A Model to Build Capacity through a Multi-Program Curriculum Review Process

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Abstract
Curriculum reviews are becoming more prevalent in higher educational institutions as a means to address quality assurance and improve program offerings. However, the review process can be structured so that instructors experience professional learning benefits as they work with program-level learning outcomes, map their courses, and analyze curriculum data with their colleagues. This paper shares an approach that was used to conduct a 1-year, complex, multi-program curriculum review in a faculty’s graduate unit. This approach enhanced the instructors’ continuing growth and their ability to carry out a curriculum review. To illustrate the dynamic nature of the curriculum review process,
Keywords: collaboration, continuing professional learning, curriculum mapping, curriculum review, CR, distributed leadership, evidence-informed, graduate attributes, higher education, professional learning, quality assurance

Introduction

With increased demand for accountability and quality assurance, many higher educational institutions are moving toward a review of their current programs. Through the curriculum review (CR) process, program-level learning outcomes and/or graduate attributes are mapped to data relating to course learning outcomes, instructional activities, and student assessments. Additional data may be included in the process to provide greater evidence of the strength of the program, and identify gaps and areas of enhancement. While the primary goal of a CR is to allow for evidence-informed decisions that enrich the learning experiences of students, there can be additional positive outcomes. By thoughtfully and deliberately structuring the CR process in order to create learning opportunities for instructors, a tremendous opportunity for continued growth and understanding of curriculum-related issues can be created.

The purpose of this paper is twofold. First, to illustrate the dynamic nature of the CR process, a three-level and three-phase model is presented. The model provides visual representation of...
the process and the nature of the structure and leadership used so as to enhance instructors’ continued professional learning about curriculum and teaching through participation in a complex CR. Second, the paper outlines how the integrated three-level model was used to conduct a one-year, 22-program CR in a faculty’s graduate unit. Following reflection on the experience and the implementation of the model, four key recommendations that foster an instructor’s professional learning practice through a CR process have been identified and discussed.

**Curriculum Reviews in Higher Education**

CR in higher education can be envisioned and conducted in different ways that relate to the purpose of the review (Willett, 2008). In this paper, CR is defined as an

academic staff-led critical examination of each undergraduate and course-based master’s program for the purpose of optimizing the learning outcomes of that program.

Curriculum reviews are a formative component of the overall quality assurance strategy and are focused on the continuing development of students’ learning experiences. (University of Calgary, 2015, p. 2)

There are typically two foci for a CR:

1. Enhancing the student learning experience, and
2. Addressing quality assurance concerns.

Higher educational institutions are accountable to numerous stakeholders, including students, and there is an increasing need to demonstrate how programs are current, salient, and meeting acceptable standards of quality. While quality assurance was a critical part of this review, we chose a more collaborative, continuous-improvement approach that aligned with institutional values and provided instructors with a vehicle to enhance both their students’ learning and their own.

A robust CR draws upon data collected from a number of different sources, such as student data from surveys or focus groups, instructor feedback, enrollment and completion statistics, and curriculum mapping data. Mapping is an important part of the review process because it documents expectations for student learning at the program and course levels, facilitation of student learning by instructors, and assessment of learning (Veltri, Webb, Matveev, & Zapatero, 2011; Zelenitsky et al., 2014). Curriculum mapping can also satisfy a variety of other purposes, such as making implicit aspects of the curriculum explicit, conveying information about the curriculum to students, offering evidence of program quality to stakeholders, providing data to use for accreditation, and ensuring that the curriculum is structured in a strategic, thoughtful way that enhances student learning (University of Calgary, 2015).
Various approaches to curriculum mapping have been described by researchers (e.g., Stefanidis & Fitzgerald, 2010; Veltri et al., 2011). A typical approach to curriculum mapping involves instructors aligning each course outcome with one or more of the program-level learning outcomes and/or graduate attributes that have been articulated for that program. Through visual representation of the mapping data, different aspects of the curriculum and their interrelationships are illustrated (Harden, 2001). However, there is no standard method of conducting curriculum mapping, and other aspects of curriculum can be mapped as well (Oliver, Ferns, Whelan, & Lilly, 2010; Spencer, Riddle, & Knewstubb, 2012). For example, Veltri et al. (2011) investigated the intended curriculum (learning outcomes), designed curriculum (core courses plus two or three program-specific electives), communicated curriculum (analyzing syllabi to see what is conveyed to students), and enacted curriculum (the extent to which program-level learning outcomes were emphasized in each course). As noted by Willett (2008), in medical curriculum the mapping process may involve articulating and aligning a wide variety of factors relating to curriculum, such as logistics (location, dates, times, instructors), student assessments, learning experiences, learning outcomes, and content. When conceptualizing the mapping process, decisions need to be made about what to map, so that the resulting data are informative in addressing critical questions about the curriculum.

The data that are gathered from mapping a curriculum are typically presented in a diagrammatic format, such as a matrix, chart, or graph (Harden, 2001; Wang, 2015). Examining curriculum mapping data that are presented visually and in aggregate form can result in benefits that are not realized by a single instructor looking at his or her course in isolation, and mapping is critical to understanding the curriculum at a program level. Mapping data, then, inform faculty discussions about strengths, gaps, general patterns and trends, links between different courses, and other aspects of the curriculum, which can lead instructors to new insights about a curriculum (Harden, 2001; Holycross, 2006; Robley, Whittle, & Murdoch-Eaton, 2005; Sumsion & Goodfellow, 2004).

Previous studies show that faculty members who participated in curriculum mapping have experienced a number of learning benefits. Zelenitsky et al. (2014) noted that the process of curriculum mapping fostered a shared terminology for faculty members to discuss curricular issues. In other studies, it has been found that instructors who have worked through the mapping process also engaged in reflection about their teaching and identified aspects of their course or their approach to teaching that led them to consider changing (Oliver et al., 2010; Spencer et al., 2012; Sumsion & Goodfellow, 2004). Uchiyama and Radin (2009) reported that the faculty members who participated in curriculum mapping benefitted from increased collegiality and collaboration. Oliver et al. (2010) suggested that involvement in the process of mapping a curriculum was a catalyst for increased faculty engagement in teaching and learning issues.
Context of the Review

In 2013, the University of Calgary launched the implementation of the Academic Quality Assurance Handbook: Curriculum Reviews (University of Calgary, 2015). The document, which has since been revised, emphasized that quality improvement occurs “through a focus on setting goals, measuring performance, and periodically re-evaluating the core mission at multiple levels of the University academic enterprise” (University of Calgary, 2015, p. 2). Integral to this work is the CR process that is designed with a specific focus on the quality of the curriculum offered in each degree program. As outlined in the handbook (2015),

Curriculum Reviews are a formative component of the overall quality assurance strategy and are focused on the continuing development of students’ learning experiences. This curriculum review process will generate an action plan for improving the program, and the impact of the review will be determined by evidence of implementation success. (p. 2)

In 2014–2015, the University of Calgary Werklund School of Education engaged in the assessment of 22 master’s-level programs through a CR process. Rather than stagger the reviews, the faculty’s administrative team decided to examine all the programs during the same academic year for efficiency and simultaneously to offer workshops and support to all groups. Additionally, they hoped that a common CR experience would promote collegiality, sharing of ideas, and discussions of curricular issues.

The CR lead team was composed of senior administrators within the faculty (e.g., associate deans of the graduate program and teaching and learning programs, and the director of professional programs). The university’s curriculum-development specialist played a critical role in guiding the process and ensuring expectations were met for a robust evidence-informed CR. The team was responsible for leading and structuring the review process and for the creation of the final report. The associate dean of the graduate unit and the director of professional programs are responsible for the implementation of the five-year plan that was generated as a result of the CR.

Methodology of the Curriculum Review

A multi-phase process was used for collecting and analyzing CR data. In phase one, conceptualization, the CR lead team designed the process of conducting a 22-program review and a communication plan to accompany it. The organizational structure was planned, and standardized templates were developed and shared.

During the second phase, the academic coordinator for each program led a mapping exercise with his or her instructional team. Instructors then used the template that was provided to map their course outcomes to program-level learning outcomes (PLOs). They also identified how course outcomes were assessed and the teaching and learning activities used to foster
student learning of the course outcomes. Instructors were asked to map courses as they were most recently taught, not as they wanted the courses to look in future. Thus, mapping data reflected the current curriculum and not the desired curriculum.

Additional data were collected through surveys of alumni and/or current students. It asked for their perceptions of the following:

- program-level learning outcome alignment with assignments,
- sequence of courses in the program,
- depth and coverage of topics in the program,
- gaps in the program, and
- aspects of the program that could be improved.

Working with their team of instructors, the academic coordinators analyzed the curriculum mapping data, making recommendations for action. The coordinators were responsible for documenting the analysis and action plan in their program areas in a report that was submitted to the CR lead team.

In phase three the CR team reviewed and analyzed the data from the 22 program reports. A number of tables and charts were created to consolidate the data. In addition, data from the exit surveys from the previous spring and fall were included in the report to provide insights into the overall graduate program. Institutional data, including enrolment numbers, attrition, retention, fail/withdrawal statistics, completion rates and times, and relevant survey results were also analyzed. With the data pulled together, all faculty members and sessional instructors who taught in the various graduate programs received a draft report of the CR in advance of a consultation meeting. In facilitated large- and small-group discussions, participants analyzed different sources of data and shared their perspectives on strengths and gaps in graduate programs and responded to the CR guiding questions. Findings and recommendations from the consultation were compiled and included in the final CR report.

Three-Level Approach to Curriculum Review

A complex CR necessitated a well-structured process. We constructed a model that used a three-level approach to CR: macro-, meso-, and micro-levels. An interrelationship existed among the three levels, yet each played a distinct role in the CR process. The macro-level pertained to the faculty. At this level larger decisions were made that affected all programs and influenced both the meso- and micro-levels. For example, at the macro level, the review team wrote and revised graduate attributes, set a timeline for the CR process, formulated guiding questions, and selected the tool and the scale for mapping course outcomes to PLOs (e.g., introductory, competent, and advanced). Program review was situated at the meso-level, which was critical to a rigorous review process: at the meso-level, the macro-level was
enacted, and the micro-level feedback was received. The micro-level consisted of all instructors involved in CR. Instructors received guidance from both the macro- and meso-levels, but also influenced them by contributing their own course data, which in turn had an impact on people's understanding of the program as a whole.

In the following sections, we describe the flow of the CR process along with three phases of the work: conceptualizing, mapping, and informing for action. During the first phase—conceptualizing—the CR leads and academic coordinators defined the process and set up structures to guide the review. The second phase involved data collection. Although data were collected from various sources, in this paper we concentrate on curriculum mapping since it was one of the two common sources of data for all 22 CRs. The third phase, informing for action, involved data analysis and creating an action plan for program improvements. Figure 1 provides a model to illustrate the relationship between the three levels (macro, meso, and micro) that structured the process and the three phases used in conducting the CR.

Figure 1:
Three-Phase and Three-Level Approach to Curriculum Review
Conceptualizing Phase

From the outset, the curriculum lead team used the *Academic Quality Assurance Handbook* (University of Calgary, 2015) as a basis to design a CR process for reviewing 22 programs. Three key decisions had to be made in the conceptualization phase about

- adopting of graduate attributes,
- writing questions to guide the review, and
- standardizing of processes and reporting of the review.

First, when starting to plan the review, the CR lead team identified and adapted statements from the *Ministerial Statement on Quality Assurance of Degree Education in Canada* (Council of Ministers of Education, Canada, 2007). Nine statements were adapted as graduate attributes for the 22 programs under review. The expectations of degree-level standards outlined in the document became the foundation of the faculty’s list of graduate attributes (Werklund School of Education, 2015, p. 8):

1. Foster a thorough understanding of a substantial body of knowledge at the forefront of the academic discipline.
2. Develop knowledge of educational research methodologies and research practices.
3. Engage in an interdisciplinary community of scholars.
4. Acquire interdisciplinary academic competencies.
5. Recognize the contributions of other interpretations, methods, and disciplines.
6. Engage in the application of knowledge.
7. Develop communication for the mobilization of knowledge.
8. Foster an increased awareness of the limits of knowledge.
9. Foster professional capacity and autonomy.

Second, overarching questions were developed to guide CR processes and ensure that each of the 22 program reviews examined common issues. Questions were designed to investigate the extent to which PLOs were reflected in the courses and the learning tasks, scope and sequence of the courses within the program, overlaps and gaps in learning outcomes, breadth and depth of student knowledge of the field of study, and the types of signature pedagogies used in the programs.

Third, the CR lead team standardized aspects of the process to support review teams, while also providing flexibility to customize their review as needed. For example, the lead team outlined the types of data to collect, created a student survey and course-mapping templates, and supplied review teams with a template for their report. The CR lead team defined the scale that all instructors used when mapping their courses’ outcomes to PLOs. Validity of the
mapping data was increased by mapping an example course with academic coordinators and facilitating a discussion on the terminology and meaning of the scale. Working through the mapping activities provided coordinators with an example of what they would be doing with their instructional teams. The modelling of the activity and the facilitated discussion established a framework that coordinators could use when working with their instructors.

**Mapping Phase**

At the micro-level, each instructor was asked to map his or her own courses. As a necessary first step, instructors needed to have a sound understanding of why the task was important and how the mapping process was to be completed. Course outcomes were mapped to PLOs, and student assessments and teaching and learning activities were identified for each course outcome. The review process afforded instructors the opportunity to examine their course outcomes to ensure they were salient and well written, making revisions as needed. Once course outcomes were clearly articulated, the instructor examined each one individually to identify which PLOs they were aligned with and to what degree (introductory, competent, or advanced).

At the meso-level, the mapping phase involved collating the data for each course into charts and graphs that represented aggregate program-level data. For example, groups typically constructed a graph of their PLOs showing emphasis and depth across the program. Many also created charts to present data on teaching and learning activities and student assessments, in order to convey the diversity and placement of learning activities and student assessments across a program. The charts and graphs presented the mapping data in different ways to facilitate interpretation and discussion of the program from different perspectives.

**Informing for Action Phase**

During this phase the data were analyzed in order to generate an action plan to guide the implementation of changes that would enhance the student learning experience. At the micro-level, mapping their courses gave instructors the opportunity to pause and reflect, evaluating the emphasis of the course and its effectiveness. For example, instructors considered what their intended learning outcomes were, how students were learning them, and how that learning was assessed. Instructors were able to see the alignment, or lack of it, for each course outcome in a visual way. Points of misalignment were occasionally addressed immediately.

At the meso-level, aggregate curriculum data provided robust data sets to better understand current emphases, pedagogical approaches, and student assessment strategies across the program as a whole. The analysis led to further action because it created a baseline understanding of the current curriculum and fostered discussion about changes to the program.
First, aggregating the curriculum-mapping data generated a snapshot of each program, often for the first time, which was used as a baseline. Documenting current aspects of a program was a critical part of quality assurance. It provided evidence to ensure that students have the opportunity to learn what is important in a program (Spencer et al., 2012; Willett, 2008).

Second, discussions based on data analysis led to revisions aimed at improving student learning for each of the programs undergoing a review (Sumson & Godfellow, 2004). Many of the revisions were curricular in nature. For example, instructional teams examined the emphasis and depth of PLOs, addressing gaps and redundancies. They also looked at pedagogical approaches and variety in teaching and learning activities and assignments. However, the teams also made recommendations in areas other than curriculum, including class scheduling, policy, staffing, academic support, faculty professional learning, and marketing.

At the macro-level, the 22 program reports and other data sources fed into the development of the overall graduate program action plan for the faculty. The action plan became the roadmap for the faculty to enhance the curriculum over the next five years. A communication strategy accompanied the action plan as a means of keeping the CR active with the stakeholders. For example, meetings with academic coordinators to follow up on the implementation of their action plans provided a means to monitor progress, but also to identify resources and supports to assist with the implementation. At the faculty level, sharing progress made with students, staff, and instructors kept people informed about how the work was moving forward and how the review had helped to inform program decisions.

It was no simple task to implement a multi-program CR. As noted in Figure 1, the flow in phases and levels provided a structure for the review and guidance for the data-collection process. In turn, data collected at the micro-level had an impact on meso- and macro-level data analysis and findings. It is at the macro-level that senior program administrators will be responsible for implementing structures and processes to support the action plan. Also, they will be responsible for gathering the data to evaluate their five-year action plan.

**Professional Learning in a Complex Curriculum Review**

Not only did the CR result in program improvements that enhanced the student learning experience but also it actively fostered professional learning experiences for instructors who participated in the process. Each of the phases provided opportunities for learning and growth in different ways.

In the conceptualization phase, the academic coordinators and their teams used a collaborative process to develop program-level learning outcomes that aligned with graduate attributes and were unique to their program. Writing and revising the PLOs fostered discussion about the intent of the program, fostered discussion about the intent of the program, future
directions, increased knowledge of the graduate attributes and faculty-level requirements, and prompted teams to articulate tacit aspects of the programs. Through discussion some participants realized there were subtle differences in their understanding of the curriculum, and there was illumination of new perspectives of it. The review teams also examined the guiding questions set by the CR lead team to identify specific lines of inquiry and add guiding questions for them. Through this process they learned about strategic priorities at the faculty level, such as signature pedagogies.

Mentoring played a particularly important role at the meso-level. The CR lead team provided ongoing information sessions and mentoring throughout the CR process. The mentoring process helped coordinators to develop their knowledge and ability to lead a CR with their instructional teams. It also developed their confidence in interpreting the mapping data and identifying action items for next steps in program refinement.

The mapping phase presented rich opportunities for continuing professional learning. Using a template to align course outcomes with PLOs was a new process for most instructors. Thus, they learned a structure or technique to ensure the constructive alignment (Biggs & Tang, 2007) of their course. Working through the mapping process prompted instructors to consider questions such as:

- What are the strengths of the course in terms of its alignment and contributions to PLOs?
- Do I have the right course outcomes and are they clearly written?
- Are the teaching and learning activities helpful in fostering student understanding?
- How well do the student assessment methods align with intended learning outcomes?

Careful consideration of such questions led instructors to think deeply about course design and helped inform the action plan for improving the program. Similar findings were reported in the literature by Sumison and Goodfellow (2004). Zelenitsky et al. (2014) found that curriculum mapping helped instructors evaluate their courses and make changes to content, pedagogy, and teaching and learning activities.

Course mapping also reinforced the focus of PLOs and encouraged instructors to think about how their courses fit into the larger context of the program. This program-level perspective provided a different way of thinking about a course: rather than a discrete piece of learning, instructors were prompted to look at their courses as part of a complete educational experience and to think about how they complemented and built on other courses in the program.
with an eye to enhancing student learning. As a result some instructors made changes to their courses to better align with PLOs or better scaffold\(^1\) student learning through the program.

Instructors who completed course mapping in a group setting experienced additional professional learning benefits during the mapping phase. Informal discussion during the activity allowed them to check with one another about how they were capturing course information and prompted sharing of ideas about teaching and learning activities, grading practices, and so on. Through meaningful discussion, instructors gained new ideas and perspectives that informed their own practice. These collaborative hands-on sessions fostered a better understanding of the curriculum, especially for sessional instructors who are sometimes excluded from curriculum committees and decision making.

The third phase, informing for action, also provided rich opportunities for professional learning. Here, many instructors learned how to analyze curriculum data in new ways. At the program or meso-level, once curriculum mapping data were aggregated, each academic coordinator invited their instructional teams to discuss the charts and graphs. Instructors had intentional and purposeful conversations about focused curriculum issues such as scaffolding student learning through successive courses and building student writing abilities throughout a program. Several of the instructional teams commented that they had rarely devoted the time to conversations about such topics prior to the review. Consistent with the literature, these curricular conversations served as professional learning opportunities on a wide range of topics, including writing learning outcomes and validity in assessment. Uchiyama and Radin (2009) found that instructors who participated in curriculum mapping also discussed teaching strategies and activities with one another, generating new ideas and reducing duplication between courses. Spencer et al. (2012) noted that, through discussions, coordinators identified program strengths and areas for improvement.

**Recommendations for Fostering Professional Learning during a Curriculum Review**

Conducting a CR with the goal of improving student learning is laudable in and of itself. However, the process can be leveraged to enhance continuing professional development for instructors in an authentic way. Four key recommendations emerged from our reflections for fostering professional learning during a CR.

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1 Instructional scaffolding provides support to students, particularly in the initial stages of learning, to move students progressively toward more complexity and advanced understanding. Common scaffolding techniques include gradually moving from simplified examples to more sophisticated ones and building on students’ experiences and knowledge (Great Schools Partnership, 2014).
First, mentoring and a distributed leadership model can be used to foster ownership of the initiative and build capacity of those involved. For example, at the meso-level, academic coordinators learned what was required of them in leading their programs’ CR. At the micro-level, instructors took on the responsibility of mapping their courses, conveying nuances that are not evident from merely reading a course outline. They then shared their findings with the instructional team and had a critical role in discussing the course mappings in relation to the program. A distributed leadership model not only strengthened the initiative but also enhanced the understanding and skills of those involved. Similarly, Oliver et al. (2010) stated that discussions, ownership, and engagement of teaching staff in the CR process were critical to the success of CR.

Second, standard templates for the student survey, course mapping, and the program report provided necessary structure for individuals who were unfamiliar with the process, thereby fostering their success. Providing a solid foundation on which to build gave people the knowledge, skills, and confidence needed to conduct their reviews. It also provided a common vocabulary for instructors to use with broader curriculum discussions in future. Zelenitsky et al. (2014) noted that common templates increased consistency and reliability of mapping data, while improving data collection and management processes.

Third, allowing groups the flexibility to customize their reviews encouraged them to identify and investigate aspects of the curriculum that were interesting to them as a team. Exploring things such as pedagogical approaches within their own program led to professional growth.

Fourth, working collaboratively led to a better understanding of the program. As individuals discussed their perspectives on the courses and the program, they gained a richer understanding of strategic priorities, intentions, future directions, and ideas they could incorporate into their own practice. Some also refined specific skills such as writing effective learning outcomes.

**Conclusion**

As a response to the need for quality assurance, many higher educational institutions are beginning to implement CR processes. We have shared strategies that were employed in conducting a complex multi-program CR where the CR lead team developed a model that clearly outlined the roles, expectations, and timeline for faculty leaders, academic coordinators, and individual instructors to manage the process. This model provides a dynamic framework to inform practice and recommendations for future actions in support of robust programs in higher education. The multi-phase model offers a structured environment that allows many people to assume leadership roles. In addition, it builds capacity for curriculum development within a faculty, encourages a collaborative approach to CR, and supports continuous professional learning. In our multi-program review, the process resulted in action plans for individual programs and the faculty, including recommendations for improving courses, teaching
practices, professional development, and policy implementation, with the ultimate goal of improving the student learning experience.

In addition to quality assurance, the CR process offers professional learning experiences for all involved through the conceptualization, mapping, and action phases of the review. Professional learning through this process provides opportunities for faculty to engage in clarifying the intent of a program, increase understanding of graduate attributes and faculty-level policies, gain new perspectives on a program, strengthen skills in curriculum mapping techniques and interpreting curriculum data, and apply concepts of constructive alignment to a course. This learning experience shifts the focus from a course to a program-level perspective. A CR process not only fosters quality assurance but also fosters rich professional learning for instructors who engage in it.

References


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Patti Dyjur est spécialiste en élaboration de programmes à l’Université de Calgary. Elle travaille avec les comités de curriculum lorsqu’ils revoient leurs programmes afin de les aider à en relever les forces et les faiblesses. Elle fait présentement de la recherche sur les différentes façons de représenter les données de programmes complexes d’une manière qui favorise de riches discussions sur les programmes et différents modèles de révision de programme.

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