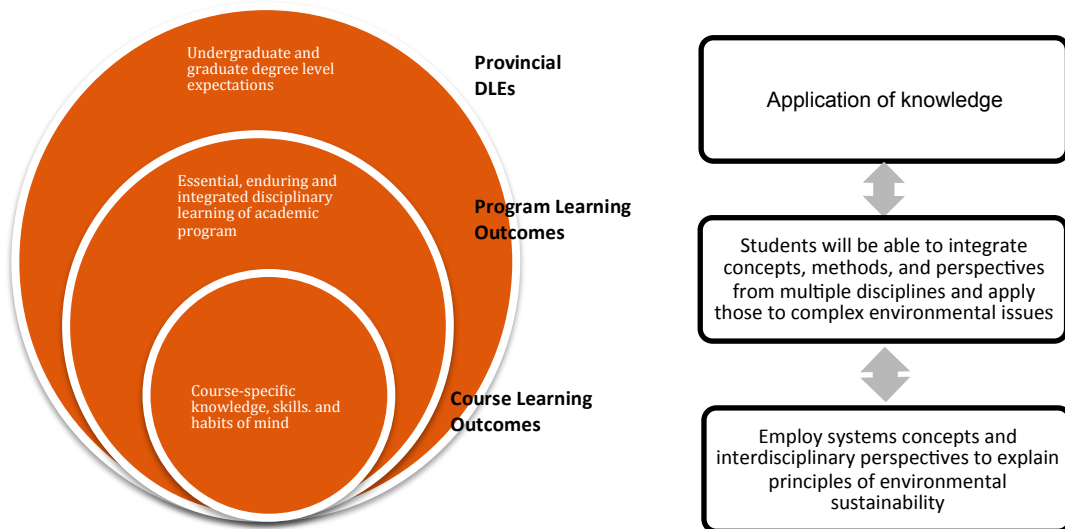
What are Learning Outcomes?

There is no clear agreement in the literature as to the specific difference between terms such as learning outcomes, objectives, and goals. Given the lack of clarity and utility of these distinctions, from now on we will only refer to the term *learning outcomes* in this document. There are multiple definitions of learning outcomes but they are all fairly similar. Hounsell and Anderson (2008) use the phrase “ways of thinking and practicing” or what others refer to as “habits of mind” to describe the depth and breadth of knowledge and subject-specific skills, and know-how that students come away with from an educational experience. According to the authors, this concept encompasses the three types of apprenticeship described by Shulman:

Learning outcomes are direct statements that describe the **knowledge, skills, and habits of mind** that students are expected to reliably demonstrate after a learning experience.

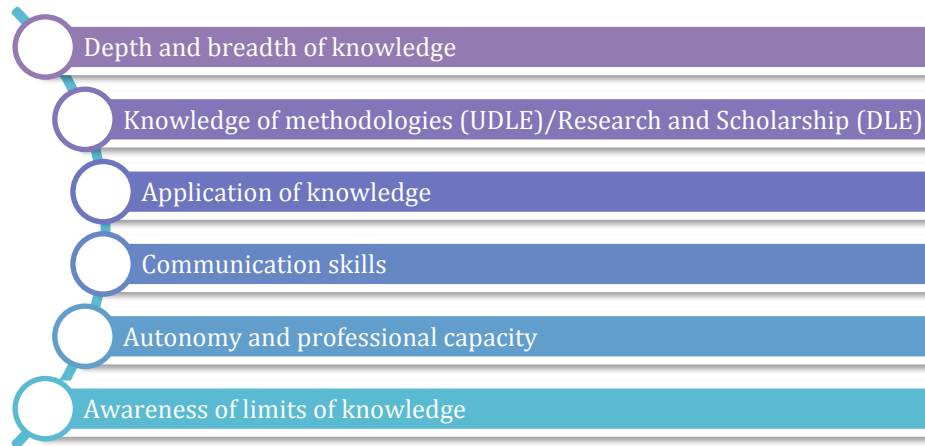
A cognitive apprenticeship wherein one learns to think like a professional, a practical apprenticeship where one learns to perform like a professional, and a moral apprenticeship where one learns to think and act in a responsible and ethical manner that integrates across all three domains. (Shulman, 2005, p. 3)

Example:



Adapted from Kenny & Desmarais. (2012) A guide to developing and assessing learning outcomes

Learning outcomes can be articulated at several levels, including lesson, course, program, institution, and province. Course learning outcomes are usually formed as explicit and concise statements that describe course-specific knowledge, skills, and habits of mind a student will be able to demonstrate as a result of their experience in the course. At the program level, courses should be organized to form an integrated and coherent curriculum based on the intended course learning outcomes. Collectively, course learning outcomes are represented and embedded in program learning outcomes. Each academic program defines its uniqueness and the essential, enduring, and integrated disciplinary learning that should be demonstrated, through program learning outcomes. Program learning outcomes help students articulate the type of learning they will collectively be able to demonstrate from learning experiences in a particular program. Program learning outcomes are linked to institutional goals and Degree Level Expectations. Each academic program must articulate how the program of study addresses each of the Degree Level Expectations. The Undergraduate and Graduate Degree Level Expectations specify the following six areas of ability required at the undergraduate and graduate levels:



Source: Council of Ontario Universities, Quality Assurance Framework (2010). For more information on this, please refer to Appendix A.

Benefits and Potential Issues with Learning Outcomes

There are several advantages to having course learning outcomes as identified by Jenkins and Unwin (2001):

- help instructors more precisely to tell students what is expected of them;
- help students learn more effectively. They know where they stand and the curriculum is made more open to them;
- make it clear what students can hope to gain from following a particular course or lecture;
- help instructors to design their materials more effectively by acting as a template for them;
- help instructors select the appropriate teaching strategy, for example lecture, seminar, student self-paced, or laboratory class. It obviously makes sense to match the intended outcome to the teaching strategy;
- help instructors more precisely to tell their colleagues what a particular activity is designed to achieve;
- assist in setting examinations based on the materials delivered;
- ensure that appropriate assessment strategies are employed.

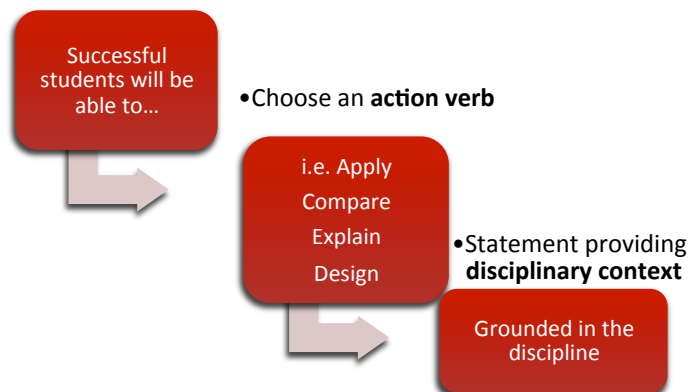
At the program and institutional level, learning outcomes increase transparency, credibility and comparability of quality assurance standards. Learning outcomes simplify credit transfer and facilitate student mobility by identifying various progression routes through and between different education systems, particularly in the context of lifelong learning (Adam, 2004).

Concerns that learning outcomes are too prescriptive are mitigated by ensuring that outcomes are written “with a focus on higher-order thinking and application skills” (Kennedy, Hyland, & Ryan, 2006, p. 27). In fact, it is still possible to have process outcomes that do not stifle creativity and allow students to choose themselves the direction they want to travel (Gosling & Moon, 2002). The nature and level of specificity of learning outcomes need to be taken into account, in order to avoid over-prescribing or under-prescribing outcomes. Learning outcomes should be

developed “with care and sensitivity... narrow and limiting learning outcomes are not appropriate for higher education where creativity and imaginative leaps are highly valued” (Adam, 2004, p. 8). Other practical objections to implementing learning outcomes, are often described in terms of time and resources required, and the notion that it can take years to have learning outcomes embedded in the curriculum (Adam, 2004).

Writing Effective Learning Outcomes

Learning outcomes describe learning that is essential and enduring; learning that really matters in the long term and what students need to know after they’ve forgotten the details of the course. Learning can be described in either prospective terms – to be achieved for new course or program, or in retrospective terms – learning that has been achieved for accreditation or academic review processes (Gosling & Moon, 2002). In its simplest expression, a learning outcome consists of a direct statement that often starts with: “Successful students will be able to” plus an action verb indicating the level of learning that is intended plus a statement providing disciplinary context and identifying what the learner will be able to do as a result of the change. This applies to both course and program learning outcomes although course outcomes are more specific.



Even though most learning outcomes are couched in terms of “at the end of the course/program, students will be able to”, it is good practice to assess the achievement of learning outcomes throughout the learning experience and not only at the end-point. This will provide greater clarity at what point curricular changes should be made to improve students’ learning (Marsh, 2007).

There should be as many learning outcomes as needed to clearly reflect what learners will be able to demonstrate at the end of a course/program, however it makes the assessment plan more manageable if you have between 5-10 learning outcomes.

A well-written learning outcome is likely to:

- Include various levels of learning and cognitive complexity;

- Be achievable by students within the time available and at the level of learning, which the students are at;
- Be assessable by some reasonable and manageable form of assessment;
- Be assessable using a variety of assessment strategies;
- Be communicated in a systematic way. Learning outcomes become more powerful when they are known and explicitly shared and understood;
- Avoid verbs that are vague, unclear, or open to multiple interpretations (e.g. appreciate, understand, learn, comprehend, gain knowledge of, be aware, realize)
- Be balanced. If the outcome is too detailed, there is a need to develop several other outcomes to ensure the breadth of learning is represented in a program. If the outcome is too broad, it becomes difficult to demonstrate that the learning and assessment within a program meet the outcomes.

Examples:

Cultural Studies – Students will be able to apply interdisciplinary perspectives to examine ways in which culture is formed, practiced and constituted.

Art History – Students will interpret art works to establish a perspective on the subject matter and the meaning of their imagery (iconography).

Drama – Students will be able to examine both the structure of the modern "musical" and its production methodology.

Environmental Studies – Students will be able to effectively communicate perspectives on complex environmental challenges to both professional and lay audiences.

Chemistry – Student will be able to apply quantitative principles to effectively describe the nature of chemical reactions.

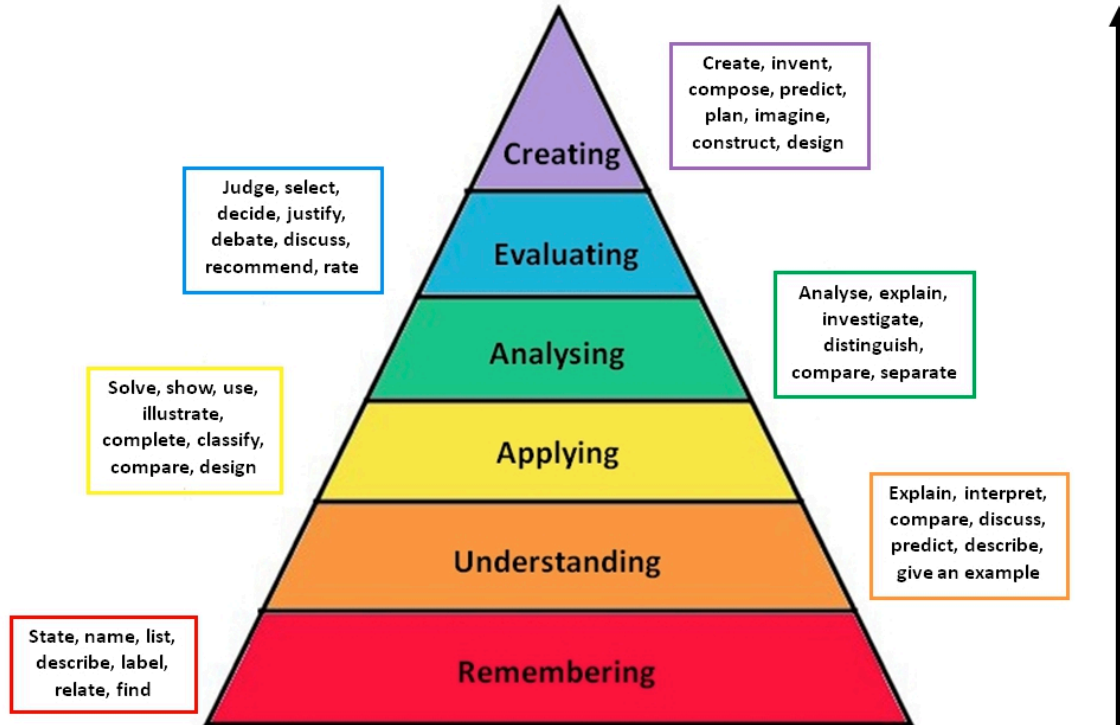
“Well written learning outcomes provide a means of mapping the content of a curriculum-for example, to see how they reflect benchmark statements, which of the key skills are acquired, where the same skill or content is appearing more than once in the programme, the capabilities the students acquire as they progress through the levels in the programme of study” (Gosling & Moon, 2002).

Learning Frameworks

When choosing an action verb, it may be useful to draw on one the following three frameworks of learning: i) Bloom’s taxonomy (Bloom et al., 1956); ii) the ICE model, which stands for *Ideas*, *Connections*, and *Extensions*, (Fostaty Young & Wilson, 2000); or iii) the Structure of Observed Learning Outcomes (SOLO) taxonomy (Biggs & Collis, 1982; Biggs & Tang, 2007).

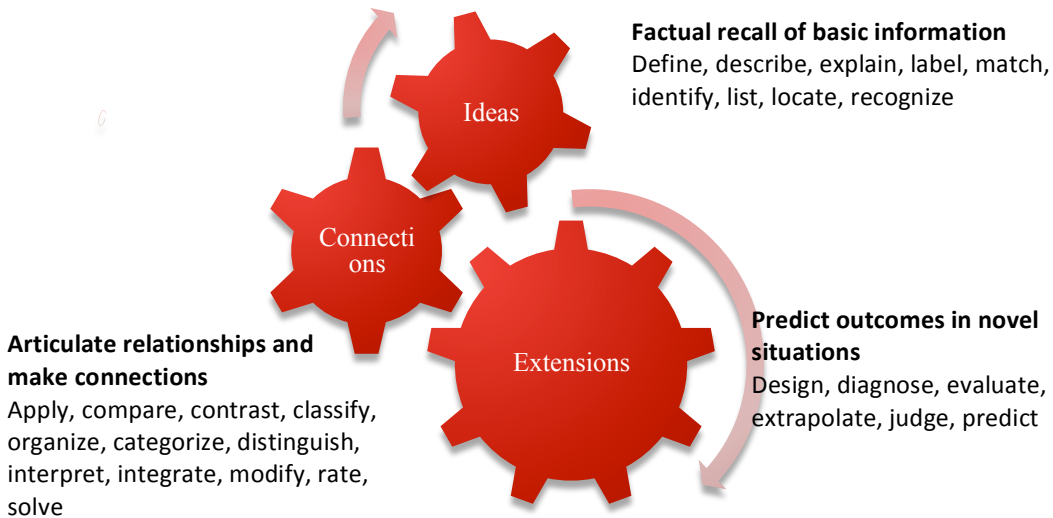
i) Bloom’s taxonomy compartmentalizes learning into three separate domains – cognitive, psychomotor, and affective. Within each of the domains, Bloom’s describes an ascending order of levels of complexity. The taxonomy is hierarchical, and for students to achieve the higher order stages, they first need to perform at the lower levels. For example, in order for students to apply knowledge, they need to first understand it. Anderson and Krathwohl (2001) have updated Bloom’s cognitive domain by changing all the labels from nouns to verbs to better represent the active nature of learning. The following picture offers a list of verbs, students’ activities and products to describe learning at different levels – this may be a useful paradigm in articulating learning outcomes.

Bloom's Taxonomy



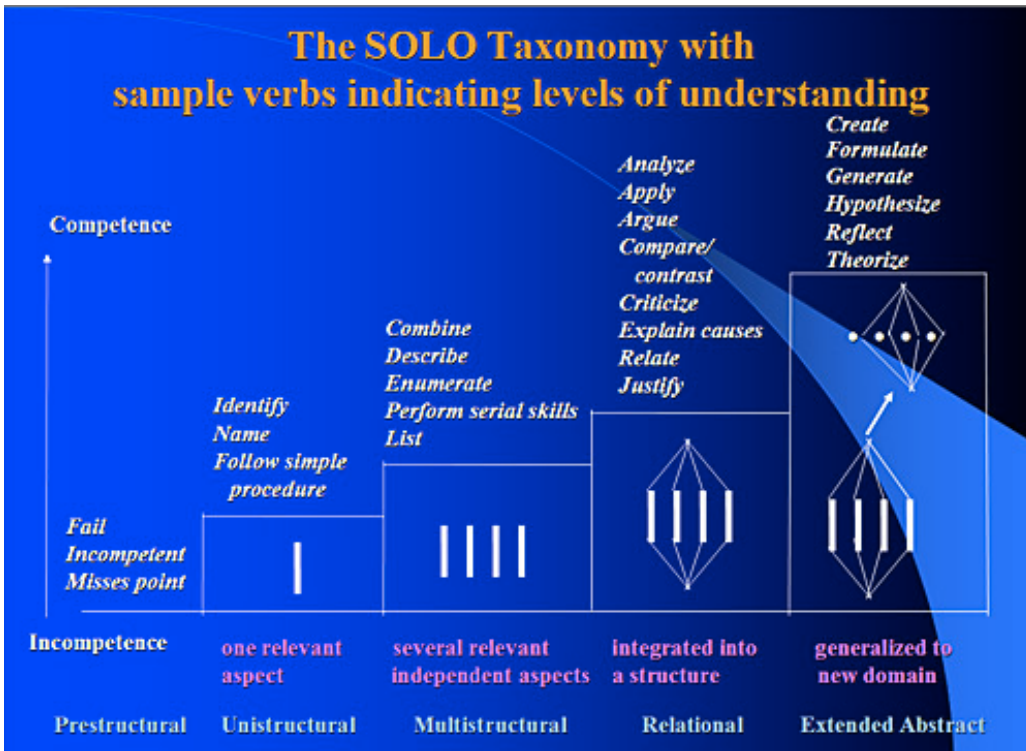
Source: <https://jennylyngriffiths.files.wordpress.com/2013/05/blooms.jpg>

ii) The ICE framework represents the gradual progression and growth of the learner towards deeper understanding. Ideas are the fundamental, discrete pieces of information that make up the building blocks of learning. Connections are the relationships that students can form among discrete ideas, and connecting new concepts to prior knowledge. Extensions constitute creating new learning and applying knowledge to completely new and novel situations (Fostaty Young & Wilson, 2000). The following diagram offers a list of verbs for the ICE model.



(Wilson, 1999; Fostaty Young & Wilson, 2000)

iii) The SOLO taxonomy structures learning in five levels, from quantitative increases in learning (acquiring new amounts of information) to qualitative increases in learning (creating meaning and transferring ideas to new situations and experiences). The pre-structural level refers to the stage before the learning cycle begins. As students enter the learning cycle they move from adding simple ideas and concepts, to drawing complex connections and distinctions between ideas, and eventually reaching the extended abstract stage.



Source: <http://www.johnbiggs.com.au/academic/solo-taxonomy/>

Learning Outcomes: My Learning experience by Dr. Katrina Gee

As an associate professor teaching 3rd and 4th year undergraduate courses in the Department of Biomedical and Molecular Sciences at Queen's, I attended a workshop on how to effectively write and plan "Learning Outcomes". Based on what I learned from the course, I proceeded to update the learning outcomes for one of my 4th-year courses.

I have noticed that the students have a more clear expectation of the assessment for the class as well as understanding the depth of knowledge that they are responsible for demonstrating. In particular, in my 4th-year course, which relies on student-initiated discussions (one of the intended learning outcomes), our in-class discussions are usually vibrant and informative.

For my learning outcomes, I kept my "dissemination strategy" simple: in the first class I went over the learning outcomes. I gave specific examples and answered any questions that the class had. The learning outcomes are posted online as well as being included in the course syllabus.

Here are a "quick tips" that I found useful:

- Use action verbs
- Keep them "to the point"
- Make them attainable

While developing my updated learning outcomes, I noticed that a few things went "hand-in-hand" with this process:

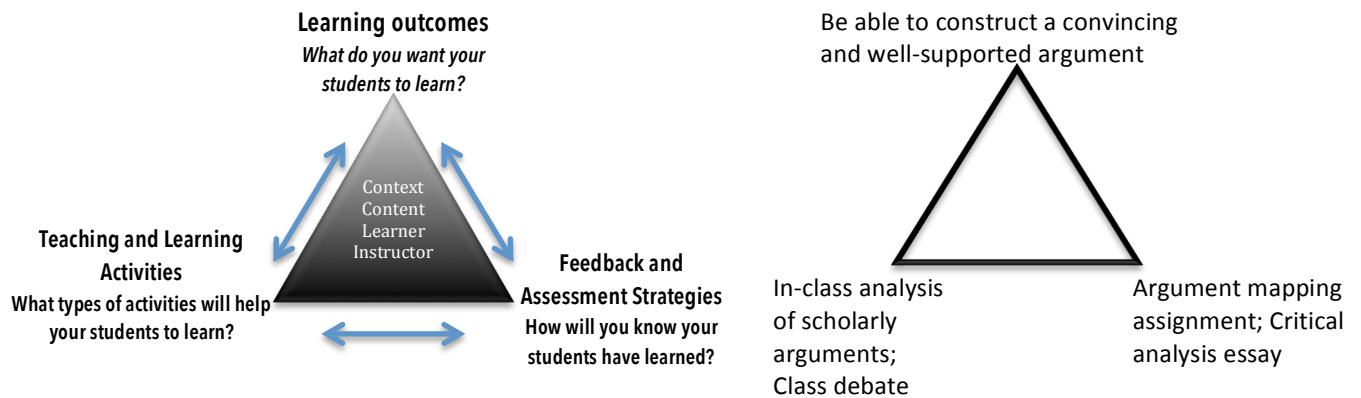
- Organization of each lecture – I used the learning objectives to make sure each lecture built towards at least one of the learning outcomes
- Deciding on the assessment "strategy" (ie the type of assessment: MCQ vs long/short answer)
- Actual grading of assessments: did the student(s) accomplish what was set out as the learning outcome(s)

Aligning Learning Outcomes, Assessment, and Instruction

Learning outcomes are described "as a basic educational building block" (Adam, 2004, p. 5) and they provide a powerful framework to build the curriculum. As such they cannot be separated from other parts of the curriculum such as assessment, and instructional strategies. To ensure a more systematic approach to the curriculum, there has to be alignment among the design, delivery, and assessment of learning: "When there is alignment between what we want, how we teach and how we asses, teaching is likely to be much more effective" (Biggs 2003). For a coherent and integrated curriculum, it is helpful to:

- Clearly identify desired learning outcomes.
- Design suitable assessment strategies and determine acceptable evidence of student learning.
- Plan instructional activities and learning experiences that are likely to ensure the achievement of the learning outcomes (Wiggins & McTighe, 1998).

Example:



Backward Design (Wiggins & McTighe, 1998), or starting with the end in mind, is similar to using a 'road map' and giving students a known destination, an expectation to achieve. The learning outcomes are the destination, and then the road map is used to plan the trip and ultimately demonstrate if students reach their destination. Answering some of the following questions might help teach towards the "end-point":

1. What are important concepts and principles learners should retain? What are some methods, processes, they should learn to use? What are some ways of thinking and practicing that students need to develop in my course?
2. How will I know students have mastered the knowledge and skills that is expected of them? What will I accept as evidence of progress?
3. What are some effective problems, activities, cases, or tasks for developing students' ability to meet the learning outcomes?

Although specifying learning outcomes is at the forefront of a paradigm shift, the next wave of educational change will be to provide evidence that those outcomes are being achieved. Bath et al question: "how would we know if there is alignment between what is espoused, what is enacted, and what students experience and learn" (p. 314)?

For Support

The Centre for Teaching and Learning has educational developers available to collaborate with you on learning outcomes, course and curriculum development and review. An initial consultation can be scheduled by calling **613-533-6428**, or emailing ctl@queensu.ca.

References

- Adam, S. (2004). *Using learning outcomes. A consideration of the nature, role, application and implications for European education of employing 'learning outcomes' at the local, national and international levels*. United Kingdom Bologna Seminar, Edinburgh, Scotland.
- Anderson, L. W., & Krathwohl, D. R. (eds.) (2001). *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives*. New York: Longman.

- Bath, D., Smith, C., Stein, S., & Swann, R. (2004). Beyond mapping and embedding graduate attributes: bring together quality assurance and action learning to create a validated and living curriculum. *Higher Education Research and Development* 23(3): 313-328.
- Biggs, J. (2003). *Teaching for quality learning at university*. Buckingham: Open University Press/Society for Research into Higher Education. (Second edition)
- Biggs, J., & Collis, K. (1982). *Evaluating the Quality of Learning: the SOLO taxonomy* New York: Academic Press
- Biggs, J. & Tang, C. (2007). *Teaching for Quality Learning at University* (3rd edn) Buckingham: SRHE and Open University Press
- Bloom, B.S., Engelhart, M. D., Furst, E. J., Hill, W. H., & Krathwohl, D. R. (1956). *Taxonomy of educational objectives: The classification of educational goals*. Handbook I: Cognitive domain. New York: David McKay Company.
- Fostaty Young, S. (2005). *Teaching, learning and assessment in higher education: Using ICE to improve student learning*. Proceedings of the Improving Student Learning Symposium, London, UK, 13, 105-115.
- Fostaty Young, S., & Wilson, R.J. (2000). *Assessment and learning: The ICE approach*. Winnipeg, MA: Portage and Main Press.
- Gosling, D., & Moon, J. (2001) How to use learning outcomes and assessment criteria. London: SEEC Office.
- Hounsell, D., & Anderson, C. (2008). Ways of thinking and practicing in biology and history. Disciplinary aspects of teaching and learning environments. In Kreber, C., ed. *The University and Its Disciplines: Teaching and Learning within and beyond Disciplinary Boundaries*. London: Routledge. pp. 71-83.
- Jenkins, A., & Unwin, D. (2001). *How to write learning outcomes*. Retrieved December 25, 2015, from <http://www.ncgia.ucsb.edu/education/curricula/qiscc/units/format/outcomes.html>
- Lennon, M. C. (2010). *Signalling abilities and achievement: measuring and reporting on skill and competency development*. Toronto: Higher Education Quality Council of Ontario.
- Kenny, N., & Desmarais, S. (2012). *A guide to developing and assessing learning outcomes at the University of Guelph*. Retrieved January 15, 2015, from <http://www.uoguelph.ca/vpacademic/avpa/pdf/LearningOutcomes.pdf>
- Kennedy, D., Hyland, Aine, & Ryan, N. (2006) Writing and using learning outcomes: A practical guide. In, *Implementing Bologna in your institution*, C 3.4-1, 1-30. Retrieved January 10, 2015, from http://sss.dcu.ie/afi/docs/bologna/writing_and_using_learning_outcomes.pdf
- Marsh, P. A. (2007). What is known about student learning outcomes and how does it relate to the Scholarship of Teaching and Learning? *International Journal for the Scholarship of Teaching and Learning* 1(2).
- McCombs, B. L., & Whistler, J. S. (1997). *The learner-centered classroom and school. Strategies for increasing student motivation and achievement*. San Francisco: Jossey Bass Publishers.
- Moon, J. (2002). *The module and programme development handbook*. London: Kogan Page Limited.
- Ontario Universities Council on Quality Assurance. (2010). *Quality Assurance Framework*. Approved by the Ontario Council of Academic Vice-Presidents. (February 8, 2010) Retrieved January 20, 2015 from <http://oucqa.ca/wp-content/uploads/2012/12/Quality-Assurance-Framework-and-Guide-Updated-October-2014.pdf>
- Pillay, H. (2002). Understanding learner-centredness: does it consider the diverse needs of individuals? *Studies in Continuing Education*, 24(1), 93-102.

Purser, L. (2003). Recognition issues in the Bologna Process: conclusions and recommendations. In S. Bergan(Ed.),*Recognition issues in the Bologna Process (pp. 23-31)*. Strasbourg: Council of Europe Publishing.

Queen’s University. (2011). Queen’s University *Quality Assurance Processes (QUQAPs)*. Approval by Ontario Universities Council on Quality Assurance (September 1, 2011). <http://queensu.ca/provost/responsibilities/qualityassurance.html>

Spady, W. (1994). *Outcomes based education: critical issues and answers*. American Association of School Administration: Arlington, Virginia.

Shulman, L. (2005, Summer). Signature pedagogies in the professions. *Daedalus*, 134, 52-59.

Weimer, M. (2002). *Learner-centered teaching*. San Francisco: Jossey Bass.

Wiggins, G., & McTighe, J. (1998). *Understanding by design*. Alexandria, VA: Association for Supervision and Curriculum Development.

Appendix A: Undergraduate and Graduate Degree Level Expectations

Undergraduate Degree Level Expectations:	Baccalaureate/bachelor’s degree	Baccalaureate/bachelor’s degree (honours)
1. Depth and breadth of knowledge	<p>This degree is awarded to students who have demonstrated the following:</p> <ul style="list-style-type: none"> a) General knowledge and understanding of many key concepts, methodologies, theoretical approaches and assumptions in a discipline b) Broad understanding of some of the major fields in a discipline, from an interdisciplinary perspective, and how the fields may intersect with fields in related disciplines c) Ability to gather, review, evaluate and interpret information relevant to one or more of the major fields in a discipline d) Some detailed knowledge in an area of the discipline e) Critical thinking and analytical skills inside and outside the discipline f) Ability to apply learning from one or more areas outside the discipline 	<p>This degree is awarded to students who have demonstrated the following:</p> <ul style="list-style-type: none"> a) Developed knowledge and critical understanding of the key concepts, methodologies, current advances, theoretical approaches and assumptions in a discipline overall, as well as in a specialized area of a discipline b) Developed understanding of many of the major fields in a discipline, including, where appropriate, from an interdisciplinary perspective, and how the fields may intersect with fields in related disciplines c) Developed ability to: gather, review, evaluate and interpret information; and compare the merits of alternate hypotheses or creative options relevant to one or more of the major fields in a discipline d) Developed, detailed knowledge of and experience in research in an area of the discipline e) Developed critical thinking and analytical skills inside and outside the discipline f) Ability to apply from one or more areas outside the discipline
2. Knowledge of methodologies	<p>An understanding of methods of enquiry or creative activity, or both, in their primary area of study that enables the student to: a) evaluate the appropriateness of different approaches to solving problems using well established ideas and techniques; and b) devise and sustain arguments or solve problems using these methods.</p>	<p>An understanding of methods of enquiry or creative activity, or both, in their primary area of study that enables the student to:</p> <ul style="list-style-type: none"> a) evaluate the appropriateness of different approaches to solving problems using well established ideas and techniques; b) devise and sustain arguments or solve problems using these methods; and c) describe and comment upon particular aspects of current research or equivalent advanced scholarship.
3. Application of knowledge	<p>The ability to review, present, and interpret quantitative and qualitative information to:</p> <ul style="list-style-type: none"> a) develop lines of argument; b) make sound judgments in accordance with the major theories, concepts and methods of the subject(s) of study; and <p>The ability to use a basic range of established</p>	<p>The ability to review, present and critically evaluate qualitative and quantitative information to:</p> <ul style="list-style-type: none"> a) develop lines of argument; b) make sound judgments in accordance with the major theories, concepts and methods of the subject(s) of study; c) apply underlying concepts, principles, and

	<p>techniques to:</p> <ul style="list-style-type: none"> a) analyze information; b) evaluate the appropriateness of different approaches to solving problems related to their area(s) of study; c) propose solutions; and d) make use of scholarly reviews and primary sources. 	<p>techniques of analysis, both within and outside the discipline;</p> <ul style="list-style-type: none"> d) where appropriate use this knowledge in the creative process; and <p>The ability to use a range of established techniques to:</p> <ul style="list-style-type: none"> a) initiate and undertake critical evaluation of arguments, assumptions, abstract concepts and information; b) propose solutions; c) frame appropriate questions for the purpose of solving a problem; d) solve a problem or create a new work; and e) to make critical use of scholarly reviews and primary sources
4. Communication skills	The ability to communicate accurately and reliably, orally and in writing to a range of audiences.	The ability to communicate information, arguments, and analyses accurately and reliably, orally and in writing to a range of audiences.
5. Awareness of limits of knowledge	An understanding of the limits to their own knowledge and how this might influence their analyses and interpretations.	An understanding of the limits to their own knowledge and ability, and an appreciation of the uncertainty, ambiguity and limits to knowledge and how this might influence analyses and interpretations
6. Autonomy and professional capacity	<p>Qualities and transferable skills necessary for further study, employment, community involvement and other activities requiring:</p> <ul style="list-style-type: none"> a) the exercise of personal responsibility and decision-making; b) working effectively with others; c) the ability to identify and address their own learning needs in changing circumstances and to select an appropriate program of further study; and d) behaviour consistent with academic integrity and social responsibility. 	<p>Qualities and transferable skills necessary for further study, employment, community involvement and other activities requiring:</p> <ul style="list-style-type: none"> a) the exercise of initiative, personal responsibility and accountability in both personal and group contexts; b) working effectively with others; c) decision-making in complex contexts; d) the ability to manage their own learning in changing circumstances, both within and outside the discipline and to select an appropriate program of further study; e) and behaviour consistent with academic integrity and social responsibility.

Source: Council of Ontario Universities, Quality Assurance Framework (2010)

Graduate Degree Level Expectations	Master's degree	Doctoral degree
	This degree is awarded to students who have demonstrated the following:	This degree extends the skills associated with the Master's degree and is awarded to students who have demonstrated the following:
1. Depth and breadth of knowledge	A systematic understanding of knowledge, including, where appropriate, relevant knowledge outside the field and/or discipline, and a critical awareness of current problems and/or new insights, much of which is at, or informed by, the forefront of their academic discipline, field of study, or area of professional practice.	A thorough understanding of a substantial body of knowledge that is at the forefront of their academic discipline or area of professional practice including, where appropriate, relevant knowledge outside the field and/or discipline.
2. Research and scholarship	<p>A conceptual understanding and methodological competence that:</p> <ul style="list-style-type: none"> a) Enables a working comprehension of how established techniques of research and inquiry are used to create and interpret knowledge in the discipline; b) Enables a critical evaluation of current research and advanced research and scholarship in the discipline or area of professional competence; and c) Enables a treatment of complex issues and judgments based on established principles and techniques; and, <p>On the basis of that competence, has shown at least one of the following:</p> <ul style="list-style-type: none"> a) The development and support of a sustained argument in written form; or 	<ul style="list-style-type: none"> a) The ability to conceptualize, design, and implement research for the generation of new knowledge, applications, or understanding at the forefront of the discipline, and to adjust the research design or methodology in the light of unforeseen problems; b) The ability to make informed judgments on complex issues in specialist fields, sometimes requiring new methods; and c) The ability to produce original research, or other advanced scholarship, of a quality to satisfy peer review, and to merit publication.

	b) Originality in the application of knowledge	
3. Level of application of knowledge	Competence in the research process by applying an existing body of knowledge in the critical analysis of a new question or of a specific problem or issue in a new setting.	The capacity to: a) Undertake pure and/or applied research at an advanced level; and b) Contribute to the development of academic or professional skills, techniques, tools, practices, ideas, theories, approaches, and/or materials.
4. Professional capacity/autonomy	a) The qualities and transferable skills necessary for employment requiring: i) The exercise of initiative and of personal responsibility and accountability; and ii) Decision-making in complex situations; b) The intellectual independence required for continuing professional development; c) The ethical behavior consistent with academic integrity and the use of appropriate guidelines and procedures for responsible conduct of research; and d) The ability to appreciate the broader implications of applying knowledge to particular contexts	a) The qualities and transferable skills necessary for employment requiring the exercise of personal responsibility and largely autonomous initiative in complex situations; b) The intellectual independence to be academically and professionally engaged and current; c) The ethical behavior consistent with academic integrity and the use of appropriate guidelines and procedures for responsible conduct of research; and d) The ability to evaluate the broader implications of applying knowledge to particular contexts.
5. Level of communications skills	The ability to communicate ideas, issues and conclusions clearly.	The ability to communicate complex and/or ambiguous ideas, issues and conclusions clearly and effectively.
6. Awareness of limits of knowledge	Cognizance of the complexity of knowledge and of the potential contributions of other interpretations, methods, and disciplines.	An appreciation of the limitations of one's own work and discipline, of the complexity of knowledge, and of the potential contributions of other interpretations, methods, and disciplines.

Source: Council of Ontario Universities, Quality Assurance Framework (2010)