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HEQCO's Guide to Developing Course and Program Learning Outcomes

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Introduction

Learning outcomes (LOs) are concise statements that describe the essential knowledge, skills and/or abilities that students should possess upon completion of a course or program. Well-constructed LOs make explicit the application and integration of knowledge and skills to facilitate the coherence of learning experiences across courses and within programs.

The Ontario government has outlined institutional-level LOs for the province's postsecondary institutions, namely the Essential Employability Skills for colleges and the Undergraduate/Graduate Degree Level Expectations for universities. Alongside these outcomes, some institutions have created their own institutional LOs that they require graduates from all disciplines to achieve. Additionally, every publicly funded postsecondary institution in Ontario is expected to follow a self-regulatory process for defining and assessing program-level and course-level LOs.

The purpose of this document is to give an overview of important considerations and to provide guidance for developing course- and/or program-level LOs. It was created by summarizing a myriad of existing, frequently cited resources, including several from institutional teaching and learning centres across Ontario. This guide promotes the development of LOs as a collaborative effort, using a combination of top-down and bottom-up approaches to engage faculty, administrators, students and even employers. Above all, the guide seeks to stimulate thinking about LO development and encourage thoughtful articulation of LOs. Below is a list of benefits of developing well-constructed LOs for multiple groups:

Benefits of LOs for students

- Clarify the critical knowledge, skills and values that students will achieve in a course or program to foster transparency, inform program selection and improve their ability to communicate these outcomes to others.
- Enhance learning by providing guidance and setting clear expectations.



Benefits of LOs for instructors

- Allow for reflection on the purpose of a course or program.
- Foster coordination of teaching strategies, learning activities, course materials and assessments.
- Advance conversations between and among faculty members about the ways that courses are aligned and connected with each other and program outcomes.



Benefits of LOs for institutions

- Reinforce institutional commitment to high-quality teaching and learning.
- Increase transparency, credibility and comparability of outcomes.
- Offer the potential to simplify credit transfer and facilitate student mobility.
- Allow for identification of gaps or overlap in course or program offerings.



Benefits of LOs for employers

- Promote understanding of prospective graduates' knowledge, skills and abilities.
- Engage employers to ensure teaching and learning is designed to meet industry needs.



Sources: Adam (2002); Council of Ontario Universities (2011); Goff et al. (2015); Greenleaf et al. (2008); Hutchings (2016); Kolomito & Gee (2015); Lennon (2010)

Learning Outcomes Development Process

STEP 1: CONSIDER THE LEARNING CONTEXT

When preparing to construct LOs, the first consideration should be the broader context in which the learning is situated. The context can be quite different for course- and program-level LOs, meaning that the process for developing each type of LO will begin quite differently.

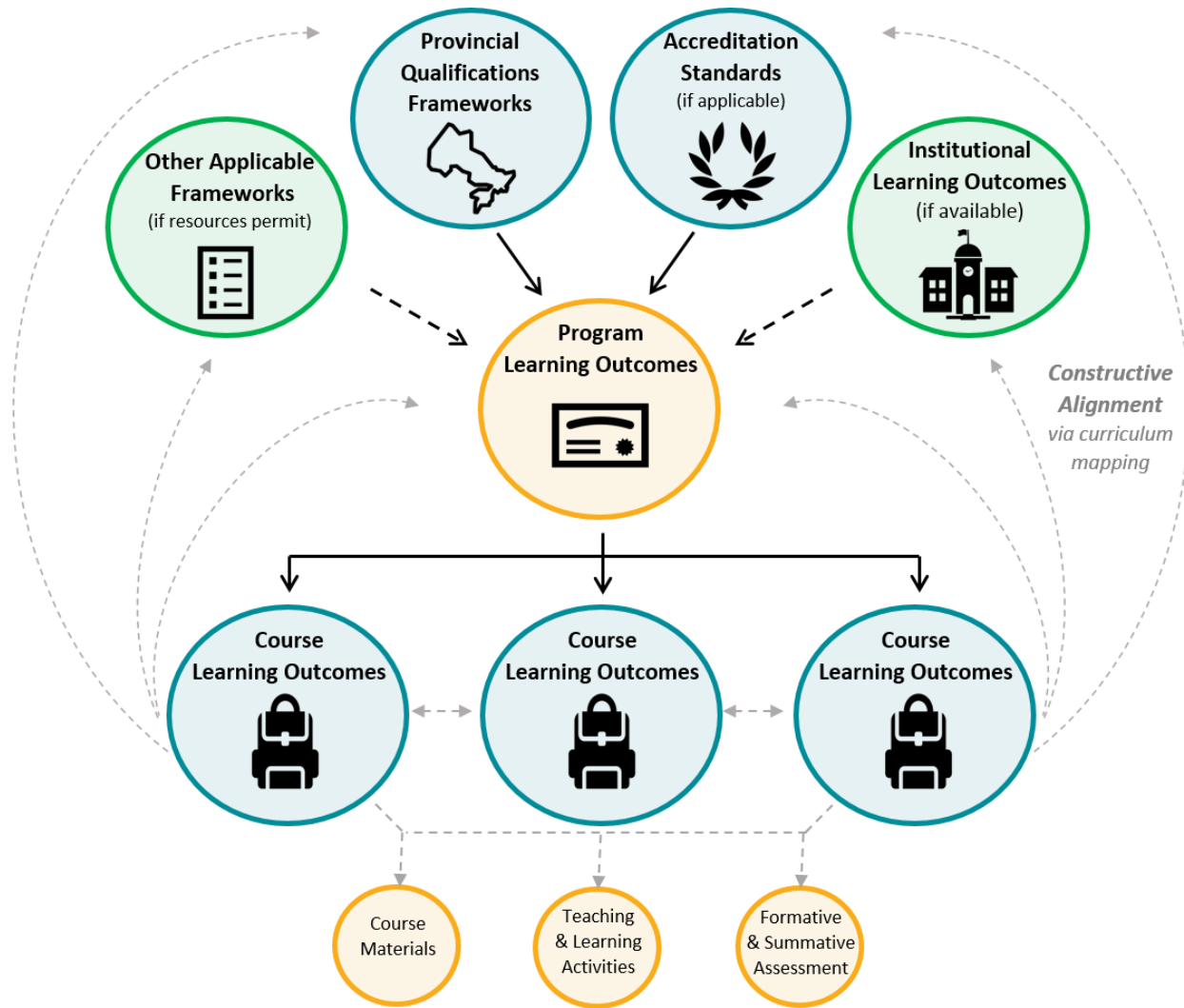
Program-level LOs

For program-level LOs, the creation process will usually begin with curriculum committees that consult with program faculty, students, the chair(s) and/or associate dean(s) of a program, and sometimes even alumni and employers. This is done to ensure the alignment of LOs with expectations set for all postsecondary students and discipline-specific expectations for students in certain programs. The following resources can be consulted when developing program-level LOs in Ontario:

- **Province-wide Standards***
 - Colleges — [Essential Employability Skills and Specific Program Standards](#)
 - Universities — [Undergraduate/Graduate Degree Level Expectations](#)
- **Accreditation Standards** that correspond with professional and/or industry requirements (if applicable)
 - E.g., Canadian Engineering Accreditation Board
- **Institutionally Mandated LOs** deemed essential for all graduates from a given institution (if available)
- **Other Applicable Frameworks** for differentiating skills
 - E.g., HEQCO's Learning Outcomes Typology (Figure 2); Lumina Foundation's [Degree Qualifications Profile](#); the Association of American Colleges & Universities' [Essential Learning Outcomes](#)

*For more information about the origins of Ontario's province-wide standards, see [Ontario's Qualifications Framework](#) and PEQAB's [framework for programs](#).

Figure 1: Situating Program- and Course-level LOs within a Broader Ontario Context



Course-level LOs

The creation of course-level LOs is usually undertaken by instructors and involves a process of aligning all aspects within a course (i.e., materials, instruction and assessments) with expectations across other courses in a program.

For electives, or courses not directly associated with a single program, consider:

- Students' backgrounds and prior knowledge/skill levels so that LOs are appropriate.

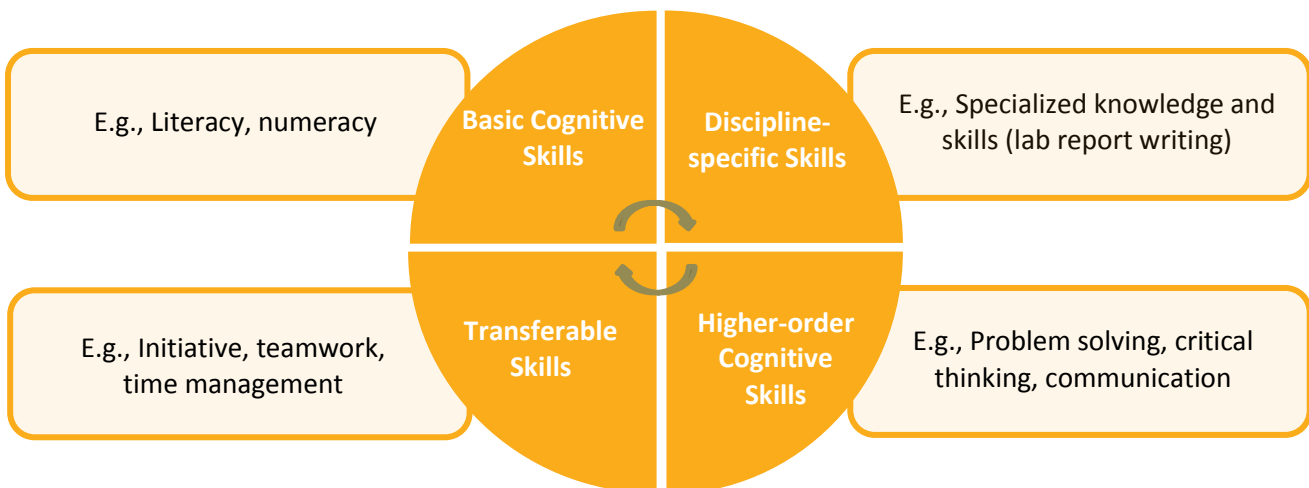
For core courses clearly associated with one program, consult:

- Program-level LOs to determine how course LOs can respond to program goals (if available). If these are not available, accreditation standards and institutionally mandated LOs may also be worth considering.
- Related course-level LOs to establish a logical progression in the complexity of learning throughout the courses in a program. Ideally, this would involve collaboration between instructors.

In either case, instructors should strive for a constructively aligned curriculum,* whereby student-centred LOs are derived as a basis for curriculum design to achieve cohesiveness between course materials, teaching and learning activities, and formative and summative assessment (Figure 1). Other applicable frameworks, such as HEQCO's Learning Outcomes Typology (Figure 2) may also be useful to consider at this stage.

*Constructive alignment was first proposed by Biggs (1996), and is often achieved via curriculum mapping, which provides an effective strategy for articulating, aligning and integrating LOs across courses while explicitly outlining how the LOs are delivered and assessed within a program (Goff et al., 2015). This will be further discussed in the final section of the guide.

Figure 2: HEQCO's Learning Outcomes Typology



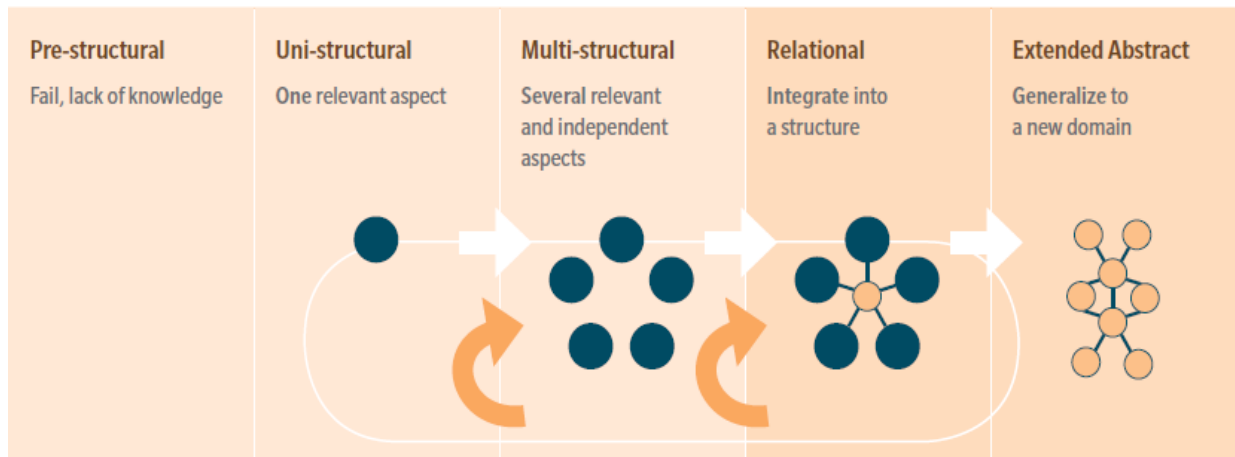
Source: Adapted from Deller, Brumwell & MacFarlane (2015); Weingarten (2014)

STEP 2: DESCRIBE THE PRIMARY GOALS OF A COURSE OR PROGRAM AND CONCEPTUALIZE THE LEARNING PROGRESSION

Once the broader context within which LOs will be situated has been considered, the next step should be to articulate what students are expected to know and be able to do at the end of a course/program by describing the most important aspects of the content to be learned and skills or characteristics to be developed.¹

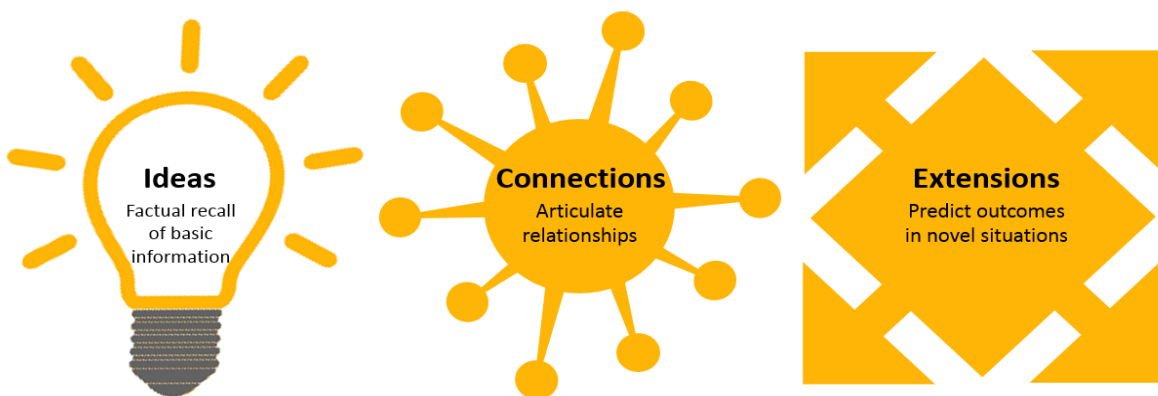
To determine whether the content and the skills just outlined are at the appropriate level for students, consider aligning each goal with a learning taxonomy, three of which are depicted in Figures 3, 4 and 5. Each taxonomy conceptualizes the progression of learning in ascending order of complexity, where students must succeed in lower levels before achieving higher levels of learning. Although each has a slightly different approach for compartmentalizing the learning levels, the overall message of progressing through learning remains the same.

Figure 3: Structure of Observed Learning Outcomes (SOLO) Taxonomy



Source: Reprinted from Goff et al. (2015, p. 14); Biggs & Collis (1982); Collis (1986)

Figure 4: Ideas, Connections, Extensions (ICE) Taxonomy



Source: Fostaty, Young & Wilson (2000)

¹ Not all anticipated learning will necessarily be specified in the LOs (e.g., time management); and it is possible to develop separate “desirable learning outcomes” for learning that is not mandatory (Gosling & Moon, 2002).

Figure 5: Bloom's Taxonomy (Revised)



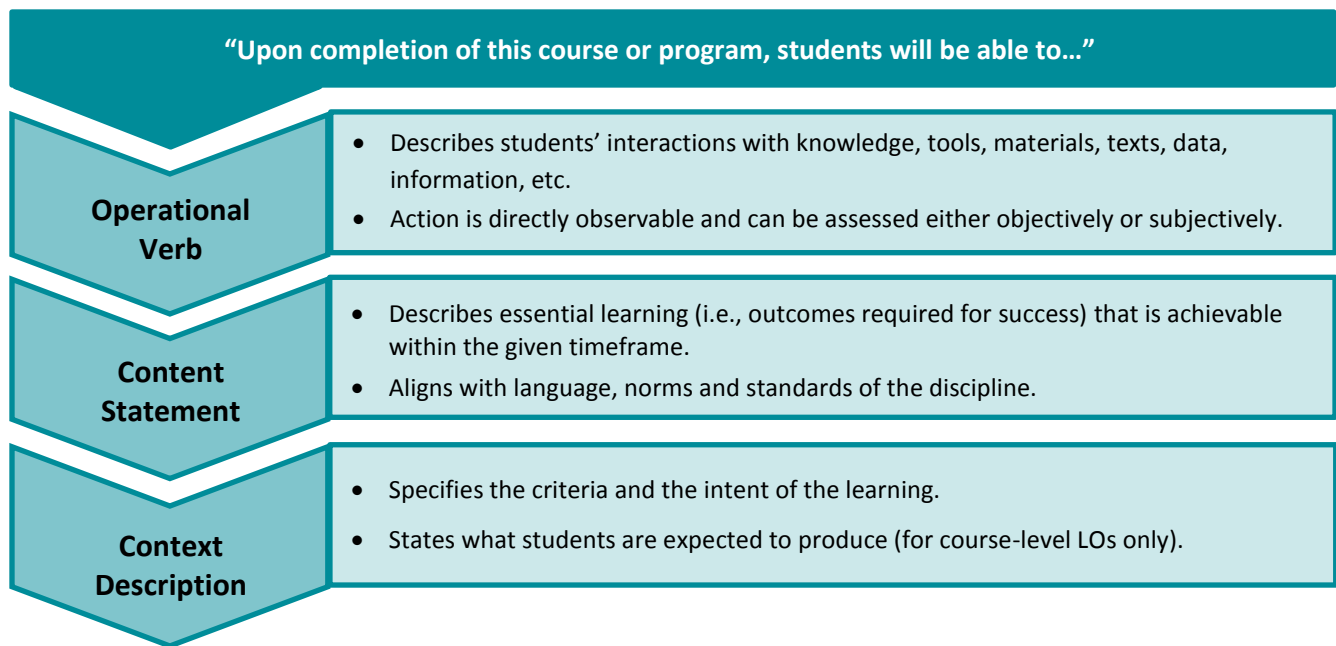
Source: Adapted from Anderson & Krathwohl (2001); Bloom (1956)

STEP 3: DRAFT LEARNING OUTCOMES

Now that the goals are laid out and there is an idea of the level of expectation for each goal, it's time to begin constructing the actual LO statements.² It is recommended that each statement should be:

- In the present tense
- A complete sentence
- Ideally, describing only one behaviour.³

Well-constructed LO statements tend to align with the following structure:



Source: Adapted from Adelman (2015); Kenny & Desmaris (2012); Lopes (2015)

When selecting operational verbs, keep in mind the following strategies:

- Consider consulting lists of verbs that correspond with the learning levels in taxonomies discussed above.⁴

² For an explanation of the difference between learning outcomes and instructional objectives, see Harden’s (2002) *Learning outcomes and instructional objectives: Is there a difference?*

³ Describing only one behaviour is especially important for course-level LOs since these are intended to be directly aligned with assessments (Lopes, 2015). Exceptions might be made for program-level learning outcomes, as these statements are generally broader and may describe related skill sets or components of knowledge relating to similar content.

⁴ For example, see Carleton Educational Development Centre’s (n.d.) *Instructor’s guide to course design*, or Chapter 2 from Stassen, Doherty and Poe’s (2001) *Program-based review and assessment*.

B) Be mindful of verbs that should be avoided or further defined.

Avoid verbs describing precursory cognitive functions, such as:	read recognize see observe get comply
Avoid verbs that are non-operational or unobservable, such as:	have possess understand appreciate know perceive consider comprehend apprehend grasp think realize accept learn foresee anticipate be conscious of be aware of be familiar with
Clarify verbs with undescriptive meanings, such as:	discuss consult practise explore interpret extend communicate relate review reflect work

Source: Adapted from Potter & Kustra (2012); Adelman (2015)

C) Aim for verb diversity to promote variety in the depth/level/complexity of learning.

Table 1: NILOA's Operational Verb Groupings	
Acquisition	access, accumulate, acquire, collect, extract, gather, locate, obtain, retrieve
Certification	cite, document, record, reference, source
Characterization	categorize, classify, define, describe, determine, frame, identify, prioritize, specify
Processing	calculate, determine, estimate, manipulate, measure, solve, test
Formatting	arrange, assemble, collate, organize, sort
Explanation	articulate, clarify, elaborate, elucidate, explicate, illustrate, outline, translate
Analysis	compare, contrast, differentiate, distinguish, equate, formulate, map, match
Inquiry	examine, experiment, explore, hypothesize, investigate, research, test
Conceptualization	assimilate, connect, consolidate, integrate, link, merge, summarize, synthesize
Creation	build, compose, construct, craft, create, design, develop, generate, model, shape, simulate
Utilization	apply, carry out, conduct, demonstrate, employ, implement, perform, produce, use
Execution	administer, control, coordinate, engage, lead, maintain, manage, navigate, operate, optimize, plan
Deliberation	advocate, argue, challenge, debate, defend, dispute, justify, persuade, resolve
Valuation	appraise, assess, audit, evaluate, judge, rank
Communication	display, draw/diagram, edit, encode/decode, map, pantomime, present, report
Collaboration	collaborate, contribute, negotiate
Reconstruction	accommodate, adapt, adjust, improve, modify, refine, reflect, review

Source: Adapted from Adelman (2015)

When constructing the content and context portions of the LO statement, keep in mind the following tips:

- A) Avoid adjectives and adverbs that describe quality of behaviour, as these lie outside the scope of the basic syntax for constructing LOs.

Avoid qualifiers that describe "how well" a student performs, such as:

effective reasonable suitable appropriate
persuasive thorough extensive

- B) Consider referencing the SMART(TT) acronym to write well-rounded LOs:

- S** tudent-centred: LOs should address the learner rather than dictating content, teaching activities or assessment.
- M** easurable: LOs should be suitable for objective or subjective assessments.
- A** ppropriate: LOs should be achievable while still posing meaningful challenges for the students.
- R** elevant: LOs should emphasize ways in which the learner is to use the knowledge or skills.
- T** ime-bound: LOs should only reference knowledge or skills that can be learned within the time frame.
- T** ransparent: LOs should be clear and easy to understand by all students, faculty and administrators.
- T** ransferable: LOs should prepare students for success across a variety of contexts outside institutional walls.

Source: Adapted from Adelman (2015); Blanchard & Johnson (1982); Greenleaf et al. (2008); and Lopes (2015)

Consider the following examples of LOs:

Program-level LOs



Upon completion of this program, students will be able to...

- Deliver oral presentations using a central message, logically sequenced sections, supporting visuals, and language and delivery techniques that correspond to the intended audience.
- Analyze worldviews and global issues, and the implications for one's discipline, professional practice and decision-making.
- Differentiate between ethical and unethical research practices in compliance with applicable ethics protocols (e.g., Tri-council).
- Analyze the relationship between social determinants of health, health policy and practice in community settings to inform services provided to individuals and communities.

Course-level LOs



Upon completion of this course, students will be able to...

- Evaluate the benefits and challenges of the ever-expanding web of internet-connected devices on our societies, our psyches and our identities.
- Reflect on work-integrated learning experiences (e.g., co-op, teaching placement, field work, laboratory work, etc.) to describe successful approaches taken to confront challenges in the workplace.
- Defend their stance on a social issue applicable to their field (e.g., driverless cars, vaccinations, animal testing, etc.) by evaluating diverse scholarly perspectives that both support and refute their claim.
- Design engaging learning activities and experiences that are grounded in research-based principles of learning.

Source: Adapted from Greenleaf et al. (2008); Lennon et al. (2014); Rhodes (2010)

STEP 4: REVIEW AND REVISE LEARNING OUTCOMES

Narrow the list of LOs as applicable:

- Accept that there is no perfect formula for an exact number of LOs for a course or a program, and that more does not mean better. That being said, many sources recommend between five and 10 LOs per course.
- Expect to have more LOs for a program than for one individual course, with the exact number largely dependent upon how broad each statement is.

Prompt critical reflection using the following questions:

1. Are these expectations equitable for all students?
2. If students completed this course or program having accomplished *only* these LOs, would it be considered a success?
3. Would all students be required to achieve every LO to pass the course or program?
4. What does this set of LOs communicate about the individual(s) who wrote them (e.g., identity, values, affiliations, assumptions, biases, etc.)?
5. How will it be ensured that students have accomplished the outcomes expected of them? Is it obvious what will be accepted as evidence of progress?

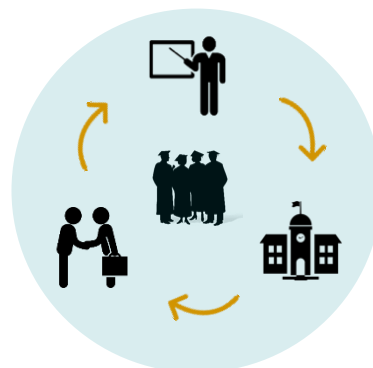
Source: Adapted from Potter & Kustra (2012)

Engage stakeholders to gather feedback about LOs as follows:

- Discuss LOs with instructors, administrators, students and employers, if resources permit.
- Prompt specific feedback on the content and the level of expectations these LOs have for students.

Next Steps

Developing well-written LOs represents only the first step toward a constructively aligned curriculum. When resources permit, it is good practice to coordinate with faculty from applicable department(s) to participate in curriculum mapping of LOs. As mentioned in Step 1, this process aims to verify the logical progression in the complexity of learning by minimizing overlap and maximizing cohesiveness of LOs between courses within a program. Curriculum maps are useful for visualizing each course's contribution to expectations within the program, institution and province (Figure 1). These maps may also be especially helpful for instructors developing course-level LOs to confirm alignment between the expectations and the assessments. For those interested in learning more about this process and for guidance on assessment of LOs, please refer to HEQCO's [Learning Outcomes Assessment: A Practitioner's Handbook](#).



Summary of Process for Developing Learning Outcomes

1

PLAN FOR ALIGNMENT OF OUTCOMES TO BROADER CONTEXT

- Are LOs developed through consultation and collaboration with curriculum committees, faculty, students and alumni?
- Have applicable standards and frameworks been considered for situating LOs in the broader learning context of a course or program?

2

DESCRIBE THE PRIMARY GOALS AND CONCEPTUALIZE THE LEARNING PROGRESSION

- Are there clear goals for what students are expected to know and be able to do at the end of a course or program?
- Are LOs cohesive to ensure logical progression of learning (considering taxonomies such as SOLO, Bloom's and ICE)?

3

DRAFT LEARNING OUTCOMES

- Are all expectations for a course or program clearly articulated to students?
- Is each LO a complete sentence written in the present tense to describe *only* one behaviour?
- Do the LOs use only operational verb(s) and avoid qualifiers?
- Are the LOs SMART(TT)?

4

REVIEW AND REVISE LEARNING OUTCOMES

- Is there alignment between and within courses in a program, and to both generic and discipline-specific expectations for students?
- Is applicable feedback from instructors, administrators, students and/or employers incorporated into LOs?

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