

# Learning outcomes and program mapping: Tools for transparent assessment

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**Abstract:** Program mapping (PM) provides a method to examine curriculum alignment, the assessment of learning outcomes, and to determine if program goals are aligned to learning activities and assessments. At a higher education institution in Western Canada, the Centre for Teaching and Educational Technologies (CTET) provides support to academic units using PM techniques to determine how learning outcomes are being implemented. The School of Education and Technology partnered with CTET to examine how to implement learning outcomes in a meaningful way for students and faculty and how to utilize program mapping as a means to evaluate success. To inform this work, a meta-synthesis research project was undertaken. Four main themes were identified in the literature: (1) faculty/student engagement; (2) organizational culture; (3) constraints, and (4) intentional process. Examples of a PM approach are shared and the implications for students and faculty of moving to outcomes-based learning approaches are discussed.

## Introduction

Program mapping (PM) can be traced back to the work of Fenwick English (1978) (as cited in Spencer, Riddle & Knewstubb, 2012) who examined curriculum in three focal categories; declared, taught, and learned. Program maps draw explicit connections between learning outcomes, learning activities, and assessments (Drake & Burns, 2004). In this paper, we will explore a program mapping approach to align program learning outcomes to course activities and assessment at a university in Western Canada. As the use of learning outcomes becomes more prevalent in higher education as a way to move towards greater transparency in assessment (Allan, 1996; Havnes & Prøitz, 2016; Hussey & Patrick Smith, 2010), it is crucial to examine the opportunities and challenges associated with the implementation of learning outcomes because they signify what is formally assessed and accredited to the student and shift the emphasis from teaching process to the celebration of student learning (Allan, 1996).

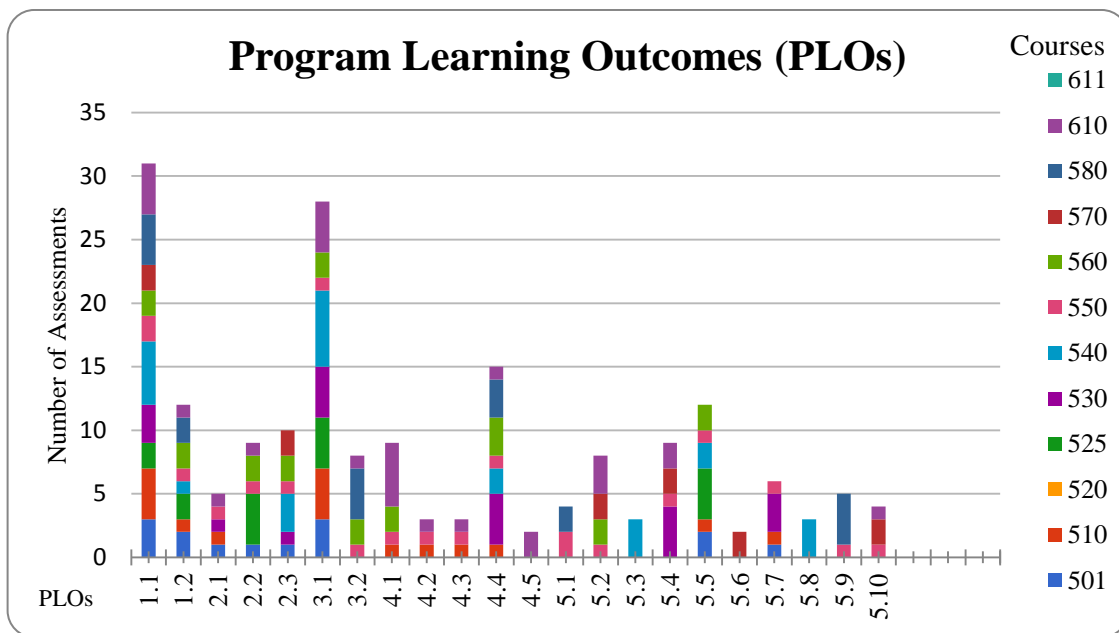
The university at which this secondary research was conducted implemented competency-based learning over 20 years ago; more recently, there has been a move towards adopting greater transparency in assessment as embodied in the institution's learning, teaching, and research model (LTRM). The university delivers predominantly graduate level programs to working professionals, with degrees delivered in on-campus, blended and fully online formats. The university's learning, teaching, and research model (*Royal Roads University Learning, Teaching and Research Model (LTRM)*, 2013: 2018) places emphasis on constructivist learning environments and the development of supportive learning communities built through collaboration with peers. To support the enactment of the LTRM (Table 1), a program mapping approach has recently been adopted for two distinct purposes; 1) to identify gaps,

strengths, and weaknesses as part of program final reviews, and 2) to provide a snapshot of the current state of programs for the purposes of faculty retreats to aid purposeful discussions for program improvements.

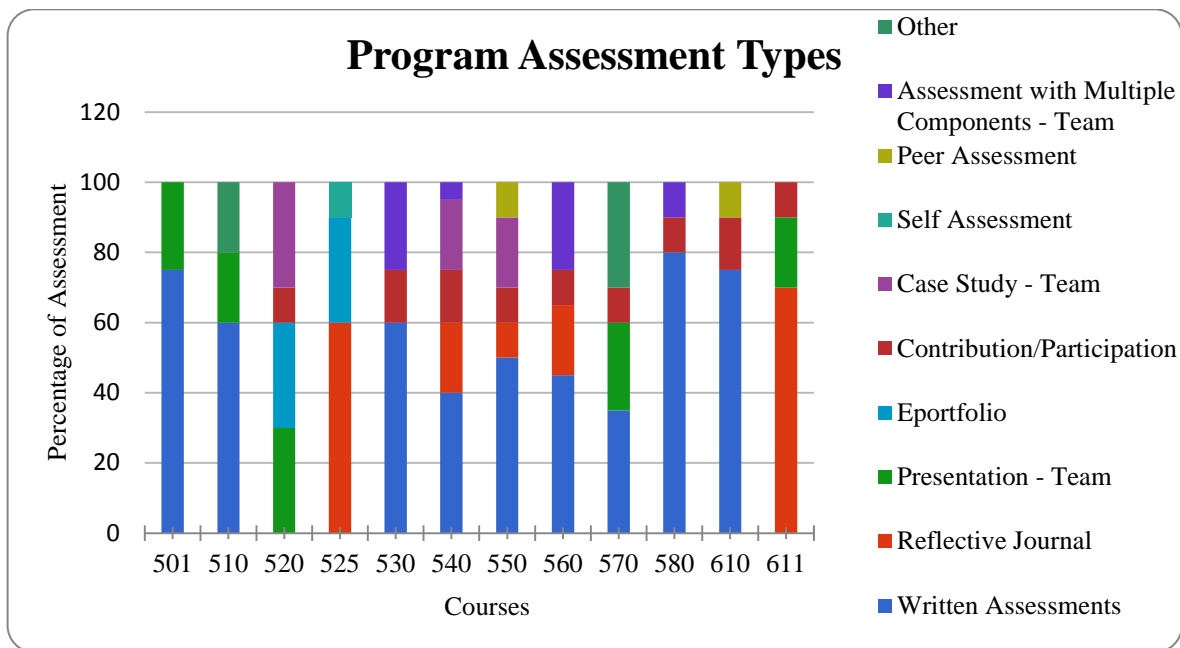
Key Categories	Elements
Applied and Authentic	Interdisciplinary & transdisciplinary Experiential & participatory Flexible & individualized Outcomes-based curricula & assessment Open practice
Caring and Community Based	Inclusive & diverse Learning community Supportive Teamwork Co-creation Sense of place/virtual space
Transformational	Social innovation, change making Reconciliation Real world impact Reflective practice

**Table 1:** Key Categories, Learning, Teaching and Research Model, Royal Roads University

The Centre for Teaching and Educational Technologies (CTET) is leading the program mapping exercise to move toward greater intentionality and transparency of assessment by examining the following: (1) assessment of learning outcomes throughout the journey of the program; (2) assessment types; (3) use of educational technologies for the purposes of assessment; (4) use of assessment rubrics; and (5) integration of team-based learning in program assessments (team-based learning is one of the core elements of the LTRM). PM is viewed as a way to capture the learning journey – an opportunity to identify the state of the curriculum as well as the teaching process itself, and determine areas for adjustment and improvement (Bath, Smith, Stein, & Swann, 2009, p. 324). Examples of the initial data results of PM are represented in Figures 1 and 2. Figure 1 documents where and how frequently program learning outcomes are assessed, Figure 2 documents the types of assessment used across the program journey.



**Figure 1:** Assessment of Learning Outcomes



**Figure 2:** Types of Assessment Used

Given the growth of the university’s programs, and the expansion of the PM approach, CTET and the School of Education and Technology were interested in examining the literature on PM and program learning outcomes to determine the benefits and opportunities and further refine the PM process. Currently, the PM process is guided by the following four questions: (1) What are the program learning outcomes? (2) What is included in teaching process and assessments? (3) What knowledge and skills are acquired? and (4) Are these three categories aligned?

## Methodology

Using a qualitative meta-synthesis approach (Erwin, Brotherson & Summers, 2011; Jensen & Allen, 1996), the following 18 search terms were used to identify relevant articles: program maps; programme maps; program mapping; programme mapping; curriculum mapping; curriculum maps; outcomes mapping; learning objectives; learning outcomes; constructive alignment; quality of learning; measure of quality; quality alignment; competency-based learning; assessment of learning; open education; open practice; open principles. These terms were searched using ERIC @ EBscohost; Google Scholar; Academic Search Complete @Ebscohost; Taylor and Francis Online; and the RRU Library Discovery tool databases. This resulted in a set of 33 articles for consideration which were examined using the following lenses: (1) student impact, feedback, and perceptions of learning outcomes; (2) constructive alignment as a measure of quality or higher-level learning as a measure as it relates to quality alignment; (3) tensions in higher education space about learning outcomes; (4) program mapping and learning outcomes: connection, history and intention.

Each researcher conducted an initial thematic analysis with themes emerging from the data. Two researchers reviewed their initial analysis resulting in 15 initial themes. The third researcher, who has significantly more depth in the field, reviewed the data through the lens of the root of program mapping – declared; taught; learned. The three researchers came together for the final round of analysis, which resulted in 12 emergent themes, which were refined into seven sub-themes and four overarching themes.

## **Findings**

The following four themes emerged from an initial analysis of the data: (1) Faculty/Student engagement (2) Organizational culture; (3) Constraints, and (4) Intentional process. These themes are discussed briefly below.

### **Faculty/Student Engagement**

The focus on the use of program mapping as a way for faculty to reflect on the teaching and the learning experiences they created for their students was prevalent in the literature reviewed. The use of explicit program learning outcomes as a way to foster deep learning, both on the part of faculty about their teaching and the complexity of the teaching and learning relationship, as well as on the part of students was evident in the literature. The use of learning outcomes in enhancing student agency and engagement in their learning was frequently discussed.

### **Organization Culture**

The role of institutional culture, specifically the impact of program learning outcomes and program mapping in contributing to an institutional learning culture and/or the need for one was a common theme in the research reviewed. Program learning outcomes were also often seen as embodying the institutional culture and goals. Several studies provided examples of learning outcomes requiring and contributing to faculty participation and engagement and the development of a common language through which to discuss the student learning experience. Assessment and alignment were common threads through the literature reviewed with the creation and use of frameworks and processes being identified as a key component impacting quality of the implementation of program learning outcomes in various settings.

### **Constraints**

Many of the articles reviewed cited workload and timing to be key constraints to the ability to sustainably implement program learning outcomes within a program mapping framework. Costs and resources associated with implementing this approach on a larger scale as well as the training and support required for faculty and staff were also discussed as having significant impact on quality and scalability. Knowledge of assessment was also consistently identified as being a necessary component for smooth implementation.

### **Intentional Process**

A focus on process, i.e. teaching process, cognitive process, or the program mapping process itself, was a key theme across much of the literature reviewed. Various process methods used included personal reflection, frameworks, critical review, and documentation. Central to all these methods was the alignment/misalignment of the learning outcomes with levels of learning and/or the student experience, goals, and intentions.

## **Conclusions**

This secondary research will inform internal process improvements within CTET as instructional designers work with programs and faculty members to revise and redesign their courses and programs. There is a move in the university to align the blended and face-to-face courses with their fully online delivery counterparts. As a result, this meta-synthesis will help CTET instructional designers develop a deeper understanding of the program mapping (PM) process and improve their design practices when working with faculty toward alignment of learning outcomes, activities, and assessments across delivery modes. Further, a similar PM process is in use for online, blended, and face to face courses, i.e. examination of the course outline, assessment matrix, assignment descriptions, and the Moodle course sites, including all courses in the program. CTET instructional designers will need to examine if the

PM process is effective for courses delivered face to face since the Moodle course shell may not contain all learning materials.

CTET is currently leading the PM initiative however; the university is examining how faculty could take the lead on implementing PM as a way to increase faculty engagement in program design, intentionality, and transparency of assessment. In addition, the university is considering expanding items captured in the PM process to include; examination of topics, readings, themes, and identification of where learning outcomes are being introduced, reinforced, and mastered. To support the further integration of PM, the university is exploring the development of a PM tool to automate the next generation of program mapping and integrate it with the student information system.

From this secondary research, we can note that while PM processes are useful for examining learning outcomes, curriculum alignment, teaching processes, and assessments, further research is needed to develop PM processes to better understand and measure what students learn, experience, and acquire. Additional research on the impact of continuing to adopt and support a program mapping and learning outcomes driven approach, with a primarily adult audience in an online environment, would help to inform this work. Furthermore, research on the impact of continuing to support a learning outcomes approach, with a primarily adult audience in an online environment in an international and Indigenous context, would inform PM processes that can be applied in broader learning contexts.

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