

# Driving Academic Quality

**Lessons from Ontario's  
Skills Assessment Projects**

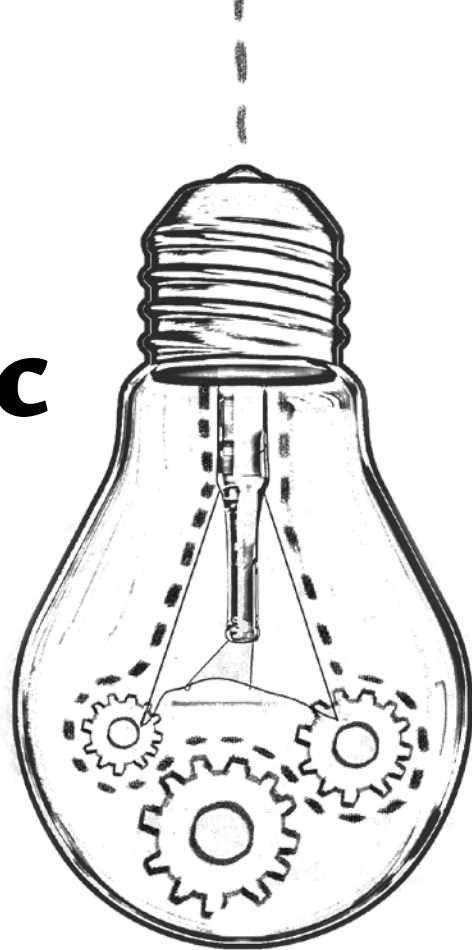


Edited by  
Fiona Deller,  
Jackie Pichette  
and Elyse K. Watkins

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**Edited by Fiona Deller, Jackie Pichette and Elyse Watkins**

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Higher Education  
Quality Council  
of Ontario

*An agency of the Government of Ontario*

## **Higher Education Quality Council of Ontario**

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# Abbreviations

AAC&U	Association of American Colleges and Universities	ILCD	Indigenous Leadership and Community Development Degree
AHELO	Assessment of Higher Education Learning Outcomes	ILO	Indigenous Learning Outcomes
CAE	Council for Aid to Education	LOAC	Learning Outcomes Assessment Consortium
CALOHEE	Measuring and Comparing Achievements of Learning Outcomes in Higher Education in Europe	MTCU	Ministry of Training Colleges and Universities (formerly MAESD)
CAR	Cognitive Assessment Redesign	NILOA	National Institute for Learning Outcomes Assessment
CAT	Critical Thinking Assessment Test	OCAV	Ontario Council of Academic Vice-presidents
CEWIL	Co-operative Education and Work-Integrated Learning Canada (formerly CAFCE)	OECD	Organization for Economic Co-operation and Development
CICan	Colleges and Institutes Canada	PAWS	Postsecondary and Workplace Skills
CLA	Collegiate Learning Assessment	PIAAC	Programme for the International Assessment of Adult Competencies
CLA+	Collegiate Learning Assessment Plus	PISA	Programme for International Student Assessment
EASI	Essential Adult Skills Initiative	PSE	postsecondary education
EDSC	Employment and Social Development Canada	STEM	Science, Technology, Engineering and Math
EES	Essential Employability Skills	TLO	Transferable Learning Orientations
EQAO	Education Quality and Accountability Office	TRC	Truth and Reconciliation Commission
ESO	Education and Skills Online	UDLEs	Undergraduate Degree-level Expectations
ETS	Educational Testing Service	VALUE	Valid Assessment of Learning in Undergraduate Education
GDLEs	Graduate Degree-level Expectations	WIL	work integrated learning
HEFCE	Higher Education Funding Council for England		
HEQCO	Higher Education Quality Council of Ontario		





# About the Authors

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**Valerie Scovill** has been a teacher for 35 years and has taught all grades and levels, from kindergarten to university. Curriculum design and revision is her speciality. Her recent work has focused on teacher education, especially for internationally experienced college and university teachers, and incorporating the principles of Universal Design for Learning into curriculum work. She holds a BA from Carleton University, as well as a bachelor of education and a master of arts in teaching from the University of Toronto.

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**S. Brenda Small** is engaged in research and policy development in Indigenous education with colleagues at several postsecondary institutions in Ontario and across the country. Always a disruptor and impassioned leader, Brenda advocates for Indigenous knowledge as foundational to public education. Brenda is a Cree woman with roots in northern Quebec on the east coast of James Bay. She is a lawyer and a graduate of the University of Toronto.

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# Introduction

Harvey P. Weingarten

Providing analysis on the quality of postsecondary education has always been at the core of the work of the Higher Education Quality Council of Ontario (HEQCO). It is embedded in our name and, more importantly, in the legislation that established HEQCO. One of our primary mandates is to conduct research, and on the basis of that, provide advice to the government that will improve the quality of the Ontario postsecondary system.

The question, of course, is how to define quality in higher education and, more elusive still, how to measure it. When I started at HEQCO in 2010, we were already engaged with these questions. At that time, much of the work on quality assessment was restricted to the semantic level — there was much discussion and debate about what quality meant, how well we were doing on the quality front and how we should think about improvement. It was clear, however, that such analysis would not suffice for an organization like ours that was supposed to engage in high-level research and evidence-based policy advice.

A critical moment for HEQCO occurred when we linked the quality discussion to the concept of learning outcomes. Learning outcomes, quite simply, refer to what students should know and be able to do as a result of their postsecondary education. We did not develop the concept. Organizations like the Lumina Foundation were already developing these ideas. However, we quickly came to appreciate how a learning-outcomes perspective was linked to and could advance our focus on quality and, particularly, how it provided a useful framework for conducting research on several important questions about quality in postsecondary education.

The first set of analyses we pursued was an attempt to identify the right and relevant learning outcomes in different postsecondary programs, work already being done by some others. Our research was influenced by the knowledge that one of the dominant reasons that students attend postsecondary studies is the pursuit of a credential that will help them get a good job, that governments fund public higher education to produce a successful workforce and that employers seek workers with skills needed to participate in the modern economy. There was no lack of people or energy invested in the exercise of listing competencies — the knowledge, skills

and characteristics — that students should have when they finish their postsecondary programs. Ontario colleges appeared to be faster off the mark than universities.

These various endeavours produced scores of documents listing the learning outcomes associated with different courses, programs, credentials (diplomas, degrees, etc.) and institutions. (In fact, one of the great and recurring debates is the best level at which to apply the learning outcomes lens — course, program, degree or institutional level — and the pros and cons of each of these approaches.) These exercises ended up with complex documents with *engaging* acronyms like “UDLEs” (Undergraduate Degree Level Expectations) and “GDLEs” (Graduate Degree Level Expectations). We produced even more Byzantine documents where we attempted to show how every course in a program contributed to the development and acquisition of specific learning outcomes, so-called curriculum maps.

HEQCO, admittedly, contributed to this cottage industry. In 2012–13 we recruited a host of serious academics to populate three panels — one for social sciences, one for physical sciences, and one for life and health sciences — to generate what they regarded as essential learning outcomes for two-year diplomas, three-year diplomas, four-year baccalaureate degrees and research-based master’s degrees. This year-long exercise, a so-called Tuning project, generated colourful charts and graphs but, far more importantly, it taught us some valuable lessons that shaped our future research on learning outcomes.

First, it became clear that we needed a more disciplined and rigorous definition about the various categories of learning outcomes that were being defined. This led in 2014 to a proposed typology of learning outcomes that identified four classes: (i) knowledge; (ii) basic cognitive skills (e.g., literacy, numeracy); (iii) higher-order cognitive skills (critical thinking, problem solving, communication) and (iv) transferable skills that included various behavioural traits we expect a postsecondary graduate to possess (e.g., resilience, adaptability) and that seemed to be the focal point of the skills-gap discussion.

Second, cognitive skills appeared to be the sweet spot. It was instructive to us that when asked to articulate the core learning outcomes that postsecondary graduates are expected to have achieved, all three panels gravitated to attributes like problem solving and critical thinking. Even though they may have used different terms to describe these attributes, they were united in the view that these were skills that a postsecondary education should foster and develop. This was consistent with the many assertions by academic leaders that these were the skills their programs were designed to foster and that students acquired (although almost none could provide evidence to demonstrate this). There was a general sense that postsecondary programs were doing a good job of instilling the



critical information and content of a field of studies. Content is generally what instructors taught and what was evaluated and credentialed. It was clear that institutions already had the content issue well in hand but that significant work needed to be done on the skills side.

Finally, it became patently clear that the important next step was one of assessment. Further work on developing lists of learning outcomes or curriculum mapping was not going to advance the conversation. Rather, the critical next step would be to move on to the difficult question of how to assess skills, especially the crucial cognitive skills. It was agreed that this was a difficult challenge. The discussions in the three panels reinforced this point. But no matter how much we encouraged panel members to articulate how they thought the important skills could be measured, participants found creative ways to talk around this problem without ever answering the challenge.

By now, HEQCO had a clear focus for further quality work — the assessment of the degree to which learning outcomes that are deemed important are actually measured and achieved.

HEQCO already had made some previous forays into the world of learning-outcomes assessment. In 2011, Ontario joined the Organization for Economic Co-operation and Development's (OECD) Assessment of Higher Education Learning Outcomes (AHELO) feasibility study, a project that had begun in 2006 to see whether it was possible to use a common assessment tool in various countries to measure learning outcomes in three different areas: economics, civil engineering and generic skills. HEQCO led and managed Canada's involvement in the project on behalf of the Ministry of Training, Colleges and Universities in cooperation with the Council of Ministers of Education, Canada. Canada contributed to the civil engineering component.

In spite of the flair, intrigue and complexity that only the OECD can muster, this was not a very helpful experience for us. We did a satisfactory job with our contribution to the civil engineering assessment. Yet, the AHELO stream that was of greatest interest to us — the generic skills stream — was truthfully the least successful of the three projects.

At the same time as the AHELO project, we also initiated, along with some Ontario colleges and universities, a pilot study exploring the possibility of using the Collegiate Learning Assessment (CLA) test to measure critical thinking. This trial taught us important lessons about the challenges of motivating students to take these tests and of the importance of giving them feedback about their performance.<sup>1</sup>

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1 Disclosure: Since 2013, I have been on the board and now am the chair of the Council for Aid to Education, the organization that developed and disseminates the CLA test. To avoid any possibility of conflict of interest, I was not involved in the development of this trial, its management, data analysis or write-up.

On the basis of these lessons, HEQCO issued a Request for Proposals in December 2013 to solicit the participation of postsecondary institutions that were prepared to commit themselves to the assessment of general learning and cognitive skills. To be successful in this competition, institutions had to demonstrate that they had already developed or adopted a set of general learning and cognitive skills to be assessed; that their assessment procedures incorporated methodologies to evaluate the reliability and validity of their proposed instruments; that following the development of appropriate instruments, the institution planned to assess the general learning and cognitive skills of all students; and that the institution was committing significant institutional funds to and support for the project.

After an internal and external independent review, six institutions were invited to join the initial Learning Outcomes Assessment Consortium (LOAC I): Durham College, George Brown College, Humber College, Queen's University, the University of Guelph and the University of Toronto. The selection was based solely on the above attributes rather than geographical or other considerations of balance. Shortly thereafter, we added Confederation College because of a promising proposal it submitted looking at Indigenous learning outcomes. The successful projects offered a range of different approaches to the assessment of general learning and cognitive skills. HEQCO funded the research projects with in-kind contributions from the institutions. The investigators and administrators involved in these projects met at least twice a year to present progress reports and to discuss with the overall group issues, challenges and key findings emerging from their work.

The chapters in *Driving Academic Quality: Lesson from Ontario's Skills Assessment Projects* present a collection of informative essays by educators, administrators and researchers who were either involved in LOAC I, or who offer a valuable perspective on the dominant themes that emerged from that effort, such as scaling up assessment projects or assessing outcomes in diverse learning environments. They reflect the specific research projects and significant issues faced by the institutions, many common to all, as this work progressed. LOAC I helped inform, evolve and sharpen our thinking about skills measurement in higher education, ultimately resulting in a second call for proposals in 2017 for another round of LOAC projects (LOAC II) to capture the matured and focused thinking about skills measurement that emerged from LOAC I. We would not be where we are today on learning-outcomes assessment without the contribution made by the LOAC I team. We learned a lot. We hope you find this collection of essays informative and valuable.

## Chapter 1

# Learning Outcomes at Scale: The Promise of Peer Assessment

Steve Joordens

## Introduction

Our world bombards us with information on a minute-by-minute basis. Much of this information remains available in digital form, allowing us to find the answer to almost any question we might have, sometimes by simply asking our phones or utilizing a digital source like Wikipedia or Medline. To the extent that this presents a challenge, the challenge is not one of finding information, rather it is one of critically analyzing the information found and being able to combine it with other information in ways that allow us to solve some problems or reach valid conclusions about some topic (Browne, Freeman & Williamson, 2000). Said another way, information is relatively cheap and easy to come by, but the skills one needs to work effectively with that information are highly valuable in the modern world.

It is not surprising then that those who consult on the future of education often highlight the need for increased development of the skills used to work with information effectively (e.g., Fullan, 2012). These are sometimes called core learning objectives (Hughes & Mighty, 2010; Goff et al., 2015) or transferable skills (Assiter, 1995) and the argument is that these basic skills allow students to be successful both as employees and in life more generally (Fallows & Steven, 2000). While there is variation in the specific skills highlighted, almost every list includes skills such as critical

thinking; creative thinking; clear, effective communication (both expressive and receptive); the ability to collaborate effectively; and the metacognitive awareness that allows one to understand one's current strengths and weaknesses.

Despite general agreement from the educational community that the structured development of these skills in our students is critical, our formal education process is focused primarily on the teaching of information related to some subject area for three understandable reasons. First, we have a long-established tradition of focusing on information transfer. The processes needed to develop skills are different from those used to accumulate information (Cohen & Squire, 1980) and most educators are not sure where to even begin with respect to formally developing core learning objectives. Second, while information can be learned very quickly, skills development takes repetition, structure and regular feedback (Ericsson, Krampe & Tesch-Römer, 1993). Most educators feel that their time and resources are already stretched thin, which makes it difficult for them to see how they could add on to what they do, especially something that takes so much time and energy. Third, the extent to which students acquire information can be measured relatively easily and this learning can be documented, tracked and compared via tools such as PISA scores (e.g., Entorf & Minoiu, 2005). We do not currently have tools that can measure skills learning in the same easy and objective manner, and without such measures it will be difficult for skills learning to hold a formal place in the public education system.

The challenge then is clear. If these core learning objectives are as important as they seem for our students, then the three barriers described must be met head on. That is, we must provide teachers with tools or processes that effectively support skills development. These tools and processes must be such that they do not require a great deal of an educator's time and energy to use. For all the hype associated with disruptive technologies (Christensen & Overdorf, 2000), sometimes the best technologies are ones that provide new abilities without requiring a major reworking of current approaches. Finally, these tools or processes must also allow skills learning to be quantified, with the ultimate goal being the addition of scores for, say, critical-thinking abilities on the academic transcript along with the scores for information learning.

In this chapter I will argue that this challenge can be met via solutions that leverage the pedagogical power of peer assessment, especially when it's combined with self-assessment and the formative provision and reception of constructive feedback. I will make this case across a number of sections. First, I will delve more deeply into the distinction between the memory systems used to acquire information and skills with the goal of specifying the factors that are critical to supporting skills development. Next, I will

focus on the educational process we have devised that incorporates these factors via a research-informed combination of evidence-based educational tasks, a process we then instantiated within an educational technology called peerScholar. The next section will shift the discussion away from skills development and toward skills measurement with the following question at the centre of thought: Are there valid ways of measuring the development of core learning objectives? With all this as background, the full promise of peer assessment will be highlighted by describing how the process used to develop skills could be combined with the process used to measure them in a synergistic manner that actually deepens the learning experience even further. Finally, I will return to the three barriers described above and show how the highlighted approach addresses all three, thereby empowering educators to empower their students.

## **Information Versus Skills: Crux of the Problem**

In 1949 Ryle discussed the difference between “knowing what” and “knowing how” in his book *The Concept of Mind*. This distinction was emphasized further by the assertion made by Tulving (1985) of separate memory systems within the human mind. Two of these systems — episodic and semantic memory — encode information. A third — procedural memory — is critical for skills learning.

Critically, the different memory systems that underlie information and skills learning work in very different ways. With respect to information, the learning process is generally one of exposure to the critical information, with the “depth of processing” during encoding being a critical variable determining how well the information will later be remembered ( Craik & Lockhart, 1972). The more deeply a student thinks about some new piece of information, especially if they elaborate on what they’ve learned and connect it to existing knowledge, the better they will later remember it. In educational contexts we all know that student engagement in learning is critical (e.g., Carini, Kuh & Klein, 2006), which is to say the more interested students are in some piece of information, the deeper they will process it and the better they will retain it. Thus, exposure to an engaging lecture, textbook, animation or other media form may be all that a student needs to quickly learn some new piece of information.

Skills learning is very different. Let’s consider physical skills first, like learning to play a musical instrument or learning to perform some sport at a high level. The kind of memory thought to underlie skills learning is called procedural memory (or colloquially as muscle memory). Unlike information, skills cannot be acquired via a single powerful experience. Instead, procedural memories build up via repeated practice of the skills, preferably in a structured environment that provides as much feedback as possible

(Davids, Button & Bennet, 2008). That is, one learns a skill by performing that skill, poorly at first, but with repeated structured practice in a feedback-rich environment the performance of the skill improves and continues to improve with more such practice.

Does the same procedural memory process underlie the development of cognitive skills like the transferable skills — or core learning objectives — that are the focus of this paper? There is not as much data on this as there is for physical skills, but the data that we have seems to indicate the answer is yes (e.g., Ackerman, Kanfer & Goff, 1995). For example, participants have been shown to slowly learn how to better allocate their attention (a cognitive skill) with repeated practice in visual tasks (Rehder & Hoffman, 2005). Perhaps more relevant to the current work, we have also shown that critical-thinking ability and meta-cognitive awareness seem to improve with targeted practice of those skills (Joordens, Paré & Collimore, 2014).

As they say, herein lies the problem: The process needed to develop skills is complex. Several aspects appear critical. First, it requires a lot of repetition. Second, the skill repetition is most effective if the practice is structured in a manner that allows students to focus on component skills in isolation and combination. With respect to this point, consider top level athletes; virtually all of them have developed their skills in training programs dedicated to developing the core skills of their sport. Nobody goes directly from the neighborhood playground to the professional level. Third, skills development is enhanced by regular feedback that encourages the “student” to reflect on their abilities (e.g., Bennett, 2011).

One can understand then in a world in which class sizes are becoming larger, resources are being spread thinner and time is ever tighter, that finding ways of giving our students this sort of repeated practice in a structured and feedback-rich environment seems an extremely big thing to ask of educators. This is especially true when the notion of such practice is left vague. What form would this practice actually take? Is it possible to add it to current educational practices without requiring a massive change? I will refer to this as the process problem. What sort of process do we need, and can it be used in relatively easy ways that respect the constraints of the current educational context?

There is also a related but different problem I will call the measurement problem. Let’s assume that educators do find a process that develops the kind of transferable skills that are the focus of this chapter. How will we know the process is working? A core part of any educational experience is assessment and, traditionally at least, the primary goal of assessment is to quantify learning. One can quantify traditional learning via traditional assessments such as short-answer or essay questions, or via multiple-choice tests that are resource efficient. These assessments validate the processes used to impart information. Can we similarly assess skills learning? If

we could, then these assessments could both validate the process used to develop the skills and, in addition, further shape the way we use the process in hopes of maximizing its impact.

The remainder of this chapter will focus on the challenges of process and measurement. In the next section I will describe a process that combines three distinct evidence-based educational practices that, when properly combined, provide the kind of structured feedback-rich environment needed to effectively develop our most valued learning outcomes. In the section that follows I will focus on the measurement problem, and the manner in which it might be met through a principled modification of the highlighted process. Finally, I will highlight synergies that arise from this approach, synergies that infuse the proposed solution to this issue with even greater degrees of pedagogical impact.

## **A Process for Skills Development**

The specific process I will highlight is targeted at the following transferable skills: critical thinking, creative thinking, expressive communication, receptive communication and metacognitive awareness. That said, the process that emerges will involve students applying these skills in the context of some task, and that task can in and of itself reflect any other learning outcome or transferable skill that the educator wants to develop. For example, an educator interested in developing oral presentation skills could apply the process to oral presentations, resulting in students thinking critically and creatively about oral presentations, giving each other feedback about them, etc. As such, the list provided above really represents the skills that will always be developed by a process that can itself be applied to any other specific skill.

With all of the above in mind, my then student Dwayne Paré and I began forming a process that we believe provides students with the structured practice environment they need, while keeping the time and resource demands on educators on par with other activities they might ask students to perform. What follows is the process we devised, a process that shares a great deal with others used in science and the humanities to arrive at principled decisions via rational thought. The process includes three steps, and as I describe each I will highlight the relevant pedagogical links to the core skills highlighted above.

### **Create Phase**

The first thing students are asked to do is to compose, well, almost anything. This is where the instructor has a lot of control over the context within which all the thinking and discussion will occur. An English

professor may ask students to do some form of literary analysis. A music professor may ask students to create and submit a musical composition. A photography professor may ask students to submit their best image that involves a contrast of light and shade. A science professor may ask students to read a research paper and then describe and justify what they would do as a next step. The best compositions allow students to exercise critical- or creative-thinking skills within some context related to the course, and the steps that follow will amplify students' consideration of that context, as will be apparent soon.

### **Assess Phase**

Many of us remember our teachers saying something like the following: "Now that you have completed your work, swap it with the person across from you, then read their work and give them some feedback on how it could be better." This basic process is called peer assessment and, as outlined in the review by Topping (1998), it supports powerful learning for a number of reasons. When students are put in the role of teacher, they feel empowered and gain a better sense of the challenges involved in assessing subjective work. It puts them in a "discovery-based learning" context whereby they must look for the attributes that make a composition good or bad, a form of discovery-based learning that is engaging and that promotes deeper learning than, say, simply being provided with a list of positive attributes (Alfieri, Brooks, Aldrich & Tenenbaum, 2011).

Now imagine that rather than seeing the work of just one peer, a student is instead asked to provide constructive feedback, and perhaps additional rubric-based assessments, of the work of multiple peers. Keeping in mind our list of transferable skills, what skills must they use to complete the work? First, each composition must be critically analyzed to ascertain its level of overall quality and, to the extent it is lacking, what is missing? Or what should be changed to improve its quality? Note that this also includes creative thinking in the sense that the evaluator must consider how modifications would affect the quality of the work. Ultimately the student must expressly communicate their thoughts to the peer they are assessing via the constructive feedback they provide. Thus, as they move from peer composition to peer composition they repeatedly exercise critical and creative thinking and expressive communication in a structured manner.

In addition, as a student assesses the work of their peers, they are continually being presented with examples of how other students answered the instructor's prompt. This gives them the opportunity to compare their own work to that of their peers. It's one thing for an instructor to tell you your work is average, it's something else entirely to come to that conclusion



yourself. Thus, students gain metacognitive awareness by directly seeing how their work compares to that of their peers.

This benefit to metacognitive awareness can be further magnified by explicitly asking the student to perform a self-assessment after they finish assessing the work of their peers. There is a great deal of research on the pedagogical benefits of self-assessment in this regard (see Dochy & Segers, 1999). Understanding one's strengths and weaknesses can often be the first step in personal development and thus the development of metacognitive awareness is critical.

### **Reflect Phase**

Students have submitted their compositions in the Create Phase, and then assessed the work of multiple peers in the Assess Phase. While they were assessing their peers, an equal number of peers assessed their work and gave them constructive feedback. In the Reflect Phase of our process, students see the feedback applied to their work and are asked to actively reflect on it in two ways.

First, they are asked to directly assess each piece of feedback they received, typically in terms of how useful they think the constructive feedback is. Returning to our transferable skills, the focus is now on receptive communication (i.e., extracting value from someone else's expressive communication), but it also relies heavily on critical thinking and to a lesser extent creative thinking in a context that has great metacognitive value. That is, each peer is focused on their *own* work, highlighting things he or she could do better by asking questions like: "Are my peers correct?" (critical analysis); "What would my composition look like if I incorporated their ideas?" (creative thinking); "Do I agree that they have highlighted a weakness I could improve upon?" (metacognitive thought).

When we use this process we also sometimes include an emotional assessment. That is, part of what students are learning in this process is how to give feedback to someone in a manner that will result in positive change, and a big part of that is being critical without being insulting. Feedback that produces negative emotional states can be ineffective because negative emotions are the enemy of rational thought (Nicol & Macfarlane-Dick, 2006). To help students appreciate the role emotions play in the effective composition and digestion of feedback, we will often provide students with a checklist of emotions with the heading "How did this peer's feedback make you feel?" and it will include emotions like happy, satisfied, smart, informed, grateful, sad, angry, frustrated and confused. Performing this rating helps the receiving student appreciate their emotions and, hopefully, learn to put them aside. Additionally, seeing the emotions that one's feedback caused in others can help one identify the aspects of the feedback that are

potentially getting in the way of its learning potential. So perhaps we can add “emotional regulation” to our list of learning objectives.

There is one additional step we ask our students to perform. After analyzing and assessing all the feedback they received, we then ask them to perform a revision that mobilizes the useful feedback with the goal of improving one’s work. This is called a formative use of feedback (Shute, 2008) and once more there is a significant research base showing that asking students to actively use feedback to form a revision, rather than simply consuming it, leads to deeper learning. The lessons of the feedback have more impact when immediately put to the test. In terms of our skills list, forming a revision based on feedback combines critical thinking, creative thinking and expressive communication.

## **The Teacher, the Technology and the Test**

Recall that educators already feel that their time is tight and adding something new to their current workload can be a significant challenge. One critical aspect of the process described above is that the majority of the learning is driven by the students themselves. The educator defines the initial composition and ultimately may provide an expert-level assessment of the work done throughout the process.<sup>1</sup> This is very much in line with the time they would invest in a traditional essay-type assignment while providing students with the rich structured practice they need to develop their core transferable skills.

The critical reader may be thinking: “Sure, this all sounds great, but it requires one to make copies of every composition, distribute them to peers according to some algorithm, provide students with the tools they need to perform the assessment, then retrieve the assessed works and collate them accordingly so they can be returned to their original authors.” I have witnessed people go through this process using a paper and pencil, and yes, it is a great deal of work to pull off and it is very error prone. The good news, though, is that this sort of thing is exactly what technology is useful for and although we were among the very first to provide technologies to support this process (see [vision.peerScholar.com](http://vision.peerScholar.com) for details), there are now a number of technologies that can support the use of this process, at least partially.

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1 Note that even this is not necessary. Research conducted in our lab and in the labs of others have shown that the average of five or more peer ratings provides a “grade” that correlates very well with expert-provided grades; the correlation compares to that between two expert graders (Cho, Schunn & Wilson, 2006; Paré & Joordens, 2008). This means that this process can be used to develop skills learning while actually requiring less time and energy on the part of the educator!

These technologies also allow another very useful aspect to come into play: anonymity. Research on peer assessment shows that the constructive comments students provide to peers are deemed as much more useful when they are provided anonymously (Topping, 1998). The students giving the feedback tend to get straight to the relevant points when they know the receiver will not know their identity, and they tend to say things more clearly and with less worry about social factors coming into play.

There is one other important point to highlight as we move to the problem of measurement. As mentioned previously, educators traditionally think of assessment as a means of measuring previous learning, a concept some term “assessment *of* learning.” But we know that students are never more engaged than when marks are on the line, and thus the assessment context is fantastic for supporting learning as well (Black & Wiliam, 1998). In the case of the process highlighted above, it would be deemed a case of “assessment *as* learning.” That is, yes the assessment will ultimately provide a grade, but it is also supporting a lot of deep learning as it does. As will become apparent, the solution suggested here will blend the concepts of assessment *of* and *as* learning in a manner that may solve multiple problems at once, including the problem of measuring learning outcomes as they develop.

## Measuring Skills Development at Scale

As highlighted, adding peer assessment to traditional student assignments enhances the pedagogy by providing critical structured practice with the core learning outcomes highlighted throughout this paper, but its potential does not end there. When students assess the work of their peers they are provided with assessment tools that define and scaffold the feedback they provide. These tools can be as simple as a comment box that allows them to provide constructive feedback or rating boxes for them to quantify their sense of the quality of the work. Critical to this work, there can also be rubrics that students apply to the work, rubrics that break the task down into critical factors the students should be looking for and rating. This sort of rubric application may be key as it may allow us to quantify learning outcomes via peer ratings in a manner that scales.

For example, the Association of American Colleges and Universities (AAC&U) has mounted a VALUE Rubric Development Project that has produced and validated rubrics related to the core learning outcomes highlighted here, along with many others related to other learning outcomes educators value (Rhodes, 2016). As I write, there are now 16 rubrics that fall into three general categories: intellectual and practical skills; personal and social responsibility; and integrative and applied learning. These rubrics were created in hopes of “changing the national conversation around the

quality of student learning” (AAC&U, n.d.), which of course fits entirely within the scope of this chapter.

This notion that one could quantify core learning outcomes by applying a rubric to work students are already performing has been verified by research conducted at Queen’s University. Specifically, Kaupp, Simper & Frank (2015) collected student work performed throughout an academic year. Then, over the summer, an expert applied a slightly revised VALUE rubric for critical thinking to each composition. Although time consuming, the ultimate data revealed expected trends. That is, evidence of critical thinking increased over the course of study and was higher in programs that one might expect to draw students who enjoyed thinking critically. It seems the idea has potential, but it is also important to point out that the expert who applied the rubric to all this student work refers to that time period as her “lost summer.” This expert-driven approach serves as a proof of concept, but the logistics are still a problem.

The idea forwarded here is a followup of what was done at Queen’s, one that draws on peer assessment rather than expert assessment. That is, what if we began widely using peer assessment in our courses as an approach to upping our pedagogical game in a way that puts more emphasis on skills learning? And what if, as part of the assessment of their peers’ work, students are asked to apply a critical-thinking rubric to the work they were assessing? There is now considerable research showing that if you form an average from five or more peer ratings, that average is very similar to the single rating provided by an “expert” assessor (Paré & Joordens, 2008; Cho, Schunn & Wilson, 2006). As long as each student is assessed by at least five peers, that means for each student we could compute an average of the peer ratings they received, providing us with a quantitative measure of their critical-thinking skills without anyone losing another precious Canadian summer.

Again, there are 16 rubrics, each associated with a unique valued learning outcome. Thus, rather than applying the critical-thinking rubric, the student might be asked to apply a rubric for creative thinking, written communication, oral communication (assuming video submissions), teamwork or quantitative literacy, etc. Different courses might focus on different outcomes, and that focus could become part of the assessment students perform on peers. What this means is we could similarly quantify pretty much any learning outcome that can be reliably captured by a rubric.

Furthermore, as already discussed, peer assessments can scale; an assertion that is perhaps best evidenced by how commonly they are used to support deep learning in massive open online courses, courses that can draw tens of thousands of students at a time. For example, in the initial offering of my Coursera.org-based Introduction to Psychology course, I ran a peerScholar activity with over 60,000 participating students without issue.

Thus, through the power of peer assessment we could gain quantitative estimates of nearly any learning outcome at any scale.

I am also involved with another research project that aims to directly assess the potential of peer assessment to quantify learning outcomes at scale. The project began in 2017 with the support of HEQCO's Learning Outcomes Assessment Consortium (LOAC). During the first phase, we asked the roughly 2,000 students enrolled in my Introduction to Psychology course to apply the critical-thinking VALUE rubric to the work of their peers. Our ultimate goal is to assess the reliability of the average ratings they provided relative to those provided by trained teaching assistants and by experts trained on the application of the VALUE rubrics. At the time of writing, data acquisition from the experts is not yet complete, but we can say that students had no issues applying the critical-thinking rubric and that in general there was no sort of push-back.

In the second phase of our research project, which will begin in the fall of 2018, we are hoping to provide a demonstration of the full potential of scalability by inviting as many other educators as possible to also try this new approach. That is, willing instructors will be provided with the necessary technology and support (both technical and pedagogical) to try this approach in their class, in whatever level or area they may teach. Moreover, they need not constrain themselves to the critical-thinking rubric. As mentioned, there are VALUE rubrics for all commonly discussed learning outcomes and thus if a given activity is more about asking students to be, say, creative, then one could ask them to apply the creative-thinking VALUE rubric.

## **Benefits of Pedagogical Synergies**

The argument forwarded here is that with an appropriate use of peer assessment, we could indeed measure a number of critical learning objectives for all students semi-regularly during their time at our institutions. This would provide metrics of skills learning that could inform practice, and that could be used by students to provide a clear picture of the skill sets they can offer to employers. For example, we might “badge” students who show a particular proficiency in some skill or post the information in digital portfolios. I imagine a student applying to an advertising company who might say, “You know, my transcript is just OK because I don’t do so well at memorizing content, but you’ll see that my creative-thinking and communication skills are far above average. Isn’t that what you need most to come up with interesting ads?”

This approach has merit for an additional important reason. First, an analogy: When one is learning a musical instrument, one must learn the motor components related to playing that instrument, but also needs to

“develop an ear.” One develops an ear by actively engaging with other pieces, listening to how notes are played, melodies are phrased and how the tonal properties of the instrument are used to provoke interest and emotionality. As one’s ear develops, one learns to also hear these things in their own playing, which allows them to tweak how they are playing to produce similarly powerful pieces.

Again, as I see it, cognitive skills do not differ significantly from physical skills in terms of how they are learned. Thus, for one to learn to be creative or critical, a critical step will likely be developing an ear — well, perhaps not an ear, but a mind — for what creativity or critical thinking looks like when it is encountered. Applying rubrics to peer compositions is an explicit way to support this development. We are giving students a sense of what some core learning objective *looks like* when it’s present, and then we’re asking them to go look for it in the work of their peers. This could represent a critical synergy. We’re not just asking our students to be creative but, within the same context, we are also asking them to consider how creative various other pieces of work are. As they learn to spot creativity they will be in a better position to also see it, or not, in their own work, empowering them for success by giving them a full immersion into the world of core learning outcomes.

## Conclusion

It’s currently easy for educators to measure content learning, but much more of a challenge for them to teach or measure the learning of core transferable skills like critical thinking. This has led us to focus heavily on content learning and not heavily enough on skills learning. It is very important to put the system in balance especially in the modern world, a world in which information (i.e., content) is readily available to all, and in which the skills to use that information in unique or transformative ways can predict success (Assiter, 1995). A critical step in rebalancing the system is finding a way to both teach and measure these core transferable skills at scale, and without requiring additional resources.

In this chapter I have argued that by embracing peer assessment we can meet both challenges simultaneously. We can place students in a structured feedback-rich learning context wherein they practise using these skills, and in the process we can have them provide measures of specific skills by applying rubrics related to those skills to the work of their peers. Yes, this approach would require widespread use of peer assessment in classes, but as more and more educators understand the pedagogical power of peer assessment, and as more technologies appear to allow them to use peer assessment in easy and resource-friendly ways, this expansion of use is inevitable and may represent the single best use of technology to enhance

learning to date. Issues will remain about how best to communicate and use these measurements, but those are great discussions to have, and I for one look forward to having them!

## References

- Ackerman, P. L., Kanfer, R. & Goff, M. (1995). Cognitive and noncognitive determinants and consequences of complex skill acquisition. *Journal of Experimental Psychology: Applied*, 1(4), 270–304.
- Alfieri, L., Brooks, P. J., Aldrich, N. J. & Tenenbaum, H. R. (2011). Does discovery-based instruction enhance learning? *Journal of Educational Psychology*, 103(1), 1–18.
- Assiter, A. (1995). *Transferable skills in higher education: Teaching and learning in higher education series*. London: Kogan.
- Association of American Colleges and Universities (AAC&U) (n.d.). Current VALUE research. <https://www.aacu.org/current-value-research>
- Bennett, R. E. (2011). Formative assessment: A critical review. *Assessment in Education: Principles, Policy & Practice*, 18(1), 5–25.
- Black P. & William D. (1998). Assessment and classroom learning. *Assessment in Education: Principles, Policy & Practice*, 5(1), 7–74.
- Browne, N. M., Freeman, K. E. & Williamson, C. L. (2000). The importance of critical thinking for student use of the internet. *College Student Journal*, 34(3) 391.
- Carini, R. M., Kuh, J. D. & Klein, S. P. (2006). Student engagement and student learning: Testing the linkages. *Research in Higher Education*, 47(1), 1–32.
- Cho, K., Schunn, C. D. & Wilson, R. W. (2006). Validity and reliability of scaffolded peer assessment of writing from instructor and student perspectives. *Journal of Educational Psychology*, 98(4), 891–901.
- Christensen, C. M. & Overdorf, M. (2000). Meeting the challenge of disruptive change. *Harvard Business Review*, 78(2), 66–77.
- Cohen, N. J. & Squire, L. R. (1980). Preserved learning and retention of pattern-analyzing skill in amnesia: Dissociation of knowing how and knowing that. *Science*, 210(4466), 207–210.
- Craik, F. I. M. & Lockhart, R. S. (1972). Levels of processing: A framework for memory research. *Journal of Verbal Learning and Verbal Behaviour*, 11(6), 671–684.
- Dauids, K. W., Button, C. & Bennett, S. J. (2008) *Dynamics of skill acquisition: A constraints-led approach*. Champaign, Illinois: Human Kinetics.
- Dochy, F. & Segers, M. (1999). The use of self-, peer- and co-assessment in higher education. *Studies in Higher Education*, 24(3), 331–350.
- Ericsson, K. A., Krampe, R. T. & Tesch-Römer, C. (1993). The role of deliberate practice in the acquisition of expert performance, *Psychological Review*, 100(3), 363–406.
- Entorf, H. & Minoiu, N. (2005). What a difference immigration policy makes: A comparison of PISA scores in Europe and traditional countries of immigration. *German Economic Review*, 6(3), 355–376.
- Fallows, S. & Steven, C. (2000). *Integrating key skills in higher education: Employability, transferable skills and learning for life*. London: Kogan
- Fullan, M. (2012). *Stratosphere*. Toronto: Pearson
- Goff, L., Potter, M. K., Pierre, E., Carey, T., Gullage, A., Kustra, E., Lee, R., Lopes, V., Marshall, L., Martin, L., Raffoul, J., Siddiqui, A. & Van Gaste, G. (2015). *Learning outcomes assessment: A practitioner's handbook*. Toronto: Higher Education Quality Council of Ontario.
- Hughes J., & Mighty, E. J. (2010). *Taking stock: Research on teaching and learning in higher education*. Kingston: School of Policy Studies, Queen's University, McGill-Queen's University Press.



- Joordens, S., Paré, D. & Collimore, L.M. (2014). *Taking learning outcomes to the gym: An assignment-based approach to developing and assessing learning outcomes*. Toronto: Higher Education Quality Council of Ontario.
- Kaupp, J., Simper, N. & Frank, B. (2015). Triangulated authentic assessment in the HEQCO Learning Outcomes Assessment Consortium. Proceedings of the Canadian Engineering Education Association annual meeting. Canmore, BC.
- Nicol, D. J. & Macfarlane-Dick, D. (2006). Formative assessment and self-regulated learning: A model and seven principles of good feedback practice. *Studies in Higher Education, 31*(2), 199–218.
- Paré, D. E. & Joordens, S. (2008). Peering into large lectures: Examining peer and expert mark agreement using peerScholar, an online peer-assessment tool. *Journal of Computer Assisted Learning, 24*(6), 526–540.
- Rehder, B. & Hoffman, A. B. (2005). Eyetracking and selective attention in category learning. *Cognitive Psychology, 51*(1), 1–41.
- Rhodes, T. L. (2016). The VALUE of assessment: Transforming the culture of learning. *Change: The Magazine of Higher Learning, 48*(5), 36–43.
- Ryle, G. (1949). *The concept of mind*. New York: Barnes & Noble
- Shute, V. J. (2008). Focus on formative feedback. *Review of Educational Research, 78*(1), 153–189.
- Topping, K. (1998). Peer assessment between students at colleges and universities. *Review of Educational Research, 68*(3), 249–276.
- Tulving, E. (1985). Memory and consciousness. *Canadian Psychology/Psychologie canadienne, 26*(1), 1–12.



## Chapter 2

# Ten Recommendations for Undertaking Institutional Assessment

Jill Scott, Brian Frank and Natalie Simper

### Introduction

In 2011, Arum and Roksa published a study that concluded that 30% of the American college students tested made no discernable learning gains over the four years of a college degree (Arum & Roksa, 2011). Institutions naturally wondered, “Are our students learning? What evidence do we have?” Most had no reliable data that could answer those questions. Around the same time, professional programs in Canadian institutions were increasingly trying to assess learning outcomes using reliable measures to meet accreditation requirements and inform program improvement. Government and public discourse has been more frequently focused on asking how well university education has been preparing students for both employment and participation in society.

Like others, we were struck by the lack of evidence around student learning at our own institution. At the instigation of our then provost, we responded to a call issued by the Higher Education Quality Council of Ontario (HEQCO) to pull together a group of universities keen on working together to find better ways to measure learning gains. Since 2012, Queen’s University, a mid-size, medical-doctoral institution, has conducted multiple assessment studies, generally for one or both of the following two goals:

1. To gather evidence about how well students develop transferable cognitive skills over time, in order to inform improvement of courses and programs

2. To compare approaches for gathering this evidence, in order to inform long-term sustainable processes

The focus of our assessment has been on our undergraduate programs, particularly in science, engineering, social science and humanities. In this chapter, we will primarily discuss our first Learning Outcomes Assessment Consortium project (LOAC I), but in places we will draw on our experience from a number of other research projects (see summary below). The lessons learned have also leveraged collaborations with other institutions, and have been informed by discussions with groups like the HEQCO Learning Outcomes Assessment Consortium, the Bay View Alliance (Bay View Alliance, n.d.) and the Engineering Change Lab (Engineers Without Borders, n.d.). Collectively, these projects have involved assessing transferable cognitive abilities like critical thinking, problem solving and written communication using two assessment methods: standardized tests (either cross-sectional or longitudinal) and scoring samples of student academic work using consistent criteria (e.g., VALUE rubrics).

We'll start with a brief overview of the recent assessment projects. A summary of goals and assessment instruments is provided in Table 1.

### **Learning Outcomes Assessment Consortium I**

The first LOAC project was a four-year longitudinal study of transferable learning-outcomes assessments in undergraduate programs. It focused on four skills: critical thinking, problem solving, written communication and lifelong learning. The assessment measures included surveys, interviews, two standardized tests — the Collegiate Learning Assessment (Council for Aid to Education, n.d.) and the Critical Thinking Assessment Test (Center for Assessment & Improvement of Learning, n.d.) — and program-wide rubrics from the Association of American Colleges and Universities (AAC&U, 2014) to score student work samples independently of course grading. The research team worked with course instructors to align teaching, learning and assessment of cognitive skills, and to investigate and evaluate the utility of the instruments used. The results of the study quantified longitudinal achievement of student learning outcomes on three instruments with incremental growth in skills demonstrated across the undergraduate programs.

### **Postsecondary and Workplace Skills**

Our participation in the HEQCO-sponsored Postsecondary and Workplace Skills (PAWS) project involved testing the critical-thinking skills of a sample of first-year and fourth-year students using a standardized test called HEIghten (HEIghten, n.d.), with similar testing conducted by an Ontario college.

## **Learning Outcomes Assessment Consortium II**

Our project in the second round of the Learning Outcomes Assessment Consortium builds on the work of our first LOAC project. The Cognitive Assessment Redesign project is an institution-wide, network-based approach to the development of cognitive skills in undergraduate education. Our goal here has been to develop a network model to support first- and fourth-year instructors as they align skills development through the design of course and assessment materials. We evaluated course assessments against external assessments. One of our aims has been to build capacity toward long-term, cognitive-based assessment sustainability. Goals of the project include: providing feedback to instructors about the course assessment; investigating the course assessment to see how it compares to other measures; helping to evaluate cognitive skills development at Queen's; providing evidence for administrators and instructors about effective assessment practices; and communicating the results to the wider community.

**Table 1: Goals and Assessment Instruments**

Project/Timeline	Outcomes	Tools
Outcomes Assessment and Program Improvement at Queen's University (LOAC I) 2013–2017	a. Measure the value-add of a university degree as measured by achievement of transferable learning outcomes: critical thinking, problem solving, communication, lifelong learning skills.	Collegiate Learning Assessment (CLA+); Critical Thinking Assessment Test (CAT); VALUE rubrics; Transferable Learning Orientations (TLO)
	b. Raise awareness of the importance of teaching and assessing transferable skills by providing evidence of student learning.	
	c. Assess effectiveness of tools (reliability, validity, implementation), including cost-benefit analysis; and adapt and develop tools that align with faculty needs for sustainable assessment practices.	
	d. Develop sustainable methods and build into operations on an ongoing basis.	
Postsecondary and Workplace Skills (PAWS) 2016–2017	a. Measure the difference in critical thinking between first and fourth year.	HEIghten
	b. Investigate the relationship between the age, sex, English-language status, parents' education, or grade point average and critical thinking (predictive model).	
Cognitive Assessment Redesign (LOAC II) 2017–2018	a. Build departmental capacity; recognize faculty leaders within departments.	Course rubrics; VALUE rubrics; HEIghten test; Instructor teaching/assessment survey; Course documentation
	b. Support instructors to develop course-based assessments (in first- and fourth-year courses).	
	c. Validate the course-based outcomes by rating a sample of assignments using the VALUE rubrics and with selective testing using the ETS HEIghten test.	
	d. Report the value-add between first- and fourth-year cognitive-skills achievement across the institution (using course assessments and standardized measures).	
	e. Develop an institutional guide, leveraging lessons learned to incorporate effective practice for sustained institutional assessment of cognitive skills.	

Source: Queen's University

In this chapter, we distill 10 recommendations derived from these projects. This chapter was initially titled, "Things We Wished We Knew before We Began." This was subsequently edited, but presented in this

chapter are the lessons we learned, either through observing effective practices elsewhere, or the hard way through experience.

## **1. Identify a shared purpose for the assessment**

Institutional assessment requires support from leaders at different levels including the central administration, deans, heads, undergraduate chairs, staff and students. Throughout the process, simple things like communicating with students, finding testing times, booking rooms, hiring graders, motivating students and making sense of data require support from a range of groups at an institution. Since universities are highly decentralized, it's critical that the assessment addresses goals that are meaningful to all these groups. Understanding what motivates disparate groups and finding ways to support what they value is essential in gaining buy-in and sustaining their involvement.

Understanding and improving student learning is a common goal that can drive assessment, but other goals could include:

- Measuring student learning to present to students, parents and government
- Providing relevant and important data to departments about learning outcomes
- Gathering data about the value of particular program elements (course sequences, experiential learning, team activities, etc.)
- Providing data to inform public and institutional policy

The nature of the goal will drive the type of assessment and might even undermine it. Assessment for real or perceived punitive reasons, or for institutional ranking, will lead to groups trying to game the system, particularly when the approach does not use standardized instruments. A course instructor can simplify the complexity of a task that will be used to gather data for institutional assessment, or passively undercut motivation for students to participate in a test. Ranking units or awarding funding by performance incentivizes such behaviour.

A good first step is to ask various groups what questions or issues they face related to learning or assessment, since aligning institutional assessment to address relevant issues can help to build support. Unless an institution already has a culture that values assessment, building an institutional assessment process will involve motivating change. Our early assessment projects would have benefited from following a model of institutional change management such as Elrod and Kezar (2016), which includes a collaborative exercise of establishing the vision, analyzing the existing landscape on the campus and identifying challenges.

Institutions should select assessment approaches and tools to meet the goals because “you can’t fix by analysis what you bungled by design” (Light, Singer & Willett, 1990, p. v). Although institutional assessment is usually iterative, approaches and tools that can’t meet the intended goals will lead to unusable data. The methodology needs to accommodate, but ideally also embrace the messiness of real-world learning. The methodology also needs to account for disciplinary cultures of teaching. Humanities and creative-arts scholars in particular favour a hermeneutic approach of close reaching (careful, sustained interpretation) that does not naturally lend itself to quantification. These faculty members may be particularly skeptical of attempts to measure learning gains using standardized tools. It is important to find ways to value and validate their disciplinary approach, and one way to do this is to provide rich data on student learning, both qualitative and quantitative, that would enable instructors to revise or redesign assessments to better elicit the kinds of skills they would like to see more ably demonstrated by students. Both quantitative and qualitative data can be valuable.

## 2. Institutional assessment should be a sustainable process

Banta (2002) presents a three-step process for effective assessment: (1) plan, (2) implement and (3) improve and sustain. These steps are summarized in Figure 1. They involve considerable consultation and an ongoing and iterative process.

Figure 1: Process for Effective Use of Assessment

1	2	3
PLAN	IMPLEMENT	IMPROVE & SUSTAIN
Involve stakeholders Allow time Written plan Clear program objectives	Effective leadership Involve everyone Staff development Assessment at unit level Multiple measures Assess process & outcomes	Credible evidence Data used continuously Demonstrates accountability Ongoing, not episodic Improvement of process

Source: Adapted from Banta (2002)



Using assessment to inform program improvement will be a long-term initiative, since it will take multiple years to measure student development, make plans for improvement and then re-measure student development. If assessment is to inform course and program improvement, it should be core to the educational mandate of an institution, rather than a bolt-on additional task. Iteration and improvement are core elements of a long-term assessment project, and both data and evaluation of the process itself should inform improvements to goals, communication and assessment.

### **3. The role of senior leadership is critical**

Any large institutional initiative requires support from all levels. In the case of assessment projects at Queen's, there was already quite a lot of work taking place in engineering, driven in part by accreditation needs and particular faculty expertise. It didn't become an institutional project, however, until the former provost directly asked us to submit a proposal to join the Learning Outcomes Assessment Consortium. He made it clear that this was an institutional priority and allocated resources, both cash and in-kind, to support the work.

But resources alone will not suffice to sustain a large initiative over many years, and it will not lead to culture change. It is essential that the provost and the president, or principal in the case of Queen's, speak publicly and regularly about the importance of the work and in the right forums. Our provost ensured that deans were regularly updated on the assessment projects, that they in turn spoke about this work inside their faculties and that internal communication channels reported on the progress.

The project was intentionally located in the office of the provost in order to give it institutional credibility, and when efforts on the part of the assessment manager to engage heads and faculty were unsuccessful, the vice-provost (teaching and learning) would occasionally pick up the phone and see what was needed to nudge the project forward. It is also equally important to know when it is not appropriate or helpful to have senior administration involved. In many instances, getting faculty buy-in is best achieved through informal conversations with the assessment manager or assessment facilitators. These sessions can be used to find out what really matters to instructors, what they would like to know about their students and where they feel they could improve student learning.

Co-creating an assessment plan or re-aligning an assignment to the learning outcomes where the emphasis is on improving student learning can be a very rewarding experience for faculty. This is why our assessment team is so strongly in favour of course-embedded assessments using validated rubrics. This approach allows instructors to be at the table as equal partners. Stand-alone, non-disciplinary assessments will continue to be important

as ways to spot check or correlate against rubric-driven assessments. But faculty engagement is much higher when the assessment work is tied directly to their course and where they can see tangible benefits to their students at the local level.

#### **4. There is no such thing as a perfect approach**

If assessing student learning were quick, easy and cheap, higher-education institutions would know exactly where all their students were at academically all the time, and be able to make informed decisions about areas for improvement. The reality is that institution-wide assessment takes time, expertise, and in many cases is very expensive. There is a continuum between highly specific disciplinary outcomes (highly aligned but not comparable between disciplines) and broad transferable outcomes (comparable but weakly aligned with disciplinary goals). In our projects, we wanted to assess what students could do (application of knowledge), rather than just what they knew (memorization and recall). In addition, we were investigating methods for evaluating learning across the institution; in other words, assessment data that could be reliably aggregated. For this to happen, there needed to be either an equivalent assessment instrument applied across disciplines, or processes of assessment moderation employed to ensure consistency across the institution.

The problem with the first point is that application of knowledge becomes domain specific (Shavelson, Gao & Baxter, 1996). The need for disciplinary specificity is one of the primary arguments that instructors make against the use of standardized assessment. Student motivation decreases dramatically when the test content does not relate to their discipline of study (Finn, 2015). This effect can be exaggerated when course instructors can't apply the assessment data directly to their courses, and are therefore limited in making evidence-informed decisions about course improvement.

The second approach, assessment moderation, involves a process whereby instructors share their expectations of criteria and standards with each other, such that they can make consistent judgements about student achievement. While this may work across a group of teaching assistants within a particular course, the wider the assessment group, the more challenging it becomes. Assessment moderation at the institutional level can be virtually impossible. Imagine, for example, an art professor, a health practitioner and an engineer all making consistent judgements on student achievement across each of their learning areas. It actually sounds like the start of a bad joke.

For the assessment research at Queen's University, we discounted the assessment moderation option, rather opting to utilize external markers, using consistent criteria for rating coursework samples across disciplines.

The assessment measures tested included the following:

### **Valid Assessment of Learning in Undergraduate Education (VALUE) rubrics**

- These are broad, discipline-neutral descriptions of selected essential learning outcomes. Three of the rubrics were applied to a range of work samples from undergraduate courses in engineering, psychology, drama and physics.
- The rubrics contain four levels of performance criteria, from benchmark to capstone level. The VALUE rubric marking was conducted by researchers, externally from the courses.
- The rubrics are free, but incur costs for training and marking (paid markers); all-in cost per work sample averaged US\$25.

We also investigated three validated, reliable test instruments available on the market. The instruments implemented were:

### **Collegiate Learning Assessment Plus (CLA+)**

- The CLA+ is a 90-minute, web-based test of critical thinking, problem solving and written communication skills.
- It has a maximum of 60 minutes allocated for an open-text response to a realistic situation (performance task) and a maximum of 30 minutes to answer the multiple-choice and short-answer questions (selected response).
- It costs US\$35 per test plus local proctoring costs. Because of the length, some students do not complete the test. The all-in cost per test was an average of US\$40.

### **Critical Thinking Assessment Test (CAT)**

- The CAT is a 60-minute, paper-based test of critical thinking, problem solving, creative thinking and written communication skills.
- It costs US\$12 per test plus an annual membership fee, training and marking costs; all-in cost per test averages US\$38.

### **HEIghten**

- HEIghten is a 45-minute, web-based multiple-choice test assessing the critical-thinking elements of analysis and synthesis.
- It costs US\$12 per test and is available to be taken online, proctor-free.

## **Costs**

The least expensive option was the HEIghten test, but it does not cover the same breadth of assessment constructs as the other instruments. For example, there is no indication of students' writing ability (see Table 2). The costs of VALUE rubric marking may be mitigated if course instructors (or teaching assistants) were to undertake the marking, although this was not a possibility for us at the time of the study.

## **Implementation**

The paper-based CAT was the easiest instrument to implement, but needed to be scored by trained personnel. Web-based test proctoring was susceptible to a number of technical issues, requiring network specifications and specific browsers, and presented difficulties for student accommodation needs. Collecting work samples for VALUE rubric marking requires cooperation from course instructors, or that all student work be submitted through the learning management system. Then access, time and expertise are needed to retrieve and distribute the appropriate work samples.

## **Reliability**

The CLA+, CAT and HEIghten have all been subjected to rigorous reliability and validity checks. The CAT local scoring is conducted under rigid protocols, and checked by the test provider to ensure the consistency of scoring within a narrow tolerance. Reliability of VALUE rubric scoring is dependent on the quality of marker training, the expertise of the markers, and maintenance of protocols for calibration to ensure consistency between markers and marking over time.

## **Time**

The fastest test to implement is HEIghten, with data files available for immediate download. HEIghten can also be administered remotely without the need for face-to-face proctoring. As such, the test could be assigned as a homework task and would not encroach on class time.

## **Use of data**

The VALUE rubric marking provided data for instructors that related directly to their course. The instructor feedback isolated achievement on assessment dimensions as they related to the course material and displayed the strengths of the student achievement in relation to the larger cohort. When an instructor was able to see where students were weak, adjustments were made to the course-based material to better enable development of specific skills.

The benefit of the CLA+ and CAT data is that it facilitates the comparison of institutional performance with other schools. One of the drawbacks, however, was that it took months to receive the CLA+ and CAT data. As such, the information arrives after the course has concluded, thus making meaningful decisions about course improvement challenging.

**Table 2: Assessment Constructs and Dimensions of the Testing Instruments**

Instrument	Assessment Area			
	Critical Thinking	Problem Solving	Written Communication	Other
Collegiate Learning Assessment (CLA+)	Critical reading and evaluation Critiquing an argument	Analysis and problem solving	Writing mechanics Writing effectiveness	Scientific and quantitative reasoning
Critical Thinking Assessment Test (CAT)	Evaluation and interpretation of information	Problem solving	Effective communication	Creative thinking
HEIghten	Analysis Synthesis			
Valid Assessment of Learning in Undergraduate Education (VALUE) Rubrics	Explanation of issues Evidence Influence of context and assumptions Student's position Conclusions and outcomes	Define problem Identify strategies Solution/hypothesis Evaluate solution Implement solution Evaluate outcomes	Context and purpose Content development Genre and conventions Sources of evidence Syntax and mechanics	

Source: Composite, compiled by Queen's University

## 5. Understand the learning contexts

Context matters a great deal when it comes to assessing student learning. Standardized tests are an effective way to consistently measure skills development over time, but these instruments do not address the specific context of learning. This can have a significant impact on the outcomes because it impacts the motivation of both students and faculty.

The Spellings report called for postsecondary education institutions to “measure and report meaningful student learning outcomes,” and advocated for the inclusion of standardized testing (US Department of Education, 2006, p. 25). The findings were met with opposition from some sectors:

“Standardized tests that stand outside the regular curriculum are, at best, a weak prompt to needed improvement,” argued the AAC&U (AAC&U, 2006). If the test content is not related to their discipline, neither students nor instructors see the relevance in them. The challenge for us was finding the balance between the ability to aggregate across an institution and disciplinary specificity.

Students are much more likely to put their best effort into an assessment when it is linked to what they are interested in and what they are good at. They are also much more motivated when their work counts for marks and when their professor says it matters. We found it was relatively easy to get first-year students in their first few weeks of university to show up and try hard on a standardized measure, mostly because they are excited to be at university and they are keen to do their best. But by fourth year, students tend to be more strategic, and more interested in putting effort into those things that really count (i.e., their course assignments). Furthermore, if students have already taken a standardized test in the past they are less motivated to complete it again. All these factors have severe consequences for the validity of conclusions drawn from scores on tools like the CLA+.

Likewise, instructors are more likely to say that an assessment matters if it is linked to what they care about: their discipline and their course. If faculty are asked to take precious time out of their course to have students write a standardized test that will not provide them any data that they can use to improve their course, it is difficult to get them involved. Finally, if instructors think they may be judged on their students’ performance, then they are more likely to resist participating in the project.

Context also matters when it comes to course-embedded assessment measures. Assessment facilitators working directly with faculty to align outcomes to assignments need to have expertise in the discipline or in a cognate field in order to have credibility. Outcomes for our various assessment projects have relied heavily on gaining the trust of faculty and working alongside them to interpret assessment data in non-judgmental ways, and to use this to close the loop on enhancing student learning. This has impacts for project costs because it means employing a variety of facilitators with an advanced graduate degree in a variety of disciplines.

## **6. Ensure alignment between learning outcomes and assessment constructs**

Why would you try and measure something that’s not taught or elicited in the student response? There is limited correlation between course and VALUE rubrics if they are assessing different constructs or dimensions. The following provides an example from the Queen’s LOAC I project. We were investigating the assessment of critical thinking, so we approached

instructors to discuss possibilities. A particular instructor mentioned that their course was all about developing students' critical thinking. It was a course about maximizing the efficiency and safety of an industrial environment, with outcomes related to optimization methods. It sounded promising, so we tried assessing one of the student assignments that was suggested by the instructor using the critical-thinking VALUE rubric.

The dimensions we were looking for related to "explanation of issues," "use of evidence," "context and assumptions," and "conclusions and outcomes." The particular student response got a high grade on the assignment in the course, and anecdotally, the instructor knew that this student was an excellent critical thinker. The problem was that the student assignment involved a spreadsheet with multiple tabs, formulas and calculations, nothing more. Perhaps a subject expert with intimate knowledge of the specific task assigned might have been able to infer critical thinking by the student's use of the correct formula or the most appropriate variables. No doubt the student needed to identify the key issues and make a series of assumptions before being able to calculate the correct answers, but we were looking for critical consideration of relevant issues, or a systematic evaluation of sources of information, and the evidence at hand was very thin.

Tacit assumptions are difficult to evaluate unless students make their awareness visible. At higher levels on the VALUE rubrics, it is desirable for students to make informed evaluations or to question the assumptions that they or others make. In this case, there was little or no evidence upon which to base judgments of critical thinking. As such, the work sample would have scored very low against the VALUE criteria. If we had used the assignment in its existing form, it would have negated the validity of correlations between the VALUE scores and the course-based assessment. For correlations to be drawn, the course assignment needed to elicit the demonstration of critical-thinking criteria (i.e., the course assessment needed to align with the VALUE dimensions).

One argument against the alignment of course-based assessments with generalizable criteria is that it would mean abandoning subject content, but we found the opposite to be true. In the example given, articulating the issues being addressed and declaring assumptions made the purpose of the data calculations overt. When the student is clear about the parameters, potential errors become easier to detect. In addition, the process of making a statement of conclusion required students to revisit their findings. Revision prompts students to evaluate their results. It also provides evidence that can be used to assess critical-thinking dimensions, and validates the instructor's assertion that critical thinking is central to student learning.

## **7. Invest in time to build relationships**

Assessment work requires the participation of a large number of faculty, staff and students, all of whom have competing demands on their time and attention. Instructors in higher education are in their positions because they are experts in their field. That does not, however, mean that they are experts in teaching and assessment. We found that there was no gain in trying to tell instructors what they should be doing. Unsolicited suggestions were met defensively. We found that reciprocity and trust were essential to building positive relationships between instructors and members of the assessment research group. The instructor needs to believe in the process, trust the data to improve student learning and utilize the data for course improvement. In consultation with instructors, don't be afraid to question why it is that they are meeting with you, and find out what they expect to get out of their involvement. It is very difficult to trust someone you don't know, so step one is getting to know the professor and the course. If instructors will let you sit in on some classes, this is a good sign. In our assessment research, we needed student consent to collect assignments for marking, so that became a good prompt for a class visit and allowed us to learn from them.

What worked in our project was listening, learning and leveraging strengths (Scott, Coates & Anderson, 2008). Take the time to hear instructors' perspectives, find out what's happened in the past, what's going on now and what is working well for them. When following this method, as many times as not, instructors would suggest a change in line with project goals, or offer time to include standardized testing in their course. Their motivation for meeting with us was likely because they were not completely happy with some area of their course, and were actually in a place where they were willing to accept help. In that situation, every effort was made to support the instructor's desired change. Sometimes that involved reworking an assignment or revising a rubric, or perhaps rearranging learning experiences for students so that they could better engage and apply their knowledge. The suggestion of including testing within the course was often made because the instructor wanted to highlight the ability of the students. When instructors were part of the process and interested in student achievement on the standardized measures, they eagerly engaged with the results. Table 3 summarizes the changes that instructors made to courses that were part of the LOAC project.



**Table 3: Course Improvements Made by Instructors Involved in LOAC I Project**

Level	Change made to the course
First-year courses	Redesigned the final lab for open-ended problem solving
	Redesigned extended response answer in exam to target critical thinking
	Redesigned ePortfolio to align with problem-solving dimensions
	Redesigned the course to incorporate an argumentation component
Second-year courses	Redesigned learning lab and changed the assessment structure
	Redesigned two assessments (tailored to critical thinking)
	Modified annotated bibliography and research essay to directly assess critical thinking
	Redesigned problem-solving task to include a fourth-year leadership component
Third-year courses	Developed a new course with an authentic multi-part group task aligned with critical thinking and problem solving
	Converted to design labs
Fourth-year courses	Redesigned production evaluation to focus specifically on critical thinking
	Moved to specific assessment of critical thinking in the fourth-year field work unit
	Redesigned exam question to authentic case-based problem
	Adopted team-based approach to the authentic case-based problem with graduate students as team leaders

Source: Queen's University

## **8. Plan for data management, documentation and communication**

Institutional assessment will likely involve a nested set of data from multiple courses, programs, departments, faculties and years. Personnel from multiple units may be involved in administering, proctoring, archiving and analyzing data, so secure and well-organized data is critical. Version control of analysis and reporting can also be very useful. Data management requires:

- Clear workflow involving data collection, cleaning, storage, analysis, visualization and communication.
- An authoritative repository of data from which all analysis is conducted. Repeated analysis of data in different spreadsheets over multiple years is extremely error prone and frustrating.

- Documenting the protocols used in recruitment, conducting assessments and any issues that arose.
- Ensuring that the process of cleaning, analysis and visualization can be replicated.
- Identification of how data security and privacy will be maintained since student data is involved.

Careful documentation of processes is crucial for continuity and ownership of project management. Effective data management is critical for maintaining confidentiality, ensuring ethics and research protocols are met, and ensuring the long-term accessibility of the data gathered. Assessment is only useful if the results are effectively communicated.

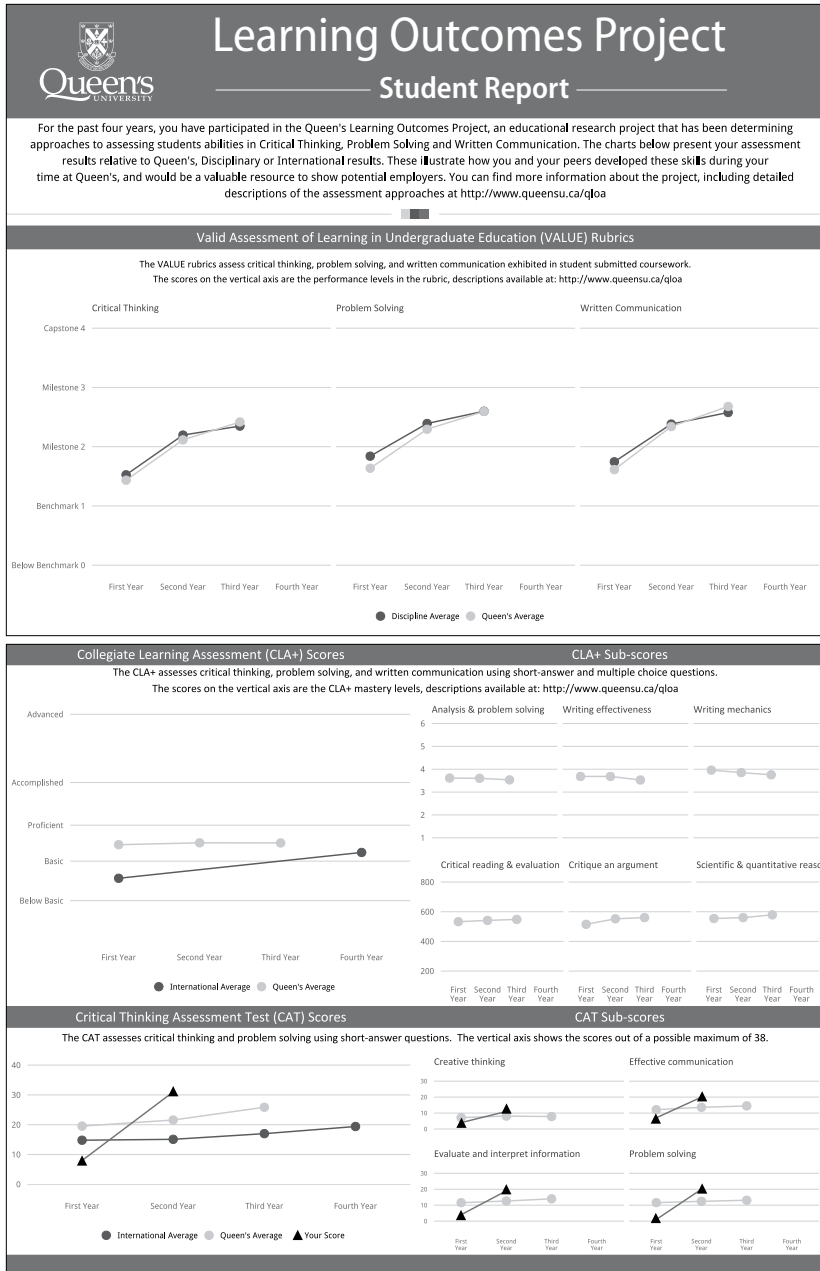
In our LOAC I project, reports were provided to departments, instructors, faculties and the provost. Each of these different audiences had specific interests and needs. The reports needed to be clear and succinct, and were best delivered in person at individual meetings where questions could be answered with time for discussion to follow. These reports often included:

- An executive summary to orient the reader to the document
- Information on the test instruments (and links for more information)
- A concise rationale for the purpose of the assessment
- A clear description of the sample and comparison groups
- Graphical representation of results
- Statements describing the demonstration of learning observed
- The qualitative differences between the different levels of achievement on the sample assignments

By being able to explore the objective differences between levels, instructors could see for themselves what the higher scoring students were doing well, and conversely, what the lower scoring students needed to work on. The quantitative data was provided to instructors with their course mean, tracked longitudinally by discipline and with reference points to the institutional mean and, where possible, the international average. Instructors found it useful to be able to cite their students' strengths and areas that required further development.

Based on feedback from our student focus groups, we also provided students with an individual (confidential) report of achievement. The first page of the report contained a general description of the project and the student results of the VALUE rubrics, and the second page contained their comparative results from the standardized test (see Figure 2). Students said that this was very useful for them as it allowed them to see their comparative achievement. The reports were also used as motivation for them to give their best effort.

Figure 2: Student Learning Outcomes Project Report



Source: Queen's University

## **9. Use networks and distribute the leadership**

### **Internal networks**

Teachers are accustomed to assessing student work, but do they really measure it against a set of validated criteria? Even if they do, is it likely the criteria are comparable to those of other courses? We often heard faculty say: “No one else understands our students/subject/challenges.” Developing internal collaborations provides the opportunity for building common ground. Networks can support instructors in talking about their assessment work and see that their challenges aren’t so different from one another’s. Our Cognitive Assessment Redesign (CAR) project (LOAC II) utilizes a network approach, designed to support the purposeful alignment of cognitive-skill assessment through the development of authentic tasks. In the CAR project, the instructor works with an assessment facilitator to discuss goals and potential strategies. Then there are formal settings where everyone presents their work, but we have found that the real benefit is in the informal social interactions, where conversations spring naturally through shared goals. It is important to recognize these social networks, as they can be key to maintaining engagement over time (Roxå & Mårtensson, 2009).

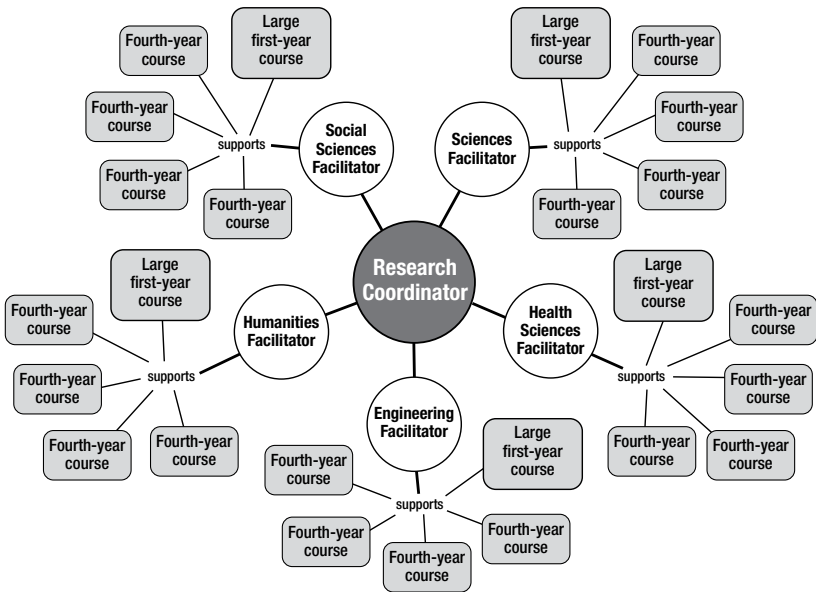
### **External networks**

Further to internal conversations, we found our external networks to be enormously beneficial. In the early years of the LOAC I project, Queen’s leveraged lessons learned at Kansas University (KU). KU had been working on the Collaborative Humanities Redesign Project and we were approached to be a research partner. The support they gave was in-kind, but it helped us frame the purpose and approach. We had regular meetings to discuss our issues (and there were many). They helped us by providing an informed external perspective. Queen’s has in turn provided feedback to a number of LOAC partner institutions, especially those that plan to undertake assessment research using the VALUE rubrics.

### **Distributed leadership**

As beneficial as the networks were, they have not been self-sustaining. Our CAR project employs a distributed support structure. Each of the assessment facilitators unites the instructors from their learning area, then there is a central coordinator who ties together and initiates engaged conversations between the facilitators (see Figure 3). The goal of the design is to build capacity and enable sustainability.

Figure 3: Assessment Redesign Network Map



Source: Queen's University

## 10. Recognize different needs and values

If we had known when we embarked on this ambitious task what we know now, would we have done anything differently? We think this is an important question to ask, but we also know it's not easy to answer. In some ways, it's better not to know all the challenges that will arise because otherwise you might not start at all. In other ways, it might have been good to know a bit more about the operational challenges we would face.

A simple look at the above parameters tells you that we had many permutations and combinations of people, instruments and schedules to manage. In the first year, testing was relatively easy because we had large courses and could test large numbers of students at a time. The further along we went into the course of study, the smaller the class sizes became, which meant that by fourth year, we were liaising with a great number of faculty, convincing one professor at a time to join the project, commit class time to assessments and identify an assignment appropriate for the rubric-based assessment. A process like this takes a lot of time, resources, patience and hopefully also a good sense of humour.

In our LOAC I project, we set out to use a range of instruments in every year. We might have saved ourselves a lot of grief by testing the first- and fourth-year students only, which would have told a story about total growth across an undergraduate degree. But if we had done that, we would have missed the opportunity to develop a more nuanced narrative of growth over time, both within and across cohorts, and we might have lost momentum with our departments, our instructors and even our students. Another possible scenario could have been to use standardized measures in first and fourth year only, and to use the course-embedded rubric-driven assessments in all four years. This might have yielded sufficient data on total growth while still affording the opportunity to provide valuable data to instructors about their own courses on an annual basis.

A good project includes ambition and naiveté in equal measure to embark on a significant challenge. The result of carrying through with all measures in all years is that we now have a huge amount of data, which we have tried to synthesize and distil into a somewhat concise final report. By combining our data on student learning with institutional data, we could easily employ several researchers for some time doing further analysis to tell different kinds of stories about student learning and about the student learning experience as a whole.

The assessment project you choose really depends on the kinds of stories you want to tell. Presidents, provosts and boards of trustees want to be able to talk about student learning across the institution, and depending on how happy they are with the results, they may also want to compare themselves to other institutions. Deans and heads want to be able to show growth inside the faculty or department, possibly with regard to accreditation or quality-assurance processes.

Government, taxpayers and parents want to see the return on their investment by way of student learning, but they are also increasingly interested in labour-market outcomes and how well students are faring in the job market, whether their employment is related to the discipline and how well they have been able to use the specific skills they learned in their program. These trends will increasingly drive assessment projects to make connections between performance in higher education and achievement in the labour market two, five or even 15 years after graduation.

High-achieving students tend to be more interested in seeing the results of their assessment than those students merely trying to graduate. We think it's important to show students how well they have done on assessments, whether course-embedded or stand-alone. One of the challenges of most standardized tools is the length of time it takes to get results. Eventually, we would like to be able to provide students with timely information about their skills achievement and, where appropriate, where they sit within their cohort.

Instructors for the most part care only about the courses they teach. They want to know precisely where they can make small adjustments in their assessments to align to the outcomes they want for students. Therefore, assessment projects also need to keep in mind the need for nuanced, course-specific data. At the end of the day, it is the professors who have the power to influence student learning. An assessment project that does not engage instructors at the course level is unlikely to lead to transformative change in the teaching culture.

## Conclusion

Our four-year LOAC I project was a research study meant to answer certain specific questions: How much do students learn over four years of study? How well do specific tools measure student learning? What can we learn about these tools by correlating results? What are the operational challenges in administering these measures? How much does this cost and which measures are more cost-effective? Which methods are more effective in influencing faculty behaviours? What does it take to motivate students?

We have learned a tremendous amount from the project, and we hope that our findings are valuable to others. But like all research studies, it was never designed to be implemented on a long-term basis. We have given a lot of thought to what it will take to move toward a sustainable model of assessment, and our future direction will likely put more emphasis on course-embedded rubric-driven assessments with a small amount of standardized testing to allow correlations between disciplines and to allow us to continue to aggregate across the institution. Ideally, we would like to continue to expand the number of disciplines engaged in assessment redesign work, with the goal of eventually having every program involved at some level.

If we were asked whether other institutions should replicate our project exactly, the short answer would be no. But we would fully recommend that colleges and universities develop an assessment project appropriate for their environment. We would suggest working on reliability of measures derived from using VALUE rubrics and multiple course assignments. There is also a need to develop quasi-standardized disciplinary prompts that could be used longitudinally within or across a program. These prompts could also be scored using the VALUE rubrics.

At the heart of all assessment projects is a push and pull between accountability and improvement. We do not see the demand for accountability diminishing, so external stakeholders will always need to be considered when designing an institutional assessment project. But we must also remember that every dollar we spend on measuring learning is a dollar not spent on enhancing learning, unless the act of measuring also

has the capacity to promote improvement. This is why we feel so strongly that projects need to be designed with the view to engaging faculty as co-researchers or equal partners in the assessment work.

There is no one right or wrong way to design an institutional learning-outcomes assessment project, but there is a right fit for every institution. We recommend that those designing the projects consider the needs of the institution, the context and the opportunities, that all levels of leadership be engaged, that appropriate and dedicated resources be allocated, and that there be a plan to evaluate the efficacy of the work on a frequent and ongoing basis.



## References

- Arum, R. & Roksa, J. (2011). *Academically adrift: Limited learning on college campuses*. Chicago: University of Chicago Press.
- Association of American Colleges & Universities (AAC&U). (2006, September 15). Statement on Spellings Commission Report. <https://aacu.org/about/statements/2006/spellings>
- Association of American Colleges & Universities (AAC&U). (2014). Programs | VALUE: Valid Assessment of Learning in Undergraduate Education. <http://www.aacu.org/value/index.cfm>
- Banta, T. W. (2002). *Building a scholarship of assessment* (1st ed.). San Francisco: Jossey-Bass.
- Bay View Alliance. (n.d.). <https://bayviewalliance.org/network/about/>
- Center for Assessment & Improvement of Learning, Tennessee Technological University. (n.d.). CAT (Critical Thinking Assessment Test). <https://www.tntech.edu/cat/>
- Council for Aid to Education. (n.d.) CLA+ for Higher Education. <http://cae.org/flagship-assessments-cla-cwra/cla/>
- Elrod, S. & Kezar, A. (2016). *Increasing student success in STEM: A guide to systemic institutional change*. Washington, DC: Association of American Colleges & Universities.
- Engineers Without Borders. (n.d.). Engineering Change Lab. <https://www.ewb.ca/en/venture/engineering-change-lab/>
- Finn, B. (2015). Measuring motivation in low-stakes assessments. *ETS Research Report Series, 2015*(2), 1–17.
- HElghten. (n.d.). Introducing the HElghten Outcomes Assessment Suite. <https://www.ets.org/heighten>
- Light, R. J., Singer, J. D. & Willett, J. B. (1990). *By design*. Cambridge: Harvard University Press.
- Roxå, T. & Mårtensson, K. (2009). Teaching and learning regimes from within: Significant networks as a locus for the social construction of teaching and learning. In C. Kreber (Ed.). *The university and its disciplines: Teaching and learning within and beyond disciplinary boundaries* (209–18). New York: Routledge.
- Scott, G., Coates, H., & Anderson, M. (2008). *Learning leaders in times of change: Academic leadership capabilities for Australian higher education*. Melbourne: ACER.
- Shavelson, R. J., Gao, X. & Baxter, G. P. (1996). On the content validity of performance assessments: Centrality of domain specification. In M. Birenbaum & F. Dochy (Eds.). *Alternatives in assessment of achievements, learning processes and prior knowledge* (131–41). Springer.
- US Department of Education. (2006). *A test of leadership: Charting the future of US Higher Education*, A report of the Commission Appointed by Secretary of Education Margaret Spellings. Washington, DC. <https://www2.ed.gov/about/bdscomm/list/hiedfuture/reports/final-report.pdf>



## Chapter 3

# The Case for Large-scale Skills Assessment

Sarah Brumwell, Fiona Deller and Lauren Hudak

## Introduction

Skills matter. Postsecondary students expect their education to hone their abilities and enhance their job prospects.

Employers expect postsecondary graduates to possess the skills needed to make positive, productive contributions to their organizations. In the coming decades, Canadian workers will need a transferable set of skills if they and the country are to be economically competitive, if they are to succeed in their jobs, and if the country is to attract the industries and jobs of a modern, innovative economy.

Innumerable employer, student and industry surveys have demonstrated clearly that the greatest concern of employers and students is not the content that graduates acquire in their postsecondary programs, but rather an apparent shortcoming in a set of cognitive and behavioural skills necessary for success in volatile and unpredictable job markets. The most cited skills needed for job success, at a cognitive level, are literacy and numeracy, problem solving and critical thinking; and at a behavioural level, effective communication, resourcefulness and adaptability. From an accountability perspective, from a public-policy perspective, and most importantly from a learning-gain perspective, skills are now synonymous with quality in postsecondary education.

However, we do not know whether these concerns are justified, whether postsecondary programs are doing an adequate job of fostering these cognitive and behavioural skills. Why? Because we do not measure them. Postsecondary education, to a large extent, still teaches, evaluates and credentials information and content. Statements about the employment-

related skills of graduates from academic institutions are largely based on inference, opinion, gut feelings or aspirations.

There is no substitute for the direct measurement of job-related skills to answer important questions about the skills gap, to determine the effectiveness of our investments in programs designed to reduce this gap, and most importantly to determine the most effective ways of teaching these desired skills and competencies to students.

While measurement can take many forms, large-scale skills assessments can be particularly effective in helping us understand students' learning gain at the system and institutional levels. In testing students' skill levels when they enter postsecondary and again when they leave, we should get a pretty good idea of whether their education contributed to an increase in their skill level. This is a relatively straightforward proposition.

But simple solutions are not necessarily without controversy, and large-scale assessment can be a polarizing topic. We are of the opinion, however, that most of the objections to large-scale assessment are reactions to poorly designed testing programs and the misuse of assessment data both for policy purposes and in the classroom. While noteworthy, they do not weaken the case for large-scale assessment: After all, assessment is simply a tool. Rather, we should use these objections as reference points to determine what we do and don't want from our assessment programs.

Below, we make the case for the large-scale assessment of skills and address some of the more common criticisms. Before diving in, we must clarify what we mean by large-scale assessment. We are not referring to high-stakes admissions tests like the SAT. High-stakes assessments refer to those that have direct consequences for the test-taker, such as determining admission to a postsecondary institution. Conversely, low-stakes initiatives like those administered by the Ontario Education Quality and Accountability Office (EQAO) and the Organization for Economic Co-operation and Development's (OECD) Programme for International Student Assessment (PISA), are designed with quality-improvement applications in mind. In other words, low-stakes assessments are used to measure student achievement but have no impact on students' grades or class standing (Finn, 2015).

Skills and educational quality are intertwined and the importance of skills assessment, therefore, cannot be underestimated. Again, assessment is simply a tool. Like all tools, it can be well or poorly constructed, and it can be used for purposes both good and ill. Past and present large-scale assessment initiatives should be treated as case studies or natural experiments. They provide a wealth of insight into what is possible and what pitfalls to avoid when implementing large-scale assessment programs.

## Large-scale Assessment and Quality Improvement

Skills-based, large-scale assessment tools such as the OECD's Education and Skills Online (ESO), HEIghten, and the Council for Aid to Education's Collegiate Learning Assessment Plus (CLA+) are psychometrically designed to capture the skill level of the test-taker in a particular skill (e.g., literacy, numeracy, critical thinking and problem solving in technology-rich environments). These tests have been validated against other measures of the same skill and are highly reliable.

We may never be able to measure all the skills that are important for a successful life and career. However, the tools for assessing skills have advanced tremendously over the last decade. Adaptive tests like Education and Skills Online increase or decrease in difficulty to better gauge a test-taker's skill levels, while the CLA+ and the HEIghten Critical Thinking assessment have made great strides in measuring higher-order cognitive skills. And we already understand quite well how to measure essential skills like literacy and numeracy. The more we measure — both with large-scale assessments and in the classroom — the more sophisticated our tools will become.

While the assessment tools available have come a long way, and while we have ample evidence that skills acquisition in postsecondary is closely tied to the value or quality of that education, it is harder to move from understanding learning gain (i.e., whether students are better critical thinkers when they graduate from postsecondary than when they started) to improving quality.

Blaich and Wise (2011) argue that while “closing the loop” between assessment and quality improvement may not be simple, it is important for long-term sustainability and engagement, and can be done through careful planning during assessment-program design. Eubanks (2017) also bears repeating: Poor data quality can undercut improvement efforts. Assessment programs must have clear, actionable goals. This is equally important for the design of the assessment program as it is for the dissemination and application of the results. Large-scale assessment can be costly and easily mismanaged. And assessment results along with the goals and logic of quality improvement programs can be easily misunderstood. However, with good, thoughtful and outcomes-oriented design, implementation and communication, we can offset these risks.

After nearly two decades of participation in EQAO, PISA and other international assessment programs, we can already point to cases where assessment results have sparked calls for improved quality. For example, declining math scores on the EQAO and PISA assessments have galvanized efforts to revise the Ontario mathematics curriculum, though the curriculum has yet to be substantially redesigned (EQAO, 2017; Richards, 2017; Stokke, 2017). Although assessment initiatives are relatively new at

the postsecondary level, the relationship between the assessment of skills and the teaching of skills is well-documented (Blaich & Wise, 2011; Fulcher, Good, Coleman & Smith, 2014).

The researchers leading the Wabash National Study — a longitudinal research and assessment project in the US that studied how teaching practices, student experiences and institutional conditions contributed to learning gains and other quality measures — found that “closing the loop” between assessment data and quality improvement required a methodology of its own (Blaich & Wise, 2011). If this is the case, that methodology would certainly include a plan for engaging students and instructors in better teaching and learning practices connected to process and results of large-scale, low-stakes skills assessment.

## **Value for Students and Instructors**

To design an assessment program that comprehensively engages students and instructors and improves quality, we must think carefully about two things: how the outputs of these assessments can be made useful to administrators, students and instructors; and how the assessment process itself can be made as simple and non-intrusive as possible.

The individual reports provided to test-takers are not always easy to understand and do not typically provide students with information they can use to strengthen their abilities. Instructors at both the postsecondary and K-12 levels do not always find large-scale assessment initiatives to be relevant to the skills they are teaching in their classrooms and often receive assessment results too late in the term to be useful. Further, administrators are not always able to use assessment results to inform improvement on an ongoing basis. These disconnects can sometimes be attributed to the presentation of the test results (e.g., the content of students’ reports or nature of the raw data set) as well as to the program’s clarity of purpose (or lack thereof) and to the alignment of the measurement tool with academic programs and curriculums. It can raise questions about the quality of the measurement as well as the knowledge-sharing strategy of those running the assessment program. Whatever the reason, an assessment program that does not provide a clear snapshot of learning to students and educators is unlikely to have a positive effect on quality improvement.

While these assessment tools can provide valuable snapshots of learning at the institutional and system levels, their value to instructors and students depends on their resonance with teaching and learning in the classroom. It is important, therefore, to balance the data collected through large-scale assessment with other aligned measures such as course-based assessments designed by instructors.

Large-scale assessments should also align with institutional learning outcomes if the results are to be used for internal improvement (Liu, 2017). Learning-outcomes frameworks can help to ensure that competencies not easily captured by large-scale assessment and other less easily aggregated modes do not fall by the wayside. They can also be used to stake out a space for faculty insight and expertise in the quality improvement cycle. For example, the Multi-State Collaborative to Advance Quality Student Learning uses the Valid Assessment of Learning in Undergraduate Education (VALUE) rubrics developed by the Association of American Colleges and Universities to collect learning-outcomes data directly from samples of student assignments (Berrett, 2016). The associated database provides faculty members and institutions with information that can be used for local quality improvement initiatives in addition to providing policy makers with an evidence base that can inform state-level decision-making. Other initiatives, including some of HEQCO's own assessment projects, work with institutional research offices to gather information on student characteristics that can contextualize assessment results (Williams, 2017). Large-scale assessments may not be an all-encompassing method of collecting data on student achievement, but they can be complemented by information from a number of other sources.

HEQCO's Essential Adult Skills Initiative (EASI) has developed a flexible and efficient model of administering a large-scale assessment at Ontario colleges and universities that minimizes the burden on instructors, students and administrators. The EASI process has proven to be student friendly — using an adaptive, online test that students can take in a setting and at a time of their choosing — and, because HEQCO manages the data centrally, it places minimal time and resource demands on institutions. The pilot has provided valuable information on how to best administer and manage this type of assessment program, which can inform future large-scale assessment projects in PSE.

EASI is one of two large trials that HEQCO has completed in partnership with Employment and Social Development Canada (ESDC) and Ontario's Ministry of Training, Colleges and Universities (MTCU). These trials have studied the best ways to directly measure the acquisition of employment-related skills in college and university students.

EASI measures the development of literacy, numeracy and problem solving skills while the second trial, the Postsecondary and Workplace Skills (PAWS) initiative, measures the development of critical thinking. The skills data collected through PAWS will ultimately be linked to income tax data to determine the contribution of critical-thinking capacity to employment success.

These two trials assessed skills in more than 7,500 students in 20 colleges and universities and serve as proof that large-scale, low-stakes skills assessment is feasible. They were designed to measure the improvement in skills from the time students begin their programs to the time they graduate. These trials use psychometrically rigorous instruments — the HEIghten test for PAWS and the online version of the PIAAC test for EASI — that have been demonstrated to be reliable and valid measurements of the skills being measured.

Large-scale assessment initiatives that directly measure skills development in postsecondary education are eminently feasible. Institutions showed interest in participating in these trials to a far greater extent than we had anticipated. All of the logistical issues — ethical, technical, privacy — were handled and resolved, suggesting the methodology and processes could be scaled to a provincial or national level.

Both EASI and PAWS demonstrate the feasibility of the approach and resolved all methodology and process issues. The most compelling and intriguing observation they offer is that improvement is evident in some situations but not in others. Female students, for example, see statistically significant gains in literacy and numeracy between the first and final year of study, while male students only see significant gains in numeracy. In addition, students in university programs appear to be experiencing greater skills development than those in college programs, though we have not yet determined the role that program length might play in this result. Our trials to date have been cross-sectional and voluntary; future trials that employ a longitudinal, census-based methodology to measure skills development can explore these observations in greater depth.

In short, large-scale assessment tools on their own do not create a toxic environment. Appropriate policy framing and implementation supports for educators are critical to ensuring that assessment programs are sustainable and successful, and that their results are used for the benefit of students.

## **Large-scale Assessments as Measures of Student Learning**

Not all the objections to large-scale assessment are reactions to poorly enacted policies and programs. Some question whether large-scale assessment can actually measure those skills that are most important for success in school, life and work. These arguments are typically accompanied by a followup question along the lines of, “If large-scale assessment cannot measure the skills that matter most, why should we use it to gauge the quality of our education systems?”



Many opinions about the usefulness of large-scale skills testing are based on the K-12 sector or on high-stakes tests such as the SAT, which is used widely for postsecondary admissions in the United States. At the K-12 level, large-scale assessments are often very different — both in mode and setting — from the ways in which students typically learn and are assessed at school. Assessments also sometimes frame certain skills or subjects in ways that diverge from the manner in which the material is covered in class. (ETFO, 2018; Kempf, 2018; People for Education, 2018). More broadly speaking, there are concerns that standardized measures are not sophisticated enough to capture holistic approaches to learning like those described in the Ontario curriculum (Campbell et al., 2018; People for Education, 2018).

At the postsecondary level, these issues take on an additional dimension with regard to fields of study. Educators are divided on whether skills like critical thinking can be assessed outside of the discipline-specific context within which they are usually delivered (Benjamin, 2012; Benjamin, 2013). Just as some elementary and secondary school teachers are concerned with the ability of large-scale assessments to capture holistic learning, so too are some faculty members unsure about the ability of large-scale assessments to accurately measure skills across an institution, when each discipline is charged with imparting specialized knowledge and techniques.

However, it is increasingly acknowledged that the skills measured by currently available assessment tools are the same skills that postsecondary institutions themselves claim to teach (e.g., literacy, numeracy, problem solving, critical thinking, communication). One only has to look to public declarations made by college and university presidents to see how deeply they believe in and tout the ability of their institutions to teach these skills. So why not measure them? And the beauty of institution-level testing is that responsibility for nurturing and educating students who have these skills is on the collective rather than any one classroom or instructor.

Finally, it may be true that postsecondary large-scale assessment projects are somewhat limited by the available tools. But this is not a fatal flaw; it is evidence that large-scale assessment is still in beta mode. The commercially available tests are continually being refined, both in technical terms and in terms of user experience. ETS's HEIghten tests, for instance, now allow administrators to add custom questionnaire items (ETS, n.d.). Other jurisdictions are creating tools of their own when commercially available assessments do not meet their quality-improvement needs: For example, England's National Mixed Methodology Learning Gain Project has developed and piloted its own standardized measure of critical thinking, problem solving skills and student attitudes for this very purpose (HEFCE, 2018).

It is important that those using large-scale assessments consider the limitations of the tools they use and identify ways in which they can be improved. It is equally important to consider ways that these limitations in the design of the testing program itself can be circumvented. And as the use of these tools continues to increase, it is reasonable to assume that we, as clients, can encourage commercial testing companies to make these instruments more useful. This also applies to the outputs of the assessments: If the raw data outputs and score reports are not useful, then we should consider how we can transform them into formats that are meaningful to students, faculty and institutional leaders. What information should a snapshot of student learning contain? What level of information is most useful to stakeholders? What is the best way to present and meaningfully aggregate data on learning gain across an institution or across a jurisdiction? What supplementary information could be added to the outputs to stave off misinterpretations and misuse of the data, and increase opportunities for formative learning?

## **Reporting Results with Context and Precision**

As we consider what a large-scale assessment program in Ontario's colleges and universities might look like, we should be mindful of how tying assessments to performance reviews, institutional funding and reputation can have negative consequences for students and educators. While transparency is at the heart of assessment initiatives, care must be taken in the use and dissemination of assessment results to avoid the negative dynamics that ranking can cause (Sellar, Thompson & Rutkowski, 2017). And it is not enough to simply release the data and advise the public not to use the information to rank schools or institutions — the legacy of the EQAO in Ontario makes that abundantly clear. As we have seen with the EQAO, public perceptions can raise the stakes for teachers and principals. Yet for all the disagreement about the role of large-scale assessment in education, the level of public interest and participation in the Independent Review of Assessment and Reporting — which evaluated and provided recommendations for improving assessment in Ontario's K-12 system — is a striking reminder that quality is an area of interest not only to government and educators (Campbell et al., 2018).

What's more, as initiatives like the Measuring and Comparing Achievements of Learning Outcomes in Higher Education in Europe (CALOHEE) and HEQCO's EASI project are demonstrating, research design can be used to prevent competitiveness from compromising the quality of our institutions.

Likewise, ranking does not have to be inevitable. *Ontario: A Learning Province*, the report on the independent review of assessment in Ontario, includes several recommendations for improving the communication of assessment results such as developing new strategies for improving public understanding of what assessments do and don't measure and how to interpret the findings (Campbell et al., 2018). There are also efforts underway to use research design to prevent ranking. The EU-funded CALOHEE project in the Netherlands, which builds on the learning-outcomes alignment and assessment work of the OECD's Tuning and Assessment of Higher Education Learning Outcomes (AHELO) projects, is breaking new ground in this area. CALOHEE is developing methods for measuring institutional outcomes for quality purposes using a set of large-scale, discipline-specific assessments in conjunction with existing program frameworks and a matrix model that reports scores in ways that are relevant to each particular institution's learning outcomes (CALOHEE, 2018).

CALOHEE's model is premised upon the idea that there are important differences in the ways that institutions deliver programs in the same fields of study. The goal is to create a transnational assessment program where "... institution X's overall score in History relative to institution Y's is irrelevant, but their scores in, for instance, 'social responsibility and civic awareness' or 'abstract and analytical thinking' might be, if they both say that's a desired learning outcome" (Usher, 2017). While CALOHEE is still in its early stages, it represents a significant advance in the ways in which postsecondary systems are thinking about assessment for quality purposes.

The Learning Gain Programme in England is also exploring how the direct measurement of student skills can be tied to existing quality mechanisms. The program is piloting a number of methods of assessing student learning and postsecondary experiences for quality improvement purposes (HEFCE, 2018). One particularly interesting goal of this project is the development of a Learning Gain Toolkit comprised of comparable, valid measures that institutions can choose from when including direct evidence of student learning in institutional reports to the national Teaching Excellence and Student Outcomes Framework. With the toolkit, the Learning Gain Programme is demonstrating how institutions can take an active role in determining what assessments best suit their institutional character without affecting the quality and relevance of their data to policy makers and improvement frameworks.

## Conclusion

Large-scale assessment can be a controversial topic, to be sure. Its misuse can have serious consequences for students, instructors, administrators and the quality of an education system as a whole. However, recent pilot projects

like CALOHEE in the European Union, the Learning Gain Programme in England and HEQCO's own EASI and PAWS projects are proving that with careful implementation, large-scale assessment is both feasible and invaluable to quality improvement efforts.

In order to make the best use of assessment, the following lessons should be kept in mind:

- When the position of assessment in the quality improvement cycle is clearly articulated and when strategies are in place to support the uptake of assessment results, we can “close the loop” between assessment and quality improvement through better teaching and learning.
- As HEQCO's EASI project has demonstrated, large-scale assessment can be administered without overburdening students, instructors or administrators. This is most easily accomplished when the results of an assessment are valuable to students, instructors and administrators alike.
- While there is no one-size-fits-all assessment, recent advances in test design mean that high-quality, valid and reliable measures of skills are readily available. Some commercially available tools feature adaptive testing, which increases or decreases item difficulty according to a test-taker's performance in order to better gauge skill level, or allow for customized questionnaires to be added to the assessment. Other jurisdictions are developing their own skills assessments to best meet the needs of their quality improvement frameworks.
- Research design can be used to limit misapplications of assessment data, as the CALOHEE project has demonstrated. And as the Learning Gain Programme indicates, design can also be used to simultaneously encourage institutional participation in assessment activities and ensure the quality and usefulness of assessment data by asking institutions to choose a measure from a selection of comparable, valid tools.

When considering the future of postsecondary assessment in Ontario, we can also draw on the wealth of skills assessment expertise that Ontario colleges and universities have developed over the last decade or so.

We are at a pivotal moment: We can now begin to put large-scale, low-stakes assessment to work for the betterment of our postsecondary system.

## References

- Benjamin, R., (2012). The seven red herrings about standardized assessments in higher education (*NILOA Occasional Paper No. 15*). Urbana, IL: National Institute for Learning Outcomes Assessment. <http://learningoutcomesassessment.org/documents/HerringPaperFINAL1.pdf>
- Benjamin, R. (2013). Three principle questions about critical-thinking tests. New York: Council for Aid to Education. [http://cae.org/images/uploads/pdf/Three\\_Principal\\_Questions\\_About\\_Critical\\_Thinking\\_Tests%281%29.pdf](http://cae.org/images/uploads/pdf/Three_Principal_Questions_About_Critical_Thinking_Tests%281%29.pdf)
- Berrett, D. (2016, October 16). The next great hope for measuring learning. *The Chronicle of Higher Education*. <https://www.chronicle.com/article/The-Next-Great-Hope-for/238075#>
- Blaich, C. & Wise, K. (2011). From gathering to using assessment results: Lessons from the Wabash National Study. (*NILOA Occasional Paper No. 8*). Urbana, IL: National Institute for Learning Outcomes Assessment. [http://learningoutcomesassessment.org/documents/Wabash\\_001.pdf](http://learningoutcomesassessment.org/documents/Wabash_001.pdf)
- CALOHEE. (2018). Towards a more reliable model for evidence based learning and quality assurance and enhancement. (CALOHEE Policy Note). <https://www.calohee.eu/wp-content/uploads/2018/02/CALOHEE-Policy-note.pdf>
- Campbell, C., Clinton, J., Fullan, M., Hargreaves, A., James, C. & Longboat, K. D. (2018). *Ontario: A learning province. Findings and recommendations from the Independent Review of Assessment and Reporting*. Toronto: Government of Ontario. <http://www.edu.gov.on.ca/CurriculumRefresh/learning-province-en.pdf>
- Education Quality and Accountability Office (EQAO). (2017). Primary- and junior-division provincial assessments, 2017 Results [Infographic]. [http://www.eqao.com/en/about\\_eqao/media\\_room/facts\\_and\\_figures/Pages/infographic-2017-elementary-results.aspx](http://www.eqao.com/en/about_eqao/media_room/facts_and_figures/Pages/infographic-2017-elementary-results.aspx)
- Educational Testing Service. (n.d.). HEIghten® test administration. <https://www.ets.org/heighten/test-administration/>
- Elementary Teachers' Federation of Ontario. (2018). EQAO testing <http://www.etfo.ca/defendingworkingconditions/issuesineducation/pages/eqao%20testing%20-%20advice%20to%20members.aspx>
- Eubanks, D. (2017). A guide for the perplexed. *Intersection*. Association for the Assessment of Learning in Higher Education, Fall 2017, 4–14. [http://c.ygcdn.com/sites/www.aalhe.org/resource/resmgr/docs/Int/AAHLE\\_Fall\\_2017\\_Intersection.pdf](http://c.ygcdn.com/sites/www.aalhe.org/resource/resmgr/docs/Int/AAHLE_Fall_2017_Intersection.pdf)
- Finn, B. (2015). Measuring motivation in low-stakes assessments. ETS Research Report Series 2015(2). Princeton, NJ: Educational Testing Service 1–17. <https://doi.org/10.1002/ets2.12067>
- Fulcher, K., Good, M., Coleman, C. & Smith, K. (2014). A simple model for learning improvement: Weigh pig, feed pig, weigh pig. (*NILOA Occasional Paper No. 23*). Urbana, IL: National Institute for Learning Outcomes Assessment. [http://www.learningoutcomesassessment.org/documents/Occasional\\_Paper\\_23.pdf](http://www.learningoutcomesassessment.org/documents/Occasional_Paper_23.pdf)
- Higher Education Funding Council for England (HEFCE). (2018). *Learning gain in English higher education: Progress report*. [http://www.hefce.ac.uk/media/HEFCE,2014/Content/Pubs/2018/201803/HEFCE2018\\_03.pdf](http://www.hefce.ac.uk/media/HEFCE,2014/Content/Pubs/2018/201803/HEFCE2018_03.pdf)
- Kempf, A. (2018). The challenges of measuring well-being in schools. Ontario Teachers' Federation. <https://www.otffeo.on.ca/en/wp-content/uploads/sites/2/2018/02/The-challenges-of-measuring-wellbeing-in-schools-Winter-2017-web.pdf>
- Liu, O. L. (2017). Ten years after the Spellings Commission: From accountability to internal improvement. *Educational Measurement: Issues and Practice*, 36(2), 34–41. <https://doi.org/10.1111/emip.12139>

People for Education. (2018). Assessment and measurement: Beyond testing.

<https://peopleforeducation.ca/mwm-sharing-the-thinking/assessment-measurement-insight/>

Richards, J. (2017). Red flags for educators: Lessons for Canada in the PISA results. *C.D. Howe Institute Commentary No. 488*. Toronto: C.D. Howe Institute. <https://www.cdhowe.org/public-policy-research/red-flags-educators-lessons-canada-pisa-results>

Sellar, S., Thompson, G. & Rutkowski, D. (2017). *The global education race: Taking the measure of PISA and international testing*. Edmonton: Brush Education Inc.

Stokke, A. (2017, September 6). When will Ontario break the cycle that is failing its math students? *The Globe and Mail*. <https://www.theglobeandmail.com/opinion/when-will-ontario-break-the-cycle-that-is-failing-its-math-students/article36157223/>

Usher, A. (2017, October 4). New quality measurement initiatives [Blog post]. One thought to start your day: Higher Education Strategy Associates. <http://higherstrategy.com/new-quality-measurement-initiatives/>

Williams June, A. (2017, August 31). Higher ed's data experts face a crossroads. *The Chronicle of Higher Education*. <https://www.chronicle.com/article/Higher-Ed-s-Data-Experts/241079>

## Chapter 4

# Institutionalizing Indigenous Learning Outcomes at Confederation College

S. Brenda Small and Emily Willson

## Introduction

The inclusion of mandatory Indigenous content as a part of program requirements is becoming increasingly common across Canadian postsecondary institutions. Oftentimes, mandatory content takes the form of a course that all learners are required to take or a percentage of a credit that each learner must complete in order to graduate (e.g., 0.5 credits of Indigenous content that can be obtained from one or several courses). Many institutions are moving in this direction, in part in response to the Truth and Reconciliation Commission's Calls to Action (TRC, 2015).

The integration of Indigenous knowledge and content into curriculums within postsecondary education is a timely step toward reconciling our shared history of colonization and the role that education once had in assimilating Indigenous peoples into western culture. Further, the need for integrating Indigenous knowledge and content into education has been identified over time by numerous Indigenous scholars (e.g., Battiste, 2013 and 2002; Kirkness & Barnhardt, 2001; Graveline, 1998) and within historical international and national documents such as the *United Nations Declaration on the Rights of Indigenous Peoples* (United Nations General Assembly, 2007), the *Report of the Royal Commission on Aboriginal Peoples* (Government of Canada, 1996) and the National Indian Brotherhood's

*Indian Control of Indian Education* policy paper (1972). It is also argued that it should be a shared responsibility of all global citizens to understand, respect and celebrate the diversity in cultures, something that has been historically neglected in terms of the recognition, inclusion and celebration of Indigenous worldviews (Brigham, 2011; Orr & Ronayne, 2009; Battiste, 2002).

Since 2007, Confederation College of Applied Arts and Technology, located in Thunder Bay, Ontario,<sup>1</sup> has been leading the way in embedding Indigenous knowledge and content into curriculums across the college through specifically developed Indigenous Learning Outcomes (ILO). The ILO provide all students with the opportunity to learn about Indigenous worldviews, cultures and contexts, which in turn support intercultural dialogue and knowledge creation while instilling a respect for diversity and social justice.

Confederation College strives to be a leader in Indigenous education in Ontario, offering opportunities for Indigenous learning through stand-alone Indigenous Studies programs and the integration of Indigenous Learning Outcomes into curriculums across all programs at the college. Currently, all programs include at least one ILO. The goal of the college is to implement all seven across all programs by 2020. Confederation College also has a strong Indigenous education council, the Negahneewin Council, which has been active since the 1980s. The council includes representatives from diverse Indigenous organizations, communities and education and training advisers within Northwestern Ontario. Its main responsibility is to advise and oversee Indigenous education and training within Confederation College. The Negahneewin Council played an active role in the development of the seven Indigenous Learning Outcomes. The council also developed and monitors the Negahneewin Council 10-year vision, which states that all learners will graduate with an understanding of Indigenous knowledge and content, and that Indigenous learners will be self-determining and affirmed in their education.

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1 The City of Thunder Bay, situated on the shores of Lake Superior, is in the traditional territories of the Anishinaabe as represented by Fort William First Nation and several communities along the north shore that are signatory to the pre-confederation Robinson-Superior Treaty of 1850. This region is known as a gathering place of the Anishinaabe whose population includes the Chippewa of Michigan, Wisconsin and Minnesota in the northern US.



## **The Role and Creation of the ILO**

The college considers providing all learners with Indigenous knowledge to be an imperative. This underlies the Negahneewin Vision, which serves as a backdrop to the college's strategic plan known as *Wiicitaakewin*. It places emphasis on the inclusion of Indigenous knowledge across all academic programs. This is further reflected in the academic plan, *Memegwa*, which stipulates that all seven of the ILO will be fully integrated into courses and programs.

Thus far, the inclusion of the ILO is providing learners with a general awareness about Indigenous knowledge. This approach proposes that learners will demonstrate their understanding of knowledge, skills and attitudes related to Indigenous Studies as it applies to their career aspirations. The goal is that all graduates will be conversant in Canada's history in relation to Indigenous people and apply this knowledge to their own program of study. The expectation is that all learners should possess upon graduation *an informed understanding of colonialism* in Canada. This aspect of the graduate profile was developed so that learners would gain the skills to navigate relationships between Indigenous and non-Indigenous people in the workplace. This is highlighted in the Negahneewin Vision as a means through which "building common ground between Indigenous and non-Indigenous people" is learned at the college and is a hallmark of the graduate profile.

Indigenous Learning Outcomes were identified in 2007 as one way that Indigenous knowledge could be shared across the college. The prospect of developing a comprehensive ILO strategy was onerous in the beginning because this had never been attempted before. Engagement with knowledgeable Indigenous community members, primarily through the Negahneewin Council, was the starting point for developing the ILO. The council, representative of diverse Indigenous communities in northwestern Ontario, was asked to identify priority areas that needed to be taught at the college.

Initially, a large workshop was held including council members, faculty, support staff and administrators from the academic and training areas of the college, which set the tone for the inclusion of Indigenous knowledge. These participants were asked to identify priority areas related to Indigenous people within Canada. The relationship-building process around

the creation of these learning outcomes was important so that Indigenous community perspectives held by council members would be integrated throughout the process as the model emerged. The role of the council was to assume leadership for the creation of the ILO so that they would be comprehensive and strategic and would be implemented over several years. This attempt was considered to be the first generation of the ILO.

There was broad categorization of topics of interest to Indigenous and non-Indigenous people and their relationship to one another in Canadian society. Identifying areas in the historical context, specifically treaties and land rights, led to contemporary discussions of issues such as Aboriginal rights and title. Socioeconomic issues were highlighted in relation to the federal government's role and the Indian Act. Large-scale resource extraction in Indigenous territories and the prospect of economic development were highlighted by identifying controversial projects across the country.

The effects of colonialism on Indigenous people and systemic racism in Canada were deemed to be critical to the conversation. The process framed a number of priority areas for discussion that were deemed critical to the prospect of facilitating understanding between Indigenous and non-Indigenous (Canadian) people in the college context. As many as 28 potential learning outcomes were identified and then reduced to seven comprehensive outcomes. Through ongoing workshop activities, these seven learning outcomes were refined for application throughout the college. These ILO were chosen on the basis of the depth and breadth of each so that essential aspects of Indigenous knowledge would be provided for classroom implementation.

The college had worked directly with the Indigenous community in the development of academic programs before. However, it was not specific to learning outcomes. This collaboration had occurred in the context of developing highly specialized, Indigenous-community-centred academic programs such as certificates and diplomas. This was further advanced when the college developed and received approval for the only college-level Indigenous Studies degree program in Ontario. The Indigenous Leadership and Community Development Degree (ILCD), accredited in 2003, was the culmination of the college's work in Indigenous Studies.

The aforementioned process led to the inclusion of Indigenous knowledge and teaching practices in curriculums at the college. Moreover, this created a broad understanding that Indigenous peoples possess Indigenous knowledge that is legitimately held and can be taught in postsecondary environments.

The final comprehensive ILO are as follows:

1. Relate principles of Indigenous knowledge to career field.
2. Analyze the impact of colonialism on Indigenous communities.
3. Explain the relationship between land and identity within Indigenous societies.
4. Compare Indigenous and Canadian perceptions of inclusion and diversity.
5. Analyze racism in relation to Indigenous peoples.
6. Generate strategies for reconciling Indigenous and Canadian relations.
7. Formulate approaches for engaging Indigenous community partners.

Staff at the college's Paterson Library Commons further supported the Negahneewin Council's leadership and advisement in curriculum development. Negahneewin's collaboration and longstanding relationship with the library staff resulted in broadening the catalogue of Indigenous resources. The emergence of new Indigenous authors and leading scholarship at universities such as Saskatchewan, British Columbia, Toronto and McGill coincided with the first adoption of the ILO at Confederation College. From 2007 to 2010, workshops were held for full- and part-time faculty during the school year, culminating in professional development sessions in the spring of 2010. The official launch of the ILO came in 2010 with the announcement by Confederation's then president, Patricia Lang, along with a traditional giveaway ceremony where essential readings in Indigenous Studies were presented to each school at the college. In keeping with Indigenous practices, Negahneewin provided gifts to each school whereby they would develop a book-lending and sharing initiative so that faculty could read materials created by many Indigenous writers. The initial plan was to start with embedding two ILO into each program, then four, then all seven.

### **What Do the Seven Indigenous Learning Outcomes Mean?**

1. Relate principles of Indigenous knowledge to career field: A way to introduce Indigenous knowledge to a program of study through a principled approach. In other words, it is meant to provide faculty with access to foundational ideas about an Indigenous worldview. This is readily available by seeking out creation stories and cosmologies of numerous Indigenous people or nations.
2. Analyze the impact of colonialism on Indigenous communities: A way to encourage faculty to examine how colonial history, policies and practices in Canada have created conditions of oppression among Indigenous people. The impact of colonialism among Indigenous communities at the behest of successive Canadian governments was an important historical reality that needed to be addressed in programs.

3. Explain the relationship between land and identity within Indigenous societies: A means of acknowledging and reinforcing the notion that Indigenous people in Canada are from this land. The idea that Indigenous people have lived on these lands since time immemorial and derive their identity from these lands was paramount.
4. Compare Indigenous and Canadian perceptions of inclusion and diversity: Canadian definitions of multiculturalism have played a pivotal role in shaping the culture of the country. The notion that Canada is a mosaic of many ethnic groups among a settler population needed to be countered by the Indigenous view that the land was not empty (*terra nullius*) when the first Europeans arrived.
5. Analyze racism in relation to Indigenous peoples: A way of examining the perpetuation of racist assumptions of Indigenous people in Canada. The prospect of faculty and learners critically analyzing systemic racism and discrimination as it affects Indigenous communities over generations was considered essential learning.
6. Generate strategies for reconciling Indigenous and Canadian relations: A means through which Canadians develop approaches to reconciling the history of the country through active engagement and the assumption of responsibility for this history. The idea that action is required to ameliorate conditions of inequality and to find equitable solutions is identified in this area.
7. Formulate approaches for engaging Indigenous community partners: A means of stimulating thinking about creating collaborations with Indigenous communities in which there is mutual benefit to the partners. This requires a new approach particularly in the area of resource allocation, business development and revenue generation. Initiatives must be accountable to the community.

Refer to Table 1 for examples of how the ILO can inform knowledge, skills and attitudes within a course.

**Table 1: Indigenous Learning Outcomes: Knowledge, Skills and Attitudes**

Indigenous Learning Outcomes			
Outcome	Knowledge	Skills	Attitudes
1. Relate principles of Indigenous knowledge to career field.	<ul style="list-style-type: none"> <li>▪ Cosmos/Creation stories</li> <li>▪ Decision making by consensus</li> <li>▪ <i>Pimatisiwin</i> principles</li> <li>▪ Traditional dispute resolution</li> <li>▪ Traditional medicines</li> </ul>	<ul style="list-style-type: none"> <li>▪ Examine the key elements of North American Indigenous and western worldviews</li> <li>▪ Investigate Indigenous approaches to decision making</li> <li>▪ Compare Indigenous and Euro-Canadian approaches to justice</li> <li>▪ Examine traditional approaches to health and wellness</li> <li>▪ Relate principles of Indigenous knowledge to community wellness</li> </ul>	<ul style="list-style-type: none"> <li>▪ Appreciate the importance of historical context</li> <li>▪ Recognize and respect people's diversity</li> <li>▪ Openness to individual differences</li> <li>▪ Be socially responsible and contribute to your community</li> <li>▪ Willingness to learn</li> <li>▪ Value lifelong learning</li> </ul>
2. Analyze the impact of colonialism on Indigenous communities.	<ul style="list-style-type: none"> <li>▪ Post-colonial theory and decolonization</li> <li>▪ Marginalization and dispossession of Indigenous communities</li> <li>▪ Residential school experiences</li> <li>▪ Agricultural displacement of Indigenous farming families</li> <li>▪ Self-determination principles</li> </ul>	<ul style="list-style-type: none"> <li>▪ Contrast perceptions of colonialism</li> <li>▪ Relate colonial policies to contemporary Indigenous contexts</li> <li>▪ Analyze examples of assimilationist policies in relation to Indigenous families</li> <li>▪ Analyze contemporary assertions of Indigenous sovereignty, self-determination and sustainability</li> </ul>	<ul style="list-style-type: none"> <li>▪ Appreciate the importance of historical context</li> <li>▪ Recognize and respect people's diversity</li> <li>▪ Openness to individual differences</li> <li>▪ Be socially responsible and contribute to your community</li> <li>▪ Willingness to learn</li> <li>▪ Value lifelong learning</li> </ul>

Indigenous Learning Outcomes			
Outcome	Knowledge	Skills	Attitudes
3. Explain the relationship between land and identity within Indigenous societies.	<ul style="list-style-type: none"> <li>▪ Principles of responsibility among Indigenous societies</li> <li>▪ The Anishinaabe Seven Grandfather teachings</li> <li>▪ Connection between land and identity</li> </ul>	<ul style="list-style-type: none"> <li>▪ Apply concepts of responsibility to community development</li> <li>▪ Create a code of ethics based on the Anishinaabe Seven Grandfather Teachings</li> <li>▪ Relate examples of oral tradition of Indigenous people in relation to the land</li> <li>▪ Investigate the significance of traditional ecological knowledge</li> </ul>	<ul style="list-style-type: none"> <li>▪ Appreciate the importance of historical context</li> <li>▪ Recognize and respect people's diversity</li> <li>▪ Openness to individual differences</li> <li>▪ Be socially responsible and contribute to your community</li> <li>▪ Willingness to learn</li> <li>▪ Value lifelong learning</li> </ul>
4. Compare Indigenous and Canadian perceptions of inclusion and diversity.	<ul style="list-style-type: none"> <li>▪ Demographics: local, regional, provincial, national</li> <li>▪ Indigenous views of inclusion</li> <li>▪ Colonialism, settler governments and immigration</li> <li>▪ Multiculturalism in Canada</li> <li>▪ Social change</li> </ul>	<ul style="list-style-type: none"> <li>▪ Examine inclusion and diversity from an Indigenous perspective</li> <li>▪ Analyze Canadian perceptions of inclusion and diversity</li> <li>▪ Explain the effect of Canada's multicultural policies on Indigenous people</li> <li>▪ Examine theories of social change</li> </ul>	<ul style="list-style-type: none"> <li>▪ Appreciate the importance of historical context</li> <li>▪ Recognize and respect people's diversity</li> <li>▪ Openness to individual differences</li> <li>▪ Be socially responsible and contribute to your community</li> <li>▪ Willingness to learn</li> <li>▪ Value lifelong learning</li> </ul>
5. Analyze racism in relation to Indigenous peoples.	<ul style="list-style-type: none"> <li>▪ Government legislation</li> <li>▪ Constitutional recognition of Indigenous peoples</li> <li>▪ The <i>Canadian Charter of Rights and Freedoms</i></li> <li>▪ Representation and the media</li> <li>▪ The meaning of privilege</li> </ul>	<ul style="list-style-type: none"> <li>▪ Investigate the concept of racism</li> <li>▪ Analyze legislation and government policies related to racism</li> <li>▪ Examine current and historical examples of racism in relation to Indigenous peoples</li> <li>▪ Examine common misrepresentations of Indigenous people</li> <li>▪ Analyze the concept of privilege</li> </ul>	<ul style="list-style-type: none"> <li>▪ Appreciate the importance of historical context</li> <li>▪ Recognize and respect people's diversity</li> <li>▪ Openness to individual differences</li> <li>▪ Be socially responsible and contribute to your community</li> <li>▪ Willingness to learn</li> <li>▪ Value lifelong learning</li> </ul>

Indigenous Learning Outcomes			
Outcome	Knowledge	Skills	Attitudes
6. Generate strategies for reconciling Indigenous and Canadian relations.	<ul style="list-style-type: none"> <li>▪ Political discourse between Indigenous people and various levels of government</li> <li>▪ Political advocacy by Indigenous leaders and communities</li> <li>▪ Truth and Reconciliation Commission</li> <li>▪ Approaches to Indigenous community development and partnerships</li> </ul>	<ul style="list-style-type: none"> <li>▪ Describe current formalized approaches to reconciliation</li> <li>▪ Analyze the effects of the Truth and Reconciliation Commission of Canada</li> <li>▪ Distinguish between self-determination and self-governance</li> <li>▪ Formulate strategies toward the reconciliation of Indigenous and Canadian relations</li> </ul>	<ul style="list-style-type: none"> <li>▪ Appreciate the importance of historical context</li> <li>▪ Recognize and respect people's diversity</li> <li>▪ Openness to individual differences</li> <li>▪ Be socially responsible and contribute to your community</li> <li>▪ Willingness to learn</li> <li>▪ Value lifelong learning</li> </ul>
7. Formulate approaches for engaging Indigenous community partners.	<ul style="list-style-type: none"> <li>▪ Indigenous community organizations</li> <li>▪ Ethical approach to working with Indigenous communities</li> <li>▪ Individual and community needs</li> <li>▪ Alternative approaches that reflect community development principles</li> </ul>	<ul style="list-style-type: none"> <li>▪ Examine local community organizations and resources</li> <li>▪ Analyze Indigenous community partnerships</li> <li>▪ Examine approaches for working with Indigenous communities</li> <li>▪ Prepare a principled approach to working with Indigenous partners</li> </ul>	<ul style="list-style-type: none"> <li>▪ Appreciate the importance of historical context</li> <li>▪ Recognize and respect people's diversity</li> <li>▪ Openness to individual differences</li> <li>▪ Be socially responsible and contribute to your community</li> <li>▪ Willingness to learn</li> <li>▪ Value lifelong learning</li> </ul>

Source: Confederation College (2018)

## Implementing the ILO across Programs

### Challenges and Successes

After 10 years of working with the ILO, there are a number of lessons that have been learned as a result of the successes and challenges of their implementation. In particular, since the development of the ILO in 2007, there have been several changes within the institution and its leadership that have resulted in modifications to the short-term implementation plans. First, from 2008 onward, the college implemented a distributive administration model that decentralized the Negahneewin College of

Academic and Community Development (Negahneewin College),<sup>2</sup> placing Indigenous support services under the purview of the learning resource division, and the Negahneewin programs under the School of Health and Community Services (now referred to as the School of Health, Negahneewin and Community Services). The philosophy behind this was that all staff and faculty at the college should take on the responsibility of Indigenous education, including the ILO. While this was an important philosophy to promote, there were challenges that resulted from this decentralization. More specifically, since there was no longer one person or department leading the direction and ensuring consistency of the implementation of the ILO across all programs, it became more difficult to ensure consistency. Further, from 2011 to 2012, there were changes in academic leadership that resulted in modifications to the implementation plan, so that programs were only required to implement two ILO, rather than transitioning from the original goal of two, to four, to all seven.

During this time, there were further internal developments that supported the implementation of the ILO. First, the Negahneewin Council, in revitalizing its mandate, created a new 10-year vision for its own work and that of the college that was implemented in 2012. This 2022 vision requires the college to assume responsibility for the respectful inclusion of Indigenous learners along with the implementation of Indigenous knowledge for all learners. In particular, the vision describes outcomes for Indigenous learners that they will be self-determining and affirmed in their education and graduate with a vision of *meno bimaadizewin*.<sup>3</sup> The vision also states that *all learners* will leave as global citizens who respect and celebrate diversity toward social justice. This demands that the college be accountable for a learning environment that honours Indigenous peoples and one that supports the full implementation of foundational approaches to Indigenous knowledge. The relationship between the seven Indigenous Learning Outcomes and the Negahneewin vision is reciprocal in that the ILO are a critical underpinning to the Negahneewin vision, while the Negahneewin vision reinforces the institutional need for the ILO. Additionally, in 2014 the college adopted Colleges and Institutes Canada's (CICan) Indigenous Education Protocol, which provided further support for the implementation of the ILO and, in particular, the "infusion of Indigenous knowledge into curriculum" (CICan, 2014). Lastly, in 2016 there was another shift in academic leadership, which resulted in a further change to the ILO implementation plan. In particular, implementation was realigned with the

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2 Negahneewin College was considered a college within a college, and was comprised of the Negahneewin programs such as Aboriginal Community Advocacy, Aboriginal Financial and Economic Planning, Native Child and Family Services, and Aboriginal Canadian Relations Certificate, as well as the Negahneewin Student Services.

3 The meaning of *meno bimaadizewin* is "a good life" in the Anishinaabe language.



original intention (of 2007) and in accordance with the Negahneewin vision; currently, the goal is to have all seven ILO integrated into all programs by 2020.

There have also been a number of strategies developed to support the implementation of the ILO. First, establishing a community of practice that is present throughout the college has been integral to supporting the implementation of the ILO. Here, a community of practice is characterized as a set of shared values, knowledge, processes and practices that are present among all members of a community, in this case members of the college (Hoadley, 2012; Wenger, 2011). Ultimately, the goal of building a community of practice is to instill a shared commitment to and respect for Indigenous education that sustains itself over time and through changes to leadership, staff and students. The college's community of practice is maintained, in part, through ongoing institution-wide capacity-building, which takes several forms including professional development training that is specific to the ILO, and to Indigenous education and learning more broadly. The ILO-specific training has included ILO workshops, an ILO book club known as the Negahneewin Reading Series and an ILO documentary series. Additionally, staff and faculty have an opportunity to gain recognition for their attendance at these different sessions in the form of an ILO certificate. There are also a number of print and online resources available within the college's library and its Teaching and Learning Centre. Finally, the college offers professional development opportunities that seek to build capacity in Indigenous education and learning more broadly including the *Bawaajigan* speaker series and the Aboriginal-Canadian Relations Certificate.

A second support mechanism for the deployment of the ILO was the creation of a designated position in the college, the main function of which was to assist faculty in integrating ILO into their curriculum. In particular, this "ILO officer" was responsible for meeting with faculty and connecting them with relevant resources specific to the ILO and for developing and delivering the different ILO-specific, professional-development opportunities. Due to the decentralization of Indigenous-specific curriculums, however, the college found that it is difficult to achieve a common understanding of the meaning and content of the ILO or consistency in their implementation across programs. Thus, it is critical to have a single person or department leading the implementation of the ILO.

## **Trends**

The successes and challenges of implementing the ILO have had an impact on how they have been embedded in programs across the college. This was revealed in an environmental scan of the ILO across programs, which was conducted in spring 2017. Based on the review of course outlines

in particular, it was clear that there is a need for strategic and targeted outreach and capacity-building. There were a number of programs that tended to rely on the same ILO, such as Numbers 1, 2 and 7, as these three focus on drawing connections between Indigenous knowledge and the learner's career field, building an understanding on the impact of colonialism, and formulating approaches for building partnerships with Indigenous communities, respectively. While the vision is that the ILO be interconnected and provide a comprehensive overview of the history and contemporary dynamics of Indigenous-Canadian relations, this may be evidence that these particular ILO are more accessible to faculty and learners. Therefore, it may be advisable to concentrate professional development efforts on the ILO that have less of a presence across programming.

There are also some programs that rely on a single and particular course to meet their ILO content requirements. For instance, there are courses within the Negahneewin programs that learners from other fields of study can take to increase their understanding of Indigenous knowledge and content. Additionally, Persuasive Writing, a communications course, and Sociology of Community: An Aboriginal Context are often selected to meet minimum requirements for mandatory Indigenous content, as they are common courses that many learners can take and are already appreciated for their ILO content. This could be how faculties ensure that learners in their programs are exposed to the minimum requirement of ILO content. However, rather than situate the Indigenous content within a stand-alone course or discipline, it is the long-term vision of the Negahneewin Council to have the ILO embedded throughout curriculums in all disciplines, so that learners are able not only to forge connections between the ILO and their fields of study or future careers, but also to participate fully as citizens of northwestern Ontario.

Lastly, the previously mentioned environmental scan revealed that there are courses that have significant Indigenous content but no identified ILO. Additionally, there are a few course outlines that characterized an outcome associated with Indigenous content as an ILO, although it was not a true ILO — that is, one of the original seven. Overall, these cases underscore the need for ongoing communication with faculty on the resources and training that are available in reinforcing a shared understanding of what the ILO are and the goals for their implementation. These cases also highlight the need for a better understanding of what faculty or program-specific strategies, supports and training might be developed in the future to promote the achievement of the college's 2020 objective.<sup>4</sup>

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4 It is also important to note that there are a diversity of programs across the college, particularly in the School of Health and Social Services (previously SHCS), that are demonstrating more than two ILO within their curriculum.

## **Sharing the ILO beyond Confederation College**

The college has presented the ILO at a number of provincial, national and international conferences, where there have often been questions about whether the ILO can be adopted by other institutions. The answer is: Yes, the ILO can be shared and utilized by many institutions, regardless of the number of Indigenous learners or Indigenous Studies programs. There are currently instances where postsecondary institutions have adopted the ILO into their own curriculums or have used them to guide the development of their own mandatory Indigenous content. For instance, the First Nations Technical Institute, one of Ontario's Indigenous Institutes,<sup>5</sup> has adopted the ILO and implemented them across its curriculum. In these cases, the college has requested that the institution acknowledge the Negahneewin Council and Confederation College for their work on the development of the ILO. Relationship-building and transparency between institutions has also been critical. Furthermore, while recognition of the college's work on the ILO is frequently recognized via a simple citation, the college is interested in pursuing more formal methods of acknowledgement such as through a letter of intent for the use of the ILO. The ILO have also been shared in research projects undertaken by Confederation College's Centre for Policy and Research in Indigenous Learning. In particular, the ILO have been used to build successful pathways for Indigenous learners and Indigenous Studies as a mechanism for mapping curriculum across programs at differing institutions.

## **Recommendations for Implementing the ILO**

For interested institutions, there are a number of recommendations for implementing the ILO that are informed by the experiences of the college. They are as follows:

- Indigenous studies departments and community representatives must be consulted and engaged throughout the process of implementing and monitoring the ILO (Pidgeon, 2016; Augustus, 2015; Chartrand, 2012). In particular, engagement with the Indigenous studies department and community is necessary for ensuring that institutions are accountable to the community and that development of Indigenous content is accomplished in a meaningful and respectful way (TRC, 2015; Chartrand, 2012; Government of Canada, 1996).
- The institution's council on Indigenous education should also be engaged with decision-making and must have an ongoing role in advising the institution, such as in the case of the Negahneewin Council at Confederation College.

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5 <https://www.fnti.net/indigenous-knowledge.php>

- Institutions must have the buy-in and support of their senior leaders, who demonstrate this support by building their own understanding of Indigenous education and learning (TRC, 2015).
- There should be a plan that supports departments working together in rolling out the ILO implementation rather than working in silos. In the context of Confederation College, there are a number of departments that have committed to working on and supporting the ILO, including but not limited to Human Resources, the Teaching and Learning Centre, the Learning Resources Division and the Centre for Policy and Research in Indigenous Learning.
- Institutions should develop strategies to ensure the sustainability of the ILO through changes to senior leadership and the postsecondary environment more broadly, as these changes may result in shifts in institutional priorities. A successful strategy at the college has been the establishment of a community of practice that is present across schools and programs and that is reinforced by multiple opportunities for capacity-building and accessing resources.
- There must be both a short- and a long-term vision for implementing the ILO. For instance, the college initially began with a short-term plan of implementing two ILO within each program, then transitioning to four and then moving to integrating all seven.
- Institutions should establish a position and/or office in the college that is responsible for building the common understanding of the ILO, and for ensuring that there is consistency in how they are embedded and presented to learners across courses and programs.
- Establish working groups or committees, as they can help to support the implementation and sustainability of the ILO. For instance, Confederation College has a number of committees and working groups in place with responsibilities that range from providing general advice on Indigenous education and learning to developing and monitoring specific ILO training opportunities, resources and curriculums.

## Next Steps

There are a number of next steps in place as the college moves toward reaching its long-term vision of implementing all seven ILO into all programs by 2020, including the following:

- Strengthening the community of practice across the college by providing tailored supports and professional development opportunities, for example tailored supports for strongly prescribed programs such as for the integration of ILO into STEM (Science, Technology, Engineering and Math) programs and curriculum.
- Developing additional tools and resources for faculty to assist with assessment of the ILO. For instance, in 2016 the Centre for Policy and Research in Indigenous Learning undertook a project funded by HEQCO to develop an assessment tool to measure and monitor how the knowledge, skills and attitudes within the ILO have informed the critical-thinking skills of both Indigenous and non-Indigenous learners across the college.
- Developing future iterations of the ILO that expand upon the first. One area that the next generation will seek to build on is exploring the impacts of colonialism on both Indigenous and non-Indigenous communities, as it is something that has not yet been thoroughly investigated in postsecondary education.
- Undertaking more research on the ILO and making more contributions to scholarship on Indigenous education and learning.

## Conclusion

Since 2007, Confederation College has embedded Indigenous content into its curriculum in the form of specifically designed Indigenous Learning Outcomes. The ILO were developed to demonstrate the college's accountability to Indigenous communities and as a part of the institution's responsibility to meaningfully include Indigenous content into its curriculum.

This chapter has sought to provide an overview of the college's seven Indigenous Learning Outcomes, the lessons learned and the best practices determined from the college's experience over 10 years (2007–2017). The inclusion of Indigenous content in program requirements is becoming increasingly popular across postsecondary institutions in Canada. As more institutions are moving in the direction of including mandatory Indigenous content as a part of their program requirements, it is critical that institutions have strategies in place to ensure that the implementation of Indigenous content, or ILO, is done so in a meaningful, respectful and sustainable way.

## References

- Augustus, C. (2015). Knowledge liaisons: Negotiating multiple pedagogies in global Indigenous studies courses. *Canadian Journal of Higher Education*, 45(4), 1–17.
- Battiste, M. (2002). *Indigenous knowledge and pedagogy in first nations education: A literature review with recommendations*. Ottawa: National Working Group on Education and Indian and Northern Affairs Canada.
- Battiste, M. (2013). *Decolonizing education: Nourishing the learning spirit*. Saskatoon: Purich Publishing and UBC Press.
- Brigham, M. (2011). Creating a global citizen and assessing outcomes. *Journal of Global Citizenship & Equity Education*, 1(1) 15–43.
- Chartrand, R. (2012). Anishinaabe pedagogy. *Canadian Journal of Native Education*, 35(1) 144.
- College and Institutes Canada (CICan). (2014). Indigenous education protocol. <https://www.collegesinstitutes.ca/policyfocus/indigenous-learners/protocol/>
- Confederation College. (2018). <http://www.confederationcollege.ca/tlc/indigenous-learning-outcomes>
- Government of Canada. (1996). *Report of the Royal Commission on Aboriginal peoples*. Ottawa: Indian and Northern Affairs Canada. <https://www.bac-lac.gc.ca/eng/discover/aboriginal-heritage/royal-commission-aboriginal-peoples/Pages/final-report.aspx>
- Graveline, F.J. (1998). *Circle works: Transforming eurocentric consciousness*. Halifax: Fernwood Publishing.
- Hoadley, C. (2012). What is a community of practice and how can we support it? In D. Jonassen and L. Land (Eds.). *Theoretical foundations of learning environments* (286–300). New York and London: Routledge.
- Kirkness, V. & Barnhardt, R. (2001). First nations and higher education: The four R's — respect, relevance, reciprocity, responsibility. In R. Hayoe and J. Pan (Eds). *Knowledge across cultures: A contribution to dialogue among civilizations*. Hong Kong: Comparative Education Research Centre, The University of Hong Kong.
- National Indian Brotherhood/Assembly of First Nations. (1972). *Indian control of Indian education: Policy paper*. Ottawa: National Indian Brotherhood/Assembly of First Nations.
- Orr, J. & Ronayne, R. (2009). Indigeneity education as Canadian First Nations citizenship education. *Citizenship Teaching and Learning*, 5(2), 35–49.
- Pidgeon, M. (2016). More than a checklist: Meaningful Indigenous inclusion in higher education. *Social Inclusion*, 4 (1), 77–91.
- Truth and Reconciliation Commission of Canada (TRC). (2015). *Truth and Reconciliation Commission of Canada: Calls to action*. Winnipeg. [http://www.trc.ca/websites/trcinstitution/File/2015/Findings/Calls\\_to\\_Action\\_English2.pdf](http://www.trc.ca/websites/trcinstitution/File/2015/Findings/Calls_to_Action_English2.pdf)
- United Nations General Assembly. (2007). *United Nations Declaration on the Rights of Indigenous Peoples*. United Nations General Assembly, 1–11. <http://www.refworld.org/docid/471355a82.html>.
- Wenger, E. (2011). *Communities of practice: A brief introduction*. National Science Foundation.

## Chapter 5

# The Inside Story on Skills: The Student Perspective

Elyse K. Watkins and Jess McKeown

### Introduction

Today's students expect to graduate with the skills required for success in the labour market (Eagan et al., 2015). Skills such as critical thinking, communication and teamwork are essential for most, if not all, jobs. Not only are the skills students develop throughout postsecondary education needed for establishing a career, but they are becoming increasingly important to even get one's foot in the door. Unfortunately, for students looking to secure entry-level work the completion of a postsecondary degree is no longer a distinguishing factor in our highly competitive job market. In recent years, some employers have complained of a skills gap: a mismatch between the skills they need in their workplaces and those possessed by new hires. Postsecondary institutions have countered that they are producing graduates with all the right skills to enter the labour market (MacFarlane & Brumwell, 2016). Looking to previous work on this topic completed in association with the Higher Education Quality Council of Ontario (HEQCO), Borwein (2014) found that the skills-gap narrative has too often conflated gaps in essential skills with misalignments in education (i.e., not enough graduates, or graduates with the wrong credentials) and insufficient work experience.

In this chapter, we explore the concept of a skills gap from the student perspective. We believe the higher-education sector is tasked with answering important, but difficult, questions: Are postsecondary institutions adequately preparing students for the world of work and are students aware of their role in that process?

## **The Student Perspective**

On paper, the two of us appear almost identical. We both have a bachelor of health/life sciences from Ontario institutions; we both completed our master of education with a focus on higher-education policy; and, we now work as researchers at HEQCO. However, our experiences as learners are not as similar as you might think. Our degrees may as well have been in completely different disciplines. By comparing classroom sizes, pedagogies, assessments and overall learning environments, we have identified where our education supported us and where it faltered in terms of preparing us for our next steps. Ultimately, it boils down to skills development.

Being the researchers that we are, we wanted to corroborate our perspectives with other recent graduates from Ontario colleges and universities to get their insight on skills development, assessment and transitions to the labour market. We informally interviewed a handful of our colleagues and friends whose programs of study included film and media production, political science, sociology, engineering and accounting. We questioned only graduates who completed their degrees within the last five years. Based on those conversations and our own experiences, we have divided our recommendations for institutions and instructors into three main areas: (1) skill sets, (2) skills assessment and (3) skills articulation.

The first item refers to the essential skills that postsecondary institutions claim to foster and that employers expect from new graduates — higher-order cognitive and transferable skills. Higher-order cognitive skills encompass domains such as critical thinking, problem solving and communication. While these are fundamental in the transition from postsecondary to the labour market, they are some of the most challenging to define, teach and assess (Borwein, 2014). Transferable skills, which include skills such as teamwork, time management and initiative are also difficult to assess as they are behavioural and personality-based attributes. For the purposes of this chapter, we include both higher-order cognitive and transferable skills under the umbrella term “skills” to represent the immediate intellectual abilities that colleges and universities want their students to develop prior to graduation.

The second area of discussion focuses on assessment. Our focus is on how the format and function of assessments influence students’ learning. We will demonstrate how critical assessments are fostering students’ skill sets,



while also examining approaches to teaching that are overly assessment-driven. Our goal is to challenge the “teaching-to-the-test” approach and set the record straight about what types of assessments are most beneficial to students.

Our final area of advice has to do with skills articulation. We believe that skills articulation captures the back and forth between learning opportunities and assessment, making it imperative for the transition between education and professional life. For a student to connect the dots between what they have learned throughout PSE and what they want from their futures, they must know what they need to demonstrate to employers, professional schools, graduate programs, etc. We will provide some recommendations about how to address the skills articulation gap.

## **Skill Sets: What Do We Expect from Students?**

Looking back on our undergraduate studies, we found that the syllabus was the Holy Grail of any given course. Not only did it map out every assignment, midterm and final exam, but it also dictated which topics we would be exploring week to week. It was clear what we would *know* by the end of the course, but what was more abstract was what we would be able to *do*. Without a mention of skills, we were left to determine for ourselves what our degrees were giving us beyond our transcripts, especially as we navigated our transition to the labour market. This experience gave us the impression that there needs to be more agreement about which skills are most important for students to develop, and whose role it is to facilitate the development of those skills.

In an attempt to tackle this issue, we first look at what skills employers want. Findings from the Conference Board of Canada’s 2013 survey of 1,500 Ontario employers show that there is relative agreement about which skills are deemed most valuable: critical thinking/problem solving, oral communication, literacy, interpersonal skills and familiarity with computers (Stuckey & Munro, 2013, p. 27). While this is encouraging information, a grimmer picture emerges when looking at employers’ perspectives on how new graduates are performing. More than 70% of employers said that new graduates have insufficient critical-thinking and problem-solving skills; 46% said graduates lack oral communication skills; and, 42% said that they are deficient in literacy skills (Stuckey & Munro, 2013, p. 11). Although these results are alarming, there are some flaws with this approach that may misrepresent the complete employer perspective. First, there is a recurring issue with selection bias for these types of surveys, as frustrated or opinionated employers may be more likely to respond. Second, research suggests that employers often expect several years of work experience for entry-level jobs, making it difficult to distinguish whether the skills of new

graduates are a result of their education or their previous work experience (Borwein, 2014). While some employers have been extremely vocal about their disappointment with young workers, others have remained entirely satisfied, thus challenging the notion of a skills gap (Borwein, 2014).

Looking at the other side of the skills-gap story, we also need to consider the alignment between how institutions respond to employers' wishes and what skills institutions deem most important. Institutions have certainly accepted their role in fostering students' skills, but the question remains: To what end? Rather than providing students with all the skills they might require throughout their career (an impossible endeavour), the role of higher education should be to provide a foundation of transferable and higher-order cognitive skills for students, ultimately producing graduates who are lifelong learners capable of efficiently mastering new skills when necessary. For instance, Ontario colleges have adopted Essential Employability Skills (EES) developed by the Ministry of Training, Colleges and Universities (MTCU) as a requirement for all students graduating from a certificate, diploma or advanced diploma program. There are six categories of EES: communication, numeracy, critical thinking and problem solving, information management, interpersonal and personal (MTCU, 2018). These skills were mandated to provide a foundation to support graduates' success as they pursue careers and continue on into the world of work. There was a significant decline (40%) in the amount of employer spending (in constant dollars) on training and development in Canada between 1993 and 2013 (Munro, 2014). Here we see a division of responsibility. If students are graduating without these foundational skills, then that's on the institutions; however, if employers are not investing resources to develop job-specific skill sets for their new hires, then that's on the employers. If we want to close the skills gap, ownership of skills development should fall on the shoulders of both the institutions and the employers.

But there's another side to the skills-gap story: the students' perspective. From the time students begin their degrees, they may have an idea of what they want to be when they graduate. For example, both of us entered our science undergraduate programs with the hopes of becoming physicians. However, becoming a physician is not that simple. Students want to know that their degree will get them a job, and we don't think that that's an unfair ask when considering the energy, resources and opportunity costs they must dedicate to getting their credential. The challenge is that not everyone in health/life sciences becomes a doctor; not everyone in psychology becomes a psychologist; and not everyone in engineering goes on to become a professional engineer. Students need to be made aware of the transferable and higher-order cognitive skills that they develop in their studies so that they can navigate diverse opportunities in the labour market. These skills should not be an indirect benefit of their education, but an explicit

one. Without an emphasis on skills at the outset, we are unable to assess how students are developing in these essential domains and we cannot demonstrate to employers what students' degrees actually mean. At the end of the day, students will have to make the link between their skills and a respective job posting, but it is fundamental that they know what they have to offer.

Moving forward, we think it's important to remember that employers, institutions and students share common goals. We know that employers want highly skilled graduates who can meet their job demands in this age of a rapidly evolving information economy. We know that institutions want to prepare students with a foundational set of skills applicable to the workforce, while also fostering their abilities to excel as lifelong learners. And, we know that students want to leave PSE feeling confident that they have the skills to successfully navigate non-linear career paths. With relative agreement about what skills are the most important for today's graduating students, the next step is to attain constructive alignment across programs. To close the skills gap, concerted responsibility from employers, institutions and students will have to be established to map and explicitly embed these skills within relevant courses for any given degree.

## **Assessment: Measuring What (Really) Matters**

Having reached agreement about what skills students should develop and when, postsecondary instructors are then tasked with the difficult mission of capturing whether or not this actually occurs. Assessment is one of the most central aspects of education, placing it at the crux of the skills debate. For students, exams feel like the be-all and end-all of every course; and often without even realizing it, students allow assessments to guide their entire approach to learning. In our experience as students, we subconsciously performed a cost-benefit analysis of each assessment, considering both the format and function. This allowed us to determine the amount of time and effort to invest in any given task, deciding whether to study alone or in a group; to memorize or practise; to cram or skim; to read or write; to pull an all-nighter or get a good night's sleep. Although these decisions are stressful, we want to reinforce how effective this process is for students' long-term learning and skills development.

To help students cope with such stress, some educators may highlight exactly what students should expect on their assessments. However, this strategy does not necessarily help students reach their long-term goals. The concept of teaching to the test, whether intentional or not, has attracted ample attention in discussions surrounding assessment. In our experience, we did not benefit from such assessment-driven teaching strategies, as there was too great a temptation to take a piecemeal approach to learning

rather than focusing on comprehensive skills development. To reveal how assessments can improve or hinder the skills conversation, we want to further explore the impact of the format and function of assessments for students.

### **Format of an Assessment**

In academic assessment, there are two general approaches to measuring students' learning: objective tests, for which students must select one right answer (e.g., multiple-choice, true or false, or fill-in-the-blank questions), and subjective tests, for which students must construct their own responses (e.g., short answers, essays, group projects or oral presentations). In theory, instructors should select the format to align with a course's learning objectives and the intended outcomes for students. However, administrative considerations often seem to override the theoretical considerations about what is best for fostering student learning. In general, objective assessments test recognition rather than recall, allow for guessing, and thus tend to assess lower-levels of cognition (Morrison et al., 2010). This is not to say that objective tests are not capable of assessing higher-level cognition, because they are; but such questions are much more difficult and time-consuming to construct (Morrison et al., 2010). Subjective assessments, on the other hand, are generally considered better suited for capturing higher-level cognition, and they tend to be easier to design.

Where objective and subjective test formats really diverge in terms of administrative effort is on the grading end. While objective tests may demand more of an upfront investment in design, they require little effort for grading, especially with the assistance of machine-gradable sheets. These assessments are often reused over multiple semesters or academic years, meaning that the upfront investment of time pays off quite quickly. Subjective tests on the other hand, pose considerable challenges for grading, especially for large classes, which may necessitate additional assistance with marking (Morrison et al., 2010). The grading of subjective assessments also raises the issue of reliability, further complicated with each additional assessor. So, while objective tests may be favoured for simplicity and reliability, subjective tests seem to be more appropriate for assessing higher levels of cognition (Price, Carroll, O'Donovan & Rust, 2011). Box 1 provides a personal anecdote about one of our experiences with assessment format.

## Box 1

**To Cram or Not to Cram?**

Throughout my undergraduate degree, many of my courses, especially in first and second year, assessed my knowledge and skills using primarily objective (i.e., multiple-choice) tests. Though some questions challenged me to use higher-level thinking, the vast majority of questions were knowledge-based and detail-oriented. As a result, I adapted my learning strategies accordingly, finding that cramming was the only approach through which I was able to retain enough detail to come out with high marks. As it turns out, I ended up with straight As. Now that I have completed a master of education, I recognize the inherent problem with the approach I took. I believe overuse of detail-oriented questions forced me to choose between good grades and authentic learning. As a result, most of the detailed knowledge I learned (i.e., memorized) was quickly forgotten, leaving me wondering what skills I really gained from courses that were assessed in this way. There was no opportunity to demonstrate creativity, communication or teamwork. Some might argue that success on multiple-choice exams necessitates problem solving and critical-thinking abilities, but I am not convinced. I would agree that select well-written questions that demand higher-level thinking would foster such skills, but unfortunately these questions were quite rare. Although I recognize the administrative strain posed by subjective assessments for large postsecondary classes, I think that such assessments should be used more frequently so that students can receive useful qualitative feedback to improve their higher-order learning skills.

*Jess*

**Function of Assessment**

In addition to the assessment format, the function and associated value of an assessment also significantly affect a student's approach to learning. There are two general functions of assessment. First, formative assessments are intended to foster and support student learning, gathering information about a student's learning process to inform areas of improvement. These assessments generally carry little to no weight so that learners can receive feedback on their process without fearing they will be penalized on their final grade. Alternatively, summative assessments are used to evaluate student achievement with the intention of explicitly measuring (i.e., grading) student outcomes. By default, summative assessments have more impact on a student's final grade. Unfortunately, the disparity between formative and summative assessments creates somewhat of a paradox in higher education.

Busy postsecondary students juggling extracurriculars, part-time jobs and coursework may inadvertently prioritize summative assessments, leaving formative assessments to fall by the wayside. Additionally, instructors often face an assessment dilemma as they seek to develop assessments that adequately capture students' study efforts and engagement in learning, but don't overextend their time or resources for marking (Gibbs, 2003). As a result, instructors may also unintentionally prioritize summative assessments over formative assessments, impeding students' opportunities to receive feedback on their work, and increasing their likelihood of experiencing stress and test anxiety (Lynam & Cachia, 2017).

Assessments have a very powerful influence on student learning, representing a critical opportunity for shaping students' skills development. When considering the format of assessments, instructors should seek to maintain variability, ensuring that all levels of cognition are represented across the assessments for any given course. Administrative considerations should not overshadow learning considerations, and instructors should be offered sufficient resources for assessing students in ways that are most beneficial to their learning. When considering the function of assessment, instructors should strive for a balance between feedback provision and explicit evaluation of skills. Furthermore, moving away from the teaching-to-the-test approach will better serve students in the long term, providing opportunities for deeper learning and skills development. After balancing all these considerations for assessment strategies, the next hurdle involves helping students market themselves to employers by concisely summarizing what they know and can do.

## **Skills Articulation: Translating a Degree for the Labour Market**

In our discussions with our peers, there was widespread agreement that there is a skills-articulation gap. Similar to the skills gap, the skills-articulation gap exists between the same stakeholders — students and employers. However, unlike the skills gap, it assumes that students are, in fact, equipped with the skills necessary to enter the labour market, but are lacking the tools to effectively communicate them to employers.

Before students can confidently articulate their skills to employers, they need: (1) an awareness of the skills being taught; (2) opportunities to demonstrate those skills (e.g., through assessments); and (3) evidence of their skills (e.g., a skills-based transcript, portfolio or résumé). Some institutions have sought to enable skills articulation by creating workshops or modules that provide students with strategies for expressing their skills to target audiences (e.g., employers, professional schools, etc.). However,

these workshops tend to be one-offs and isolated experiences that take place outside the classroom. For students to express the skills they have gained from their courses, there should be opportunities for practice and feedback embedded in the classroom (Nicol & Macfarlane-Dick, 2006). Box 2 provides an example of an approach that fosters opportunities for skills articulation.

## Box 2

### **Four Years in One Course**

At the beginning of my undergraduate studies, I started a course that spanned the four years of my degree. The course was unique not only for its length, but also for its content and goals — it centred on developing skills to help foster a culture of lifelong learning and community. We were asked to describe three goals that we wanted to achieve each year and then submit evidence about how we followed through (or not) with those goals. To be honest, I did not take this course seriously until my fourth year. As I was preparing for graduate school, I found myself going back to what I had written over the previous years. In first year, I wanted to be better at communicating with my peers and professors. In second year, I wanted the opportunity to work with vulnerable populations in the community. In third year, I revisited the communication piece and wanted to improve my persuasive writing. By fourth year, I realized that those goals were more than a laundry list of things I wanted to accomplish; this presented opportunities to intentionally assess where my skills (e.g. professional communication and citizenship) were lacking and act on that assessment. To pass this four-year-long course, I had to submit a body of evidence to show how I had achieved my goals and subsequently discuss my experience during an exit interview with the program dean. I spent weeks compiling my evidence, informally discussing this with my peers and drafting a case for how well I had done over the four years. My exit interview was a testament to how much I had grown throughout the program and a clear view of what my education had given me beyond my course grades.

*Elyse*

The above examples provide some ideas about what can be done to bridge the skills-articulation gap by illustrating formalized opportunities at the program and course levels. While we recognize the logistical barriers inherent in scaling up such experiences (e.g., resources, time, administration, etc.), we see three elements that would help to move this agenda forward. First, if we want students to take the skills-articulation process seriously, there have to be stakes attached. Stakes can include anything from course credits to grades to graduation requirements.

Although it can take some time to adjust to skills-focused pedagogies, students will eventually appreciate opportunities to reflect on their skills development. Second, the skills conversation needs to be a continuous one. Providing students the opportunity to track skills development over several years is extremely valuable. Not only does this provide students with the language to articulate skills, but it also helps to build a dynamic portfolio of evidence to support development. Lastly, for students to be able to elaborate on what skills they have, having a body of evidence is essential. In an interview setting, employers often ask about specific situations in which a student has demonstrated a certain skill. If students have anecdotes or scenarios from a portfolio of evidence, they will be more prepared to provide concrete examples to support their argument. By formalizing the skills conversation in our postsecondary institutions, we can give students the tools to identify, track and prove how their degrees have equipped them for the next stage of their lives.

## **What's Next for the Skills Conversation?**

Speaking as two recent Ontario graduates, we believe that our education served us very well: We successfully developed, demonstrated and articulated the skills that we are now using in the workplace. At the same time, as we look back we see opportunities where our skill set could have been further developed, and we know of other learners who question whether their education has supported them in developing or articulating the skills necessary for their transition to the labour market.

We recognize that identifying, assessing and articulating skills is no small task, but we also feel a sense of urgency. Below we set out our recommendations for advancing the skills conversation.

1. Balance the voices at the table (skill sets): To ensure that students are being taught the skills that employers covet, employers and students need to be represented around the table. Institutions need to engage students and employers to establish a common language, determine which skills are most important for students and how those are going to be explicitly embedded in their educational journey. The skills conversation needs to be sector-wide and motivated from the top, similar to the Essential Employability Skills that are mandated for Ontario colleges.
2. Teach to the skills (assessment): We have outlined the downfalls with imbalanced approaches to assessment that favour certain formats and functions. The greatest lesson we can glean from this discussion is that assessments are very influential on student learning, and that variety in format and function will pave the way for assessing knowledge and skills at appropriate levels, with ample opportunities for feedback along



the way. If instructors clearly express the importance of skills and more explicitly integrate them across assessments, then students are more likely to find value in this process and develop their skills beyond the expectations of any given test.

3. Prove it (skills articulation): The only way students are going to be able to articulate their skills to employers is by practising, early and often. These opportunities should be woven into students' learning experiences so that they can reflect on their skills, draw on evidence to support their development and be proactive about furthering their skill set. Allowing students to build a portfolio of skills-focused experiences can be leveraged to support achievement within individual courses, throughout programs and into the workplace.

At the end of the day, the skills conversation does not begin and end with higher education or getting a job. This conversation paves the way for a lifelong journey that educators and employers can help navigate. We hope this movement toward improving skills development, assessment and articulation will nurture graduates who feel confident in the outcomes of their education, and who are prepared to meet the tasks of today and face challenges we cannot yet anticipate.

## References

- Borwein, S. (2014). *The great skills divide: A review of the literatures*. Toronto: Higher Education Quality Council of Ontario. <http://www.heqco.ca/SiteCollectionDocuments/Skills%20Part%201.pdf>
- Eagan, K., Stolzenberg, E. B., Bates, A. K., Aragon, M. C., Suchard, M. R. & Rios-Aguilar, C. (2015). *The American freshman: National norms, Fall 2015*. Los Angeles: Higher Education Research Institute, University of California, Los Angeles. <https://www.heri.ucla.edu/monographs/TheAmericanFreshman2015.pdf>.
- Gibbs, G. (2003). Improving student learning through assessment. *Journal of Geography in Higher Education*. 27(2), 123–132.
- Lynam, S. & Cachia, M. (2017). Students' perceptions of the role of assessments at higher education. *Assessment & Evaluation in Higher Education*. 43(2), 223–234. doi:10.1080/02602938.2017.1329928.
- MacFarlane, A. & Brumwell, S. (2016). *The landscape of learning outcomes assessment in Canada*. Toronto: Higher Education Quality Council of Ontario. <http://www.heqco.ca/SiteCollectionDocuments/The-Landscape-of-Learning-Outcomes-Assessment-in-Canada.pdf>
- Ministry of Training, Colleges and Universities (MTCU). (2018). Essential employability skills. <http://www.tcu.gov.on.ca/pepg/audiences/colleges/progstan/essential.html>
- Morrison, G. R., Ross, S. M., Kalman, H. K. & Kemp, J. E. (2010). *Designing effective instruction*, 6<sup>th</sup> Edition. New York: John Wiley & Sons, Inc.
- Munro, D. (2014). *Developing skills: Where are Canada's employers?* Ottawa: The Conference Board of Canada. [http://www.conferenceboard.ca/topics/education/commentaries/hot-topics-in-education/2014/03/20/Developing\\_Skills\\_Where\\_Are\\_Canada\\_s\\_Employers.aspx](http://www.conferenceboard.ca/topics/education/commentaries/hot-topics-in-education/2014/03/20/Developing_Skills_Where_Are_Canada_s_Employers.aspx)
- Nicol, D. J. & Macfarlane-Dick, D. (2006). Formative assessment and self-regulated learning: a model and seven principles of good feedback practice. *Studies in Higher Education*. 31(2), 199–218.
- Price, M., Carroll, J., O'Donovan, B. & Rust, C. (2011). If I was going there I wouldn't start from here: A critical commentary on current assessment practice. *Assessment & Evaluation in Higher Education*. 36(4), 479–492.
- Stuckey, J. & Munro, D. (2013). *The need to make skills work: The cost of Ontario's skills gap*. Ottawa: The Conference Board of Canada. [http://www.collegesontario.org/Need\\_to\\_Make\\_Skills\\_Work\\_Report\\_June\\_2013.pdf](http://www.collegesontario.org/Need_to_Make_Skills_Work_Report_June_2013.pdf)

## Chapter 6

# Learning Outcomes: Defining, Measuring and Validating

Nancy Miyagi and Valerie Scovill

## Introduction

The intent of this chapter is to highlight certain aspects relating to the measurement and validation of learning outcomes along with practical examples that teachers can use with their courses or programs. Generally the same principles apply for any unit of learning being assessed against learning outcomes.

Theories and approaches for defining and measuring learning outcomes are constantly evolving, resulting in a wealth of new, and sometimes overlapping, knowledge and lexicon that can make it much more challenging for educators to conceptualize and integrate this new information into their course development in practical ways. Even for seasoned educators, the task of embedding learning outcomes into their course curriculum can be daunting. We hope that this chapter will be useful to new and seasoned educators who are interested in learning-outcomes theory and its application in the classroom.

The content is drawn from the authors' own experiences (and challenges) with embedding, assessing and evaluating learning outcomes in college-level courses and programs, and as a result, may not be immediately applicable in every context.

## Defining Learning Outcomes

Learning outcomes are statements of what learners are able to demonstrate upon successful completion of a unit of learning, course or program of instruction. With the introduction of learning outcomes, the focus of teaching shifts from a teacher-centred model (content delivery) to

a student-centred model (demonstration of learning) (O'Neill & Murphy, 2010). Course learning outcomes are not created in a vacuum. In fact, there are a number of factors that influence the design and creation of learning outcomes including program standards, qualification frameworks, the context of the course within a program, Essential Employability Skills (EES) and professional requirements. These elements impact the way learning outcomes are defined and written. For instance, learning outcomes written for qualification frameworks use high-level general descriptors to allow for multi-institutional, national or international qualification system comparison (Cedefop, 2017). At the course level, descriptors for expected outcomes to be achieved are more specific, and guide teachers in the selection of instructional strategies to support learners in gaining the skills and competencies necessary to confidently enter the workplace.

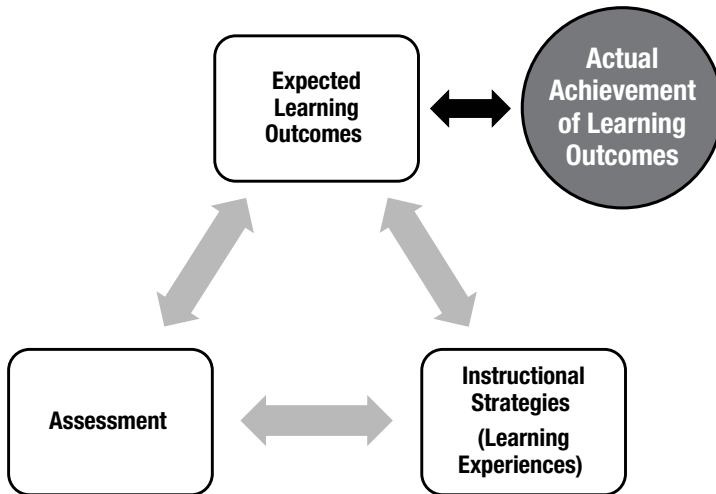
Building on its previous work, the Higher Education Quality Council of Ontario proposed four general categories of learning outcomes deemed appropriate in the Ontario postsecondary context: basic cognitive skills (literacy and numeracy), discipline-specific skills (related to the chosen field of study), higher-order cognitive skills (i.e., critical thinking, problem solving and communication) and transferable skills (i.e., creativity and emotional intelligence) (Deller, Brumwell & MacFarlane, 2015). In Ontario, according to the Ministry of Training, Colleges and Universities, colleges must adhere to program standards developed by the provincial government covering vocational learning outcomes (field specific), Essential Employability Skills (which apply to all programs of instruction) and general education requirements. The first two are expressed in terms of learning outcomes as the minimum skills and competencies students are expected to reliably demonstrate by the completion of their program. In addition, Ontario postsecondary institutions have the flexibility to include other learning outcomes in response to emerging trends in the labour market or other environmental factors. For instance, the World Economic Forum (Soffel, 2016) proposes that in addition to traditional skills, students need to acquire social and emotional proficiency in order to be successful in an evolving digital economy. Regardless of how learning outcomes are categorized, the challenge for many educators is to design a curriculum that intentionally embeds these diverse, multi-level learning opportunities while providing evidence of students' intellectual growth.

Educators generally rely on learning taxonomies or categorizations of learning to help them articulate the types and levels of learning that are expected to take place and against which learners will be evaluated. There are different learning taxonomies, but generally they touch on three domains: cognitive, affective and psychomotor. The oldest and most popular taxonomy, published by Benjamin Bloom and collaborators in 1956, related to the cognitive domain (Bloom, 1956). It was later

revised in 2001 (Anderson & Krathwohl, 2001). Some taxonomies, like Bloom's, are expressed in hierarchical terms, implying that learning occurs sequentially, requiring students to master a lower level of learning first (i.e., remembering) before moving to more complex cognitive processes (i.e., creating knowledge). Fink's taxonomy of significant learning, on the other hand, posits that learning is not hierarchical but relational and interactive; that is, the acquisition of one type of learning may enable the achievement of other kinds of learning. "This interrelation matters to teachers because it means the various kinds of learning are synergistic" (Fink, 2003, p. 32). What is important to emphasize is that learning taxonomies can assist educators in developing curriculums, identifying instructional strategies that support learning outcomes, and assessing learning that authentically and directly demonstrates the learning outcomes of the course or program.

Therefore, a high degree of alignment between the curriculum, instructional strategies and assessment against expected learning outcomes is required for the actual achievement of learning outcomes to take place (see Figure 1).

**Figure 1: Alignment of Assessments and Instructional Strategies to Learning Outcomes**



Source: Authors' compilation

## Writing Learning Outcomes

Learning outcomes answer one specific but crucial question for the learner: At the successful completion of this course, what will I be able to do, use, demonstrate, apply, create, etc.? They answer specific and crucial questions for the teacher as well: What will my students be able to demonstrate by the successful completion of the course, and what experiences and assessment practices will support that?

Learning outcomes that are clearly stated, understandable and relevant to the profession give learners and teachers well-defined goals to work toward throughout the course. These outcomes must be authentically measured, matching both the cognitive level and the substance of the outcome, with assessment tools that allow learners to clearly demonstrate the learning outcome. For example, if the outcome is “to create a marketing plan for the launch of a new vegan restaurant located in downtown Toronto,” the assessment tool is the marketing plan that the students create. That is an authentic measure of the outcome.

Well-written learning outcomes must:

- Be measurable; course assessment tools must be designed or chosen to provide an authentic and suitably challenging demonstration of the outcomes
- Represent a major skill that supports the program and professional standards, and lead to practical and/or soft skills required in the profession
- Be written at a cognitive level that provides a meaningful challenge to the learner and reinforces the skills needed for the workplace (i.e., the “application” level of Bloom’s taxonomy and higher)
- Begin with a single verb that describes the performance of the learner rather than the activity of the teacher
- Answer the question, “What will learners be able to demonstrate by the successful completion of the module, course or program?”

Table 1: Examples of Learning Outcomes

Guiding Questions (If the answer to these questions is yes, then the outcomes are well-written)	Learning Outcomes (examples)
Do they begin with a single, measurable verb?	Explain the effects of human activities on the changes that have occurred ecologically, socially and economically to the earth's oceans.
Do they provide a challenge to the learner? Are they written at the "application" level or above?	Analyze the effects that myths, stereotypes and attitudes associated with aging have on the care given to seniors in assisted-care facilities.
Do they describe what the learner will be able to demonstrate at the end of the course? Do they describe this from the perspective of the learner and not the teacher's activities?	Prepare financial statements according to basic Canadian accounting principles (GAAP) and international standards (IFRS).
Are they clearly stated? Do they appear to relate to the profession?	Apply protocols for infection prevention and control in a dental health-care practice and laboratory setting.

Source: Authors' compilation

## Revising Learning Outcomes

The following examples provide guidelines and rationale for how to revise learning outcomes.

### **Learning Outcome 1: Acquire an awareness of the ways in which active-learning teaching strategies improve student performance.**

This outcome begins with a verb that is difficult to measure. Ask yourself the question, "What will learners do so that I and they know that they have acquired this awareness?" Perhaps they will analyze a case study, or write a lesson plan or a report on applicable strategies to "improve student performance." The point is, how they demonstrate the outcome must be clearly measurable and must be reflected in the outcome.

### **Learning Outcome 2: Explore current trends in food preparation.**

The answer to the question, "What will my students be able to demonstrate at the successful completion of my course?" is that they will be able to explore current trends. If that is an accurate statement of what your students should be able to demonstrate, then this is a good outcome; however, if this is a classroom activity and you will be exploring "current trends in food preparation" in order for your students to demonstrate something else, then this outcome should be revised. Perhaps in class you are exploring these trends so that students can "design a menu for a small to medium restaurant in a tourist spot," for example.

**Learning Outcome 3: Design and present a marketing plan for a small-to-medium tech startup.** Will the students design the plan or will they present the plan? Both of those verbs mean something quite different. Again the question here is, “What will my students demonstrate at the successful completion of the course?” The answer could be that both these skills are required by the students, in which case there are two outcomes represented.

**Learning Outcome 4: List the tasks faced by a mid-level manager in a finance company.** This outcome does not appear to offer enough of a challenge for learners since listing items requires them to recall information rather than apply it. Perhaps the learners need to be able to list this information in order to do something more challenging and authentic such as match the tasks to the ultimate goals of a finance company. Learners should be challenged to put the smaller pieces together and apply the concepts and information in as close as possible to a real world context.

## **Integrating Essential Employability Skills into Assessment Practices**

In Ontario community college curriculums, programs must cover a breadth of vocational skills and Essential Employability Skills as learning outcomes. However, “the general challenge for Ontario colleges has been to translate the broadly worded EES and their 11 associated learning outcomes into more clearly defined, context-specific and measurable learning outcomes that are relevant for a particular course.” (Kapelus, Miyagi & Scovill, 2017, p. 7). These 11 transferable skills and abilities, all of which must be demonstrated by graduates from college certificate and diploma programs, are deemed necessary for successful functioning in the workplace and beyond, and are not specific to a particular subject area or profession but rather apply across all areas. Because these are generic skills, they can, and should, be smoothly integrated into the teaching and assessing of course learning outcomes, and indeed can support the demonstration (assessment) of these outcomes. For example, “exhibiting specific leadership skills while conducting a business meeting for a business leadership course” also involves the demonstration of communication and interpersonal Essential Employability Skills. “Developing a menu” involves the categories of numeracy and critical thinking, and “conducting a statistical research project” involves skills such as numeracy and information management. It is important not to assume that learners have already developed these generic skills elsewhere; making thoughtful choices regarding which EES will be taught, practised and evaluated in a specific course, and then explicitly teaching and assessing them within the context of the course and subject



matter, indicates to learners that these skills are not only important for their success while in their college/university classes and programs, but are also crucial in the workplace.

## **Assessing Learning Outcomes**

For successful learning to occur, instructional strategies and assessments need to be intentionally aligned with well-written learning outcomes. Furthermore, intentionally designing assessments that address learning variability by providing multiple options for students to express and demonstrate what they know (CAST, n.d.) through a variety of assessment methods, while still ensuring that learning outcome levels are upheld, can reduce barriers to learning, promote better alignment between teaching pedagogies and assessment with learning outcomes, and consequently improve learners' capacity to succeed in their courses.

Learning outcomes answer the question, "What will learners demonstrate by the end of the course?" The assessment tools answer the question, "How will learners and teachers know that the outcomes have been demonstrated?"

Not only should learning outcomes be thoughtfully created by considering the level of learning, the context of the course within the program and the requirements of the profession, but the assessment of the learning outcomes should also be carefully designed and aligned with teaching strategies. If the learning outcome is written at the "application" level (using Bloom's taxonomy), the learners should be assessed by having them apply their learning in an authentic way. If the learning outcome is written at the "creating" level, learners must create and so on. Since curriculum design is an iterative process, sometimes the activity of constructing the assessment tools and ensuring that they correspond to the learning outcomes points out flaws in the learning outcomes, which then must be revised until both the learning outcome and the assessment tool are aligned.

Table 2 contains examples of authentic assessment tools that clearly evaluate the learning outcomes:

Table 2: Examples of Learning Outcomes and Assessment Tools

Learning Outcomes	Examples of Assessment Tools
<ul style="list-style-type: none"> <li>▪ Explain the effects of human activities on the changes that have occurred ecologically, socially and economically to the earth's oceans.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Individual or group presentation</li> <li>▪ Research essay</li> <li>▪ Poster presentation</li> <li>▪ Case study question on exam</li> <li>▪ Web page, wiki or blog</li> <li>▪ Photo essay</li> </ul>
<ul style="list-style-type: none"> <li>▪ Analyze the effects that myths, stereotypes and attitudes associated with aging have on the care given to seniors in assisted-care facilities.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Report on interview with residents at a seniors residence</li> <li>▪ Report on interview with workers</li> <li>▪ Research essay</li> <li>▪ Class or small-group debate</li> <li>▪ Role play, original video</li> <li>▪ Case study question on exam</li> </ul>
<ul style="list-style-type: none"> <li>▪ Prepare financial statements according to basic Canadian accounting principles (GAAP) and international standards (IFRS).</li> </ul>	<ul style="list-style-type: none"> <li>▪ Financial statement(s)</li> <li>▪ Financial statement(s) in an exam setting based on a case study question.</li> </ul>
<ul style="list-style-type: none"> <li>▪ Apply protocols for infection prevention and control in a dental health care practice and laboratory setting.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Role play</li> <li>▪ Observation in clinical setting</li> <li>▪ Peer observation and feedback</li> </ul>

Source: Authors' compilation

## Validating Learning Outcomes

Higher-education institutions are increasingly developing curriculums to equip students with knowledge and skills that go beyond simply recalling information to demonstrating more complex higher-order thinking skills. As a result, teachers use a wide range of instructional strategies and assessment methods to engage students in their learning and gather evidence of their progress across different learning outcomes (Hack, 2015). However, given the multifaceted and evolving nature of theory and practice with regards to the assessment of learning, issues around clarity and transparency of the assessment process (Hack, 2015) as well as issues around consistency and validity of assessments have received increased attention by academia and policy makers in recent years. Unlike low-level cognitive processes, higher-order thinking skills are not easily evaluated and they generally require the use of open-ended tasks such as portfolios and essays, which are deemed to be subjective measures. By explicitly stating the

criteria against which the learner will be evaluated, well-developed rubrics can help teachers assess students' learning objectively and reliably.

Before expanding on the concept of rubrics and their development, we want to touch on validity and reliability as they apply to assessments including rubric validation. Assessments need to be reliable and valid for teachers to be able to assert that learning has occurred and for students to be able to monitor and reflect on the progress of their own learning.

## **Validity**

While the term “validity” is often defined as the degree to which an assessment measures what it is intended to measure, the focus is not on the validity of the test or assessment itself. Rather, “validity is an overall evaluative judgment of the degree to which empirical evidence and theoretical rationales support the adequacy and appropriateness of interpretations and actions on the basis of test scores or other modes of assessment” (Messick, 1995, p. 741). Whether performance assessments are externally or locally developed, or are high or low stakes, validity is an important concept to keep in mind because decisions and actions derived from the inferences made from assessments have an impact on those being assessed (Jonsson & Svingby, 2007). Once the learning outcomes of the program or course are developed, teachers can select from a myriad of assessment tools (i.e., short quizzes, multiple-choice exams, essays, presentations, case studies, etc.) and modify them to suit the learning outcomes. As a result, the question that comes to mind is, “What evidence exists that the judgements derived from these various assessments can be relied upon to provide a true picture of students' learning in direct alignment with learning outcomes?”

There are different types of validity that teachers can use to gather this evidence (sometimes referred to as validity evidence), but the most widely used are classified as content validity, construct validity and criterion validity.

- Content validity refers to the content of a test/assessment. The items of the test/assessment should be both relevant to the domain/construct (content relevance) and contain a representative sample of skills of the domain/construct (content coverage) (National Foundation for Educational Research in England and Wales, n.d.).
- Construct validity refers to an assessment that is designed to measure the intended construct. Generally, input is gathered from content experts or literature.
- Criterion validity is sometimes further divided into:
  - Concurrent validity, which indicates whether the assessment correlates with other assessments that measure the same construct.

- Predictive validity, which refers to whether the assessment can predict future student outcomes.

## **Reliability**

Reliability is related to the concept of consistency and repeatability. A reliable assessment provides a consistent measure of a student's learning on a specific topic (e.g., a locally developed English assessment test will yield similar results if a group of students take the same test at different times of the day). Generally, reliability can be divided into these types:

- Intra-rater reliability — scoring consistency by the same rater
- Inter-rater reliability — scoring consistency by multiple raters
- Inter-rater agreement — scoring agreement among multiple raters

There are different statistical methods used to test for reliability. In the past, the authors have used inter-rater reliability and inter-rater agreement tests concurrently to inform changes to a locally developed critical-thinking rubric, which was found to be a useful approach (Kapelus, Miyagi & Scovill, 2017). It is important to remember that a reliable assessment is not necessarily valid. Raters may be in agreement, even though the assessment does not accurately measure what it purports to measure.

## **Rubric Development**

A rubric is a scoring guide that is used to evaluate a student's performance across a set of criteria and different levels of mastery. Rubrics can be used for almost any type of assessment task. A rubric can be generic or task specific. A generic rubric assesses a trait (e.g., critical thinking) across disciplines, whereas a task-specific rubric assesses a single task (e.g., oral presentation). Rubrics can also be holistic or analytical. Holistic rubrics assess students' overall performance on an assignment or learning activity. They are generally used for large-scale assessments, for summative feedback and when time is of the essence. Analytical rubrics assess each criterion of a task or construct, contain a performance descriptor with a corresponding level of mastery, a grading scale and sometimes a weight for each criterion. They are best used in the classroom (Jonsson & Svingby, 2007) because they can help teachers and individual learners identify areas of a learner's strengths and progress toward achievement of learning outcomes. However, analytical rubrics can be time consuming to develop and implement. An example of a partial analytical rubric is provided in Table 3.

This rubric can be used to assess Essential Employability Skills 1, 2 and 9:<sup>1</sup>

- Communicate clearly, concisely and correctly in the written, spoken and visual form that fulfills the purpose and meets the needs of the audience.
- Respond to written, spoken or visual messages in a manner that ensures effective communication.
- Interact with others in groups or teams in ways that contribute to effective working relationships and the achievement of goals.

**Table 3: Assessing Participation in Online Discussions (College Course Example)**

Category	0–1	2	3	4
Promptness and Initiative	Does not respond to postings; rarely participates freely.	Responds occasionally. Often leaves a great deal of time before responding.	Responds mostly in a timely manner to several postings.	Consistently and quickly responds to most postings; demonstrates excellent initiative.
Relevance of Post	Posts topics that do not relate to the discussion content; makes short or irrelevant remarks.	Occasionally posts topics related to discussion; most posts are short in length and sometimes offer further insight into the topic.	Often posts topics that are related to discussion content; often adds to development of topic and advances discussion.	Consistently posts topics related to discussion topic; always adds value to discussion and develops discussion further.

Source: Valerie Scovill

It is important to emphasize that a well-developed rubric does not compensate for an inappropriately selected or poorly designed assessment tool, or a poorly written learning outcome.

## Conclusion

Although curriculum design and revision, the creation of assessment tools and rubrics, the integration of EES, and the validation of it all can seem to be a daunting task, thoughtful design can benefit both learners and teachers. When the curriculum provides a suitable challenge, is connected to the rest of the program and the workplace, and is transparent, students move toward autonomy in their learning and achieve successful results. As well, teachers can be assured that their classroom strategies support

1 Ontario Ministry of Training, Colleges and Universities. <http://www.tcu.gov.on.ca/pepg/audiences/colleges/progstan/essential.html>

learning and their assessment tasks are authentic measures of the learning outcomes.

**Table 4: Steps in Developing a Rubric**

Steps	Guiding Questions
Identify the purpose of the assessment to inform selection of rubric type.	<p>Is the purpose of the assessment to evaluate student performance on an overall learning activity or task (online participation) or multiple aspects of a domain or construct (promptness of initiative in posting online content, relevance of post, etc.)?</p> <p>Is the assessment also evaluating any Essential Employability Skills (or other transferable, soft skills) that relate to and support the learning outcome?</p>
Identify the criteria or elements of the construct that are to be assessed.	<p>Are all of the important elements or dimensions of the construct present?</p> <p>Are there any elements or dimensions that are not relevant to the construct?</p> <p>Are the description of learning outcomes and instructions given to students in the assessment/learning task (what they need to demonstrate) reflected in the rubric?</p>
Identify the scale or levels of performance that will reflect students' achievement, i.e., from "not met" to "exceed."	<p>Does the scale or number of levels cover the range of students' performance?</p>
Write a description of performance for each criterion corresponding to the identified levels of performance.	<p>Is the language used to describe each level of performance:</p> <ul style="list-style-type: none"> <li>▪ Easily understood by learners with different ability levels and teacher raters?</li> <li>▪ Clearly differentiated between levels that minimize potential rater bias or misinterpretation?</li> <li>▪ Qualitative rather than quantitative (unless the latter is the objective of the assessment)?</li> <li>▪ Able to smoothly transition between levels, and is there enough of a distinction so that learners clearly understand why they received a particular grade?</li> </ul>
Test the rubric with colleagues (and with students if possible) by asking them to rate a random sample of student samples. The samples must be aligned with the learning outcomes for which the rubric has been developed.	<p>How do they respond to the questions above?</p> <p>Do markers arrive at the same scores/conclusion about students' level of performance?</p> <p>Repeat the process if needed.</p>

Source: Authors' compilation

## References

- Anderson, L. W. & Krathwohl, D. R. (Eds.). (2001). *A taxonomy for learning, teaching and assessing: A revision of Bloom's taxonomy of educational objectives (complete edition)*. New York: Longman.
- Bloom, B. (Ed.). (1956). *Taxonomy of educational objectives: The classification of educational goals. Volume 1*(2 ed.). New York: David McKay Company, Inc.
- CAST. (n.d.). About universal design for learning. <http://www.cast.org/our-work/about-udl.html#WmVFwUxFw2w>
- Cedefop. (2017). *Defining, writing and applying learning outcomes: A European handbook*. Luxembourg: Publications Office of the European Union. <http://dx.doi.org/10.2801/566770>
- Deller, F., Brumwell, S. & MacFarlane, A. (2015). *The language of learning outcomes: Definitions and assessments*. Toronto: Higher Education Quality Council of Ontario.
- Fink, L. D. (2003). *Creating significant learning experiences: An integrated approach to designing college courses*. San Francisco: Jossey-Bass.
- Hack, C. (2015). Analytical rubrics in higher education: A repository of empirical data. *British Journal of Educational Technology*, 46(5), 924–927.
- Jonsson A. & Svingby G. (2007). The use of scoring rubrics: Reliability, validity and educational consequences. *Educational Research Review* 2(2), 130–144.
- Kapelus, G., Miyagi, N. & Scovill, V. (2017). *Building capacity to measure Essential Employability Skills: A focus on critical thinking*. Toronto: Higher Education Quality Council of Ontario.
- Messick, S. (1995). Validity of psychological assessment: validation of inferences from persons' responses and performances as scientific inquiry into score meaning. *American Psychologist*, 50(9), 741–749.
- National Foundation for Educational Research in England and Wales. (n.d.). Centre for assessment. <https://www.nfer.ac.uk/research/centre-for-assessment/validity/>
- O'Neill G. & Murphy F. (2010). *Assessment: Guide to taxonomies of learning*. Dublin: University College Dublin.
- Soffel, J. (2016, March 10). *What are the 21st-century skills every student needs?* World Economic Forum. <https://www.weforum.org/agenda/2016/03/21st-century-skills-future-jobs-students/>





## Chapter 7

# Skills Articulation and Work Integrated Learning

T. Judene Pretti and Anne-Marie Fannon

## Introduction

In recent years, debate has raged about the skills possessed by graduates of Canadian postsecondary programs. Many believe that Canada is experiencing a critical skills gap, producing graduates with insufficient or mismatched skills for the labour force, ultimately costing the Canadian economy billions of dollars each year (Stuckey & Munro, 2013; Harder, Jackson & Lane, 2014; Canadian Chamber of Commerce, 2014; Sullivan, 2017). Others argue that we do not have a skills gap so much as an experience gap (Cassie & Do, 2016). Students are graduating without real world experience, an increasingly common requirement for even entry level positions (Borwein, 2014; Sattler & Peters, 2012). Still others argue that claims of a skills gap are exaggerated and that we are experiencing more of a skills-articulation gap (Craig & Markowitz, 2017; Markowitz, 2017; Lewarne & Gurrisi, 2017). Neither students nor employers fully understand the skills possessed by graduates and thus perceive the mismatch to be greater than it is.

Beyond questions regarding the legitimacy of the alleged skills gap are debates about the role that postsecondary institutions should play in responding to labour market needs. Some note the lack of direct pathways to employment and argue that it is futile for postsecondary institutions to attempt to respond to the ebbs and flows of labour market demand (Weingarten, 2016). Others cite the rapid pace of change in the global workforce and claim that even if we were able to meet the skills demands

of today, the disruptive change expected in the coming years will lead to significant skill mismatches in the future (World Economic Forum, 2016).

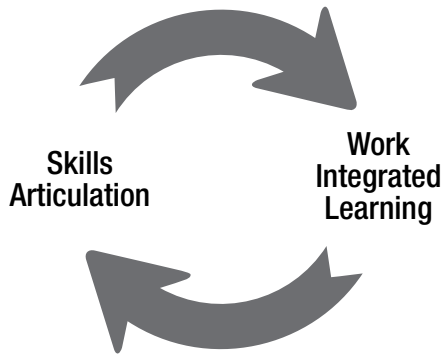
While there is no consensus on the extent or even the existence of a skills gap, it's clear that skills are both the dominant language and currency of today's labour market. As postsecondary institutions, we are doing a disservice to our students if we don't teach them how the knowledge and experiences gained during their degree programs translate into the skills required by employers (Harrison, 2017). At least one recent survey indicates there is significant work to be done on this end. Of the 18,000 Canadian respondents to the 2015 Graduating University Student Survey, only 43% indicated that their university experience contributed much or very much to the development of skills and knowledge required for employment (Prairie Research Associates, 2015). Graduates must understand not just what they know but what they can do. They must also be able to describe their skills using evidence and language that is meaningful to potential employers. If, through the process of postsecondary education, we can teach our students to accurately recognize and articulate their skills, we are equipping them with a lifelong skill that will aid them as they are forced to adapt to the rapidly changing labour market.

Work integrated learning (WIL) has been held up as a promising solution to the skills-gap argument. Co-operative Education and Work-Integrated Learning Canada (CEWIL Canada) defines WIL as "a model and process of education which formally and intentionally integrates a student's academic studies with learning in a workplace or practice setting" (CEWIL Canada, n.d.). Numerous forms of WIL exist in Canadian postsecondary programs including cooperative education, apprenticeships, internships, professional practice, field experience, applied research projects and service learning, among others (Sattler, 2011; McRae & Johnston, 2016).

We argue that WIL is a pedagogy that is particularly relevant to this conversation for a number of reasons. WIL provides opportunities for students to demonstrate and further develop their skills in a workplace context, thus helping to address both the skills gap and the experience gap. Furthermore, WIL provides students with multiple opportunities for authentic skills articulation. Through the various stages of a WIL program, students are challenged to identify, reflect on, and then articulate their skills using language and modes relevant to industry. These touchpoints highlight the importance of skills as workplace currency and teach students the importance of persuasive and clear skills articulation.

The focus of this chapter will be on the ways that supporting students' skills articulation sets them up for success in work-integrated learning experiences and how opportunities for work integrated learning supports their skills articulation as illustrated in Figure 1.

**Figure 1: The Reinforcing Influence of Skills Articulation and Work Integrated Learning**



Source: Authors' compilation

## **Skills Articulation for Work Integrated Learning**

Supporting students in skills articulation prior to work-integrated learning experiences has the potential to set them up for success in at least two ways. One has to do with the nature of the WIL program and the ways that students become matched with a WIL partner, and the second has to do with setting the foundation for increased awareness of learning and development opportunities during the WIL experience. We are using the generic term partner to include employers in the case of cooperative education, preceptors in the case of practicums and community agency members in the case of community service learning.

There are various ways that students are matched with partners in WIL programs. In some programs there is competition for posted jobs where students need to prepare application packages and interview for the position. Success in this process is dependent on students being able to articulate their skills in a convincing fashion such that the WIL partners (e.g., employers, community or industry partners) believe the student will be an asset to their organizations.

In other programs, students find and arrange their own WIL opportunity. While not necessarily competing with peers in their program, students do need to make the case about what they would bring to the organization and the value of the WIL experience for the partner overall. In these instances, being able to credibly articulate their skills is critical for students to organize and secure their WIL opportunity.

Even in cases where students are placed into WIL opportunities, there is value in helping students work through the process of articulating their skills so that they begin their WIL experience both aware of what skills they have to contribute, and also primed to view opportunities in their WIL experience for skills acquisition and development.

The mechanisms for supporting students in skills articulation as preparation for WIL centre around three main activities, which will be explained in this section: awareness and language; identification and connection; and practice and feedback.

### **Awareness and Language**

A foundational activity for skills articulation is raising students' awareness of the importance of skills and the connection of skills to employability. Some students enter university with previous work experience and thus have begun to consider their skills in an employment context. However, many other students have not yet had paid employment or have not given thought to how their prior academic, volunteer, co-curricular and employment experiences have led to skills development.

Beyond an awareness of the role of skills and their connection to employability, it is important for students to be exposed to the language of skills used in the labour market. It can be helpful to start with high-level categories of skills such as technical skills, interpersonal skills (e.g., communication, teamwork), personal management and metacognitive skills (e.g., critical thinking, problem solving). There are many sources for these lists of skills including employer surveys, labour market reports and skills listings on job-posting sites. At a program-specific level, sample job advertisements or skills listings of alumni of a particular program can be examined. The important aspect here is to present a skills language toolkit as a reference point for students to use in articulating their skills.

### **Identification and Connection**

Once equipped with the skills language that will be relevant in an employment context, students then need to attach meaning to those skills by providing examples from their own experiences. Prior to WIL, most students will need to draw on academic, co- and extra-curricular experiences, or part-time work. Employers will not be satisfied with students providing a list of skills they possess without credible examples showing how they have developed and demonstrated those skills. For example, students should be thinking, "How can I support my claim that I have developed communication skills through a specific course?" or, "How can I describe my development of conflict-resolution skills through being a residence don?" At this stage, it is important for students to unpack their

experiences, connect the relevant skills language to personal experiences and think of examples that provide evidence of skills development.

### **Practice and Feedback**

Once students have tied specific examples of their experiences to skills language, they need the opportunity to practise and receive feedback on their skills articulation. This may take many forms including written or verbal. Students can practise articulating skills in a written assignment that a professor or TA will grade, participate in a mock interview with a peer or career adviser, write a résumé, compose a cover letter or participate in an actual job interview. The key element is to practise reviewing the relevant information and presenting it in a succinct and convincing way.

Depending on the context and the opportunities, the type of feedback the student receives will vary. However, feedback is key in the articulation of skills. Institutions should ensure there are opportunities to provide feedback to students, and students should be encouraged to seek it out as well.

Sometimes the feedback the student receives is explicit and other times it is implied. In the case of written-skills articulation, feedback can be provided through grades and/or rubrics, and written feedback from a TA or instructor. In the case of cover letters and résumés, feedback can be sought from career-centre staff, family or friends, or even employers. For students applying to WIL positions, one example of feedback on their written skills articulation as demonstrated through a résumé or cover letter is whether or not they are invited to an interview.

In the case of verbal practice through mock interviews, interviewers may have a formal rubric that they complete and share with the students. Interviewers may also provide verbal feedback on which aspects of the skills articulation exercise were successful and which required further refinement.

In a job interview, it is less likely that interviewers will provide direct feedback, but they may do so in the form of body language cues or comments to the interviewee. Additionally, whether or not the interview results in a job offer is a form of implied feedback to the student. In all cases, students should be encouraged to self-assess, identifying what went well and what needs improving for their next opportunity.

## **Skills Articulation from Work Integrated Learning**

Within the WIL experience itself, students have a multitude of opportunities to reflect on their skills development and articulate it to others. Some of these opportunities occur naturally as a result of the work experience, but many are facilitated by a WIL curriculum that encourages

students to self-assess their skills, set learning goals, chart their skills development and then reflect at the end of the experience. These curricular interventions challenge students to maintain an awareness of their skills throughout the work experience and to contrast their perceived level of skills at the beginning of the experience to that at the end.

Students enter a WIL experience with an idea of the skills required for success in the role based on the job application and orientation process — the job description, the interview, and any training or onboarding materials provided. Many WIL programs encourage students to formalize their understanding of the skills required for success in the role through a start-of-term self-assessment or through the development of learning goals. These activities can take various forms. In some models, students are asked to self-assess their skills using the same performance appraisal that will ultimately be completed by the partner. Other programs ask students to self-assess their skills using a list of core competencies that map to their academic program. Some programs simply require students to set learning goals for the work experience by identifying specific skills that they would like to develop throughout the WIL opportunity. Regardless of the format, these activities encourage students to consider their level of skill coming into the work experience and to identify how they would like to develop that skill moving forward. These benchmarking activities also serve to reinforce the language of skills as an important component of a work experience.

As WIL students enter into the community of practice, they gain a variety of insights into skill utilization within specific contexts. They are able to witness colleagues and supervisors using technical and interpersonal skills to varying degrees of success. They are able to test their assumptions about their current level of skills, and through formal and informal training further develop these skills. They gain an appreciation for the nuances of using skills in a workplace context and the ways in which this differs from using skills in the classroom. Last but not least, through immersion in a community of practice, students learn the language with which skills are described and evaluated within an organization or an industry.

While students may receive some feedback on their skills development from the WIL partner, students must be reflective and self-evaluative to fully benefit from the workplace as a learning environment. To aid in this process, WIL programs often include a curricular component that requires students to reflect on their development and collect evidence of it throughout the experience.

In some instances, particularly for technical skills development, students collect artifacts — work samples that demonstrate competence or successful use of a particular skill. In other instances, students may choose to photograph or film themselves demonstrating a particular skill. Students may also choose to collect feedback on their work from colleagues or from

their supervisor as evidence of skills development. This is sometimes facilitated through the use of an ePortfolio, which can accommodate a variety of media used as evidence. Other WIL programs encourage regular reflection on skills development by requiring students to complete reflective assignments or critical incident reports throughout the work experience. Last but not least, WIL programs also commonly include site visit requirements where faculty members and support staff visit the student in the workplace and engage the student in a conversation about the work experience. In addition to revisiting learning goals, this conversation often serves as another valuable opportunity to encourage students to articulate the skills they are developing using authentic language. Whatever form they take, these touchpoints encourage students to maintain an awareness of the skills they are developing and to consider the language and evidence required to support their claims.

At the end of the WIL experience, many programs require students to complete a final reflection or presentation that summarizes their experience, including knowledge acquisition and skills development. Students are encouraged to revisit their learning goals, previous self-assessments, artifacts they have collected or reflections they have completed, as well as any feedback they have received to synthesize the impact that the WIL opportunity has had on their learning and growth. As students assess their skills at the end of the experience, they are able to draw on this collection of evidence and any newly acquired skills language to articulate their skills with greater confidence and clarity. These reflections, along with any collected artifacts, assist students in preparing application packages for future WIL experiences or post-graduation employment. When applying for positions, these learners are not only able to articulate what they know, they are able to provide evidence and examples of what they can do in an authentic context using the relevant skills language.

## **Partner Involvement in Skills Articulation**

WIL partners can also contribute to the skills articulation development of students in important ways. In this section, we want to shine a spotlight directly on the role that partner organizations can take in this process.

### **Skills Articulation for WIL**

Outside the work-integrated learning experience itself, there are a few ways that WIL partners can support students in identifying skills language relevant for particular fields or industries. In written form, they communicate the skills needed through job advertisements and role descriptions. They can also be explicit about the skills they seek during class visits and participation in industry projects. They may also be involved

in advisory boards or curriculum committees with university faculties or departments, which can provide them a venue for sharing the skills that are critical for their evolving workplaces.

In addition to communicating skills that are needed within certain roles, fields or industries, there is great value in partners giving students the opportunity to practise their articulation of skills. This may happen through a competitive interview process as is the case in many co-op programs, or through informational or mock interviews. Partner involvement in these activities raises the authenticity of the practice for students and, as such, provides a real-world opportunity to test their skills articulation. In all instances, the students receive valuable feedback from the partner. This may take the form of explicit feedback provided at the end of a mock interview, or indirect feedback in whether or not the student is offered a WIL position with the organization. Practice and feedback are critical parts of skills articulation and so partner involvement in these processes is often highly valued by students and educators.

### **Skills Articulation from WIL**

WIL partners can also play a role in supporting students in skills articulation during the work experience. Of course, the different types and durations of WIL experiences will affect the type and amount of support that partners can provide to students.

Orientation activities introduce students to the language and culture of the organization and begin to give them an understanding of the context in which they will be using and developing skills. Orientation also initiates the process of integrating the students as members of the organization, which will be critical to their success in working with and learning from others. Another early activity that proves very useful to students is goal setting, preferably with the support of a supervisor or other organizational member. During this process, students and supervisors are able to negotiate what each is hoping to gain through the WIL experience, including the elements directly related to skills development using authentic language for the workplace. Sometimes being aware of goals set by previous students in a similar role can help with this process.

Partners can also support students by offering opportunities for training and development, as well as providing regular, informal feedback on their performance. Setting goals early in the experience gives partners the opportunity to revisit the progress on goals with students at various points over the course of their time at the organization.

At the end of the WIL experience, partners can provide the opportunity for students to practise their skills articulation and to receive feedback in ways that are genuine assessments of skills that might mirror the mechanisms used with full-time employees. For example, the partner can



provide a formal assessment of skills demonstrated by the student during the WIL experience through a performance evaluation. Ideally, this is paired with a conversation between the evaluator and the student so that in addition to skill ratings, students have the opportunity to ask questions and understand the feedback, similar to a full-time-employee performance-review process. A variation on this could be an exit interview, where students can comment on aspects of their experience and make suggestions for the partner for future WIL students, a practice common when full-time members leave organizations. And, finally, a more public mechanism for practice and feedback is to have students make a presentation to a team or the organization about their experience, which may include the goals they set and achieved, a description of projects that they worked on and the skills they have developed over the course of the experience.

## **Short-term and Long-term Benefits of Skills Articulation**

There are many positive benefits to supporting students in identifying and articulating their skills in preparation for and during work-integrated learning experiences. These extend to all three parties involved in WIL — the students, the institutions and the partners. Some of the outcomes have shorter-term impacts and some have longer-term impacts.

There are several short-term impacts for students. First, teaching students the importance of skills articulation better prepares them to apply for work experiences offered through formal work-integrated learning programs. In addition to providing students opportunities to further develop their skills, these WIL experiences may help them pay for their education. By further focusing on skills articulation through the WIL experience, students will gain confidence in their job-seeking skills and what they can offer future employers. We also believe that this work will increase students' awareness of the connections between their academic programs, the skills they've developed and their post-graduation plans, particularly in programs where there is no obvious direct path to a specific career. This, in turn, could lead to increased motivation for learning and retention in courses and programs. Also, due to the increased awareness of the connections between academic programs and skills being developed, we believe that as graduates they will be more likely to report that their post-graduation employment is related to skills they developed during their academic programs. (Prairie Research Associates, 2015)

In the longer term, we believe that supporting students in skills articulation will foster a lifelong skill. We believe that students will continue to see their life and work from the perspective of what they are learning, how they are developing and how they can transfer that learning from one

context to the next. This skill will be invaluable to them given the expected changes in the workforce in the coming years (Premier's Highly Skilled Workforce Expert Panel, 2016; Economist Intelligence Unit, 2017; World Economic Forum, 2016).

For postsecondary institutions, the benefits of supporting students in skills articulation are numerous. As noted above, one of the biggest benefits is the higher number of graduates who understand and appreciate the value of the postsecondary education and experiences they received. Postsecondary institutions are being encouraged to offer more WIL opportunities to students, and in order to do so, they will need to establish additional partnerships. We believe supporting students in skills articulation will lead to better WIL experiences for students and partners, leading to sustainable WIL partnerships. In the longer term, the success and appreciation of graduates will be reflected in the institution's reputational measures and the satisfaction of its alumni. We also believe that this work can lead to increased awareness and recognition by industry and society-at-large of the role that higher education plays in equipping students with skills for their future.

While there are numerous benefits for WIL partners in offering work-integrated learning opportunities (Sattler & Peters, 2012), there are also specific benefits to partners in supporting the skills articulation process for and from work integrated learning. In the short term, we believe this work, at scale, will result in fewer reports of a skills gap. As mentioned previously, there are many who believe part of the skills-gap issue is a skills-articulation gap. Through this work, partners will better understand how students' previous education and experience map to the skills needed for success in the workplace. Consequently, partners will be able to better identify graduates who have the desired skills. Additionally, we hope partners will recognize the value of graduates who have developed the ability to self-assess and articulate skills and make it a lifelong skill. With respect to longer-term impact for partners, we believe there is potential for partners and postsecondary institutions to benefit from a variety of strengthened relationships such as research partnerships.

## **Challenges**

While the discussion of impacts on various stakeholders sounds very appealing, a focus on skills articulation for and from work integrated learning is not without challenges. In particular, multi-stakeholder engagement (of students, postsecondary institutions and partners) is critical. In this case, engagement comprises two key aspects. First, all partners must have an awareness, recognition and appreciation for the value of skills articulation for and from work integrated learning. Second,

adequate and often incremental resources are required in the form of time and/or money.

With many priorities competing for their time, students need to understand the value of investing their time and attention in thinking about, and making connections between their education, experiences and skills development. First, they must recognize the limitations of credentials and that a degree alone will not guarantee employment. They then have to learn the value of reflective thinking and engage in the work of skills identification, accurate self-analysis and skills articulation. For students involved in competitive work-integrated learning programs such as cooperative education, the need to take stock of their education, experiences and skills development is more apparent, as they are applying, interviewing and competing for jobs with their peers. Co-op students who are able to persuasively articulate their skills to potential employers will experience success earlier in the work-term job search. Students not enrolled in a competitive WIL program may not experience the immediate pressure to invest time in the process of understanding and articulating their skills. Efforts need to be taken to demonstrate to these students the value of this work early in their academic programs.

For institutions, there are also a number of engagement challenges. Within postsecondary institutions, particularly universities, there is a debate about the role that higher education should play in preparing students for future careers. However, there is a general consensus around the expectation that students develop skills, whether technical or higher-order metacognitive skills, during the completion of their degrees. In fact, in 2005 the Ontario Council of Academic Vice-Presidents (OCAV) affirmed the essential skills expected to be developed in an undergraduate degree program in Ontario when they established the Undergraduate Degree Level Expectations (UDLEs) (OCAV, 2005). With these UDLEs, there is an opportunity to connect course- and program-level outcomes with specific skills and to share that language across the institutions including professors and students. There is also an opportunity to document the role of work-integrated learning experiences, and experiential education more broadly, as they relate to the UDLEs.

Beyond the philosophical debates about recognizing skills articulation as important work, there are a number of financial challenges associated with this work. In order to support skills articulation for students for and from work integrated learning, resources need to be dedicated to properly prepare students for those experiences. There are also costs associated with the process of finding, posting and matching roles provided by WIL partners with qualified students. Additionally, support needs to be provided during the WIL experience to the student and the partner when needed. Lastly, the institution needs to invest from a curriculum perspective in providing

opportunities for reflection as well as feedback and evaluation of the WIL experience. These resource requirements are often incremental to the typical costs of degree programs, and thus, institutions must recognize the value of this work in order to prioritize these added costs.

While partners have much to gain by helping to develop graduates who can clearly articulate their skills, they also experience challenges related to recognizing the value of WIL and dedicating resources for skills articulation, particularly in the context of WIL. In order to develop effective job descriptions for WIL, partners must work with postsecondary institutions to understand the skill sets being developed in the classroom and to clearly define the skills required for a specific project or short-term WIL experience. Partners must also appreciate the role they can play in helping students and institutions understand the skills required by their particular industry by engaging with postsecondary institutions. This can include participating on curriculum committees, engaging with the school as a guest lecturer or in an industry project, or providing feedback to students in mock or real interviews. All these activities require the partners to dedicate additional resources to engaging with postsecondary institutions and their students. Within the workplace, the activities involved in supporting students' skills articulation are often part of what many partners offer their WIL students. Consequently, we believe that the most significant challenges inherent in supporting students' skills articulation is the offering of WIL opportunities in general (Sattler & Peters, 2012).

## **Conclusion**

According to the World Economic Forum, we are on the cusp of a fourth industrial revolution where an unprecedented rate of change will dramatically disrupt the existing workforce, "changing the skills that employers need and shortening the shelf life of employees' existing skill sets in the process" (World Economic Forum, 2016, p. 19). Indeed, according to one estimate, 50% of the subject knowledge gained in a four-year technical degree is already outdated by the time a student graduates (McLeod & Fisch, n.d.).

Given this anticipated rate of change, postsecondary institutions must consider new ways of equipping students with the skills to successfully enter and navigate the workforce of the future. Skills articulation is a foundational activity that underpins this lifelong ability. New graduates must be able to identify, accurately self-assess and persuade others of the skills they possess in order to secure employment. As they progress through their careers, they will need to stay keenly aware of their existing skill set, the gaps in their abilities and the changing skill sets required in their field. They will also be

required to identify and articulate how their skills and experiences transfer across contexts and industries.

Work integrated learning is a particularly effective tool for teaching skills articulation because it allows students to learn the language of industry and to practise articulation in authentic contexts and modes. However, in order to successfully adopt this pedagogy and prepare students for the skill demands of the future, all stakeholders — students, postsecondary institutions and partners — must recognize and be willing to dedicate the needed resources required to effectively teach the lifelong skill of skills articulation.

## References

- Borwein, S. (2014). *The great skills divide: A review of the literature*. Toronto: Higher Education Quality Council of Ontario. <http://www.heqco.ca/SiteCollectionDocuments/Skills%20Part%201.pdf>
- Canadian Chamber of Commerce. (2014). *A battle we can't afford to lose: Getting young Canadians from education to employment*. <http://www.chamber.ca/media/blog/141014-a-battle-we-cant-afford-to-lose-getting-young-canadians-from-education-to-employment/>
- Cassie, C. & Do, A. (2016, December 12). *W/Ling + able: Addressing the experience gap*. Brookfield Institute. <http://brookfieldinstitute.ca/2016/12/12/wiling-and-able-experience-gap/>
- Co-operative Education and Work-Integrated Learning Canada (CEWIL Canada). (n.d.). Work-integrated learning definition. <http://www.cewilcanada.ca/coop-defined.html>
- Craig, R. & Markowitz, T. (2017, March 17). The skills gap is actually an awareness gap — and it's easier to fix. *Forbes*. <https://www.forbes.com/sites/ryancraig/2017/03/17/the-skills-gap-is-actually-an-awareness-gap-and-its-easier-to-fix/#108eaa7b3ff4>
- Economist Intelligence Unit. (2017). *Worldwide educating for the future index*. <http://yidanprize.org/download/EIU%20Yidan%20Prize%20Educating%20for%20the%20Future%20WP%20final%20spread.pdf>
- Harder, C., Jackson, G. & Lane, J. (2014). *Talent is not enough: closing the skills gap*. Calgary: Canada West Foundation. [http://cwf.ca/wp-content/uploads/2015/10/CWF\\_HCP\\_TalentNotEnough\\_Report\\_SEP2014.pdf](http://cwf.ca/wp-content/uploads/2015/10/CWF_HCP_TalentNotEnough_Report_SEP2014.pdf)
- Harrison, A. (2017) *Skills, competencies and credentials*. Toronto: Higher Education Quality Council of Ontario. [http://www.heqco.ca/SiteCollectionDocuments/Formatted\\_Skills%20Competencies%20and%20Credentials.pdf](http://www.heqco.ca/SiteCollectionDocuments/Formatted_Skills%20Competencies%20and%20Credentials.pdf)
- Lewarne, V. & Gurrisi, M. (2017, October 24). PSE's "skills awareness gap." Toronto: Higher Education Quality Council of Ontario. <http://blog-en.heqco.ca/2017/10/ousas-victoria-lewarne-and-marc-gurrisi-ps-es-skills-awareness-gap/>
- Markowitz, T. (2017, April 28). A skills gap from college to career doesn't exist. It's the awareness gap we need to fix. *EdSurge*. <https://www.edsurge.com/news/2017-04-28-a-skills-gap-from-college-to-career-doesn-t-exist-it-s-the-awareness-gap-we-need-to-fix>
- McLeod, S. & Fisch, K. (n.d.). *Shift happens*. <https://shifthappens.wikispaces.com/>
- McRae, N. & Johnston, N. (2016). The development of a proposed global work-integrated learning framework. *Asia-Pacific Journal of Cooperative Education*. 17(4), 337–48.
- Ontario Council of Academic Vice Presidents (OCAV). (2005). Ontario Council of Academic Vice Presidents' Undergraduate and Graduate Degree Level Expectations. Ontario Universities Council on Quality Assurance. <http://oucqa.ca/framework/appendix-1/>
- Prairie Research Associates. (2015). 2015 Graduating University Student Survey. Canadian University Survey Consortium. [http://www.cusc-ccreu.ca/CUSC\\_2015\\_Graduating\\_Master%20Report\\_English.pdf](http://www.cusc-ccreu.ca/CUSC_2015_Graduating_Master%20Report_English.pdf)
- Premier's Highly Skilled Workforce Expert Panel. (2016). *Building the workforce of tomorrow: a shared responsibility*. [https://files.ontario.ca/hsw\\_rev\\_engaoda\\_webfinal\\_july6.pdf](https://files.ontario.ca/hsw_rev_engaoda_webfinal_july6.pdf)
- Sattler, P. (2011). *Work-integrated learning in Ontario's postsecondary sector*. Toronto: Higher Education Quality Council of Ontario. <http://www.heqco.ca/en-ca/Research/ResPub/Pages/Work-Integrated-Learning-in-Ontario's-Postsecondary-Sector.aspx>

- Sattler, P. & Peters, J. (2012). *Work-integrated learning and postsecondary graduates: The perspective of Ontario employers*. Toronto: Higher Education Quality Council of Ontario. <http://www.heqco.ca/SiteCollectionDocuments/WIL%20Employer%20Survey%20ENG.pdf>
- Stuckey, J. & Munro, D. (2013). *The need to make skills work: The cost of Ontario's skills gap*. Ottawa: The Conference Board of Canada. [http://www.collegesontario.org/Need\\_to\\_Make\\_Skills\\_Work\\_Report\\_June\\_2013.pdf](http://www.collegesontario.org/Need_to_Make_Skills_Work_Report_June_2013.pdf)
- Sullivan, K. (2017). *Talent in transition: Addressing the skills mismatch in Ontario*. Ontario Chamber of Commerce. <http://www.occ.ca/wp-content/uploads/Talent-in-Transition.pdf>
- Weingarten, H. (2016). Postsecondary education and jobs: It's a question of skills. Toronto: Higher Education Quality Council of Ontario. <http://blog-en.heqco.ca/2016/11/harvey-p-weingarten-postsecondary-education-and-jobs-its-a-question-of-skills>
- World Economic Forum. (2016). *The future of jobs: Employment, skills, and workforce strategy for the fourth industrial revolution*. [http://www3.weforum.org/docs/WEF\\_Future\\_of\\_Jobs.pdf](http://www3.weforum.org/docs/WEF_Future_of_Jobs.pdf)





## Chapter 8

# Assessment Tools and Techniques: An Overview of the Learning Outcomes Assessment Consortium Project

Rosanna Tamburri

When asked about the qualities they seek in new hires, employers often list skills such as critical thinking, communication, teamwork and collaboration. Content-specific knowledge rarely gets top billing. At the same time, a growing body of economic research indicates that social skills are more highly prized by the labour market than they once were. In one study, Harvard economist David Deming found that between 1980 and 2012, jobs requiring high levels of social skills grew by almost 12 percentage points as a share of all jobs in the US economy. Wages paid for these jobs also grew rapidly over this period.

“We are not witnessing an end to the importance of cognitive skills,” he writes. “Rather, strong cognitive skills are increasingly a necessary — but not sufficient — condition for obtaining a good, high-paying job. You also need to have social skills.”

Why are employer and labour-market expectations changing? Some observers point to technological advances and the emergence of new jobs with different skill requirements as possible explanations. Deming notes that workplace structures and job design have also changed and now require more multitasking of employees.

Whatever the reason, governments, employers and students increasingly look to postsecondary institutions to provide the critical skills needed to succeed in the workplace. The Ontario premier's Highly Skilled Workforce Expert Panel called on postsecondary institutions to do a better job of measuring and credentialing these skills and to identify teaching practices and experiences that help foster them.

The Higher Education Quality Council of Ontario (HEQCO) created the Learning Outcomes Assessment Consortium (LOAC) in 2012. Participating institutions have been developing and piloting tools and techniques such as standardized tests, rubrics, scorecards and ePortfolios to assess students' skills, and sharing their findings with the broader postsecondary sector.

Here's an overview of the research work undertaken by HEQCO and its partner institutions.

## **Assessing Learning Outcomes: A Comparative Approach**

Researchers at Queen's University conducted an extensive, four-year study to evaluate several methods of assessing skills such as critical thinking, problem solving and written communication in undergraduate students. The study tracked skills development in multiple disciplines including engineering, science, social sciences and humanities across the four years of an undergraduate degree. The methods studied included two standardized tests — the Collegiate Learning Assessment Plus (CLA+) and the Critical Thinking Assessment Test (CAT) — and the Valid Assessment of Learning in Undergraduate Education (VALUE) rubrics developed by the Association of American Colleges and Universities. The researchers also conducted surveys and focus group interviews to examine participation rates, student motivation, and the utility and reliability of each instrument.

The study found that students' skills in critical thinking, problem solving and communication increased over the four years of their degree. The effects were detectable using both standardized tests as well as the VALUE rubrics, which were used to score student work samples in select courses. Queen's students demonstrated a higher level of skill in critical thinking than students at US peer institutions participating in the CLA+ or the CAT. Results from the standardized tests also suggested that Queen's bachelor of science students performed at the highest level while bachelor of arts students saw the largest gains over the four years of their program.

The VALUE rubrics offered several advantages over the standardized tests. Student motivation was not a concern when using the rubrics to score academic work. The rubrics were also less costly than administering the CLA+ or CAT and the results aligned with those of the standardized tests.

On the other hand, low student motivation was a significant concern in the case of the standardized tests. Participation rates among fourth-year students were much lower than first-year rates. Factors that affected student motivation included a lack of discipline-specific content, test repetition over multiple years, insufficient instructor promotion of assessments to encourage student effort and the fact that assessments do not count toward course grades. Assessment results were also affected by scheduling concerns in the case of the standardized tests and, in the case of the rubrics, a misalignment between assignment expectations and rubric dimensions. However, standardized tests allow comparisons with other institutions and between programs within the same institution.

The results of student focus group interviews suggested that for students to put effort into tests, instructors need to value the test, the content needs to be relevant, careful attention should be given to the timing of the tests and test results should be made available to students.

One major benefit of the study noted by the researchers was that qualitative and quantitative feedback provided to departments and instructors led to improvements in courses.

## **Measuring Critical Thinking**

Researchers at George Brown College conducted a multi-year study to measure students' critical thinking skills — one of the Essential Employability Skills that graduates of Ontario colleges are expected to acquire over the course of their studies. The researchers set out to identify measurable elements of critical thinking, and develop an assessment tool to measure gains in critical thinking that could be adapted for use in any course offered by the college and potentially other postsecondary institutions as well.

Rather than use a standardized test, the project team developed an assessment rubric designed to measure critical-thinking skills within an English course taught at the college. The team identified a core set of critical-thinking elements that were viewed as most relevant by college faculty. The team then developed a reliable assessment rubric to measure students' critical-thinking skills consistently across the curriculum. The rubric was tested and underwent several revisions. The final version featured six critical-thinking constructs and four levels of mastery. However, the researchers noted that improving the reliability of the rubric remains an ongoing exercise.

As a result of its work, the research team concluded that critical thinking was not explicitly addressed or assessed within the college's English course. Attempting to assess critical thinking was complicated by the quality of students' English language abilities. Faculty members needed training

to separate assessment of students' critical thinking from their language abilities. Furthermore, faculty members had different interpretations of critical thinking and how it could be demonstrated on course assignments. Notably, the researchers concluded that developing an assessment tool on its own provided no benefit unless the elements being assessed were clearly incorporated into the curriculum.

A faculty working group incorporated the critical-thinking rubric into a selection of general education and liberal arts courses at George Brown. The research team also developed *Critical Thinking: Learning, Teaching and Assessment — A Teacher's Handbook*, a resource designed to help other institutions incorporate critical-thinking skills into their curriculum and improve the consistency of assessments. In addition, the team created a teacher resource guidebook with practical examples and suggestions for incorporating Essential Employability Skills and their associated learning outcomes into college curriculums.

## **Rubrics for Competency Assessment**

Researchers at the University of Toronto developed a set of rubrics to assess student learning in communication, teamwork and design across courses in the university's Faculty of Applied Science and Engineering. They then tested the rubrics with graduate students, teaching assistants and instructors, and used the feedback to revise the rubrics. They also developed specific learning outcomes for problem analysis and investigation.

Focus group discussions revealed many misconceptions and confusion regarding the terminology used in the rubric. A tendency among participants to misinterpret terms suggested that the rubric by itself is insufficient, the authors concluded. This was particularly true in cases where a course was taught by a team of instructors. They recommended that faculty training sessions be conducted to ensure that the rubric is interpreted in the same way by everyone assessing student work. Training will help assessors better understand the assignment instructions, the objective of the rubric and specific terms used, they concluded.

Having a shared understanding of rubric terminology and the quality of work that exemplifies each performance level leads to greater consistency in grading, the researchers found. Allowing instructors to customize the rubrics is also important.

Assessing teamwork skills was particularly difficult, in part because doing so requires observation and interpretation of student behaviour. They recommended that teamwork be assessed using multiple sources, mainly students' own reflections, reflections from their teammates and evaluations from external observers. They also recommended that rubrics be integrated into existing learning management systems to help ensure that the

university and its students receive detailed information on student learning and performance.

## **Using ePortfolios to Assess and Demonstrate Skills**

At Durham College, researchers examined the use of ePortfolios and their value for skills assessment and employability. EPortfolios provide a digital record of a student's skills and academic accomplishments, and can include items such as blog entries, multimedia creations and academic transcripts.

In the first phase of the project, a comprehensive ePortfolio study was implemented in four programs at Durham: Fitness Health and Promotion, Practical Nursing, Personal Support Worker and Social Service Worker. More than 600 students and faculty members participated in the project. After two semesters, 224 students and seven faculty members took part in surveys and small focus groups to examine the benefits and challenges of using ePortfolios as assessment record keeping tools. The second phase examined employers' perceptions and uses of ePortfolios.

The study found that while awareness and use of ePortfolios is still developing, students, faculty and employers see value in them. Using ePortfolios created greater awareness among students of the Essential Employability Skills they are expected to acquire and the importance of these skills to the labour market. Faculty found the tools were useful for assessing students' work and providing students an opportunity to reflect on their learning.

Following the conclusion of the study, Durham College continued to use ePortfolios. A majority of students who used them agreed that they should be strongly promoted and encouraged, but not made mandatory. Students proposed integrating ePortfolios into aspects of the curriculum, student services, and campus activities as well as linking them with experiential and work-integrated learning opportunities. However, students noted the need for ongoing training in using ePortfolios, something highlighted by faculty as well.

Employers saw value in using ePortfolios to improve their recruitment, selection and hiring processes. However, many employers were confused about what constitutes an ePortfolio. Their lack of familiarity was the main reason that ePortfolios are not used more widely. Without employer awareness and recognition of ePortfolios in the hiring process, students remained skeptical about their usefulness.

## **Assessing Critical Thinking and Written Communication Skills**

Researchers at Humber College developed a skills-assessment scorecard to evaluate students' critical-thinking and written-communication skills across several courses.

About 650 students, mainly from Humber's Schools of Business, Liberal Arts and Sciences, and Social and Community Services took part in the study. The scorecard was used in three types of courses: those in which these skills were explicitly taught as part of the course content; vocational courses that emphasized the importance of core skills, but which embedded them implicitly in the course content; and a dedicated course on critical thinking in which the material was taught as content knowledge.

The skills-assessment scorecard indicated that students were not making significant gains in critical-thinking and written-communication skills. However, students in courses where these skills were explicitly embedded in course content had higher levels of achievement than those in the other types of courses. The researchers concluded that these skills need to be taught consistently and over a longer period of time to see significant gains. They recommended that these types of courses should be positioned strategically throughout each program of study.

While the study found that the scorecard accurately captured students' critical-thinking and written-communication scores, there was some inconsistency in instructors' judgements of the scorecard's categories and components. Nearly three-quarters of faculty participants found the scorecard easy to use, but only 58% felt the information would be meaningful to students. The researchers concluded that more faculty training and repeated use of the scorecard over a longer period of time would improve its validity, relevance and understanding.

## **Developing an Online Learning Outcomes Assessment Strategy**

The University of Guelph was one of the first institutions in Canada to adopt statements identifying and defining the skills students are expected to learn in their programs — skills such as critical and creative thinking, literacy, global understanding, communication, and professional and ethical behaviour. The university then set out to develop a process to assess students' achievement of these skills and attributes.

Researchers worked with D2L, a provider of an online learning management system used to deliver learning resources to students. Together they developed an online rubric to capture and assess learning outcomes through the learning management system. They tested the

assessment tool in undergraduate courses within the bachelor of arts and sciences program and the bachelor of engineering program to measure changes in students' skills and abilities over time.

As a first step, they applied the rubric in a first-year course within the bachelor of arts and sciences program. The findings from this pilot demonstrated that the proportion of students who achieved satisfactory learning outcomes scores as they progressed through the assignments increased. In the next phase of the study, use of the assessment tool was expanded to approximately 50 courses in the bachelor of engineering program. The data derived from this test demonstrated the rubric's ability to associate and measure student achievement of learning outcomes at a course level.

The researchers concluded that the online learning outcomes assessment tool was able to effectively capture achievement data. It also strengthened faculty engagement in program assessment and pedagogy. However, some challenges did arise, including technological issues stemming from converting D2L's tool designed to capture individual grades in a course to one that captures broad outcomes in a program. Additionally, the volume of data on student achievement of outcomes raised issues related to access, security, storage and privacy.





# Conclusion: Making the Leap from Assessment to Teaching and Learning

Fiona Deller

Over a decade ago, in a previous life, I worked for the Council of Ministers of Education, Canada where I was involved in the creation of the Canadian Degree Qualifications Framework. That process, useful as it was at the time coming on the heels of the Bologna Process, was made up in large part of provincial and territorial government representatives wordsmithing institutional learning outcomes in an effort to come to a pan-Canadian agreement on the outcomes a student should attain in any given degree. If memory serves, we almost never discussed the assessment of learning outcomes, much less how the skills that made up these outcomes would be taught or learned.

We've come a long way since then to a growing recognition that non-disciplinary skills matter across all areas of postsecondary study; that the assessment of non-disciplinary skills, though difficult, is extremely important in the postsecondary context; and most importantly, that good assessment practices drive good teaching and learning practices. In his introduction to this book, HEQCO President Harvey Weingarten lays out the history of HEQCO's involvement in learning outcomes articulation and skills assessment, and our path to creating the Learning Outcomes Assessment Consortium (LOAC). This book is a culmination of what we have learned over the last five years from the first round of LOAC projects (referred to as LOAC I).

LOAC I was our way of pushing past learning-outcomes articulation into the world of skills assessment. We brought together a lot of smart, engaged, passionate people who were thinking deeply about how to assess non-disciplinary skills in their own institutional environments. In many

ways, we were throwing everything against the wall to see what would stick. We were experimenting: piloting assessment initiatives in a variety of classroom environments across different disciplines and institution types; testing theories of faculty engagement and methods of creating inter-rater reliability; thinking creatively about scaling assessment tools across disciplines (could historians use a rubric created for engineers?); parsing skills definitions (what exactly do we mean by “critical thinking”?); and validating different assessment tools without losing sight of the importance of not overtesting students. Some colleges and universities, faculty members and departments had been doing this work already. Our contribution was to bring those few early adopters together, provide funding to expand the projects, facilitate a conversation between investigators on the wicked problems they were encountering and the lessons they were learning, and then share that work with the rest of the sector. And, frankly, we think it was a success.

This book brings together the lessons from many of the LOAC I projects, introduces some of the second round of projects (LOAC II) now underway, and highlights other areas of interest in skills assessment. Some of the chapters in this book are aspirational, describing what might be achieved if we can get the assessment piece right. Others are practical, offering tips and steps for implementing good assessment practices. One of the great things about LOAC is that over the years we have had a healthy dose of aspiration, inspiration and practical learning experiences.

We learned a lot and we think we collectively pushed the envelope a bit. When we first started work on LOAC I, there was some real skepticism about measuring non-disciplinary skills. That skepticism seems to have diminished somewhat and we are left with the task of figuring out the *how*. Not only how to measure skills (we are getting better at that), but how to make it matter at the institutional and system level; how to engage faculty in a meaningful way; how to link assessment with teaching and learning practices; how to use assessment results to drive good public policy; how to effect a fairly significant system-level change in the way that we value postsecondary education. No small feat and there isn't one straightforward solution.

So, let's begin with what we can agree on.

## **Skills Matter**

We live and work in a world that is changing rapidly. All the authors agree that non-disciplinary skills acquisition matters now in a way that it did not a few decades ago. Many of the authors make the point that the changing nature of work and the labour market means that postsecondary education is being tasked with teaching skills to prepare students for the

work world in a way that is significantly different than it was even 10 years ago. In the introductory chapter, Steve Joordens points out that we live in a world where Google and Wikipedia are ubiquitous. The problem isn't getting information, it's navigating and assessing the massive amounts of information that is readily available at our fingertips.

In the chapter I co-authored with my colleagues, Sarah Brumwell and Lauren Hudak, on large-scale assessment practices, we provide a context for the importance of non-disciplinary skills acquisition to meet the needs of tomorrow's labour market, arguing that postsecondary students expect their education to hone their abilities and enhance their job prospects. "Employers expect postsecondary graduates to possess the skills needed to make positive, productive contributions to their organizations," we argue. "In the coming decades, Canadian workers will need a transferable set of skills if they and the country are to be economically competitive, if they are to succeed in their jobs, and if the country is to attract the industries and jobs of a modern, innovative economy."

In Chapter 7, Judene Pretti and Anne-Marie Fannon make the very helpful distinction between a "skills gap," an "experience gap" and a "skills-articulation gap." In their view, it's not that students lack the skills needed in the labour market, but that they lack the work experience necessary to hone those skills and the training in how to articulate those skills to employers. They frame work integrated learning (WIL) as a pedagogy for skills articulation. In a WIL environment, students explicitly understand the skills they are learning and learn to incorporate the language of those skills into the way they talk about their own abilities and experience, they argue.

In Chapter 4, Brenda Small and Emily Willson of Confederation College make the case for thinking holistically and creatively about the articulation and assessment of non-disciplinary skills in a learning environment that incorporates an Indigenous curriculum into all areas of study. They also emphasize the importance of this work across the sector. "As more institutions are moving in the direction of including mandatory Indigenous content as a part of their program requirements, it is critical that institutions have strategies in place to ensure that the implementation of Indigenous content, or ILO, is done so in a meaningful, respectful and sustainable way," they write.

And in the subsequent chapter, Elyse Watkins and Jess McKeown argue that students have an expectation that their postsecondary education will give them the non-disciplinary skills they need to enter the labour market.

While some of the authors spent time discussing the notion of a skills gap and others took the importance of non-disciplinary skills as a given, one point on which most authors focused attention was on the importance of institutional buy-in and, in particular, faculty engagement in building a culture of learning-outcomes assessment.

## Faculty Engagement is Important

The LOAC projects are all about formative assessment practices used in the classroom, so it's no surprise that most authors spent some time on the importance and practice of engaging faculty. Nancy Miyagi and Valerie Scovill of George Brown College offer a practical guide to linking the assessment of learning outcomes to classroom teaching practices. In particular, the authors focus on how the *writing* of learning outcomes creates a foundation for the assessment and ultimately the teaching of the competencies that support those learning outcomes.

Jill Scott, Brian Frank and Natalie Simper of Queen's University offer a series of lessons learned over the course of their ambitious four-year LOAC I project and explain the driving philosophy behind their LOAC II project. The lessons learned from the first stage (focused on validating multiple learning outcomes assessment tools in a series of pilot projects), led the Queen's team to focus in the next phase on faculty engagement as an essential part of building an assessment culture at their institution. Their LOAC II project, therefore, is focused on puzzling out how to engage faculty across an institution with the goal of scaling up their assessment work to the entire university. They argue that in order to create sustainable change in assessment and teaching practices in the institution, faculty need to be engaged.

"If assessment is to inform course and program improvement, it should be core to the educational mandate of an institution, rather than a bolt-on additional task," they write. "Iteration and improvement are core elements of a long-term assessment project, and both data and evaluation of the process itself should inform improvements to goals, communication and assessment." Not only can the very act of assessment change teaching practices, they continue, but small changes like providing useful, timely data to faculty, administrators and students can make a big difference in how assessment is perceived.

Confederation's Brenda Small and Emily Willson describe their project of creating a framework for Indigenous learning outcomes, something that was made particularly difficult as it had not been attempted before. Small and Willson's project sought to build on the institutional commitment of Confederation College to be a leader in Indigenous learning and in implementing Indigenous content across the college curriculum.

They also emphasize the importance of engaging faculty in the process to create meaningful and sustainable culture change in an institution. Small and Willson describe the importance of institutional leadership in the implementation of a learning outcomes framework and the challenges (and opportunities) that occur when leadership changes. The authors argue that "the relationship-building process around the creation of these learning outcomes was important so that Indigenous community perspectives held

by council members would be integrated throughout the process as the model emerged.”

In the only chapter that touches on summative assessment (large-scale, low-stakes assessment in this case), Sarah Brumwell, Lauren Hudak and I argue that, while measurement can take many forms, large-scale skills assessments can be particularly effective in helping us understand students’ learning gain at the system and institutional levels. “In testing students’ skill level when they enter postsecondary and again when they leave, we should get a pretty good idea of whether their education contributed to an increase in their skill level. This is a relatively straightforward proposition,” we argue.

And this leads us to the third area of agreement. The authors found consensus around the idea that the heart of skills assessment is student learning. In keeping with this central tenet, many authors emphasized students and the question of how best to engage and teach skills to students.

## **Students are at the Centre**

Elyse Watkins and Jess McKeown offer an interesting perspective as both researchers in the area of skills assessment at HEQCO and as recent graduates from postsecondary education. While many of the other chapters focus on the institutional or faculty perspective to support skills assessment, Watkins and McKeown focus on three areas they believe to be important to students: the types of skills that students are expected to have; the relationship between assessment and student learning; and the importance of skills articulation for students. They argue that with the changing nature of the workforce, students need skills that help them navigate change and build resilience, and that don’t assume a static or linear relationship between the discipline studied and career options. In fact, the authors say, “these skills should not be an indirect benefit of [a student’s] education, but an explicit one.”

Further, in thinking deeply about which skills should be explicitly taught in postsecondary, the authors argue that college and university can only be responsible for those skills required for entry level positions. The labour market itself needs to take on the responsibility for continued skills development and enhancement. In regard to the relationship between skills assessment and teaching, the authors argue that currently those formative assignments and assessments that are explicitly meant to teach skills (such as handing in an early draft of a paper or a self-reflection exercise) often carry little weight in regard to a student’s grade, and are therefore not given much value by students who are busy trying to juggle various demands on their time.

Judene Pretti and Anne-Marie Fannon argue that skills acquisition must actively involve the student in the process because if students don't know they are learning skills and cannot articulate the skills they have learned, then those skills are not being optimized. However, when students are actively involved in their own skills learning, the authors argue, not only do students gain the ability to articulate their own skill level through work integrated learning, but in the longer term "supporting students in skills articulation will foster a lifelong skill...Students will continue to see their life and work from the perspective of what they are learning, how they are developing and how they can transfer that learning from one context to the next."

Steve Joordens directly links assessment with teaching and student learning by showing that peer assessment is a powerful tool for learning skills as well as providing assessment results. Joordens notes that unlike information, "skills cannot be acquired via a single powerful experience," such as a dynamic lecture or an interesting reading. "Instead, procedural memories build up via repeated practice of the skills, preferably in a structured environment that provides as much feedback as possible." This makes teaching skills harder, especially for instructors who have mastered the art of delivering a dynamic lecture or providing students with an interesting reading because it requires instructors to learn new skills as well.

Joordens further argues: "The process used to develop skills could be combined with the process used to measure them in a synergistic manner that actually deepens the learning experience even further." He calls this "assessment *as* learning."

So, what's next for LOAC? All roads lead to the teaching and learning of skills.

## **The Next Step: How Do We Teach Skills?**

In the chapter on large-scale assessment, we argue that educational quality and skills are intertwined and the importance of skills assessment cannot be underestimated. However, assessment is simply a tool. And like all tools, it can be well or poorly constructed, and it can be used for purposes both good and ill.

Most of the projects in this book have already made the leap from assessment to teaching and learning. In fact, the concepts of teaching and learning are intertwined with the best assessment practices. Student learning is, after all, why we assess. The best assessment tools not only provide a snapshot of student learning, they also serve to drive improvement in the teaching of skills, and in some cases act as teaching and learning tools along the way.

In other words, assessment is a bridge between the articulation of learning outcomes (and their related skills) and the teaching and learning of skills. So, what does that mean for the future work of the Learning Outcomes Assessment Consortium? After the last half decade of work in this area, we are struck by several outstanding questions: How do we take a culture of assessment from a small number of programs, faculties, and departments to the institution or even system level? In other words, how do we take what we have learned from a small but powerful number of committed faculty members and administrators and apply that to all postsecondary institutions so that every student in Ontario has the opportunity to know what skills they are learning and how they have learned them? And, on a related note, how do we successfully extend that bridge, so that good assessment practices start to inform good teaching and learning practices? What do we, as a community, have to do, think about, pilot and experiment with to make that happen?

Is Steve Joordens right that teaching non-disciplinary skills is significantly different than teaching disciplinary content? Are Queen's, Confederation and George Brown on the right path in the effort and time they are taking in trying to engage faculty members in this culture shift? Is there a role for large-scale, low-stakes assessment in assessing the skills that students learn in postsecondary education, and is there a way to do it that engages and informs students in the process? Are Judene Pretti and Anne-Marie Fannon, and Elyse Watkins and Jess McKeown right that part of the equation is helping students articulate the skills they are already attaining? And, finally, what are the best, most effective practices for teaching non-disciplinary skills? These are some of the questions we hope to answer with LOAC II.

As Watkins and McKeown articulately note: "At the end of the day, the skills conversation does not begin and end with higher education or getting a job. This conversation paves the way for a lifelong journey that educators and employers can help navigate. We hope this movement toward improving skills development, assessment and articulation will nurture graduates who feel confident in the outcomes of their education, and who are prepared to meet the tasks of today and face challenges we cannot yet anticipate."

On a final note, I would like to thank the contributors to this book for their thoughtful and informative analyses and for their ongoing work in the area of skills assessment. We hope you find it as instructive and valuable as we have.

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## **Driving Academic Quality: Lessons from Ontario's Skills Assessment Projects**

Edited by Fiona Deller, Jackie Pichette and Elyse Watkins

When asked about the qualities they seek in new hires, employers often list skills such as critical thinking, communication, teamwork and collaboration. Content-specific knowledge rarely gets top billing. Yet, when it comes to assessing academic performance, colleges and universities focus almost exclusively on content. Why the disconnect? Governments, employers and students are demanding change. They are increasingly looking to postsecondary institutions to provide the skills needed to succeed in the workplace and in life. Since 2012, the Higher Education Quality Council of Ontario has partnered with a group of researchers to develop new ways to identify and measure the essential skills that students ought to learn. *Driving Academic Quality: Lesson from Ontario's Skills Assessment Projects* presents a collection of informative essays by educators, administrators and researchers who were involved in the effort and who are striving to help students succeed.



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