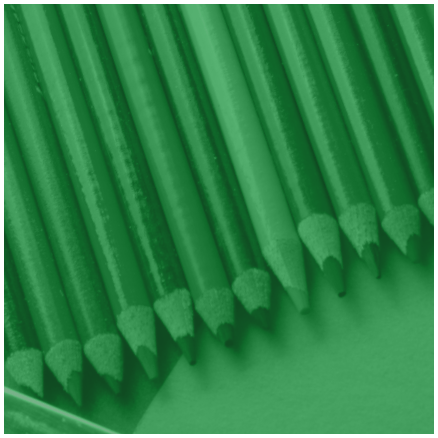
A Comprehensive Guide to Working with Higher Education Curriculum Development, Review & Renewal Projects



EDC • RFPES

Educational Developers Caucus

le Réseau de formateurs en pédagogie de l'enseignement supérieur

Editors:
Dyjur, P.
Skene, A.

Authors:
DiPietro, C.
Dyjur, P.
Fitzpatrick, K.
Grant, K.
Hoessler, C.
Kalu, F.
Richards, J.
Skene, A.
Wolf, P.

EDUCATIONAL DEVELOPMENT GUIDE SERIES

NO.4

Educational Development Guide Series: No. 4. A Comprehensive Guide to Working with Higher Education Curriculum Development, Review & Renewal Projects

ISBN: 978-0-9949335-3-9

Recommended Citation:

DiPietro, C., Dyjur, P., Fitzpatrick, K., Grant, K., Hoessler, C., Kalu, F., Richards, J., Skene, A., & Wolf, P. (2022) Educational Development Guide Series: No. 4. A Comprehensive Guide to Working with Higher Education Curriculum Development, Review & Renewal Projects (P. Dyjur & A. Skene, Eds). Educational Developers Caucus.

Educational Development Guide Series: https://edc.stlhe.ca/edguides/

ISSN: 2369-9019

The Educational Development Guide Series is coordinated by Deborah Chen, Independent Instructional Consultant and Coach, at the time of this guide's creation.

Recommended Attribution

1) Specify materials and indicate if any changes were made.

2) Cite the materials (e.g., DiPietro et al., 2022).

3) Include the attribution statement: Educational Development Guide No. 4 is licensed under a Creative Commons Attribution 4.0 International License.

Educational Developers Caucus (dissolved) had its last mailing address at:

PO Box 63
5707 St Peters Rd,
St Peters Bay, PE C0A 2A0
Phone: 1 (902) 367-3532
Website: https://edc.stlhe.ca/edguides/

EDC • RFPES

Educational Developers Caucus

le Réseau de formateurs en pédagogie de l'enseignement supérieur

Educational Development Community

The writing, production, and preparation for publication of this guide occurred in the final months of the Educational Developers Caucus (EDC) in its 2002-2021 structure within STLHE. At the time of this guide's development, our values of open community, collaboration, ethical practice, and scholarly approach continued to guide our work and approach. These values still guide the educational development community in this place we call Canada.

About the Educational Development Guide Series

The Educational Development Guide series offers in-depth, open, scholarly, collaborative, and practical resources for new to experienced educational developers.

With the aim of embodying and furthering evidence-informed reflective practice in educational development, ED Guides are expected to:

- provide a practical and applied resource for educational development practice;
- draw on established literature and/or research, in addition to lived practice;
- reflect diverse contexts and perspectives within educational development;
- achieve high quality writing through constructive peer-review; and
- draw on the richness of our community by inviting contributions or collaboration from EDC action groups, ED colleagues, and/or others in response to a call for expressions of interest or initial conference sessions.

Table of Contents

About the Authors

Cary DiPietro, Centennial College

Cary DiPietro is Dean of Learning, Teaching and Scholarship at Centennial College in Toronto, Ontario. As a specialist in early modern drama and theatre, he has taught in post-secondary education for twenty years in a variety of appointments in England, Japan, and across Canada. Prior to Centennial College, he was Associate Director, Teaching and Learning at OCAD University, where he was responsible for leading the university's curriculum renewal initiatives, providing guidance and oversight for the Institutional Quality Assurance Process and leading the centre's educational research portfolio. At Centennial College, he leads the Centre for Faculty Development and Teaching Innovation and works with the Senior Leadership Team to help realize the college's commitments to inclusive, equitable, and critical practices in teaching and learning.

Patti Dyjur, University of Calgary

Patti Dyjur is an Educational Development Consultant with the Taylor Institute for Teaching and Learning at the University of Calgary, focusing on curriculum review and development. She works collaboratively with groups as they review their programs to identify strengths and areas for improvement, as well as new program development. To date she has worked on the review of over 90 programs from almost all faculties at the University of Calgary. She is interested in examining different ways of representing complex curriculum data sets in ways that foster insightful curriculum discussions. Patti has numerous scholarly works relating to curriculum, and her current research interests include the process and impact of curriculum review, the effectiveness of micro-credentialing professional learning opportunities, and Universal Design for Learning (UDL) in higher education.

Kathleen Fitzpatrick, Simon Fraser University

Kathleen Fitzpatrick is a Senior Lecturer in the Biological Sciences Department at Simon Fraser University (SFU). Kathleen primarily teaches courses in Genetics, Development, and Molecular Biology. She also holds several grants (in partnership with other faculty members in Biology) from the Institute for Scholarship on Teaching and Learning in the Disciplines (ISTLD), and Open Access Education Resources (OER), both at SFU. The projects are focused on development of an open access, interactive, e-text for Introductory Genetics students, and the development of video resources to assist Developmental Biology students to understand core concepts. She also holds a Dewey Fellowship from the ISTLD to work on a curriculum map for the Biological Sciences Department. Kathleen is interested in multiple areas of teaching and learning research, with a strong focus on helping students with meaningful, rather than rote, learning. Her current work is aimed at investigating the alignment between program level and course level learning outcomes in the Biology Department, with a focus on assessment practices.

Kimberley A. Grant, University of Calgary

Kimberley Grant is an Educational Development Consultant at the Taylor Institute for Teaching and Learning at the University of Calgary. In this role, Kimberley collaborates with programs across the university on curriculum review and development projects as well as serving as the Lead for the Academic Staff Certificate in Post-secondary Teaching and Learning. This work builds on her SSHRC-funded doctoral research in curriculum studies and her many years of teaching in secondary and post-secondary contexts. Most recently, Kimberley has enjoyed the opportunity to collaborate with Patti Dyjur in developing a Curriculum Community of Practice as well as a workshop series that encourages cross-disciplinary conversations about curriculum, learning, and teaching. Kimberley is keenly interested in multiple areas of teaching and learning research including the role of authentic assessment in higher education and in educational development.

Carolyn Hoessler, Thompson Rivers University

Carolyn Hoessler creates meaningful and effective processes for higher education change, curriculum development, evaluation, and professional development. Carolyn is a Coordinator, Learning and Faculty Development at Thompson Rivers University on the traditional and unceded lands of Tk'emlúps te Secwépemc and T'exelc within Secwépemc'ulucw, and a senior facilitator and founder of Higher Education & Beyond. Carolyn's ongoing experience in curriculum development spans traditional curriculum development areas of outcome defining, mapping, data gathering, and facilitation with over 50 programs at the University of Saskatchewan, Ryerson University, and Thompson Rivers University, for both accredited and non-accredited programs. In addition, Carolyn has been involved with research on how educational development is responding to outcome-based accreditation, and advancing evaluation of ED effectiveness.

Frances Kalu, University of Calgary in Qatar

Frances Kalu is an Educational Development Consultant at the Taylor Institute for Teaching and Learning at the University of Calgary. She is currently in Qatar on a secondment as a Teaching and Learning Specialist at the Centre for Teaching and Learning, University of Calgary in Qatar. As part of her role, Frances consults with faculties, curriculum committees, and review teams on curriculum development and review projects. She also provides evidence-based educational development opportunities for faculty members to build capacity in teaching and learning, innovations in education, the scholarship of teaching and learning, as well as curriculum. Previously, Frances worked as a Curriculum Development Specialist at the Cumming School of Medicine, University of Calgary, where she developed the Physician Assistant Program and the Professionalism Educational Framework. She also has extensive experience teaching in the K-12 system and higher education. Frances holds a PhD in Curriculum, Teaching and Learning, and a Masters in Educational Leadership.

Jessie Richards, University of Toronto

Jessie Richards is the Curriculum Development Specialist at the University of Toronto (U of T), based in the Office of the Vice-Provost, Innovations in Undergraduate Education. Jessie has been working in educational development since 2012, starting in the private college sector where she supported curriculum design, program review, and learning outcome assessment processes for a variety of professional programs. In her current role, Jessie guides departmental leaders in the coordination and management of curriculum review processes, which includes developing and implementing program evaluation strategies, guiding departments through curriculum mapping, and coordinating strategies for continuous improvement of curriculum. Outside of her work at U of T, Jessie is actively engaged with professional associations for educational development. She served as Chair of the Council of Ontario Educational Developers in 2020, part of a three-year term on the Executive Council. Jessie is also engaged with numerous projects with the (dissolved) Educational Developers Caucus, including a research project on early-career educational developers. She is currently pursuing her PhD in Higher Education at the Ontario Institute for Studies in Education at the U of T.

Allyson Skene, University of Windsor

Allyson Skene is an Educational Developer at the University of Windsor with a focus on curriculum development and learning analytics. Her current project is to meaningfully integrate these two areas to provide both individual instructors and departments/faculties relevant data to help inform curriculum development and renewal projects. In her work, she has supported curriculum (re)design throughout the process from writing effective learning outcomes, mapping the curriculum, analyzing data and strategizing areas for improvement. She has designed and facilitated numerous curriculum retreats and workshops and created customized resources to support disciplinary differences in accreditation requirements, as well as curricular culture and expectations. In conjunction with IT Services, she designed an in-house curriculum mapping program that also serves as an institutional archive for learning outcomes and supports program development processes. In the spirit of ongoing improvement, she continues to develop and expand on all of the above.

Peter Wolf, Higher Education Advisor

Peter Wolf is a passionate advocate for the continuous improvement of educational practices and culture in higher education. He has taught in the Ontario college and university systems, served in a variety of educational leadership roles at the University of Guelph and was the inaugural Associate Vice Provost (Teaching & Learning) at Queen's University. He has also served as a board member for the Society of Teaching and Learning in Higher Education (STLHE). As an independent higher education advisor, Peter collaborates with universities, colleges and educational organizations, on projects oriented towards educational technology-enabled teaching and learning, furthering academic program development and assessment processes and educational development leadership. Though each project is unique, the consistent theme of his work is the capacity-building of systems, organizations, and people to enhance educational practices and approaches.

Preface

“A Comprehensive Guide to Working with Higher Education Curriculum Development, Review & Renewal Projects” is a collaborative effort drawing on the collective experience of the authors, who have worked in different institutional contexts across Canada and beyond. Our goal is to provide practical guidance by describing curriculum development, review, and renewal practices in plain language, using a scholarly, evidence-informed, critical, and self-reflective approach. In writing this guide, we drew variously from theories of learning, well-established scholarship in education and curriculum studies, models of change management as applied to education, and the practice of educational development as informed by our own experiences and shared knowledges, to identify what in our view are best or promising practices for curriculum development.

Guiding Principles

Through our many discussions together, the authors have learned that, while we work in very different institutional contexts, and have different roles, approaches to our work, disciplinary backgrounds, and experiences, we share many common principles that guide our work in curriculum development:

- We understand curriculum development to be an iterative and continuous process of creation and renewal, and recommend a consultative and appreciative approach, working with faculty to build on successes and strengths over time.
- We consider that the aim of educational development overall is to improve learning outcomes and learning experiences; to that end, curriculum development should centre on the perspectives, experiences, and achievements of learners.
- We believe that curriculum development should engage diverse perspectives by employing collaboration and consultation. It should be grounded upon and respectful of the disciplinary expertise and intellectual autonomy of faculty and should, where possible, engage learners in the participatory design of their learning experiences and outcomes.
- We agree that equitable access for diverse learners, as well as the inclusion of diverse knowledges and ways of knowing, are fundamental principles for curriculum development. The decolonization of education is necessary to realize those principles, and in the Canadian post-secondary context, should include realization of the Calls to Action of the Truth and Reconciliation Commission and the 13 Principles on Indigenous Education outlined by Universities Canada to redress the ongoing legacy of Canada's unjust treatment of Indigenous peoples.
- We believe that curriculum development requires a critical, scholarly, and evidence-based approach informed by, and informing, educational research.
- We have opted to ground this guide in an outcomes-based model of curriculum. Not only is this approach common both nationally and internationally, but substantial educational research has also demonstrated the benefits of an outcomes-based approach, including the communication to learners of clear expectations and objective assessment criteria, more agency and self-direction for learners over their learning, and flexibility and autonomy for faculty in their choice of curriculum and methods of instruction. The adoption of outcomes-based approaches also enables the comparison of learning across institutions and contexts, including accreditation contexts, supporting better mobility and transferability for learners.
- We recognize that curriculum development is never culturally neutral and is always embedded within a set of assumptions and beliefs, and we acknowledge tensions between, for example, our choice to follow an outcomes-based approach and advocacy for greater inclusivity and decolonization. Because of these tensions and continually shifting terrain, we view this not as an ultimate guide, but as one situated within a specific context, with evolving practices that all of us are continually learning. Where possible, we have tried to incorporate critical perspectives, and suggest possibilities for other approaches throughout the guide.

Chapter Overview

In framing an overall approach to curriculum development, we have had to be necessarily selective. Our focus is primarily on the Canadian post-secondary sector. We have chosen to structure the guide with chapters that reflect steps or stages in curriculum development (see Figure 1.1. in Chapter 1) common to many contexts, and have recommended strategies that, while situated within a single development or renewal process, are intended to accommodate a diverse range of contextually-specific needs and institutional practices.

Chapter 1 defines Curriculum Development in the Context of Educational Development, types of curricula, and emerging quality frameworks. Specific curriculum development models as well as key benefits and implications for practice are also described.

Chapter 2 focuses on considerations and strategies in Facilitating Curriculum Development. Because context will determine who should participate and what the role of the educational developer will be in a curriculum development project, this chapter provides a number of suggestions for how to engage multiple stakeholders, how to recognize and respond to challenges, as well as how to approach conversations across disciplinary divides.

Chapter 3, Visioning and Planning, includes helpful guiding questions, suggestions around determining the overall purposes and goals of specific curriculum development projects, and general advice with respect to facilitating program visioning. A detailed discussion of learning outcomes can also be found in Chapter 3.

As Gathering and Analysing Curriculum Data is critical to evidence-based and informed decision making, Chapter 4 discusses different sources of data that could be helpful for curriculum projects. In addition, there are strategies for presenting that data and supporting groups in meaning-making data analysis activities.

Curriculum Mapping, a particularly critical and central component of data collection and analysis of a program as a whole, is discussed in Chapter 5. By visualizing the pathways of a program that students may take, and the achievements at each level, many of the guiding questions can be answered through this process.

Chapter 6 provides strategies for Action Planning in Curriculum Development as well as for encouraging ongoing and sustainable approaches to data collection, analysis, and curriculum review or renewal.

Chapter 7, Advancing Our Current Practice, provides overall strategies to help educational developers navigate a variety of tasks and roles in support of curriculum development while also raising important questions about how to incorporate principles of equity, diversity, and inclusion (EDI) and decolonization throughout these processes.

How To Use This Guide

We do not presume to tell readers how to use this guide, but will suggest that our intent was not that everyone would read through from beginning to end. Our hope is that it is possible to easily dive into specific sections that are most relevant to specific needs using the Table of Contents or Chapter Overview.

Instead of providing a list of steps for curriculum development, we have incorporated models and theories, and elucidated various ways that educational developers might guide curriculum development and renewal. We also aimed to focus on providing different considerations, without being too prescriptive, as there is great variation between disciplines, institutional cultures, as well as specific faculty or departmental cultures. There is never just one way to approach situations, and what works for one group may not work for another.

For those new to the field, we hope this guide will serve as a foundational document on curriculum; for more experienced educational developers, it could serve as a resource to ground, confirm, and expand knowledge. We hope that educational developers across the board will benefit from this guide as they support curriculum development and renewal across their campuses.

We recognize, however, the limits of our shared knowledges and experiences, and appreciate the need for critical self-reflection and to be inclusive of diverse knowledges and ways of knowing as they relate to curriculum development. We aim to model critical self-reflection as a cornerstone of our practice through the inclusion of a series of “critical reflections” throughout the guide, which are intended to offer a counterpoint to the approaches recommended, and we welcome the tensions such reflections may produce.

Throughout the guide, we refer to ourselves and to those who undertake the work of curriculum development as educational developers, recognizing that those using this guide may have very different roles and responsibilities at their respective institutions. We use the term broadly, recognizing that curriculum development requires many different skills—from data collection, analysis, writing and communication, to facilitation, negotiation, and change management—and knowledge of current and complex issues in post-secondary education ranging from active learning practices to decolonization of curricula. This guide is a “how might” rather than a “how to”.

We also recognize that our work in curriculum development is more than the sum total of the approaches and strategies recommended here. While we may have incorporated lessons learned while writing this guide during a global pandemic, there are very likely further approaches/changes that come out of that. And while we have incorporated examples and experience from both colleges and universities, we acknowledge that most of our collective experience comes from universities, and so may have unintentionally privileged the latter over the former.

Curriculum development is still very much an emergent field of scholarship and practice, related to and drawing from the field of educational development. In identifying an approach to curriculum development, we hope this guide will serve as a contribution to this growing field.

Chapter 1
Introduction to Curriculum Development as Educational Development Practice

Curriculum Development as a Field of Scholarship and Practice

Before we begin to recommend strategies or describe different processes and approaches, it is important to situate our work in curriculum development as a scholarly practice, one that is, as noted above, fundamentally related to the field of educational development.

Educational or academic development, sometimes referred to as faculty development, is a field of scholarship and practice in post-secondary education involving the programmatic planning, development, and facilitation of educational development activities. These activities are intended primarily for faculty, graduate students, and postdoctoral scholars with the goals of fostering professional learning, improving teaching practice and, ultimately, improving educational outcomes and experiences for learners (Amundsen & Wilson, 2012; Baume & Popovic, 2016). Over the years, the focus of the field has changed in line with the needs of the higher education sector (Gibbs, 2013). Initially, educational developers (ED) primarily focused on working at the micro-level with individual instructors. This involved seeking to foster the adoption of evidence-based teaching practices; enhancing teaching, learning, and assessment in their classrooms through course design; and providing feedback on teaching (Kalu, et al, 2018; Taylor & Rege Colet, 2010). More recently, the focus has expanded to include working with programs at the meso-level on curriculum development and program review, with the aim of improving the program as a whole (Fraser, Gosling, & Sorcinelli, 2010; Gosling, 2010; Kalu & Dyjur, 2018). Although educational development is most commonly situated in teaching and learning centres in universities and colleges both in Canada and internationally, responsibility for curriculum development processes is often divided across multiple stakeholders. Some teaching centres provide systematic support for program review, whereas others may share that responsibility or work collaboratively with offices of quality assurance or academic excellence, as is the case in many Canadian colleges. Larger institutions such as multi-campus universities may have a more decentralized approach, in which department or faculty

leads are given greater autonomy to undertake curriculum development and program review processes, making use of supports and resources drawn from different offices at their discretion. Offices of institutional analysis often provide much of the data for program reviews, and may place restrictions on how that data is used or who is able to access it, which may limit the ability of EDs or others to support processes or remain involved.

Adding to this complexity is vast differences across degrees, diplomas, and certificates within and across provinces, as well as disciplinary accreditation processes. For example, at the time of writing this guide, Ontario has the Quality Assurance Framework of the Ontario Universities Council on Quality Assurance (OUCQA) with required provincial-level outcomes, British Columbia has the Quality Assurance Process Audit (QAPA) that sets reporting guidelines but no provincial outcomes, while Saskatchewan has the Degree Authorization Act and Saskatchewan Higher Education Quality Assurance Board (SHEQAB) that focuses on authorizing degree granting without a detailed cross-institutional formal reporting framework or outcomes. There may also be further accountability to accrediting bodies or professional associations, who may be involved in program reviews or prescribe standards for curriculum development or program delivery.

To navigate these layers of complexity, we approach curriculum development as a discrete field of scholarship and practice similar in scope to the (also still emergent, but more developed) field of educational development. We recognize that our work together in the programmatic planning, development, and facilitation of curriculum development processes requires specialized expertise, is informed by and contributes to professional scholarship, shares in the responsibility of providing a relevant and high quality education, and helps to ensure that educational practices are consistent with institutional values and with broader societal values such as inclusivity, decolonization, and effective and evidence-based practice.

What is Curriculum?

The word curriculum has roots from the Latin word “currere”, meaning a race course; in education, this translates to students undertaking various courses on their path through a program of study. Various interpretations of the word curriculum exist in education today. Wojtczak (2002) defines curriculum as an educational plan that spells out the goals and objectives to be achieved, topics to be covered, and methods to be used for teaching, learning and evaluation. This definition interprets the notion of curriculum as a prescribed program of study within an educational system. Other researchers argue that curriculum encompasses a set of intentional, designed learning experiences, composed of content, as well as organization, and approaches to teaching and learning. Prideaux (2003) defines curriculum as an expression of educational ideas in practice, while Cornbleth (1990) interprets it as an ongoing social process comprising the interactions of students, teachers, knowledge, and the environment within which they exist. Curriculum is a dynamic and complex interaction between multiple stakeholders: learners, instructors, administration, students, services, accrediting bodies, potential employers, and society.

Types of Curriculum

Curriculum can be viewed through different lenses. While individual theorists employ different, sometimes conflicting, language to describe these lenses, they typically include some or all of the following six aspects:

- **Designed or intended curriculum:** This is curriculum as planned and described by the institutions, programs, and faculty. It typically includes the intended outcomes, overall approaches, and purpose of the curriculum (Plaza, 2007; Bester, 2012;). It is also known as the “created” curriculum (Knight, 2001), “written” curriculum (Kopera-Frye, Mahafy & Svare, 2008), and the “declared” curriculum (English, 1978; Robley, Whittle, & Murdoch Eaton, 2005).
- **Implemented or enacted curriculum:** This is what is actually taught in the classroom and includes what both the instructor and learners do (Plaza, 2007). Bester (2012), among others, refers to this as the “taught” curriculum, but as indicated below, this term has also been used to describe the learned curriculum, and so may cause confusion.

- **Experienced curriculum:** This refers to what the learners gain and understand from their experiences (Plaza, 2007; Bester, 2012). Also known as the "taught curriculum" (English, 1978), and the "learned" curriculum (Kopera-Frye, Mahafy & Svare, 2008).
- **Assessed curriculum:** This is how student achievement/learning is measured (Kelley et al., 2008; Kopera-Frye, Mahafy & Svare, 2008).
- **Hidden curriculum:** This refers to concepts and practices that are embedded into the curriculum, but which are not always made explicit to the learners (Posner, 2004; Wachtler & Troein, 2003). For example, ethical, moral, and value-based lessons may be modeled by medical educators' behaviours and attitudes toward patient interactions, but not explicitly taught. (Hopkins, Saciragic, Kim, & Posner, 2016).
- **Null curriculum:** This refers to concepts, skills and ways of knowing that are left out of the curriculum. The absence of these from the curriculum communicates negative messages about their value or validity and these negative messages are therefore part of the learning that takes place (Apple & King, 1977). For example, the systemic exclusion of Indigenous ways of knowing reinforces the view that these epistemologies and ontologies are less than Western approaches (Gaudry & Lorenz, 2018).

As EDs, when we guide or support curriculum development or review projects, it is helpful to share information around the various types of curriculum with faculty members. Although a curriculum is planned, it might not be delivered nor received as intended. In addition, hidden and null curricula relate directly to issues of inclusion, diversity, and decolonization, and faculty and administration should consider what messages are being dominantly conveyed or excluded through the curriculum and to ensure other perspectives are included. (See Chapter 7 for more discussion.)

In this guide, with reference to curriculum mapping (see Chapter 5), we use the terms: designed or intended curriculum, implemented or enacted curriculum, and experienced curriculum, along with hidden and null.

What is Curriculum Development?

Curriculum development is the intentional design, evaluation, and potential revision or redesign of institutional-, program-, or course-level learning outcomes, educational practices, assignments, and assessments. It can range from de novo (from scratch) development of a course or program, to minor or major revisions to a pre-existing curriculum. In this guide, we frame curriculum development as a continuous, iterative process, in which outcomes are developed, learning and teaching strategies selected, and assignments and assessments created. The curriculum is then implemented, the results assessed, and the outcomes and strategies revisited and refined based on the results of the assessment. On the other hand, the term curriculum renewal or review, which are sometimes used synonymously, may suggest an episodic process - one which takes place at intervals with little or no consideration of the curriculum in between (Wolf, 2007).

In his seminal work, Dewey (1916) links the process of education to the continuity of life. He explains that societies and social groups within them perpetuate their existence by passing on information around their beliefs and practices to the younger generation. With growth and modernisation the knowledge changes, and without a systematic means of transferring this knowledge to the younger generation, societies and social groups will cease to exist. This process of passing on knowledge from the older to the younger generation is termed "education". Similarly, without a systematic process of developing and revising curriculum, it becomes difficult to determine if a curriculum contains the relevant knowledge for the program.

Critical Reflection: Unpacking the meaning of "development"

Development as a process of improving, growing, or working out the possibilities of something, often over time or in successive stages, emerged in English in the early eighteenth century after the French verb "développer" (to unwrap, expose) (OED, 2021). It's not by chance that this sense of the word coincides with the global expansion of European influence and power, when the notion of "development" was used rhetorically to justify processes of colonial expansion such as the extracting of natural resources, cultivating "newly discovered" lands and "civilizing" Indigenous peoples (meanings that persist in such constructions as "developing nations").

To the extent that curriculum development involves activities such as collecting data, gathering the perspectives of faculty, staff, students and other stakeholders, analyzing this information, and communicating the results of the process using a range of scholarly methods, it constitutes a type of research. In her seminal work Decolonizing Methodologies (1999), Tuhiwai Smith reminds us that academic research is informed by Western European norms that value empiricism and positivism, almost always to the exclusion of non-Western knowledge and ways of knowing, or in ways that seek to colonize them through observation and classification. As with education, academic research inheres with the legacy of a European colonizing project that seeks to understand and order the world, and whose practices often continue to extend it.

What are the implications of this sense of "development" as we invoke it here in the context of our work in curriculum? Throughout the following chapters of the guide, we will reflect periodically on the implicit power relationships of curriculum development—who does it, who is it done for, to what end, who is excluded from the process, what counts as evidence, etc.? This is particularly important for our work as EDs and agents of change in complex and historically-situated organizations. In Chapter 7, we will also consider more explicitly decolonizing approaches to curriculum development, drawing from work in recent scholarship.

The Rise of Quality Frameworks

Reforms in higher education in different parts of the world most often occur with an aim of regulating the quality of the curriculum. In Europe, for instance, the Bologna Process was launched in 1999 by 49 countries with an aim of streamlining the quality of education offered within higher education institutions. Through the process, the European Higher Education Area (EHEA) framework was designed to allow for a comparison of education systems between the countries, the design of a qualifications framework, and quality assurance of curriculum within different institutions. Similarly, in 2007 provincial governments in Canada adopted the Ministerial Statement on Quality Assurance of Degree Education in Canada, which provided a framework for quality assurance across degree programs in Canada. The Higher Education Qualifications Framework serves a similar purpose in South Africa. The existence of the various frameworks underscores the importance of a systematic process in the development of curricula to ensure it meets stated goals.

Curriculum Development Models

There are multiple models or approaches that can be utilized in curriculum development (see e.g., Staykova, 2013). Models can be useful in framing a process of development and directing the focus. For instance, some models focus more on how learning outcomes are derived, or whether the emphasis will be on the acquisition of content or skills knowledge.

Curriculum development models used in Western university settings are predominantly outcomes-based models. They begin with learning outcomes (what the learner should know and be able to do at the conclusion of the course or program) and then design content, activities, and assessments to measure attainment of the outcomes. Outcomes themselves are often divided into content (knowledge), skills

(process), and values (affective). In the first case, the objective is facility, with certain content and concepts that are considered essential to the subject matter; the second is the types of skills—such as critical analysis, teamwork, decision-making, and problem-solving—commonly needed in the discipline; and the third involves ethics, attitudes, social responsibility, and other more difficult to assess measures. Some might focus more on content while others focus more on skills, but in general outcomes-based approaches focus on grades and performance in relation to specified outcomes within a pre-determined schedule. Outcomes-based approaches are often favored because they facilitate consistent and comparable measures of attainment. Also, external stakeholders such as accreditation agencies or professional schools will have guidelines on the skills and knowledge needed for graduates of a particular program and will require evidence of their achievement.

An alternative approach to curriculum design could be experientialist. This approach can be more process-based, with the main focus on the learner's interactions with the world, and so generally more aligned with Indigenous ways of knowing, humanistic, or transformative approaches to learning. Students may have more agency in choice of the content and skills they focus on, as in this approach students shape their own educational experiences based on their choices, preferences, and interests. Achievement is typically at least partly dependent on students' goals, and the emphasis is on exploration and discovery in the moment, rather than predetermined lesson plans

Problem-centred curriculum design is another approach, focused on presenting students with real-world type problems and helping them work towards possible solutions. The problems are often "wicked" (Rittel & Webber, 1973): open-ended, dependent on context, and with multiple potential solutions, each with their own advantages and disadvantages. Thus, the solutions devised by the learners might vary greatly from one to another. Because the problems used are relevant and either real or analogous to real-world situations, they may be particularly motivating to students. Such problems may be approached in groups or teams, helping learners to build collaboration skills and to employ creative/lateral thinking depending on the "case" or problem offered.

Critical Reflection

Outcomes-based approaches are arguably quite limited. Do we not consider self-actualization, autonomous thinking and reflection, and broadened horizons key aspects of education? Do we not wish to allow students to develop as capable, thoughtful citizens, with self-understanding and curiosity about others, and able to lead societal change for the better? Education that is driven by quality control, based on efficiency and effective standardization of the institution (Le Grange, 2019) emphasizes measurable criteria to establish the merits of an institution, department, or program. This shifts emphasis to what can be easily measured, at the expense of aspects of education that are arguably more important but not as easily measured.

Gibbs (2017), for example, noted that the shift from the university as a place for "edification" to one of "value for money" led to a focus on student satisfaction as the key indicator of institutional success. But is it the sole function of the university to provide enjoyable experiences that are easily assessed and lead to high status employment? Or should the aim be "an educative process of developing potential capabilities and a realistic appreciation of what this means for one, being in the world with others" (Gibbs, 2017)?

While the emphasis on "outcomes" does facilitate many advantages for learners and institutions, its behaviorist assumptions and emphasis on measurement may detract from some of the most critical elements of education: citizenship, community, and values.

Why Engage in Curriculum Development?

Engaging in curriculum development processes helps to foster a program culture that regularly and rigorously examines its curriculum (iterative, regular process of self-reflection and analysis). By providing an opportunity for critical reflection on the overall program structure, as well as specific teaching and learning practices, curriculum development has many potential benefits for students and instructors, as well as the department, faculty, and institution. See Table 1.1 for details.

Benefits	Implications for Practice
Enhances both teaching and learning when well-implemented, integrating evidence-based teaching and learning approaches into courses and programs (Biggs, 2014).	A scholarly, reflective, and evidence-based approach towards curriculum development will likely yield the best results. Depending on experience and knowledge of team members, additional faculty development may be required to increase capacity.
Ensures the program and offerings are up to date, aligned, engaging, effectively delivered and providing opportunities for learners to develop relevant skills.	To encourage regular and iterative review, need to plan for ongoing sustainability, ensuring manageable workloads and consistent effort (see Chapter 6 for some strategies).
Increases collaboration and collegiality (Uchiyama & Radin, 2009).	Important for facilitators to represent / give voice to those affected by the curriculum changes, not only because it is likely to generate a more inclusive curriculum but because it builds a sense of community and accomplishment.
Leads to increased transparency for learners to see how courses fit into the program.	Transparency isn't just one-way; as learners better understand the intentions in the design, the more contributions they might make to that design.
Helps instructors understand how their courses fit into the program, and how they might adjust and align methods.	As faculty take a more active role, workload issues, as well as institutional supports for this workload (or lack thereof) need to be taken into consideration.
Makes the purpose, content, and design of the curriculum readily apparent to all stakeholders: faculty, administrators, future employers, students, parents, and external entities requiring evidence of accountability (McKimm & Swanwick, 2017).	It is important to keep the core values and mission at heart during the process to ensure that it does not stray too far from the principles and values of the institution/ academic unit; also important to avoid falling prey to "trends".
Guides program design and improvement, including consistency, fairness, quality, and effectiveness (Matveev, Okala, & Cuevas, 2006).	Possible ripple effects or unintended consequences may arise, especially if changes are not minor tweaks but large-scale.
Promotes equity, diversity, and inclusion by incorporating Universal Design and fostering a decolonized curriculum.	These are very complex issues, and while some steps may be valuable, they may not result in substantial changes (Gaudry & Lorenz, 2018) or may be seen as imposed by a dominant culture (Walton, 2018; Le Grange, 2019). Inviting Indigenous and other curriculum developers from equity-deserving groups to the design table, however, can open the door to productive collaborations that can lead to real change. Further discussion on these issues can be found in Chapter 7.

Table 1.1. Benefits of curriculum development and implications for practice

Steps of Curriculum Development

There are several general steps of curriculum development that form part of an iterative process. Most formalized models of curriculum development include these steps in some form or other. Note that while Figure 1.1 may give the impression that these are discrete stages with clear boundaries, they often overlap.

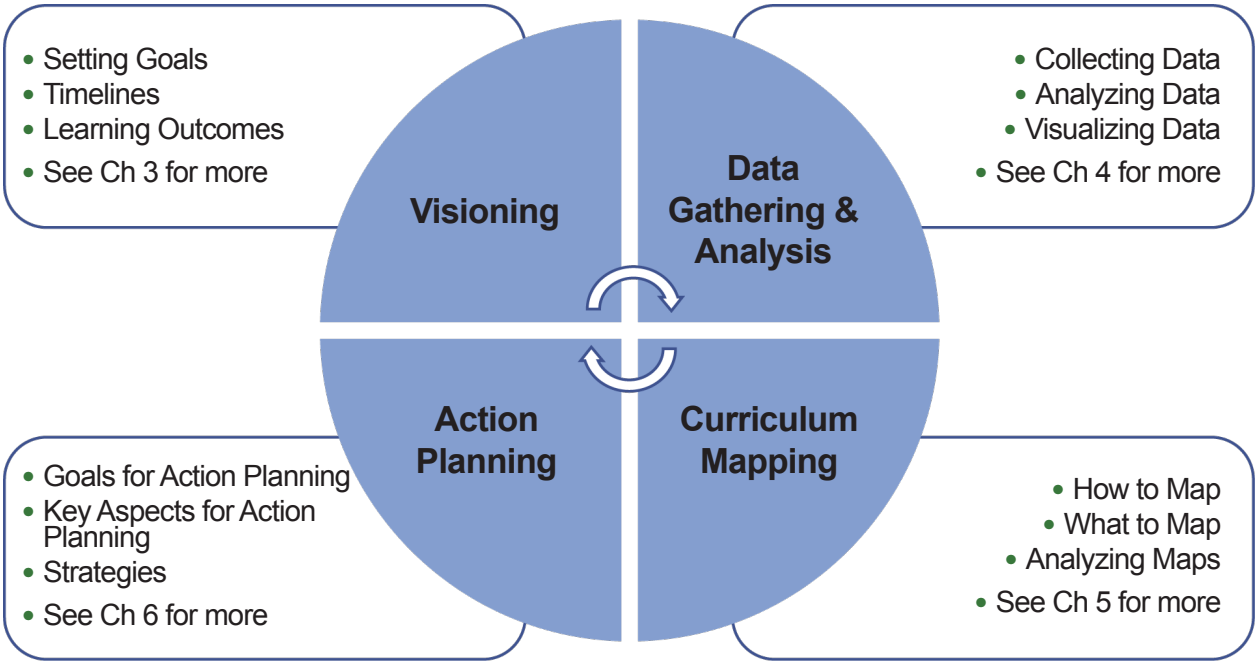


Figure 1.1. Overview of Curriculum Development Process.

Chapter 2
Facilitating Curriculum Development

Educational developers (EDs) can play a variety of roles in curriculum development, ranging from organizing and facilitating the entire process to acting as a consultant during particular stages or for providing answers to very specific questions.

In these various roles and tasks, the ED will need to navigate expectations of instructors and stakeholders in a range of areas. As EDs frequently do not have expertise in the disciplinary area that they are working in, they will often seek to maintain the role of a process guide with knowledge of guiding principles, requirements, and facilitation skills, recognizing that others will decide on a program's context and content. EDs may also bring with them expertise about the process, institutional and/or governmental expectations, constructive alignment, curriculum design, relevant software and tools, possibly the disciplinary trends, or some combination of these along with other expertise. An ED's knowledge will also shift and grow over time.

As the process of curriculum design is ideally consultative and collaborative, there will be people involved with different perspectives and priorities. The ED may also have to contend with resistance, reluctance, or even conflict. With so many variables at play, it is helpful for the ED to think through who is (and should) be involved, the drivers behind the change, as well as other important characteristics of the people they will be working with.

Who Should Be Involved?

As curriculum development is a labour- and time-intensive process, it is important to consider who is or will be involved and how the work will happen. If some of the work has already begun, one of the first steps will be to determine who is 'regular' (e.g. members of a committee, attendees at meetings or retreats, etc.) and who has been consulted thus far. If work hasn't yet begun, it's useful to consider how teams might best be configured: A committee structure is fairly typical – often chaired by a program director or associate chair, with participation from a representative group of faculty, student representation, and possibly one or two key administrative staff, and other stakeholders as relevant. The committee would be largely responsible for planning, working, making decisions, and consulting with the rest of the academic unit and other stakeholders as needed.

Critical Reflection: Student Involvement

Students are a particularly critical stakeholder group to consider. The extent to which faculty will value student voice can vary, and EDs may need to advocate for the inclusion of student perspectives and for student involvement in the curriculum development process.

However, there are complexities beyond just involving students. First and foremost, which students' voices are heard? How many? Are only the high-achieving keeners involved? Do students who are marginalized have a voice? If only dominant voices are heard, this will greatly affect a groups ability to analyze the impact and value of a curriculum for a diverse student body.

Also important: Is there a safe way for students to share their perspectives? Students may lack the confidence to take on the greater responsibility of contributing to curriculum review or educational development, and this may be particularly true for those who do not perceive themselves as top students or who come from a marginalized group. In addition to providing a safe space for student involvement, it is important to consider how student contributions are incorporated, supported, and validated.

For example, invitations might include explicit statements that diverse and honest input is being sought. Compensating students for their time is another way to provide validation. Equally important is follow-up, and letting students who may have had a conflicting viewpoint know that those contributions are valued. Another strategy is to provide opportunities for anonymous feedback.

Thinking through these considerations early in the process can help ensure students are involved in a productive and inclusive way.

Another approach is to have a small leadership team of a few faculty and more of a retreat/workshop approach for engaging with the rest of the unit and other stakeholders. For example, there might be shorter sessions for milestone activities (e.g., workshopping program learning outcomes, or debriefing a curriculum map), with longer retreats for larger discussions and decision-making (e.g. visioning, planning, etc.) There are lots of ways to create a team for the process, and certain approaches will work better for some academic units than others, but it is critical that there is broad representation of diverse stakeholders, and as much engagement as possible – curriculum development is not a spectator sport.

To be effective, curricula need to have the support of those who teach it, meet the needs of diverse students who are in it, and integrate with the community it is situated within. For these reasons alone, it is helpful to include a wide range of stakeholders who may have interests in shaping a program, including instructors, students, program staff, alumni, clinical instructors or other field/community partners, employers, and so forth. That said, one key question to consider is to what extent other stakeholders might have a say in how a program is designed. Depending on the nature of the program and the scope of the analysis, it may or may not be helpful to ensure consultation or participation with all potential stakeholders. For example, in some cases, consultation with certain stakeholders such as accreditors or government might be required. A project that is large in scope might require broad involvement in the process to ensure the work invested will satisfy the aims. In other cases, a curriculum development project might be relatively small in scope, and so it may not be necessary to involve anyone other than the relevant instructors, and possibly students.

If you are working with a program from the beginning, establishing who should be involved in the process will likely be a natural part of planning. Who should be a part of the core 'team', who should be consulted, who is responsible for making decisions, etc.? Also, be aware that the faculty union's collective agreement may specify that faculty members are responsible for the curriculum and therefore have decision-making authority over any curricular decisions. If this is the case, other groups can be consulted but are not involved in decision-making or approval processes.

Whatever approach the group chooses, leadership is critical to the success of a curriculum development project. While it is entirely possible for curriculum change to be a grassroots initiative among faculty, having the support of the Chair and/or Associate Chair (or other program leader) can be very helpful in ensuring the process is adequately supported. By support we mean not only in the goals or outcome, but also in the valuing of the principles and process as well. Support from leadership will also help any resourcing that's needed. For example, if funding is required to hire a research assistant to help move the project forward, or an instructor needs a course release to manage part of the process, advocacy from the Chair (or other leader) will be key in securing those resources.

Drivers for and Resistance to Change

In any curriculum project, there will likely be both drivers pushing for change and resistance to that change (whether active or passive). Faculty and students themselves could be pushing for changes, but drivers may also be external, such as the institutional administration, accrediting bodies, other professional societies, or government regulators. In many cases (as in Australia and some parts of Canada) educational institutions are required by government to do some form of curriculum review and revision as an exercise in quality assurance.

Resistance to curriculum work is also common. As this resistance is often grounded in very reasonable concerns and can be a productive contribution to the dialogue, it is helpful to think through where it might be coming from, and identify strategies that might either defuse conflict or identify areas where further advocacy might make the process more inclusive and productive for all. The following table identifies some common reasons underlying resistance, with some helpful considerations:

Possible sources of resistance	Helpful considerations
Workload: Curriculum development and review takes a lot of effort, energy, and time.	• Institutional support for curriculum work helps mitigate this problem (Biggs, 2014). • Time for faculty participation should ideally be paid time, accompanied by a release from some other duties. • Highlight areas where EDs and other units guide and provide support. • Review processes are ideally structured as an ongoing part of the job, not an unwelcome extra burden.
Perception that curriculum work is a bureaucratic hurdle without real meaning or purpose.	• Help groups identify ways to ensure that the process also facilitates achievement of their goals for the program, along with any immediate need to complete required forms. • Suggest an action plan with short, medium, and long-term action items for ongoing curriculum work which results in quick wins as well as longer substantive changes.
Disagreement with required metrics or assumptions behind reporting demands.	• Allow room for this disagreement. In many (most?) cases, it will not be possible to change the required metrics, but the resulting discussion can help the group better understand their own and each other's approaches to teaching, learning, and curriculum.
Lack of agreement with respect to the goals and vision for the program.	• EDs can help facilitate discussions for finding common ground (see Chapter 3 for more specific suggestions for visioning exercises).

Disagreement with the pedagogical theories, approaches, or assumptions of proposed revisions or changes.	• Appeal to the scholarly literature that grounds these opposing views and help facilitate these conversations. • While it is helpful for a program to have overarching values and approaches that everyone agrees on, it isn't necessary for everyone to be in lock-step in terms of approaches. EDs can encourage evidence-informed approaches to teaching and learning, and help to identify ways to reconcile or integrate differing perspectives.
Perception that one's input is not valued or contributing to the whole.	• Curriculum development and revision almost always involves some difficult decisions and balancing of practical considerations with ideals. • Encouraging inclusivity and multiple perspectives from the outset can help build a broader sense of community for disparate voices. • Find strategic points in the process for participation from the wider group, such as feedback on a draft action plan at an all-faculty retreat.
Defeatist or negative attitudes.	• Begin workshops, retreats, or consultations on a positive note, by inquiring into program accomplishments and points of pride. For example, do they have a strong research profile? Commitment to their students? Success stories? • Suggest using an Appreciative Inquiry framework for the work to examine a program from a "strengths" perspective.

Table 2.1. Possible sources of resistance and some considerations

Importance of Knowing Your Audience

EDs typically support instructors and program leaders in curriculum development, review, or renewal, and often in disciplinary cultures distinct from their own. This level of engagement requires EDs to navigate, listen and work within the specific contexts. Taylor (2010) highlights a need to be aware of disciplinary influences. She describes how each discipline and academic unit holds their own disciplinary elements including:

- Modes of inquiry;
- Disciplinary structures that shape how tightly constrained or loosely patterned course content in a program may be;
- Communication and expressions of thinking and disagreeing;
- The disciplinary culture around academic work (including how solitary or collaborative);
- The disciplinary models and regimes for teaching and learning including power relations, rules of appropriateness, implicit theories of learning, and the roles of instructors;
- Values and assumptions that influence the knowledge that is pursued; and
- Language and terminology.

These distinctions influence the forms of data and methods of analysis that matter and are familiar.

While is it possible to learn in the moment, EDs could also seek out information about the departmental and disciplinary context prior to starting the curriculum work. To have a sense of the epistemic roots and collegial politics of the context, consider some of the following questions and issues:

- Could you approach the curriculum lead directly to gather information about relevant background, motivations, or concerns and issues that have been raised?
- Do you know anybody in the department or faculty that you could ask about their modes of inquiry, disciplinary culture and models, and values and assumptions about teaching and learning?
- Is there anyone in your centre for teaching and learning that has worked extensively with the curriculum group or is from that discipline?

Surfacing values

While program reviews may not always aim to, they can surface "individual and cultural values underpinning purposes, processes, and judgments" (Yarbrough et al., 2011). When working with an academic unit or program group, you may want to identify the stated values and consider asking about what the program hopes to accomplish (e.g., inclusive programming, decolonizing, objective rigorous education). In some program reviews, those familiar with critical theory may be able to consider the power and privilege at play in a curriculum to address questions of equity, diversity and inclusion.

Also, there may be values that influence the process itself. For example, disciplines differ in how solitary or collaborative scholars tend to be (Taylor, 2010) and that may shape how comfortable they are with collegial sharing and collaborative activities as well as how likely they are to engage beyond their own courses for learning outcome assessment, analyzing retention rates, or curriculum mapping.

Discussions and results that align with a group's values often go smoother as they are affirming of assumptions. Those that challenge the values or reveal the gap between stated and lived values can be uncomfortable as instructors and leaders wrestle with unlearning and learning about their program.

Language and terminology

The language and terminology used to describe curriculum information and the processes by which it will be gathered and analyzed will vary.

As an ED, embarking on a curriculum project with a group often involves stepping into their disciplinary context. The curriculum process asks instructors to learn new curriculum vocabulary and concepts. EDs have the opportunity to build goodwill by showing willingness to learn the terms used in others' fields as well as becoming familiar with the dynamics and structures of their program. In particular, when working with disciplines with accrediting bodies, learning terms like graduate attributes and indicator (e.g., engineering accreditation), competencies (e.g., pharmacy, electrician), and goals and objectives (e.g., business).

Taking on this work also presents an opportunity to build capacity within faculties and departments to have curriculum discussions. As instructors seek clarification throughout the process on things such as the meaning of the term 'learning outcome', the level of granularity and how it fits with program design, the group is developing a common vocabulary to ground future discussions.

(Un)Familiar forms of data

Most scholars are trained in a specific set of methodologies and epistemic beliefs about what counts as evidence, ontological beliefs about the nature of the world, along with processes and expressions that are appropriate for their thinking, analysis, and communication via teaching and scholarship. These roots of the disciplines influence how quotes, mappings, surveys, retention rates and other evidence collected for curriculum development are viewed, analyzed and communicated. They also influence how contradictions in data are navigated. For example, are the beliefs and perspectives of learners considered evidence and for what? If there are differences between student and instructor experiences of the same event, are both true or only one? How can quotes be understood alongside retention rates and demographic patterns?

The ways in which people conceptualize data may lead them toward certain types of guiding questions. If a group is more familiar with numerical or quantitative data, they are more likely to pose guiding questions that rely on statistics and numerical scoring. Groups that do not normally work with quantitative data may tend to focus on the kinds of questions with which they are more familiar: questions that lead to rich descriptions and nuanced responses. Most groups discover that they would actually prefer both quantitative and qualitative types of questions in order to have the most valuable information moving forward.

EDs can listen for what evidence is meaningful and familiar in a discipline and consider how the analysis process and presentation of data will be received and utilized by the instructors, program leaders and other stakeholders who are making decisions about their program. Unfamiliar forms of data may be dismissed and seen as not meaningful or not useful for decision-making with the data's insight potentially lost even if it is sound, accurate, and timely.

If your curriculum processes are mandated, there may be standard types of data that have to be included, such as program demographics, curriculum mapping, and student-provided data. Additional data can be collected depending on project needs and the group's preferences.

Deep personal interest in their programs

Curriculum development and review projects will often engage people at an affective level because they involve the fields about which people are passionate as well as the courses and programs in which they have a vested interest. Conversations about the direction for curriculum development are often quite intense as there will always be a multiplicity of strong opinions. While this level of engagement and commitment are to be applauded, decisions about curriculum can be more productive and may reach greater consensus when they are grounded in evidence gathered from a range of perspectives.

Critical Reflection: Vulnerabilities

It is important to remember that bringing people into the process of curriculum analysis can make instructors feel extremely vulnerable. Even after encouraging instructors to consider the program objectively, and their courses as a part of a larger whole, there is no denying that curriculum analysis can surface critiques that feel personal. Instructors may be reticent to have 'outsiders' involved in conversations where gaps or deficiencies in the program are laid bare, and those feelings need to be addressed with care. It does not mean the department should shy away from having differing and important perspectives weigh in, but what conversations include which stakeholders, and the methods of data collection, can be adjusted to ensure all parties feel safe and included. A tip to help with this issue is to try to emphasize the focus on student learning experiences throughout the program, and encourage instructors to feel less of a sense of ownership of individual courses.

Recognizing the decision-making process and dynamics of different units

Working within faculty or departmental meetings is one of the few ED roles where the ED is immersed in the culture of an existing and established group. It can also feel like entering into and opening the curtains of a private space depending on the openness of the institutional, disciplinary, or program culture.

When entering this space, it is helpful to find out how a group makes decisions and what their approach to the curriculum review is. You can ask an ally or contact in advance, listen to how decisions are made in the moment, or where possible attend departmental meetings early to be ready to setup and to observe previous discussions. Some dynamics that may be visible are listed in the following chart along with strategies to try to ensure the high quality of the process, the safety of the stakeholders, the quality of the work resulting from the process, as well as protecting oneself if things happen to go awry:

Facilitating Difficult Dynamics	Strategies to Try
Healthy turn-taking and consideration of multiple perspectives	• This does not mean that everyone is in agreement. Expect that there will still be differences in opinion and create space for these for richer conversations. • Use facilitation skills to keep meetings on track: questioning, summarizing, small and large group discussions, etc.
One person or a single perspective is being advocated for, excluding other opinions and perspectives	• At the beginning of a meeting or workshop review Collaborative Intentions (see Appendix 2.1), modifying them as the group sees fit. • Move from large group activities and discussions to small groupings. You could try splitting up "factions" so that people hear different perspectives, or keep them in the same groupings so that each group can have time and space for discussion. • Use a dot-mocracy approach (ensuring each person contributes a vote) when narrowing down a list or making decisions to ensure that everyone's preferences are given equal weight.
Lack of engagement	• Change the narrative of "why are we doing this?" to "how can we showcase the strengths and uniqueness of the program?" • Provide a rationale for why this work matters and ask the group for ideas of why the work is important. • Emphasize where progress is being made. • Remember that individuals may be more interested in some stages than others. Plan to involve them in areas that they care most about.
Lack of trust in how the data will be reported and used	• People often have a good reason to be concerned about why data are being collected, so be transparent about what will happen with the data. If the data are used for teaching evaluations, instructors need to know this. If they are not, that message needs to come directly from someone in a position of authority, such as the provost.
Micro-aggressions, negative behaviors, and a culture of lack of respect within a faculty or department	• Ask an ally what to expect before meeting a new group. • If the group you are working with has a pattern of disrespect, try co-facilitating discussions and sessions with the department head or other leader so the group can see that you have support for the process. • Build independent activities into the agenda, such as using a white board for brainstorming. This will allow for quiet time to collect your thoughts. • Incorporate small group activities such as working on a shared document. • Some behaviors are not the result of curriculum processes but have been an issue with the department or faculty for a long time. It is unlikely that you will be able to change them, in which case all you can do is be courteous and professional. • Talk to a supervisor or mentor to get another perspective. It might help to bring someone with you to the next meeting or trying a different approach. • Nobody should have to put up with abuse or harassment in the workplace. If the aggression becomes focused on you or comments become personal, exit (e.g., "Let's finish here for today") and speak to your supervisor or mentor about how to proceed. They may need to work through the process on their own.
Uncertainty about how to enact and enable authentic and sustainable curriculum development processes	• Once trust is established with the ED and methods used are successful, negative dynamics/challenges will lessen and the focus can shift to curricular issues.

Table 2.2. Strategies for facilitating difficult dynamics

Chapter 3
Visioning & Planning

As will be emphasized throughout this guide, curriculum development is not a straightforward, lockstep process. It can take many shapes, driven by a variety of factors, and can range in scale from a small project focused on analyzing the readings across first year courses up to multi-year, long-term projects that overhaul an entire program. Planning long-term, complex processes requires both forethought and flexibility. While there are no explicit steps that must be taken in a specific order, there are certain conversations that are helpful to have early in the process and some planning steps you can take that will help make a smoother curriculum review process overall. How to begin with the overall planning for curriculum development depends on where in the process you are brought in. In some cases, there might be a dedicated point when academic units connect with you about a cyclical review process (e.g., a 'kickoff' meeting for programs that are about to start work on their self-study), or a new program development process (e.g., a program consultation meeting). In other cases, program committees might have gotten started on curriculum work and find, when they try to do curriculum mapping, for example, that they need help. The point is that you may not always be brought into the process at the beginning.

A model of steps in the curriculum development process was shared in Figure 1.1 in the introduction to this guide. The bulk of this chapter will focus on considerations for facilitating some activities connected to the first step of visioning. The intention of the facilitation section is to provide you with concrete recommendations and guidance for approaching the initial work of curriculum development with a faculty or department. It is important to remember as you read this chapter, and the remainder of the guide, that recommendations may be more or less relevant to your specific institutional context. Use what guidance is helpful to you, but do not feel constrained by any recommendations that do not suit your situation.

Specifically, this chapter is intended to:

- Orient educational developers (ED) to the planning process for curriculum development;
- Address both practical and conceptual considerations around establishing the process;
- Outline facilitation strategies for early curriculum development milestones such as visioning conversations and drafting/revising program learning outcomes; and
- Provide reflections on challenges and complex implications for beginning curriculum development projects.

Goal Setting

In order to plan the curriculum development process, you need to have a sense of what the academic unit is hoping to accomplish as a result of the process. Starting off by setting goals will help the unit clarify what they are aiming for, and therefore what kinds of data gathering, analysis, consultations, and reflection will be needed. Goal setting comes down to what priorities the unit has for the curriculum. Some units are mostly interested in figuring out where the weaknesses lie in the program; for example, anecdotally the faculty feel students struggle with writing in the fourth year of the program, so they want to figure out why they are unprepared by that stage in the program. Other units might have entirely different goals, such as an interest in incorporating more experiential learning into the program – a different goal that requires a customized process plan.

Critical Reflection: Influence

Generally speaking, EDs' roles in curriculum development are in a support capacity – providing guidance, facilitation, support, etc. to enable academic units to improve their programs. However, often there are institutional, social, and other priorities that EDs may need to suggest. It is worth considering how much EDs should influence the goals of the projects they support. To what extent is it the EDs responsibility to forward important work such as decolonization or the implementation of anti-oppressive frameworks? To what extent do EDs have agency in how we further institutional priorities and agendas?

Often, engagement in curriculum development/review is not internally driven, but prompted by external requirements such as accreditation or cyclical program review. In these cases, a unit may feel little motivation to engage in the often time-consuming work of curriculum review because the driver is coming from outside. Goal setting allows the unit to think through how instructors, students, and other stakeholders can benefit from the curriculum development process by focusing on their wants and needs. Essentially, there needs to be some sense that students' experiences in the program and faculty members' lives as instructors in the program will be better as a result of having engaged in the process. Similarly, in setting goals one should consider how improvements will impact stakeholders involved – e.g., fewer students needing advice or support from administrative staff because of clearer pathways through the program, or students who are better prepared for their clinical placements so there is less pressure on clinical educators, etc.

The following are examples of broad goals an academic unit might have for the curriculum project:

- Discover how well they are supporting students as writers.
- Create clearer pathways through the program so students understand their choices.
- Incorporate Indigenous ways of knowing into the curriculum.
- Incorporate equity, diversity, and inclusion approaches to teaching throughout the curriculum.

There are many possible goals a unit might have for its program(s). Ideally you want to help them hone in on two or three that are particularly critical or timely, which will help them to determine the appropriate process.

Guiding Questions

One way of approaching goal setting, or priority setting, is to have the program lead or curriculum committee establish guiding questions for the curriculum development process. Guiding questions are designed to help focus the inquiry, and groups are encouraged to develop a few to support the planning of their curriculum development process. The following are selected examples of guiding questions (University of Calgary, 2017):

- How current is the program? What is being emphasized? Are we preparing graduates for traditional and/or emerging roles?
- How can we make the program more innovative?

- What is the right balance of discipline-specific courses and interdisciplinary courses to give students a solid grounding in the discipline yet enhance their learning of broader perspectives? What might a multidisciplinary approach look like?
- What aspects of the program are problematic for students and how do we resolve them?
- Do we have the right prerequisites for upper-level courses? The right core courses?
- How does our program align with other learning outcome frameworks, at the faculty and/or institutional level?
- Does our program align with divisional and/or institutional strategic priorities?
- How are Indigenous/Black/other equity-deserving groups' perspectives being incorporated into the program in terms of pedagogies and/or content?
- Are there any new or emerging priorities or initiatives that we should examine? (e.g., mental health and wellness in students and staff, integrating educational technology, experiential learning opportunities, etc.)

Once goals or guiding questions have been established, you can begin to develop an overall plan for the curriculum development process.

Selecting Activities and Establishing Timelines

Much of the work of curriculum development is centred around gathering, analyzing, and reflecting on different kinds of evidence. The following two chapters in this guide will dive into evidence gathering and analysis, so this chapter will not delve deeply into those areas. However, it is important to think through what kinds of analytical and reflective activities (and what evidence and other information is needed to support them) in relation to the goals or questions the program hopes to achieve or answer through the development process.

Project planning can then begin by considering what sources of information you can draw on to help answer the guiding questions, or respond to each goal, and what kinds of analysis will provide insight into the program. The following table, which has been adapted from Dyjur et al.'s (2019) curriculum review guide, provides an example of how you can set up an overall plan for gathering and analysing evidence to support individual questions/goals. While we use this table as an example, we recognize that other approaches to project planning can be developed that are better aligned with curricular development goals. For example, when evaluating Indigenous ways of knowing, EDs should employ a culturally appropriate planning model that reflects the holistic elements of Indigenous pedagogies and epistemologies.

Guiding Question	Data Sources on Hand	Data Sources Needed	Collection Strategy	Analysis Strategy
What gaps and overlaps exist in content across the curriculum?	Curriculum map Graduate exit survey Student performance (Yrs 1-3, Practical exams) Accreditation exam data	Content map Preceptor feedback Alumni feedback	• Gather all topics addressed in each course • Collect scores by question from accreditation exam • Collect content-relevant feedback from exit survey • Alumni consultation: survey / focus groups • Preceptor consultation: survey / focus groups	• Categorize & 'map' content coverage across the curriculum • Categorize accreditation exam questions by content & success/ failure rate • Analyse qualitative and quantitative consultation data • Categorize & 'map' exit survey data
Are topics/ concepts/ etc. introduced and developed in a strategic way across the curriculum?	Curriculum map Course evaluations Graduate exit survey Student performance (Yrs 1-3, Practical exams) Average grades	Student feedback Preceptor feedback Instructor feedback Student artifacts DFW rates (grades of D or F, and withdrawals)	• Collect content-relevant & program structure feedback from exit survey • Student consultation: survey / focus groups / town hall / class discussions / other? • Preceptor consultation: survey / focus groups • Select key assessment artifacts for analysis	• Track patterns of DFW rates to determine bottleneck courses or other areas for consideration • Code student artifacts to determine common strengths and weaknesses • Analyse qualitative and quantitative consultation data • Categorize & 'map' exit survey data (contextualize above in curriculum map)
How well are the theoretical elements of the program aligned with the practical components?	Curriculum map Graduate exit survey Placement evaluations	Student feedback Preceptor feedback Environmental scan of other Pharmacy programs Summary of 'best' practices in health education literature	• Student consultation: survey / focus groups / etc. • Preceptor consultation: survey / focus groups • Website analysis of peer programs (gather program requirements, program structure, residency info, unique learning opportunities, etc.) • Peer consultation (peer programs, cognate units, etc.), survey / focus groups / interviews / etc. • Literature review on integration of theory and practice in health education (Pharmacy to start, but other health professions too)	• Analyse qualitative and quantitative consultation data • Code and 'map' findings from peer program sites • Compare findings from literature review to current practices in program

Guiding Question	Data Sources on Hand	Data Sources Needed	Collection Strategy	Analysis Strategy
What problematic overlaps exist in the way we assess students? What are some other expectations that are missing from our curriculum?	Curriculum map Graduate exit survey	Assessment map/ charts Workload analysis Student feedback Instructor feedback	• Gather all topics addressed in each course • Collect scores by question from accreditation exam • Collect content-relevant feedback from exit survey • Alumni consultation: survey / focus groups • Preceptor consultation: survey / focus groups	• Categorize & 'map' assessment coverage across the curriculum • Map workload expectations across the curriculum • Analyse qualitative and quantitative consultation data
How do we make our curriculum more flexible/ dynamic?	Curriculum map	Environmental scan of other Pharmacy programs Summary of 'best' practices in health education literature Summary of 'best' practices in teaching & learning literature	• Website analysis of peer Pharmacy programs (gather program requirements, program structure, residency info, unique learning opportunities, etc.) • Peer consultation (other PharmD programs, cognate units, etc.): survey / focus groups / interviews / etc. • Literature review on keeping health education programs 'nimble' (Pharmacy to start, but other health professions too) • Literature review on keeping higher education programs in general 'nimble'	• Code and 'map' findings from peer program sites • Compare findings from literature reviews to current practices in program

Table 3.1. Sample Curriculum Development Plan for Pharmacy Program

What is not addressed in the table above is the timeline for the curriculum project, which would include the milestone meetings where the critical analytical and reflective work would take place. Almost every curriculum project is going to have deadlines that are outside of the program's control, whether it be a self-study deadline, a response report deadline, a modification proposal deadline, etc. There is going to be something that the unit needs to work toward that will impact what they are able to achieve within a given timeframe. Importantly, no unit is going to have endless resources to dedicate to curriculum analysis for an indefinite period of time, so planning for what is most critical and feasible is paramount. In light of that, it is important to focus on the priorities of the unit and lay out a plan of action for the next year or two, and what might be more appropriate to tackle three to five or more years down the road. The timelines for the analysis and development of a program should be aligned with the timelines of any external review processes for that program to help streamline that work. (See also Chapter 6 for more strategies to enhance sustainability.)

Most of the timelines for curriculum projects are dependent on how much the program committee is able and willing to put into them, as well as the structure and availability of the development team. For example, if a small committee can only have hour-long meetings once a month, with little work happening in between, progress is going to be a lot slower than a unit that is dedicating a few faculty members, staff, and research assistants to work consistently over a shorter period of time. It is generally not advisable for a curriculum review project to extend much beyond a one-year time frame as the information collected can get stale, requiring additional data gathering, which is frustrating for all.

Some activities are based on time of the year, so if an extensive round of student consultation is necessary, but it is coming up to the end of April, that work will likely have to wait until September, which is not an ideal time of year to get student feedback on the program. Certain activities need to be focused around what is achievable within a given term or semester, in addition to what resources are available for the work.

Finally, the time and expertise you are able to provide as an ED also factors into the timeline: are you able to support the curriculum project by pulling together data and presenting it; or pulling together visioning ideas into a preliminary list of program-level learning outcomes, etc.; or are you solely able to help support the facilitation of the process? Having a clear sense of the boundaries of your role is important both for your own time management but also to help project leaders understand what you can offer. These boundaries should be clearly communicated so program leads (and others) know what to expect or ask of you, and they may need guidance on what additional resources or support may be needed for the project outside of the support you offer. It can sometimes be challenging to establish those boundaries for yourself – ensure you work with your supervisor so there is no misunderstanding about expectations on your time and how you are prioritizing project tasks, and ideally make the support you offer and your general availability clear to the unit from the beginning of the process.

Facilitating Early Process Milestones

This section focuses on facilitation suggestions for some of the key milestone activities that typically take place early in the curriculum development process. These facilitation suggestions are focused on helping those involved to think about the big picture of their curriculum before drilling down into the details of engagement, evidence, and consultation, which will be addressed in later chapters. It may not be necessary to engage in all of the milestones we address here, but these are some of the key conversations/touch points that help centre a curriculum development process.

Often these big-picture conversations can confront some of the ideological, philosophical, and epistemological tensions within a unit, and between your perspective as an ED and those of the programs you work with. To help navigate some of those tensions, it can be helpful to identify your own understandings of how knowledge is generated and how learning happens, because those understandings might vary drastically from what those in other disciplines believe about knowledge and learning. In a paper about

understanding the disciplines in educational development work, Taylor (2010) notes, "it is critical that educational development specialists appreciate the diverse approaches to knowledge organization, problem solving, values, and communication that characterise various disciplines. This knowledge has a real impact on our capacity to assist colleagues in making these aspects of expert knowledge explicit in their teaching…" (p. 61). Understanding these elements of a discipline has important implications for how to build rapport with an academic unit and how to put together a plan that makes sense for the discipline. For example, values that EDs hold, such as student-centeredness, might be quite foreign or unapparent to some instructors, so it can be helpful to gain an understanding of their ways of knowing and what kinds of knowledge, processes, and evidence they value in order to come at conversations about curriculum effectively. Similarly, processes that feel obvious and inherent to curriculum development, such as collaboration or consultation, may be less familiar to some.

Part of this process is also understanding the philosophical and epistemological underpinnings of our own work and disciplinary backgrounds. Setting aside some time to think about educational development as a field, including curriculum development as a unique subset, along with what you bring from your own disciplinary background will help you move forward with curriculum development more effectively.

Initial Consultation

In preparation for meeting, it is helpful to get a sense of the research base and program context – does the research of the faculty seem to be largely quantitative or qualitative? Empirical or theoretical? Individual or collaborative? What can you learn about how the discipline works? What else can you learn about the academic unit, its programs, and its faculty? What does their website tell you about their approach to teaching and learning? Support for students? What other information is relevant? It is also worthwhile to check when the program's last external review took place (if relevant), and when the next one is due to happen.

When you meet with a curriculum development group for the first time (likely whoever will be leading the project, and possibly a few key faculty members), it is an opportunity to learn more about the faculty or departmental context and culture, and their motivations and aspirations for the project. It is also an opportunity to lay out the guiding principles for the process and clarify your role. It is important to remember at this stage that you are there to provide expertise on curriculum development and the process of analyzing and reflecting on curricula. You have the expertise to suggest why certain approaches are effective and important, and it is at this early stage that you can work with program leadership to talk through how to ensure the process draws on effective practices. Curriculum development may require you to take on more of a leadership role than other areas of educational development practice, and the initial meeting is the best opportunity to position yourself effectively.

The table below provides a few broad areas that may be helpful to explore in your initial consultation meeting, along with some sample questions to ask for each area. The questions noted in the table are by no means an exhaustive list, but they should provide a sense of what information you need to start working with a program on a plan for the development project.

Category	Rationale	Sample Questions
Program Context & Curriculum Development History	You can learn a fair amount about a program and its curriculum from your pre-meeting research, but you likely won't find the nuances of how the program has grown and changed over the years, which can not only help you understand how the program works, but can also help you understand how the unit works, some of their orientation to how curriculum works, etc.	• When was the last time a curriculum development initiative was undertaken? • If an external review or accreditation happened recently (within the last couple years) what was the main feedback from reviewers? • How is the curriculum structured? Why is it structured that way? How many programs will be part of the review process? • Does the program have established learning outcomes? • What are enrollment trends like in the program?
Drivers / Motivators for Development Process	Sorting out the program priorities begins with understanding what the driving factors are behind the development project. Sometimes the purpose for curriculum development is driven by internal concerns within the program, which makes it more likely that faculty and possibly other stakeholders are already motivated to do the work. However, curriculum analysis and development are often driven by external factors (e.g., program review or accreditation), and in such cases the process can be seen as just a bureaucratic necessity. In situations where the process is externally driven, it is helpful for the group to find an internally-motivated purpose that feeds their goals.	• What brought about the desire/need for change? • Are most instructors interested in reviewing / making changes to the curriculum? How can we engage/motivate those who are less interested? • What do you want to find out in this process? What do you hope to accomplish?
Logistics / Process Facilitation	As noted earlier in the chapter, you may not come into the process right at the outset. Establishing what has been happening in the program with respect to curriculum development prior to your meeting is important for determining next steps.	• What has been done up to this point? • Is there a team established to work on the project? • If so, is this part of an established committee, or was the team formed specifically for this project? • Who is responsible for signing off on decisions? • What kind of consultation is done with students and alumni? (Annually / at all) • What timelines/deadlines do we need to be mindful of? (e.g., governance, accreditation, external review visit, etc.)

Table 3.2. Initial Consultation Discussion Prompts

Program Visioning

A useful early activity to engage a unit in is broad-level program visioning. Visioning can help instructors think through the larger purposes and intents of a program (perhaps beyond just curricular interests) and re-focus on how they want to move the program forward. Program visioning early in the curriculum development process provides participants with the opportunity to:

- Take a step back and think about the broader purpose and their big-picture goals for the program;
- Consider their educational values as a group; and
- Establish some common ground about what the program is here to do.

Visioning conversations are often a stark contrast to typical curriculum committee discussions that often focus on the granular nuts-and-bolts of the curriculum, such as course description changes or considering how many sections of a course to offer in a given year. Visioning early in the process not only helps establish a foundation for the priorities of curriculum renewal, it also helps instructors understand that a program is a holistic thing, not just a sum of its parts: visioning conversations are one of the few opportunities for instructors to start to see the program outside the prism of their own course(s).

It can be problematic to start conversations about program visioning without any sort of information – under that circumstance, you end up with instructors simply exchanging opinions based on personal experience rather than thinking about a broader program lens. To help set up a visioning conversation, it can be helpful to share contextual information about the program (its history, program requirements, accreditation requirements, etc.) along with evidence and feedback that will help spark ideas and drive conversation. Depending on the goals of the process, the committee might benefit from an overview of a recent program review report, a summary of enrollment data, external review reports, and so on. What information to share will depend on the goals of the session, but there is likely some type of existing data that can help enrich the discussions planned for the session. Ensure that participants are aware of what will be shared, and that any information that might put stakeholders in a vulnerable position is shared carefully. Typically, information is shared with the understanding that it is confidential. The last thing you want to do is upset or alienate the people you are hoping to engage in a visioning discussion!

The following table outlines some of the key considerations for establishing a program visioning session, and it is followed by an example visioning retreat agenda to illustrate one way a visioning session can be structured.

Consideration	Description
Goals	Much like the larger curriculum development process, planning and facilitating visioning sessions starts with goal-setting – it is difficult to plan a session unless you have a sense of what the unit is interested in exploring.
Structure	How you structure the session(s) depends largely on the unit's goals and their timing/resourcing. In some cases, a unit may be interested in setting aside a full day to have a program retreat to engage in broad visioning and planning. In other cases, committees may only be able to dedicate a 1- or 2-hour meeting, or series of meetings. Some units may want to (and be able to fund) an off-site meeting at an event space, and others may wish to host the session in their own facilities. Some may prefer to hold the session virtually so more people are able to attend. What you're able to accomplish will vary based on these structural details, so you'll need to work with the program leader(s) to determine the best option.
Participants	As with the larger process, consider who should be included in talking about the vision for the program. This may be dependent on the goals for the session, but it is often helpful to have representation from key stakeholders (e.g. continuing appointment faculty, sessional instructors, clinical faculty, teaching assistants, staff, students, etc.) There may be certain prompts or conversations that are more relevant to some stakeholders than others, but it is useful to consider what voices need to be heard at this early stage. If possible, plan a visioning session with all program instructors so that they are involved in discussions early on and are more likely to buy in to the process.

Pre-Work	Depending on the goals, it may be helpful to have participants do a bit of reading or work in advance, so they come into the session prepared for discussion. For example, you might ask them to read over program documentation in advance and bring their course outlines to the session. If the purpose of the session will be to reflect on the program's existing learning outcomes, send them ahead of time. You could take that a step further and have them respond to the program learning outcomes via a survey (e.g., rate how important they think an existing outcome is, identify key gaps in the outcomes) and then present the results at the session as a way to begin a discussion. Of course, not everyone will 'do their homework', but giving people an opportunity to prepare is rarely a bad idea.
Next Steps / Follow Up	Finally, the session should conclude with a discussion of priorities for next steps that is aligned with the overall goals of the curriculum development process. What needs to happen in order to progress further in the process? This could be data gathering, revision of program learning outcomes, curriculum mapping, etc.

Table 3.3. Program Visioning Planning Considerations

Example Retreat Agenda – Bachelor of Nursing Program

Retreat goals:

1. Establish a clearer sense of program's vision, purpose, etc.
2. Articulate priorities to focus on for curriculum development work in the following year & beyond.

Preparatory tasks:

1. Review the program documentation, including current program learning outcomes.
2. Instructors bring their course outlines to the session.

Note: this retreat was facilitated online, but the activities could be run in an in-person or hybrid format as well.

Timing	Agenda Item	Online set-up & facilitation
15 mins	*Welcome & Introductions* • Purpose & structure of retreat • Opening of sandbox – a place where instructors can add issues for discussion and questions throughout the day. We may not get to all of them through our activities, so what we don't complete we can bring forward after the retreat.	Department Head, program coordinator or lead of the curriculum committee to take notes in shared document.
15 mins	*Presentation* • What is a curriculum? Orientation to curriculum as an integrated whole.	Presentation from curriculum developer or educational development consultant. Shared document.
30 mins	*Icebreaker* • Ask participants to jot down three words or phrases to describe their current program. For example: experiential or inquiry-based. (Note: sometimes people write negative things such as outdated). • Next, ask them to write three words or phrases that describe the program as they would like it to be in 5 years. • Participants share their responses, either verbally or in the chat. Do they have some of the same descriptors for now and 5 years from now? • To what extent are people on the same page regarding their vision for the future program? Are there themes that resonate with the group?	Assign a scribe to record responses.

1hour	*Program Visioning* Use the notes from the ice breaker activity and build on them in this section: • What unique role does [institution] play in the landscape of Nursing education, and how is that role currently (or not) enacted in the curriculum? • What are the educational values of the program? (E.g., What are our beliefs about how learning happens? What do we feel is the purpose of Nursing education? What kinds of pedagogy do we value?) • What does an ideal graduate of the program look like? What broad skills do they have? What values do they have?	Small group discussions using virtual breakout rooms: • Break into groups of 4-6 participants and each group discusses the same question simultaneously for 10 minutes. • After 10 minutes, return to the larger group for a 5-minute debrief. Each group provides a short summary of their discussion and conclusions. • Repeat for other questions. Each group will have a scribe that documents notes in shared document.
Break: Incorporate a break in the session. If the workshop takes place over multiple days, the activities below would occur on day 2.		
1hour	*Program-Level Learning Outcomes Discussion* If there are existing PLOs: • Give a brief overview of existing PLOs as a refresher. Small group discussion: • What is working well with the PLOs? • How relevant and current are the PLOs? What emerging trends in the field may need to be reflected in the PLOs? • How is our program different from when these learning outcomes were written, and what changes need to be made? OR: If the program does not have existing PLOs: • Give a brief overview of the purpose and structure of PLOs, as well as a couple of examples. Small group discussion: • What should graduates be able to know and do at the end of the program? • What is important about the program and how do we convey that in terms of student learning?	Department Head, program coordinator or lead of the curriculum committee facilitates. Small group discussions using virtual breakout rooms: • Break into groups of 4-6 participants and each group discusses the relevant questions for approximately 30 mins. Shared document with a volunteer from each group taking notes. *Debrief:* Groups present an overview of their discussion to the large group (15 mins total). Department Head, program coordinator or lead of the curriculum committee facilitates. Small group discussions using virtual breakout rooms: • Break into groups of 4-6 participants and each group discusses the relevant questions for approximately 30 mins. Shared document with a volunteer from each group taking notes. *Debrief:* Groups present an overview of their discussion to the large group (15 mins total).

1hour	*Draft Program-level Learning Outcomes* • Break into small groups again to rewrite / draft PLOs. Each group can take a subset of the PLOs.	Small group discussions using virtual break-out rooms: • Break into groups of 3-4 participants for approximately 40 mins. Shared document with a volunteer from each group taking notes. *Debrief:* Groups present an overview of their discussion to the large group (15 mins total).
15 mins	*Conclusion* • What are we doing between now and our next session? • What is the goal of our next session?	Large group discussion facilitated by department Head, program coordinator or lead of the curriculum committee.

Table 3.4. Sample Retreat Agenda

Program Learning Outcome Development / Revision

Definition and Purpose of Program Learning Outcomes

Program-level learning outcomes (PLOs) are the knowledge, skills and attitudes / values that students are expected to attain by the end of a program of study. There are a few notable features of this working definition:

- PLOs capture various kinds of learning that go beyond disciplinary knowledge, including skills development and personal attributes.
- PLOs emphasize student learning, not content. The difference is subtle but important. Some groups may need to work with accreditation standards that emphasize content. In this case, they may decide to use the accreditation standards, or work with two sets of PLOs.
- PLOs are broader than course outcomes in that they are not typically attainable by taking one course; students usually need to take more than one course to meet the expectations set out in the PLO. This allows for scaffolding learning as students proceed through a program, deepening their understanding.

PLOs communicate what is essential and intentional about a program. They indicate what is valued, to the extent that it needs to be articulated to students (and more broadly) as well as reflected in student learning experiences. PLOs set the stage for what students will learn and help guide decision-making about the program. When a group writes or revises their PLOs, they are essentially working on visioning their program. They are thinking about the vast array of possibilities for the program and focusing in on what they would most like it to comprise.

Aligning PLOs

As with learning outcomes at the course level, program learning outcomes are developed for the purposes of alignment – to enable the design and analysis of elements of curriculum (courses, types of assessment, etc.) as they align with the learning outcomes. Program learning outcomes are the aggregation of learning across a curriculum, and the program is intended to be designed to enable students' development toward and

achievement of those learning outcomes through completion of program requirements. Alignment does not merely apply to the relationship between the program learning outcomes and the curriculum, though. It also applies to the alignment of program learning outcomes and divisional, institutional, and potentially provincial learning outcomes, including, in some cases, professional competencies or other accreditation frameworks. Learning outcomes at various levels are nested within one another:

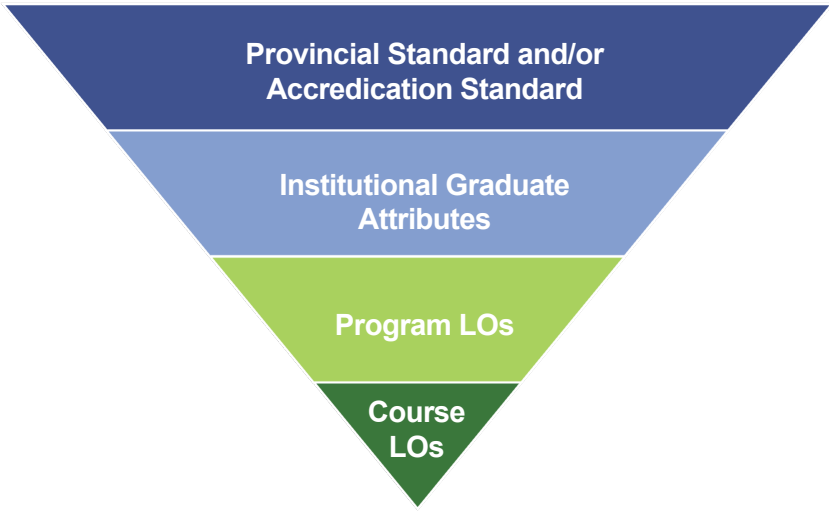


Figure 3.1. Model of Learning Outcome Alignment

In theory, there should be a through-line from courses straight to the provincial learning outcomes or accreditation standards, if relevant. However, actual alignment is rarely that straightforward. Please note that for programs that are smaller than degrees, such as certificates or micro-credentials, PLOs and course outcomes may be identical if one course is the only point of connection for student learning.

Working with Academic Units on PLOs

Depending on the context, the development of program learning outcomes may be more or less familiar to instructors or curriculum committees. Regardless of whether there has been an outcomes-based framework in place, as is the case in Ontario, or whether there is no provincial framework in place, individual groups will have different understandings of outcomes-based processes. Even within regions where outcomes-based frameworks have been in place for years, some find program-level learning outcomes to be a helpful way to think through the design of their programs, and others find program-level learning outcomes to be a frustrating bureaucratic hoop that needs to be jumped through to maintain their programs. Determining the familiarity with and stance on learning outcomes will be necessary before jumping into any outcomes-related conversations – if you are working with a group that is less than keen on outcomes, the approach to discussing them will need to be different than working with a group who finds them inherently helpful (note – some people within a unit may find them helpful, and some may not; academic units are not a monolith).

Depending on how entrenched PLOs are in your institution, it may be that the unit you are working with already has program learning outcomes established for their programs. Even if they have not specifically articulated program learning outcome statements, there is likely to be documentation that outlines what students are meant to take away from the program, which can be used as a starting point. That is not to say visioning conversations shouldn't inform program learning outcome development (or redevelopment); the big picture ideas from visioning can be concretized into tangible learning intentions, which can be compared to existing program learning outcomes (or other documentation that outlines expected learning for students in the program).

There are a number of approaches that you can take with a program committee to develop or revise learning outcomes, but a few key methods are outlined below.

Method 1

One approach is to brainstorm learning outcomes using a backward design approach, thinking through what kinds of learning students ought to have by the end of the program, and drafting or editing learning outcome statements based on the result (Wiggins & McTighe, 2006). This method is particularly helpful for groups that do not currently have PLOs or accreditation standards. Conversations about the vision and purpose of the program, along with any documentation about intended learning from previous program proposals or reviews, should provide a solid foundation for brainstorming program learning outcomes. Working with the program group to concretize, and in some cases flesh out, visioning ideas can lead to a good start to program learning outcomes. For example, you may ask instructors what they mean by a vague term such as 'critical thinking' or what it would look like for a student to graduate with the ability to do something specific to their discipline. Responses to these kinds of questions will help frame the appropriate language for learning outcomes.

Method 2

A different approach to developing program learning outcomes is to start with analyzing the learning outcomes from key courses in the program and then aggregating/categorizing the results to write more global outcome statements. The results can then be compared with the ideas that came from visioning discussions to see if there are any concepts or skills missing from courses that the program would like to address. It's important to note that not all course learning outcomes will be part of the aggregation process, but there should be some alignment or representation of each course to the program-level outcomes. This method can be used by groups that do not currently have PLOs, as well as those who are reviewing their current set of PLOs.

Method 3

A variation on the backward design approach is progression mapping, which involves asking instructors to consider how knowledge and skills develop across multiple degrees – from undergraduate through to doctoral or post-doctoral programs. While progression mapping was originally developed as a way to determine where to integrate new content into a program based on program learning outcomes, it can be helpful to consider as a brainstorming exercise as well. This process not only encourages programs to consider the relationship between various degrees they may offer, but also what kinds of learning make sense at each level of education.

Method 4

For programs that are accountable to accrediting bodies and have a set of accreditation standards, we recommend adopting those standards without revisions or writing program outcomes that align with those standards. It is possible that a group will want to develop additional PLOs to add to the accreditation standards that articulate how their program is unique and distinct from similar programs at other institutions.

How many PLOs?

A common question often asked by program leads is how many PLOs they should have, which is a difficult question to answer. A general guideline of how many PLOs to include for a bachelor's degree is about 8 – 12. However, there are many examples of programs that have many more, as well as programs that have less. The right number of PLOs would be the number that is needed to state the expectations for student learning in the program. Our observation is that too many PLOs can be hard to work with, and at a certain point they are quite similar to course outcomes in their level of granularity. A more challenging issue is when there are few PLOs that are so global they are essentially meaningless, resulting in curriculum maps from

which it is hard to discern useful information. It is sometimes necessary to 'work with' the PLOs (e.g., through curriculum mapping) in order to determine the appropriate level of granularity. For example, a program may have a general PLO about written and verbal communication, then find through mapping that they need to break it down into specific types of communication in order to effectively locate gaps in the curriculum. It is not unusual for the development of PLOs to be iterative.

Examples of PLOs

Major in Quantitative Biology, Department of Ecology and Evolutionary Biology, University of Toronto
This set of PLOs is based on a four-year honours bachelor degree program.

Students who are successful in the program will be able to:

1. Demonstrate advanced knowledge and practice of scientific methodology and biological techniques.
2. Critically evaluate biological information and hypotheses.
3. Apply the process of scientific inquiry through hypothesis generation and testing in laboratory or field settings.
4. Communicate scientific principles clearly and concisely through oral presentation, writing, and graphical representations of biological information.
5. Solve biological problems as part of a team or with collaborators.
6. Demonstrate knowledge of cellular, ecological, and evolutionary processes governing the diversity of life.
7. Demonstrate knowledge of the levels of biological organization and their interconnection from molecules to organisms to populations to ecosystems.
8. Apply mathematical, statistical, or computational approaches to solve biological problems and to represent ecological and evolutionary ideas.
9. Demonstrate knowledge of the relevance and importance of ecological and evolutionary principles in society.
10. Critically evaluate quantitative approaches for testing scientific hypotheses.

Master's Certificate in Software Security, Computer Science, University of Calgary
This set of PLOs is based on a two-year Master's-level certificate program.

Students who are successful in the program will be able to:

1. Gain foundational knowledge in the principles of secure systems: systems security and applications security.
2. Develop a secure software system or product that will be connected to the Internet: anticipate potential threats and design options to secure a product.
3. Apply existing tools and practices into the software development process in order to enhance the security of their software.
4. Apply threat modeling, security design, and security assessment skills in the process of developing an innovative product such as a mobile application or other smart device.
5. Recognize the limitations of technical security measures, and strategize and evaluate ways to address gaps, including non-technical solutions such as deployment of policies and programs.
6. Communicate systems design and security assessment results to a technical audience who may not be security experts.
7. Decide on a course of action based on relevant legal and ethical considerations.

Advanced Diploma in Journalism, School of Communications, Media, Arts and Design, Centennial College
This set of Program Vocational Learning Outcomes is based on a three-year college diploma program.

Students who are successful in the program will be able to:

1. Report on a range of stories in an accurate, detailed, balanced, professional, and timely manner.
2. Apply computer and technical skills to a range of production and research functions in journalism.
3. Provide leadership within editorial and production teams, while valuing independence and fostering collaboration.
4. Analyze knowledge from communities, current events and public affairs, and history to interpret and express the context for a range of journalism publications and/or productions.
5. Develop strategies for personal and professional development.
6. Comply with and promote adherence to relevant Canadian legislation, standards, and the principles and practices of journalism.
7. Write and edit complex content for a range of media platforms.
8. Publish and broadcast content for a range of media platforms.

Evaluating PLOs

Once you have a solid draft of a program's PLOs you will want to gather feedback on them, possibly from multiple stakeholders. It can be helpful to provide them with some questions to guide the discussion, such as the following:

- Do the PLOs state what all graduates of the program should be able to accomplish? Do they outline the critical competencies, skills, and knowledge that students are expected to learn by the end of the program? Do they adequately convey the purpose of the program? Each outcome should specify the minimum expectations of graduates regardless of their specializations, options, or minor (University of Waterloo, n.d.). Additionally, the outcome must be achievable by the end of the program, and not several years into the graduate's career.
- Are they stated from the perspective of student learning? Occasionally learning outcomes are more focused on content or more general goals of the program. Check to see that they are phrased in terms of what students will be expected to accomplish (Dyjur et al., 2017).
- Are the PLOs comprehensive in terms of depth and breadth of the program? In other words, are they program-level rather than course-level expectations (University of Waterloo, n.d.)?
- Do they convey what is important about the program? Learning outcomes can reflect the program's disciplinary context by using disciplinary language and pedagogical approaches (University of Waterloo, n.d.).
- Do they articulate what is valued in the program? Can you tell what is special or distinct about it? For example, a program might emphasize an inquiry-based approach, social justice, experiential learning, and so on. Do the PLOs reflect this (Dyjur et al., 2017)?
- Is anything missing? In other words, if a student graduated from our program with only these outcomes, would you be proud to call them a graduate of your program? This can be the hardest question to address when examining PLOs.

Approval of PLOs

Once the PLOs have been written and received feedback from relevant groups, they should be approved following faculty, departmental, and institutional processes. Depending on location and type of institution, approvals for PLOs might need to go to a provincial or accreditation governing body as well. It is possible that the group does not have an existing approval process, in which case they will need to seek guidance from the dean or department head on how to proceed. Some groups need to go before faculty council for approval, while others receive approval from the dean or curriculum committee.

Chapter Conclusion

In this chapter, we reviewed the overall approach for planning a curriculum development process, including facilitation guidance for some of the early milestone activities that help an academic unit reflect on the 'big picture' of their curriculum. We established the importance of getting to know the unit you are working with in order to best understand their motivations for curriculum development, their goals, and generally how the unit works. Working with the group to establish goals or guiding questions for the curriculum development project will help you guide them in creating a curriculum development plan, which may begin with program visioning, and/or drafting or revising program learning outcomes.

We also addressed the significance of the ED's role in these activities, and the complex power dynamics at play in curriculum development initiatives. Considering the extent to which you as an ED have agency and influence over the direction of the project and the extent to which they bring institutional authority to bear on a project will impact how best to work with different groups. Understanding of your own disciplinary biases and ideologies will help you recognize where you align with an academic unit, and where you may need to do more work to understand the group you are working with.

The following chapter will expand on how to continue addressing guiding questions and curriculum aims through gathering and analyzing different sources of data and evidence. The themes developed here regarding the role of EDs and the importance of acknowledging disciplinary differences will be continued in Chapter 4.

Chapter 4
Gathering and Analyzing Curriculum Data

Introduction to Curriculum Data Gathering & Analysis

In order to make meaningful evidence-based decisions during the iterative process of curriculum development, we emphasize the value of gathering and analysing relevant information about the program from a variety of perspectives, and discussing these data within the context of the program. In this chapter, we highlight the variety of roles educational developers (EDs) may play in data gathering and analysis, as well as the importance of getting to know and adapting to your audience. We also describe data gathering and analysis strategies and important considerations with detailed examples in Appendices 4.1 to 4.3. Curriculum mapping, often a central and mandated form of data, is the focus of Chapter 5.

Role of Educational Developers to Support the Data Process

The role of EDs and those facilitating the curriculum development process, including analysis, is to foster a common purpose and build positive relationships (Bamber & Stefani, 2015) while "being a sounding-board for curriculum ideas (and complaints), and … creating a relationship with the instructors that embodied trust and investment in the process" (Jeppesen, Hoessler, Fewer, & Mulhall, 2019, p. 9).

Specifically, EDs support data gathering processes in a number of ways, depending on the context, timing of involvement, expertise, and scope of their role. For example, the ED might support curriculum groups through foresight into linkages across the whole process and how data analysis of one source might inform data gathering of another source. EDs may also support data gathering and analysis by providing feedback, coaching program leaders in the process, offering workshops, curating resources or guides, facilitating departmental sessions, co-developing resources with program leaders, and providing guidance on alignment across accreditation and institutional requirements. Expected roles differ by institution and sometimes within an institution ranging from creating a guide for data gathering and analysis processes that program curriculum committees, department chairs or instructors then implement to coaching program leaders as they navigate the process, to working directly in program review teams to facilitate key sessions. Regardless of the level of ED involvement, it is

important that the process of data gathering and analysis involves making meaning of the data to inform evidence-based conversations and decisions about the program. EDs can emphasize the value of the people involved in the curriculum review making meaning of the data rather than taking the data as self-evident.

Supporting the design or providing examples of data gathering strategies

After the guiding questions are established, EDs may also have the opportunity to support groups in choosing the most appropriate methods to gather and analyse the sought information. See Figure 4.1 for an example of how to align particular types of questions with specific data sources and gathering methods.

Once these decisions are made, groups may also need support in developing their data gathering tools and methods. If a group with a more quantitative approach to data plans to create a needs assessment survey, they may need extra help designing questions as well as analysing survey results. A group that is most comfortable with surveys and qualitative analysis may seek support in interpreting numerical data received from institutional analysis reports. This does not mean that EDs must be experts in all approaches to research. However, being aware of the range of possible strategies, EDs can tactfully point out possibilities that may not be readily apparent to a given group, and support connections to other program chairs who have had success with different data collection strategies. The conversations may be identifying the specific questions and relevant data as shown in the pharmacy program curriculum development plan example (Table 4.1).

Providing ethical data gathering, usage and storage protocols, including considerations for Indigenous knowledge sharing

Designing survey questions or focus group questions is only the first step in actually gathering data. The ethical considerations for data gathering and storage may or may not be familiar to each group. We often find that groups appreciate practical suggestions such as making statements about how data will be used, hiring a graduate student to run student focus groups, removing identifying information from transcripts, fostering respectful discussion about results, or using software such as Qualtrics™ to ensure anonymity and security for survey responses. Regardless of the types of data sought, ensuring that people know their information is being thoughtfully and ethically treated can increase response rates and the quality of the data.

Institutions and disciplinary accreditation vary in what is required for ethical data collection in terms of student assignments, course content, and use of focus groups or quotes, where there are limits on uses of the data. Institutional research or data offices, where they exist, can also provide student, program and alumni data or data collection advice, particularly in provinces where such reporting is required for government funding. While data gathering for program improvement typically does not need research ethics clearance under the Tri-Council Policy Statement (Canadian national ethical research framework), institutional and government privacy policies as well as cultural ethical considerations may apply. Where faculty intend to publish or use the data in additional research, it is wise to consult local ethics policy experts such as a research ethics board (REB) early in the process planning.

With the increasing focus on reconciliation and the inclusion of Indigenous knowledges and ways of knowing in curriculum, attention to the collective rights and protocols around the specific knowledge and its sharing needs to be attended to. Use, recording, and sharing of Indigenous knowledge are best when locally guided as part of ongoing relationality with Indigenous knowledge keepers and communities. Before plans are made to do so, we encourage you to consult with local knowledge keepers, Elders and leaders. National information can also be found on the First Nations Information Governance Centre website (www.fnigc.ca), and Canadian Federation of Library Associations Position statement on Indigenous knowledge

in Canada's copyright act (http://cfla-fcab.ca/wp-content/uploads/2018/05/CFLA-FCAB_Indigenous_knowledge_statement.pdf).

Leading, facilitating or supporting data analysis discussions

Working within programs through the data analysis process involves a form of guided sense-making where the role and responsibilities of the ED vary depending on context. An ED may prepare the data and reports, meet with program chairs or leaders to identify the most relevant approach for engaging instructors, and facilitate discussions and sense-making sessions where instructors review, question, interpret, and integrate the information into their understanding of their program and their plans.

Analysis discussions engage instructors and program leaders in collaboratively making sense of the data they have and interpreting the data to inform next steps for the program. Depending on the context and familiarity with the forms of data, instructors (program leaders, faculty councils, or curriculum committees) may require or request scaffolded guidance in their data analysis discussion. The ED support for these discussions will vary depending on a group's requirements and the ED's expertise and capacity. Here are some possible variations:

- **Educational developer-guided discussion** with questions that are standard for the institution, adapted to bridge accreditation and institutional requirements with program leaders, or co-created with program leaders to meet specific program needs.
- **Education developer facilitated discussion** with an interactive interface (such as a data dashboard) or distributed report packages. Instructors work through the data in pairs then discuss as a large group.
- **Co-facilitated discussion** with program chair who frames the discussions of each data set or section with the ED there to provide explanations and work with the groups for any needed clarification.
- **Instructor-led discussion** where faculty are provided with all or part of the data prepared by the ED or institution, perhaps with a form or specific questions to guide their analysis.

The approach often varies by program and by institution; for example, the instructor-led approach may occur in institutions and programs where there is familiarity with a frequent or long-standing process or where the philosophy or structure leaves the implementation of curriculum work to individual departments and programs. In some cases, the faculty will gather and interpret the data without consultation with an ED.

How to: Strategies and Examples for Data Gathering

Each provincial and institutional context has its own set of required, recommended, and typically reported data for program proposals, curriculum review, and curriculum modification. In addition, disciplines with regional, national, or international accreditation may seek similar or additional data for accreditation. EDs can encourage groups to ensure they are aware of and are working in accordance with any data gathering and usage policies that apply to their project. This section explores many of the types of data collected during curriculum development with new programs, major revisions, outcome-based accreditation, and cyclical program review. Curriculum mapping, perhaps the most common but also complex of data gathered, is addressed separately in Chapter 5. Because of contextual differences, it is important to confirm the required and recommended data for each program as well as to check if different data is needed for any majors or minors of the program in order to coherently plan for all the data gathering and analysis.

Program metrics and demographics

Institutional data are often quite helpful in planning a curriculum revision or development project, and might be sought to address specific questions. For example, new proposals and revisioning of existing programs might draw on:

- Current enrollment and multi-year enrolment trends;
- Enrolment data for Indigenous students and international students, if available;
- Completion rates (percentage who graduate) and number of years to graduation;
- Year to year retention rates that compare retention Year 1 to Year 2, and Year 2 to Year 3 and Year 3 to Year 4;
- Failure rates of courses, or list of high-failure courses;
- Standard student engagement surveys (NSSE: National Student Survey of Engagement);
- Standard alumni surveys (required of institutions in some provinces);
- Conversion rates of applications to registrations (in some provinces); and
- Other programs that applicants most frequently applied to (in some provinces).

Depending on your institution and the types of data needed, the information may be available from a centralized unit responsible for institutional data, from previous NSSE or similar reports, or from past curriculum or unit reviews (See Appendix 4.3 for more details). EDs should be familiar with the various sources of institutional data available to help groups find the most relevant information for their purposes.

Environmental scans

An environmental scan is an umbrella term for gathering information about comparable institutions or programs. Whether designing a new program or renewing existing curriculum, gathering details from comparators can provide helpful context as well as enable program differentiation. Determining what information will be of most value to the curriculum project ahead of time will help save time and energy in tracking down the information.

Be intentional when choosing other institutions with which to compare your program(s). Generally, you will want to consider the following when determining comparator programs:

- Reputation/ranking of institution and program.
- Geographic location – do you need to look at programs in your city, province, nation, or beyond?
- Institution size – do you want to focus on similarly sized institutions as well as those larger or smaller?
- Institution focus – will it be most helpful to look at programs with similar types of focus, i.e., research-oriented, undergraduate only, polytechnic, etc.?
- Similarities – if you have a smaller, niche program, are there enough similarities with more mainstream programs with which to compare?
- Accreditation – is it most helpful to find comparators with similar accreditation requirements?
- Credential type – what are other programs' requirements for this kind of credential (i.e., diploma, graduate certificate, etc.)?

Typically, you will want to look at similar types of institutions to your own. For example, a technical or trade school will want to look at similar schools in the province while U15 universities often compare to other such institutions. Additionally, your environmental scan might look at all related programs in the region. For example, a research-intensive university with a faculty of Nursing might compare local programs including colleges with a Licensed Practical Nursing program because these programs could serve as feeder programs into their degree program.

In addition to determining which programs provide the best comparisons, groups will want to decide which factors they want to compare. Some of the most common comparators will include:

- Program Learning Outcomes
- Admission requirements
- Progression requirements and time to completion
- Disciplinary depth and breadth
- Annual enrollment
- Average acceptance rates
- Annual graduation rates
- Titles and descriptions of courses/electives
- Majors, minors, and concentrations
- Micro-credentials offered within the program
- Key experiences like experiential learning, workplace integrated learning, field studies, etc.
- Program focus
- Tuition rate per course and/or total tuition and fees for the program

While some of this information is available on institutional webpages for prospective students, sometimes making a phone call to a department head or administrator will be required. Department heads or program review leads may have a better chance of finding out information from colleagues at other institutions if they already have collegial working relationships with them. It is possible that you will not be able to locate complete information on comparator programs at other institutions.

These types of comparator data may be required for new program proposals that require approval by the provincial government. Please refer to development and approval processes specific to your institution and governmental regulations.

Where comparator data are not required, sometimes groups will find it helpful to collect comparison information from similar programs across Canada or globally. For example, if the guiding questions include developing strategies to raise the profile or ranking of a program or a group aims to create a niche program, it will be helpful to find out what other programs are currently offering and how they are structured.

The value of multiple perspectives: surveys, interviews, and focus groups

Curriculum development impacts a wide range of people and gathering information from as many perspectives as possible can be very helpful in informing discussions about how the program is experienced and viewed. Programs or institutions can vary in who is considered a stakeholder.

For example, engaging students, in addition to instructors, provides a different experience of an existing program from the people who teach in it. Student voice and representation is particularly important as students may be able to raise structural and learning concerns that instructors have not seen or anticipated. Keep in mind, however, that current students may be reluctant to share their experiences without appropriate processes to protect anonymity. Even though formal ethical approval may not be required to collect perspectives on a program, ethical considerations are paramount in designing opportunities for feedback. Group dynamics and departmental history may make it helpful for instructors as well as students to have confidential ways to share their perspectives.

Here are some ideas for gathering data from different groups:

Group	Possible strategies
Students (typically across more than one year of multi-year programs)	• Surveys/questionnaires* • Focus groups • Graduation surveys • Exit interviews* • Exit Surveys** • Consultations with student leadership groups • Including student representation on the committee
Instructors	• Curriculum mapping*** • Survey/questionnaire • Focus group • Teaching/learning artifacts (i.e., course outlines)
Alumni	• Survey/questionnaire re: learning, employment, etc.
Other staff (i.e., student advisors, program support staff, etc.)	• Representation on committee • Survey/focus group re: themes in student need, requests, common questions
Co-op, practicum, and internship supervisors	• Survey/focus group re: learning outcomes, readiness
Professional accreditation bodies	• Accreditation requirements and processes • External review data
Industry/employers/community partners	• Survey/questionnaire • Focus group re: industry or community needs and trends; reputation and perception of the program
Disciplinary faculty peers	• (Typically) external peer reviews as part of the review process • May be a focus group or interviews

Table 4.1. Curriculum development data strategies for specific groups

*Sample survey questions can be found in Appendix 4.1.
**Sample exit survey questions can be found in Appendix 4.4
***Curriculum mapping is further explored in Chapter 5.

In addition to watching for group dynamics, it is important to be particularly mindful of strategies to include the perspectives of equity-deserving groups such as Indigenous instructors or students, instructors or students utilizing accessibility services for accommodations, and Black or racialized instructors or students—without asking representatives to speak on behalf of these groups. Additionally, EDs will want to become aware of how specific populations within groups may have more or less social capital within a specific department. For example, we have noticed cases where there were noticeable differences in voice and social capital between non-PhDs or PhDs; tenured or non-tenured faculty; part-time or professional students; research stream or teaching stream instructors; specific sub-disciplines; and specific age or cohorts. EDs may need to tactfully broach conversations about the importance of equity, diversity and inclusion when designing data gathering strategies for multiple perspectives.

Important Considerations for Data Gathering & Analysis

To define good practice for data gathering and analysis on program reviews, the educational development community can draw on the wisdom of the joint (Canada-US) standards for program evaluation (Yarbrough, Shulha, Hopson, & Caruthers, 2011). These recommendations serve as a reminder to attend to one's role,

stakeholders, the purpose of the curriculum data gathering and analysis (e.g., new program, addressing challenges, updating the program), and the values underpinning the process. In addition, the standards suggest curriculum leads (with or without ED support) determine the relevant data, meaningful processes, and timely and appropriate communication and engagement with instructors, program leaders, and program stakeholders.

Are the original purpose(s) still the same purpose(s)?

Yarbrough et al. (2011, section U3) state that "purposes should be identified and continually negotiated based on the needs of stakeholders." In curriculum review, identifying the shared goals of the review (e.g., to demonstrate program value with minimal change, to identify direction for renewal, or to re-envision a program) helps to focus efforts. While these goals may be internal to the group, relevant requirements such as provincial review, institutional curriculum requirements, accreditation, reconciliation calls to actions, and other priorities of stakeholders are also important to consider. Some institutions have a standard list of questions for program review and for major modifications or new programs. EDs can help identify additional priorities by asking the program lead: What questions matter most right now? And if you heard the answers to these questions, would you be ready to address them?

The purpose of the data gathering and analysis may shift (or accidentally drift) over the course of the curriculum review as earlier data sources raise new concerns or questions. Revisit the goals and guiding questions of the curriculum process before and after reviewing the data collected to keep the overall goals in sight or to adjust them. For example, a program goal may be minimal change to a new capstone, yet the data begin to show deep concern and issues for the capstone and program structure that instructors may want to investigate. If you have doubts about how to balance institutional and local program goals or address a shift in goals, it's helpful to talk with a supervisor or mentor who has insight into the institutional context and your role.

Quick tip: Focus on aligning data gathering/information collecting processes with the aims of the project.

Having large amounts of unfocused data can create confusion and/or slow down the curriculum development project. By encouraging curriculum development groups to focus on the guiding questions or aims of the project, EDs can help groups decide whose perspectives are most pertinent as well as what kinds of questions to ask each group.

What data are relevant?

This is not a case when more is better. The "information should serve the identified and emergent needs" (Yarbrough et al., 2011, U5) so align the data with the purposes identified for the curriculum review.

Quick tip: Keep surveys, institutional data tables and questionnaires concise and focused on the needs.

Where there are multiple surveys being sent to the same students or stakeholders, it may be tempting to combine surveys/questionnaires to serve multiple purposes, but response rates may be higher and the data more helpful if each survey is short and focused. Where possible, use existing data, and trim questions to just those that are useful and needed. One strategy is to ask "how would knowing this answer impact the program design?" [see sample survey questions in Appendix 4.1].

Quick tip: When reviewing an existing curriculum, gather feedback at a program level and/or on program-level learning outcomes.

We find that we have to regularly encourage all participants in a curriculum review to stay focused on the program level rather than get into detailed conversations about individual courses. Because most instructors know their own courses intimately but often have quite vague impressions of the overall program, there may

be a tendency for feedback and conversations to narrow to the course level. On a positive note, keeping the focus on the program level may also lead instructors to become more engaged because they are confident that their courses are not going to be singled out for critique.

Supporting a meaningful process

We aim to support a meaningful curriculum development process for all groups; however, involvement in the data gathering and analysis process varies widely by context and ED role. Depending on the scope of the ED's role, and the audience, you may provide general guidance or a sample process, or you may be asked to provide more focused guidance when programs are using unfamiliar forms of data (qualitative, quantitative) and formats (spreadsheets, long sets of text). For those familiar with the process and data form, a folder of spreadsheets and an itemized form is likely sufficient. Best practice for data analysis is to provide data results in ways that are meaningful to interpret and useful for intended users (e.g., instructors, program leads, program review committees, external peer reviewers) to make decisions and report key findings and follow up to "facilitate and enhance use" (Patton, 2013, p. 1). "[C]onstruct activities, descriptions, and judgments in ways that encourage participants to rediscover, reinterpret, or revise their understandings and behaviors" (Yarbrough et al., 2011, U6). Where a program needs support to understand the data, and where resources and expertise permit, ED support may include a prepared analysis with organizing and highlighting patterns in data. See practical strategies and forms of reporting in this chapter's "Strategies and Examples for Engaging Programs in Data Analysis: data visualization and guided interpretation" section below.

Quick tip: With small amounts of data, focus on trends rather than using it to make big decisions.

While there is a risk of getting overloaded with too much data if the process is unfocused, depending on the size of a program or the potential pool of students/instructors/employers from whom to get feedback, the amount of data gathered might be quite small. If this is the case, EDs can help curriculum development groups to look for trends across data sources and perspectives to inform their decisions. It may be tempting to focus on anomalies and outliers, but if the overall numbers are small, it is important to assess how much weight to give to any one data source.

What process would support timely and appropriate communication and engagement with instructors, program leaders, and program stakeholders?

Academic cycles often have fixed deadlines for admission requirements and curriculum changes, so timing the gathering, analysis, and overall process to fit within the larger cycles helps to avoid delays. It is helpful for coordinators and programs to keep the academic calendar in mind and to consider scheduling faculty sessions and timing of surveys within the academic year. One strategy is to identify pre-set meeting times in advance and back plan the timelines from those meetings. For example, if the goal is submission to the June curriculum committee, then the analysis and recommendations will need to be presented at the May retreat for the draft report to be sent to Instructors mid-May. A final version would need to be approved by the end of May, with prior data gathering, including curriculum mapping, completed by January or February. Gathering timely data at the appropriate time in the curriculum review process with sufficient time to review and make changes is key.

Quick tip: Suggest programs note key dates/months on the timeline beside each step given their culture and department meetings.

Institutions may offer dashboards or other reports to provide departmental leaders and program leads with ongoing access to focussed data, such as applications-to-registration conversions, course enrolments and course failure rates. You may also consider and encourage curriculum leads to plan for a program's needs for following up with and engaging program stakeholders, such as employers, practicum supervisors, and community partners.

What are the implications of the data and analysis process?

Data are not neutral nor are interpretations of the data. They hold the potential for both healthy growth and misuse. Yarbrough et al. (2011, U8) highlight the importance of "promot[ing] responsible and adaptive use while guarding against unintended negative consequences and misuse." As noted in Chapter 5 in the section on "the trickiness of a great conversation," when presenting data there can be a tendency to leap to conclusions, rely on individual anecdotes, and make superficial tweaks to make the report look right. There is also the risk that data could be used to justify changes that replicate inequity or exclusion that might not benefit students or strengthen learning, or that may deepen divisions or budget cuts of a program. For example, responses that represent a small number of students may be overlooked when looking for major trends; however, those small numbers may provide important insights into the experiences of already marginalized students.

In addition, the need to ensure individual instructors or students are not identified yet being aware that serious concerns may be raised leads to planning for how we collect, anonymize, represent, keep confidential, and represent student quotes, while also promoting their insightful contributions to decision-making and reporting. Examples include removing comments that identify specific courses and instructors to avoid feeding into local politics; ensuring the members of the focus group are compensated fairly without names provided to a program leader; identifying and focusing on trends relevant to the whole program. It is also helpful to check with your director or program leaders for results that seem controversial or oddly specific, as there may be a history there. To further equity and reconciliation, EDs and program instructors can attend to how to minimize the potential for negative outcomes and impact particularly where the data reflect challenges or exclusion for specific populations of equity-denied groups.

How to: Strategies and Examples for Engaging Programs in Data Analysis

As an ED, confirm your role in the processes of data collection, data wrangling and analysis: what are you able to offer, and what do others expect of you? This may depend on the scope of your role, time constraints, institutional need, and the group's capacity to manage the process themselves. Each ED comes into the role with different disciplinary norms and skills regarding data use and analysis, and each of us will draw on our individual strengths when supporting curriculum development. The rest of this chapter outlines a number of data visualization and analysis approaches, but these examples are not intended to imply that all EDs need to be skilled in the whole range of possible strategies.

For more detailed approaches to planning a curriculum data analysis retreat, please see Appendix 4.2: Adaptable template for data analysis retreat.

Is the form of data familiar or unfamiliar? What level of pre-processing is needed?

Where the form of evidence (qualitative first person or quantitative) matches the unit's strengths and they are familiar with program reviews, anonymized raw data might be meaningful for them to work through. When the evidence is less familiar, an ED (if comfortable with the data) or data analyst may be asked to guide or walk with them through the themes and patterns. If it is a part of your role, you might prepare packages with organized data and handouts with guidelines or instructions for those who like clear processes; if it is not a part of your role the group could hire a research assistant to work with the data.

It is a careful balance of time spent before the meeting and the depth of conversation that the review group is looking for. For one-on-one or small leadership team meetings, the data may be raw or presented in expandable pivot tables to allow people to work through and prioritize during the session. For a larger group, having the materials in a prepared and organized package helps everyone to engage.

There are several different ways to prepare, organize and highlight data:

- Providing additional organization (e.g., ordering tables, theming of quotes) can help in disciplines where data spreadsheets or textual analysis are not routine in research or decision-making.
- Providing conditional formatting (e.g., heat maps) or other methods to visually highlight patterns can help disciplines that do not routinely use tables or Excel.
- Start with the overall picture, then add complexity. For example, in a spreadsheet, adding a pivot table so totals or patterns can be filtered by year, and layers of complexity can be added in after the overall pattern is discussed.
- Start with their top questions or concerns. For example, look first at the number of individual written assignments across a curriculum map, examine how employers and practicum supervisors rated students' critical thinking skills, or review comments related to the previously restructured labs.
- Use an existing guided set of instructions that walk them through sections of standardized datasets (e.g., institutional planning standard reports, curriculum maps), identifying benchmarks, typical variations.
- For multiple institutional data tables, include specific reflective questions and links to other data sources (e.g., Is your program's retention rate consistent, increasing or decreasing? What other data might tell you why this is occurring?").

Preparing templates, having standard question handouts, and data processes that allow for auto or easy dashboards or analyses are helpful.

When the group includes a mix in disciplines and/or interdisciplinary departments that combine qualitative and quantitative research, it can be very helpful for all to engage with both types of curriculum data rather than one side leaning into the quantitative (instructor-perspective curriculum mapping, and instructor-designed closed questions), and the other side leaning into the qualitative (student first-person lived experience, emerging questions, and concerns).

How to organize and display data?

If your role includes responsibility for organizing and presenting data, consider the audience, purpose, and data available to identify the best option for emphasizing the main focus in a familiar or engaging manner. Many groups have preferred formats for data presentation. They may be willing to present the data in ways that appeal to their faculty and department while demonstrating innovative ways that it can be done! Note that different formatting can emphasize different patterns so ensure the emphasis makes sense. Focus on the discussion instructors will have as they learn and unlearn trends and details about their program, and as they create understanding and interpretations together based on the data and context about their program.

Themed quotes

Quotes can be organized by themes. This is often a manual process, though using software can help. One strategy is to provide themes within a question rather than across questions and note in a summary when there are cross-occurring themes. This works particularly well with focus groups, short answers, specific questions, and smaller data sets. Groups familiar with qualitative data will want to know what strategies were used for theming. Also consider feasibility and the ability of the instructors. For example, 300 paragraph-length responses to what is good about the program may be difficult to sort, and if the instructors are not familiar with a qualitative approach, they are more likely to skim over comments.

Example: Strengths - What's working well regarding course selection?
Required courses – available
Quote 1
Quote 2

Specialization courses – much less availability
Quote 1
Quote 2

Rating-related sorted quotes

Sort the quotes by a rating question. For example, how engaging are the courses (rate: not at all to very engaging)? What makes them engaging/not engaging? The latter comments can be sorted by the ratings with all the "not at all" raters' comments presented together. This is quicker than theming, though it may be better to theme if there are larger datasets or if instructors are not familiar with analysis of qualitative quotes. The quickest option in an Excel spreadsheet is to create a cross-tabulation in a pivot table by rating. Some survey software also allows for tidy cross-tabulations of comments (some make each comment a column).

Rating of how engaging are the courses	**Quotes from "What makes them engaging/not engaging?"**
Not at all	"Quote 1" "Quote 2"
…	**…**
Very Engaging	"Quote 21" "Quote 22"

Heat maps

In a large table of data, it can be hard to see patterns. Heat maps (also called conditional formatting) allow for colour-coding text or ratings in tables or spreadsheets based on criteria or along a scale from highest to lowest values. The most useful example in curriculum mapping is to colour code levels such as introduce, reinforce, and proficiency; or to colour-code student ratings across survey items to show trends across the years or learning outcomes. Note, for accessibility heat mapping is best accompanied by alternative text or a summary, and should not replace the numbers in the cells.

Average ratings (on a scale of 0 - not at all, 1, 2, 3, 4 - greatly contributed) of how aspects of the program contributed to the learning outcomes. Without heatmapping, the pattern is hard to discern visually. For example, the highest ratings of capstone for investigation and teamwork, and co-op for communication are difficult to see.

Contributed to my learning	Critical Thinking	Investigation	Communication	Teamwork	Theory
Labs	1.2	3.2	2.1	1.3	2.1
Student groups	1.3	1.7	2.8	2.6	1.2
Co-op	2.2	1.8	3.6	2.7	2.1
Readings	1.3	0.3	0.1	0.1	3.1
Capstone	2.8	3.8	3.1	3.8	2.1
Class time	1.4	0.6	2.1	0.4	3.2

Table 4.2.a. Data table without heatmapping

Heatmapping over average contribution ratings overall (lowest to highest in all cells) to highlight the pattern of contributions across outcomes and activities.

Makes noticeable: Overall patterns such as low contributions of readings and class time, and variation into which outcomes are contributed by each of the activities.

Quick Tip: select all rating cells at the same time and conditionally format with a single rule to create a table with overall heatmapping. For row-by-row (table 4.2.c.) format each row, and for column-by-column (table 4.2.d) format each column.

Contributed to my learning	Critical Thinking	Investigation	Communication	Teamwork	Theory
Labs	1.2	3.2	2.1	1.3	2.1
Student groups	1.3	1.7	2.8	2.6	1.2
Co-op	2.2	1.8	3.6	2.7	2.1
Readings	1.3	0.3	0.1	0.1	3.1
Capstone	2.8	3.8	3.1	3.8	2.1
Class time	1.4	0.6	2.1	0.4	3.2

Table 4.2.b. Data table with overall heatmapping

Heatmapping over average contribution ratings row by row (lowest to highest in all cells) to see which *outcomes* are most contributed by each activity.

Contributed to my learning	Critical Thinking	Investigation	Communication	Teamwork	Theory
Labs	1.2	3.2	2.1	1.3	2.1
Student groups	1.3	1.7	2.8	2.6	1.2
Co-op	2.2	1.8	3.6	2.7	2.1
Readings	1.3	0.3	0.1	0.1	3.1
Capstone	2.8	3.8	3.1	3.8	2.1
Class time	1.4	0.6	2.1	0.4	3.2

Table 4.2.c. Data table with row-by-row heatmapping to emphasize variation across columns

Makes noticeable: Row by row conditional formatting emphasizes differences between the columns (outcomes). For example, communication stands out as strong and critical thinking as low, with differences in investigation, teamwork, and theory noticeable.

Quick tip for row-by-row: conditionally format one row then select that row, click the formatting paintbrush tool, and paint by selecting the next row, repeat for all rows.

Heatmapping over average contribution ratings column by column (lowest to highest in all cells) to see which *activity* contributed the most to each outcome.

Contributed to my learning	Critical Thinking	Investigation	Communication	Teamwork	Theory
Labs	1.2	3.2	2.1	1.3	2.1
Student groups	1.3	1.7	2.8	2.6	1.2
Co-op	2.2	1.8	3.6	2.7	2.1
Readings	1.3	0.3	0.1	0.1	3.1
Capstone	2.8	3.8	3.1	3.8	2.1
Class time	1.4	0.6	2.1	0.4	3.2

Table 4.2.d. Data table with column-by-column heatmapping to emphasize variation across rows

Makes noticeable: Column-by-column heatmapping emphasizes the component or components that most contribute to each outcome. For example, Co-op & Capstone stand out as contributing significantly to all outcomes, but achievement of Critical Thinking relies heavily on these specific activities.

Quick tip for column-by-column: conditionally format one column then select that column, click the formatting paintbrush tool, and paint by selecting the next column, repeat for all columns.

Stacked Charts

Charts (also called graphs) provide a visual representation of how many, how much and how high/low. Colour-coded legends allow for highlighting one or more of the categories. They are particularly useful in showing aggregate amounts. Take care when deciding on which values to stack (legend) and which to organize by (X axis).

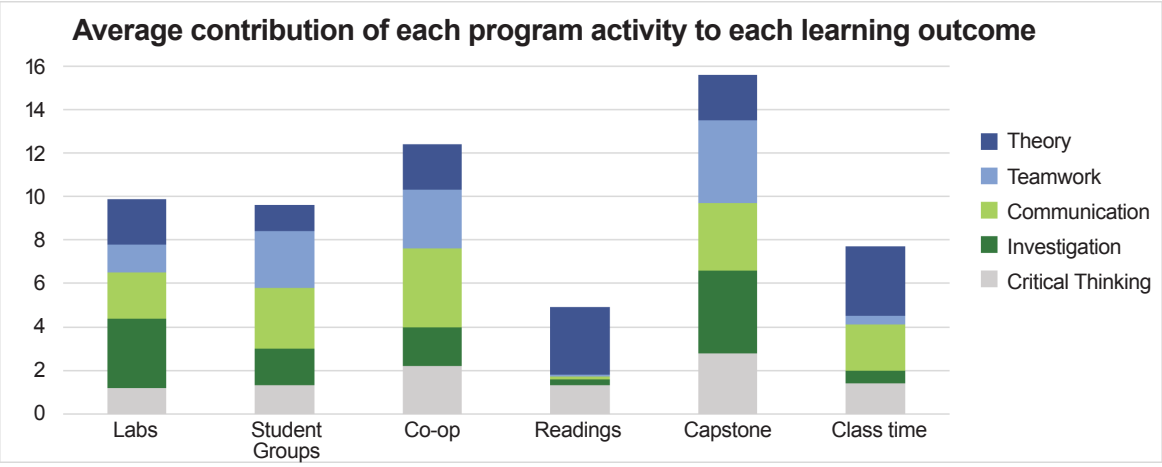


Figure 4.1.a. Stacked chart with activities on the x-axis, outcomes as the legend

Makes noticeable: differences in total between the outcomes (x-axis) and relative proportionate differences between activities.

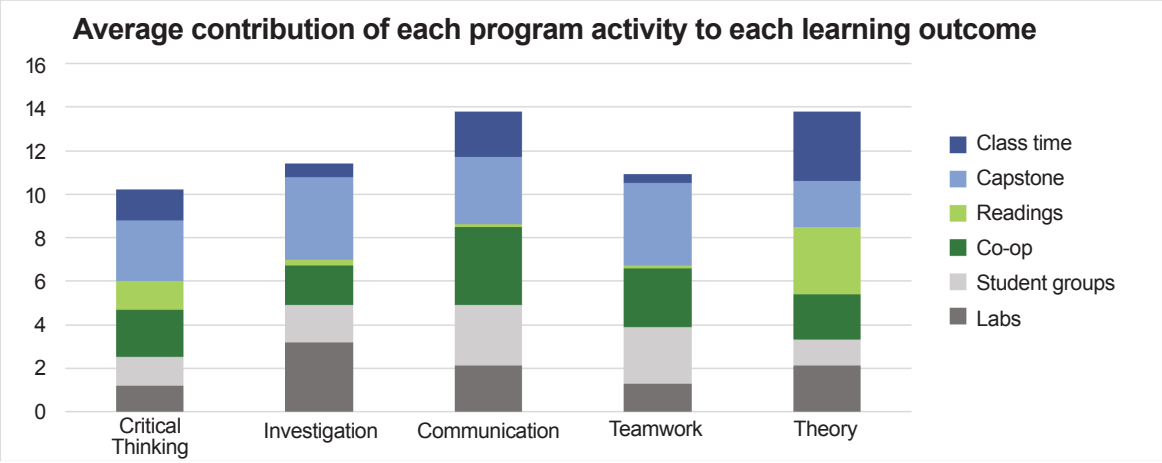


Figure 4.1.b. Stacked chart with outcomes on the x-axis, activities as the legend.

Makes noticeable: differences in total between the outcomes (x-axis) and relative proportionate differences between activities.

Line graphs and bar charts with trend lines

Line graphs (line chart in Excel) provide a visual representation of slope (change) over time or over categories. Add a trendline to show if the numbers are going up or down or staying consistent. Colour-coded legends allow for highlighting one or more of the categories. They are particularly useful in showing change over time. X-axis is typically time on a line graph or when there is a trendline.

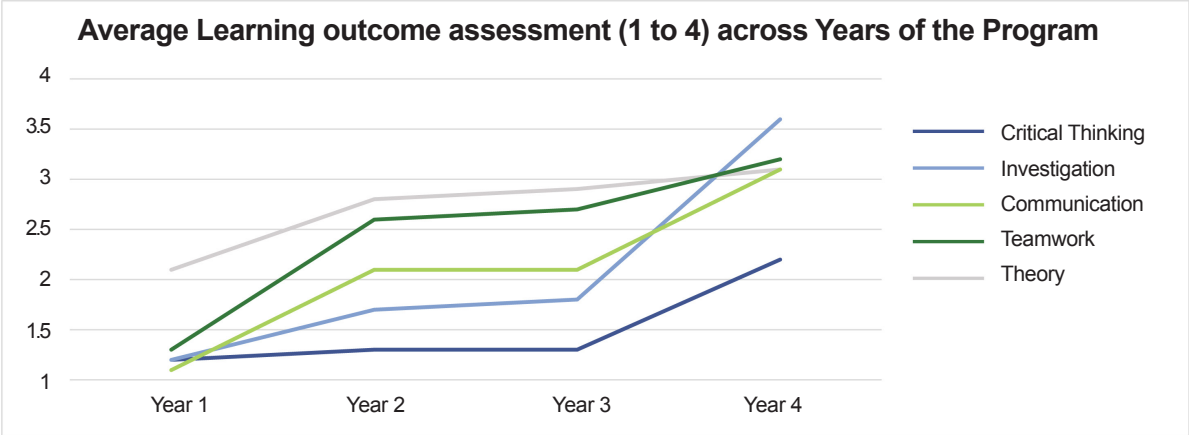


Figure 4.2.a. Line graph of Learning outcome assessments where the rubric scale ranges from 1 (beginning), 2 (developing), 3 (meeting) 4 (exceeding)

Makes noticeable: Differences in patterns of growth over the four years. Handles multiple lines but more than 6 can look like spaghetti (messy).

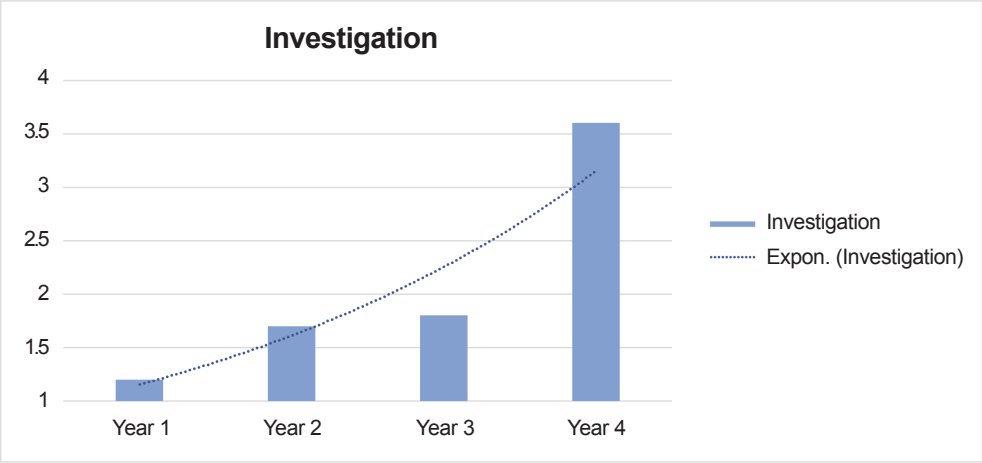


Figure 4.2.b. Bar chart with trendline of investigation learning outcome assessments where the rubric scale ranges from 1 (beginning), 2 (developing), 3 (meeting) 4 (exceeding)

Makes noticeable: Direction of growth over the four years in the trendline (labelled as “Expon. (Investigation)” in this figure).

Consider how the results could be presented in an accessible format, with attention to factors such as font size, colour, and providing a screen-reader friendly or human provided overview.

Online data dashboards, Excel dashboards, and data placemats

Institutions may make some data available through online or digital institutional dashboards or paper reports. There are other strategies, though, to provide an overview of the data visually with charts or summary tables such as those above. Dashboards can be created through Excel™ with interactive pivot tables and charts with options for filters (or as filters beside the chart, called slicers) and expanding/collapsing information. A common expansion/collapse is to allow for instructors to be able to expand course data rows organized by years to see courses, or expand courses to see offerings, and also to be able to filter/slice by demographics. Data placemats can be printed on tabloid-size paper to provide the data you want to start with and highlight, along with a space for notes (e.g., margins or boxes on paper or an “insert textbox” in Excel™). The aim is to provide organized and visually engaging data needed to foster discussions. Themes, sorted quotes, heatmaps, charts and trendlines can all be helpful. In Excel™ and some custom platforms there may also be options for:

- **Expandable pivot tables** that can have rows expand to provide more details including the names of courses in each year.
- **Filters** (older Excel) or **slicers** (floating filter box in the new Excel program only) in pivot tables to select or deselect sub-groups appearing in pivot tables, such as deselecting electives to focus on required courses.

Curriculum, Student Workload or Experience timelines

Students, faculty, and staff can be invited to visually map students' journeys throughout the program along visual timelines. The co-creation process can invite reflection, perspective-sharing, and intermingle analysis and data gathering. Start by asking program staff to populate the timeline with required milestones, then have instructors add in their assessments and outcomes and analyze. Next, layer on retention and incomplete courses data as well as student experiences, based on students co-creating or via student comments, and analyze. Analyze by looking for bottlenecks, heavy workload times, existing and missing scaffolding, overlaps in expectations, potential for cross-course assignment (e.g., assessing content from one or more courses by having all the students complete the same assignment), communication or guidance provided to students and more. One approach is to use sticky notes or a shared document or Padlet to place the various student learning activities and experiences along a timeline of the program.

Longer term, keep data representing feasible and accessible

For EDs whose roles include designing strategies for longer-term data collection and representation, it is a good idea to plan with feasibility in mind. For example, find out if institutional planning or other units on campus could provide a template that can read the data and auto-generate reports, or at least a template that can be copied and updated for themes. Suggest faculty and other end-users are involved in designing the dashboard. For units that hire a programmer, it is best to pilot test a dashboard, mock-up using Excel™ or PowerPoint™ or even paper to pilot with instructors before asking someone to code.

Chapter Conclusion and Reflections

Throughout this guide, we have emphasized that curriculum development is not a one size fits all process. There are multiple contextual factors that influence decision-making for each different project. For that reason, this chapter has described a range of ED roles and a variety of data gathering and analysis strategies. We have also noted several important considerations for the data gathering and analysis phases of curriculum development. Our aim is for you to consider the possibilities and choose to focus on the options that best fit your current project(s). The next chapter, Curriculum Mapping, will provide detailed guidance about that particular form of data gathering and analysis.

Critical Reflection

As the saying goes, data are never neutral. The same holds for data gathering and analysis. The decisions curriculum development groups make about data use are both highly contextual as well as inevitably value-laden. In order to make thoughtful, equity-oriented decisions about data, we encourage consideration of questions such as these:

- What types of data collection do different governments, accrediting bodies and institutions require?
- What are the limitations of empirical approaches to gathering and analyzing information?
- Whose data is this and for whom? How might they be used?
- Who is involved in decision-making about what data are gathered? And how it is used?
- What role will instructors play? Students?
- How does reporting to students, community, and stakeholders and engaging them in data analysis change voice and power in shaping the direction of programs?

Chapter 5
Curriculum Mapping

What is Curriculum Mapping?

Curriculum mapping literature often refers to both the process of curriculum mapping and the resulting data that are collected and aggregated into curriculum maps. Although there is no standard definition, we offer the following definition for curriculum mapping in higher education:

> Curriculum mapping is a process that involves the collection and representation of information about a program such as program learning outcomes, alignment with course outcomes, teaching and learning activities, and student assessments. Curriculum maps, the resulting data visualizations of this information, are an important source of evidence for discussions about the patterns, strengths, gaps and redundancies of a program and potential changes that could enhance student learning opportunities.

Outcomes-based curriculum mapping is conducted to better understand how elements of courses and other learning experiences (e.g., dissertation defence, internship, study abroad, performance or art installation) contribute to the program learning outcomes. It is undertaken with a specific purpose in mind: to determine strengths, gaps and redundancies, in order to improve student learning in the program. Curriculum mapping documents the expectations of the learning at the program and course levels, the instructional practices that facilitate student learning, and the assessment of learning (Veltri et al., 2011; Zelenitsky et al., 2014).

Curriculum maps illustrate curriculum data visually. Two common types are course maps, which show information on a specific course, and program maps, which include aggregate data for courses across a program of study. Although the type of data may vary, many curriculum maps visually display information about learning outcomes. Others might show content, teaching and learning activities or pedagogical approaches, student assessments, course sequence, or co-curricular activities (Harrison & Williams, 2017; Bester & Scholtz, 2012). In addition, custom curriculum maps can be generated to show a variety of other types of curriculum information.

Curriculum maps can look quite different depending on why they were created and the data being displayed (Rawle et al., 2017). Aggregate maps can display data in a number of ways, such as tables or

matrices (Landry et al., 2011; Lam & Tsui, 2013; Perlin, 2011; Fraser, Crook & Park, 2007), graphical maps (Spencer, Riddle & Knewstuff, 2012), and tick-box grids (Tariq, Scott, Cochrane, Lee & Ryles, 2004). Other data visualizations include heat maps (Plaza et al., 2007) and diagrams (Lam & Tsui, 2013;). These visualizations are created to reveal patterns in the data such as program strengths, gaps, and redundancies, which can form the basis for evidence-informed discussions about how the program might be improved (Metzler, Rehrey, Kurz & Middendorf, 2017; Kertesz, 2015; Jacobs & Johnson, 2009; Uchiyama & Radin, 2009). Different types of charts or graphs may be useful for different purposes, providing evidence in slightly different ways and fostering specific discussions about the curriculum. Therefore, the group may want to create several types of data visualizations to present different aspects of the curriculum.

Some curriculum maps show different perspectives of a program. For example, Plaza et al. (2007) discuss three different ways of capturing the curriculum: 1) Designed or intended curriculum; 2) Implemented or enacted curriculum; and 3) Experienced curriculum (Plaza et al., 2007, p.1). Others add a fourth conception of curriculum, the assessed curriculum (Kelley et al., 2008). By comparing the results, reviewers can determine any gaps between the goals of the program, what is being taught, what students experience in the program, and what is learned. The goals of the project will help to determine which perspective will be mapped, and whether more than one perspective is needed. For example, if the group wants to gain an understanding of the curriculum as it is currently taught, they would map the implemented or enacted curriculum. If they would like to map what the program is intended to do, they would map the designed or intended curriculum.

Curriculum maps can also be generated when designing a new program, though they may include fewer details than existing programs about activities or assessments. Mapping a program that is under development can be quite helpful in identifying trends, gaps and redundancies, allowing developers to address potential issues before students are even in the program, and may be required as part of the governance process.

Benefits of Curriculum Mapping

Instructor benefits of curriculum mapping include:

- While mapping their courses, instructors examine their course outcomes and how they align with student assessment activities and teaching and learning activities. They can make immediate changes to their course design to improve alignment and the student learning experience (Kertesz, 2015).
- Instructors reflect on their teaching practice (Tariq et al., 2004).
- They think about program goals and how their course fits into the program (Metzler, Rehrey, Kurz & Middendorf, 2017).
- Instructors can gain a common vocabulary for discussing curriculum (Schroeder, 2015; Zelenitsky et al., 2014).

Curriculum mapping benefits program development in the following ways:

- Aggregate data provide a view of the curriculum as a whole (Kertesz, 2015; Jacobs & Johnson, 2009; Metzler, Rehrey, Kurz & Middendorf, 2017; Uchiyama & Radin, 2009), and the resulting aggregate charts can provide data for evidence-informed discussions about the curriculum.
- Visualizations of curriculum data in charts, graphs, and other displays can reveal patterns that are easier to discern than by examining individual courses.
- If curriculum mapping is done to the level of assignments, the data can be aggregated across the program to show where program learning outcomes are assessed in a program and assessment results can be used to indicate the extent to which students are able to achieve the outcomes (Harrison & Williams, 2017).

- Curriculum maps can provide evidence of program quality, which can be used for accreditation purposes (Cuevas, Matveev & Miller, 2010).
- Research shows that using curriculum mapping data can result in better decision-making about the individual courses (Zelenitsky et al., 2014).

What does Curriculum Mapping Look Like?

Curriculum mapping can be done in different ways, depending on what data are collected. In some cases, course outcomes are mapped to PLOs, while in others, courses are mapped holistically to PLOs, competencies, institutionally defined graduate attributes, or degree level expectations. Many institutions require instructors to map their student assessments and teaching and learning activities. Accreditation processes may require content to be mapped and more granular documentation of assessment of competencies. Additionally, the curriculum mapping process can be customized to capture almost any information that a group wants to document at the course level, such as decolonizing the curriculum, experiential learning opportunities, undergraduate research, or other departmental or institutional priorities such as emphasizing resilience or mental well-being.

In this chapter we will give a few different examples of some of the more common approaches to curriculum mapping.

Mapping Course Outcomes to Program Learning Outcomes (Outcome-to-Outcome Chart)

This example shows a simplified course map of an introductory Psychology course. The instructor has articulated the course outcomes and added them to the left-hand column. Then, they aligned each course outcome to key program learning outcomes.

In this example, program learning outcomes are titled for brevity across the top of the columns; they are typically written in full following the chart. For examples of complete PLO statements please refer to Chapter 3.

Introductory Psychology Course Outcomes: By the end of the course, students will be expected to:	**Disciplinary Knowledge**	**Problem Solving**	**Evaluating Invormation**	**Communication**	**Apply Knowledge and Skills**	**Research Skills**
Describe key concepts and theories in the field of psychology.	X			X		
Evaluate information reported in popular media based on psychological principles, concepts and theories.	X		X			
Identify research methods used in the field.	X					X
Distinguish differences between personal views and scientific evidence.	X				X	
Reflect on and communicate experience from the perspective of a subject of an experiment.	X			X		X

Figure 5.1. Simple Course Map

The resulting mapping forms a matrix or grid showing the alignment between course outcomes and program learning outcomes. This type of map can be very useful for helping instructors to see how their individual course aligns to the program.

This is a basic example. A mapping scale could be used to provide more information (please refer to Appendix 5.1 for examples of mapping scales). They are used to show the level of expectation of student learning in the course. The mapping scale indicates the degree to which a program learning outcomes is addressed by a particular course outcome. If we were to add a mapping scale to the example, it might look as follows:

Introductory Psychology Course Outcomes: By the end of the course, students will be expected to:	**Disciplinary Knowledge**	**Problem Solving**	**Evaluating Invormation**	**Communication**	**Apply Knowledge and Skills**	**Research Skills**
Describe key concepts and theories in the field of psychology.	I			I		
Evaluate information reported in popular media based on psychological principles, concepts and theories.	D		D			
Identify research methods used in the field.	I					I
Distinguish differences between personal views and scientific evidence.	I				I	
Learn from experiences as a participant in a psychological study and communicate them in a writen reflection.	D			I		D

Figure 5.2. Course Map with Mapping Scale

Mapping Scale:

I = Introduced: Key ideas and concepts concentrate on knowledge or skills at a basic level. Instructional and learning activities address basic knowledge or skills at an entry-level complexity.

D = Developing: Students demonstrate learning at an increasing level of proficiency. Instructional and learning activities concentrate on enhancing and strengthening existing knowledge and skills, as well as expanding complexity.

A = Advanced: Students demonstrate learning with an increasing level of independence, expertise and sophistication expected upon graduation. Instructional and learning activities focus on and integrate the use of content or skills in multiple levels of complexity.
Adapted from Veltri et al. (2011).

Note that the specific scales can vary by institution, accrediting body, and/or faculty. Several examples are in Appendix 5.1.

Mapping Courses to Program Learning Outcomes – Summary Chart

A summary chart approach to curriculum mapping, sometimes referred to as a Progression of Learning map, has instructors indicate associations between the course as a whole and the PLOs they address on a mapping scale. For example, for Course 101, the instructor would indicate the level of introduced, developing, and advanced learning for each of the eight program outcomes show in Figure 5.3a. This chart is useful for examining overall student pathways through a program. It is also common to see this type of summary chart when doing new program development in which the courses have not been developed and therefore do not have course outcomes yet.

Course No.	Disciplinary Knowledge	Apply knowledge & skills in different contexts	Evaluate Invormation	Communicate orally	Communicate in writing	Critical thinking	Design and implement reserach	Ethical understanding
COURSE 101	I		I		I	I		
COURSE 103	I		D			I		
COURSE 150	D	I	D			I	I	I

Add additional rows as needed for courses in the program

Figure 5.3.a. Program Summary Chart with PLOs as headers

The summary chart is ideal for identifying gaps and areas of growth at the program level (e.g., students do not reach an advanced level for a particular outcome, or certain outcomes are only reached in elective courses). It can also be helpful for planning at the instructor level; seeing that your course is the only one that introduces a learning outcome might be important in ensuring that you do not cut that aspect from future iterations of your course.

Note that a summary chart may be organized with courses listed across the top and the PLOs in the left-hand column (as show in Figure 5.3.b). This is commonly seen when there are dozens of PLOs that are used for accreditation purposes, or longer PLO names. Courses are listed in order within the program, even when numbering of courses has a complex nomenclature. Some summary charts may include a heading with years or semester, though note that if using any filters or pivot tables having a second row can add a complication, so best to use the PLOs as headers (Figure 5.3.a) when including year or semester beside the courses.

Course No.	COURSE 101	COURSE 103	COURSE 150
Disciplinary Knowledge	I	I	D
Apply knowledge & skills in different contexts	I		
Evaluate information	I	D	D
Communicate orally			
Communicate in writing	I		
Critical thinking	I	I	I
Design and implement research		I	
Ethical understanding		I	

Figure 5.3.b. Program Summary Chart with Courses as headers

Mapping Course Assessments & Teaching Activities to Program Learning Outcomes

When mapping student assessments and teaching and learning activities, there is the option to map them to specific course outcomes or to the course as a whole.

a. If mapped for the course as a whole, you can set up the mapping process so that instructors can select from a list of options, or as text entry where they specify what they have used in their course. There are advantages to both strategies. Selecting from a list can be easier for instructors and can prompt their memories. It also makes it easier to aggregate the data across courses. Text entry, on the other hand, allows instructors to be more precise, which is particularly helpful for unique or idiosyncratic assessments. The challenge comes in aggregating information if instructors have used different terms for similar information: essays and research papers, for example. A middle ground is to constrain the summary of assessments to a pre-determined list, and to expand on some unique or innovative assessments in an open text box. A sample list of student assessments and teaching and learning activities is included in Appendix 5.4.

b. Asking instructors to specify which student assessments and teaching and learning activities they implement for each course outcome is more time-consuming for them to enter when mapping their courses. However, it offers a compelling benefit for reflecting on their teaching. As they map their courses, they will be prompted to think about whether or not they are assessing those outcomes, and if they have sufficient teaching and learning activities to enhance student learning of the course outcomes. Therefore, the mapping process can result in improvements to course design. The figure below shows the same psychology course, with a couple of columns added. Here the instructor indicates their student assessments and teaching and learning activities used for each course outcome.

Introductory Psychology Course Outcomes: By the end of the course, students will be expected to:	**Disciplinary Knowledge**	**Problem Solving**	**Evaluating Invormation**	**Communication**	**Apply Knowledge and Skills**	**Research Skills**	**Student Assessments**	**Teaching and Learning Activities**
Describe key concepts and theories in the field of psychology.	**I**			**I**			**Midterm, Final exam**	**Lecture, Readings**
Evaluate information reported in popular media based on psychological principles, concepts and theories.	**D**		**D**				**Paper, Midterm**	**Lecture, Readings, Discussion, Seminar**
Identify research methods used in the field.	**I**					**I**	**Midterm, Final exam**	**Lecture, Readings, Discussion**
Distinguish differences between personal views and scientific evidence.	**I**				**I**		**Response paper, Final exam**	**Lecture, Readings, Discussion**
Reflect and communicate experience as a psychological subject.	**D**			**I**		**D**	**Written reflection**	**Lecture**

Figure 5.4. Course Map with Student Assessments and Teaching and Learning Activities

At some institutions, instructors may use software to link specific program outcomes to assessments, or indicate in the cell in the table the assessment based on a legend that is consistent for all instructors in the program (e.g., D – 1, 2 where program: 1 = presentation, 2 = essay).

This approach of mapping activities and assessment recognizes that mapping a course to a program outcome, or a course outcome to a program outcome, may not be enough as not all courses are properly aligned across course outcome, assessment, and activities. Variation across course offerings and course activities not aligning with course outcomes can pose challenges (see Table 5.1. Common Challenges for more).

Decisions about Curriculum Mapping

There are many decisions to be made about the curriculum mapping process that will affect what data are collected, curriculum mapping output, time required to collect and analyze the data, and what supports are needed. We discuss some of those factors in this section. In addition, Appendix 5.2 includes a chart that outlines some of the major decisions to be made.

Who Maps the Courses?

Ideally the course instructors will map their own courses. They know the courses best and can provide the most accurate information about them. The mapping process provides the opportunity for instructors to think about alignment with program goals, elements of course design, and how they might improve. Whether instructors are mapping the designed or delivered course, or both, can be determined by the project lead or negotiated by a curriculum committee or departmental meeting/retreat.

Typically, instructors are mapping the intended curriculum, or what they intend for students to learn in the course. It can be helpful for instructors to refer to the syllabus, particularly when mapping to assessments or activities.

It is possible that the last person who taught a particular course is not able to map it; for example, they may be a sessional instructor or have moved on to another institution. In that case, another faculty member who has taught the course or has familiarity with the content might be called on to map it. Resulting data may be a bit more subjective than a recent instructor mapping the course, but is likely better than having no course data.

In some cases, it may be necessary for someone other than the instructor to map the course based on a course outline. Consider if the mapping is based on:

- **Copying existing information** - when instructors have already mapped course outcomes to program outcomes on their syllabus, the task for curriculum leads is to compile existing information. This mapping can be an accurate representation as long as syllabi are up to date.
- **Reasonable guess** – read course outcomes and indicate likely PLOs. If completed by a program coordinator or someone knowledgeable about the course, it can have a high degree of accuracy.
- **Title and calendar description only** – maps created without course outcomes and without the people teaching the course have the greatest risk of inaccuracies from the actual intentions of instructors and may not represent the intended program.

Where possible, program leads can then send the resulting data to the instructor and ask if they are accurate, and hopefully get a response.

Finally, as instructor-created maps often map intended curriculum, they do not reveal what students have learned, which is referred to as the experienced curriculum (Plaza et al., 2007). Student-created curriculum maps can be examined in conjunction with instructor-created maps to determine if there are discrepancies between what is taught and what students have learned.

Which Elements of a Course to Map?

Many other curriculum elements can be mapped. Decisions about what should be mapped are often guided by institutional requirements, accreditation requirements and/or government regulations, as well as any formative purposes the department or faculty might have (see Chapter 2). The following are the elements most commonly mapped:

- Outcomes, both course and program
- Student assessments, mapped to course outcomes or to the course as a whole
- Teaching and learning activities, mapped to course outcomes or to the course as a whole
- Content, mapped to course outcomes or to the course as a whole

In addition, the curriculum mapping process can be leveraged to investigate aspects of a program that relate to programmatic initiatives or institutional priorities. For example, when instructors are mapping their courses, they could indicate if any of their course outcomes relate to undergraduate research, experiential learning, high-impact practices (Kuh, 2008), or other priorities for student learning. Another way to gather mapping data using broader strokes would be to ask questions such as the following:

1. Please indicate which of the following high-impact practices are incorporated into this course, if any. Check all that apply:
    a. First-year seminars and experiences
    b. Common intellectual experiences
    c. Learning communities
    d. Writing-intensive courses
    e. Collaborative assignments and projects
    f. Undergraduate research
    g. Diversity/ global learning
    h. ePortfolios
    i. Service learning, community-based learning
    j. Internships
    k. Capstone courses and projects (Kuh, 2008)
2. If one or more high-impact practices are incorporated into this course, please elaborate (open text box).

Which Courses to Map?

Deciding which courses to map is a lot simpler when students all take the same courses. However, most programs offer some flexibility in course selection, making it more challenging to get a picture of a representative program (Tariq et al., 2004). We suggest the following, but acknowledge that contextual factors may alter your approach such as regional, sector or institutional specific guidelines when mapping for quality assurance. Required courses in a program should be mapped. If there are multiple courses that could fulfill a program requirement (e.g., a communication course or electives), we suggest picking a couple of the most commonly-taken ones and map them. If using a mapping software, you could manually select courses to include in specific charts. At some institutions, a program elective requirement is intended to address a specific outcome, and institutional policies ensure the electives are designed to meet that outcome (e.g., to develop written communication; to develop understanding of Indigenous history and knowledges) so the elective requirement can be mapped as a single course entry for that specified outcome.

Ideally, all courses within the program will be mapped, but this is not always possible. The project lead or curriculum committee will need to determine where it makes sense to map optional courses: sometimes students can choose between hundreds of options, which is not realistic or helpful to include in the curriculum map. Courses from other disciplines that are crucial to the program pose particular challenges for mapping, but should be included if possible. In programs where many optional or elective courses are available to students, it can be helpful for the project lead or curriculum committee to consider if there are ways in which the electives might be categorized, in which case the category could be mapped rather than individual courses, or whether it's best to leave elective courses out of the map entirely.

Additionally, there could be multiple sections of the same course that allow instructors considerable latitude over course outcomes and content. One approach would be to map one section of the course that is representative of all sections; for example, a course coordinator might map their section. Alternatively, all sections of a course could be mapped in order to compare whether or not students in different sections are getting equitable learning opportunities. A third approach would be to map only that which is true for all sections of the course. If, for example, one section involves a written assignment, but other sections assess only through multiple choice testing, then the written assessment and relevant outcomes would not be mapped.

Additional learning opportunities may also be included in a curriculum map. For example, milestones that are not typically for credits, but can be program requirements and it therefore makes sense to include them. In diploma or degree programs, non-course requirements could include WHMIS (safety) training, a worksite shadow, student competitions, applied skills to support a charity, and a learning portfolio. A graduate-level program map could include things such as a proposal, candidacy exam, thesis or dissertation, project, and/or conference presentation. Since graduate programs are often customized to the student, it can be challenging to create curriculum maps for them. One suggestion is to map learning outcomes rather than focusing on content.

Curriculum Mapping Methods

There are many options for tools to conduct the mapping process. The choice will depend on several factors, such as cost, availability, and the needs of the group doing the mapping. Each method has benefits and drawbacks. We discuss (three) options in this section.

Paper-based Method and .doc Files

In the past, mapping a program on paper was essentially the only option, and many programs relied on paper-based mapping for decades. We have expanded the paper-based approach to include both hard copies of a document and using a .doc file to do it electronically.

Benefits:

- Chart format with rows and columns makes it easier to see the constructive alignment (or lack of it) in an individual course. The chart format makes intuitive sense to many instructors, and they can tell at a glance what is being asked of them (unlike online surveys that are often completed over multiple pages).
- Can be done electronically or in a face-to-face setting.
- Complete flexibility to structure the mapping process to suit your group. Everything can be adjusted: the terms used, the number of course outcomes people can input, how the chart is arranged, what elements are included – things can be changed as needed.

Drawbacks:

- Someone has to put the data in electronic format; the higher the number of courses that are mapped, the larger the workload.

- No report is automatically generated. Someone will need to do data wrangling and create visualizations.
- Instructors sometimes do not know where to start since it does not use a step-by-step approach.
- Flexibility can also lead to greater complexity and confusion because of the multiple possible answers

Use this approach if:

- Only a few courses will be mapped
- Digital access is not required
- Maximum flexibility is needed

Online Survey Tools

Although online survey tools were not created specifically for curriculum mapping, they can be used effectively for this process. Instructors can map their courses through a web browser, with results compiled into a basic report. Further analysis can be done by downloading the data into a spreadsheet and working with them further.

Benefits:

- Good option if some people will be mapping their courses from a distance.
- Flexibility with the number and types of questions and response formats.
- Faster aggregation and reporting than some of the other methods as reports are built in or templates can be saved in most surveys.
- Data can be downloaded into a spreadsheet for further analysis.
- Many participants will be familiar with the tool; support issues are likely to be fewer than other methods.
- If your institution has purchased a license to a tool, you will have access to it already.

Drawbacks:

- If using the table format to indicate alignment between course outcomes and PLOs, the participant will probably have to contend with both vertical and horizontal scrolling, something that many users dislike.
- If people are completing the survey from a distance, you need to give very clear directions so that they understand the task.
- Data are often stored in the cloud, which may or may not affect your decision.

Use this approach if:

- Digital access is needed.
- Your institution has a license to the software.
- Basic reporting is needed.

Commercial Curriculum Mapping Software

There are a number of options for commercial curriculum mapping software. Since commercial tools can change, we will speak broadly in this section, not about a particular tool.

Benefits:

- Robust functionality.
- Some tools can be customized for your institution.
- Often supported by the company, which allows for continuity of support even if institutional staff change.
- Reliability of the tool.
- Time spent creating reports is reduced.

Drawbacks:

- Ongoing subscription costs, which can increase over time.
- Sometimes functionality is constrained and not a good fit for purpose. Curriculum mapping needs may change and the tool may not be able to be adjusted in response.
- Data ownership: who owns the data if they are not stored on your institutional servers?
- You may lose access to your data if you decide not to renew your software license.

Use this approach if:

- Cost is within budget.
- Functionality or customization opportunities are fit for purposes.
- Support and reliability are paramount.

Institutionally-created Software

Many institutions have decided that the best option for them is to build a tool that suits their institutional needs.

Benefits:

- Because a home-grown tool is designed and built specifically for your institution, you can get the exact features you need.
- No ongoing subscription costs.
- Data are stored on institutional servers.
- You can add new tool features over time.
- Time spent creating reports is reduced.

Drawbacks:

- Scratch development of a curriculum mapping tool is expensive and can take two or more years.
- Ongoing maintenance and support costs (usually in staff time).
- Less functionality than commercial tools.

Use this approach if:

- Your institution has specialized curriculum mapping needs.
- Mapping needs are expected not to change substantially in coming years.
- You have a sustainability plan for the tool.

Selecting a Method

There are many considerations to take into account when selecting a curriculum mapping method. We summarize some of them in this section.

- Costs (immediate and ongoing)
- Availability
- Instructor familiarity and preference
- Functionality needed, including reporting
- Ease of use
- Degree of flexibility in setting up the mapping process
- Need for digital access
- Adequacy of reporting
- Number of courses to be mapped
- Support materials provided
- Storage of confidential data
- Sustainability

The Process of Curriculum Mapping

Determining if a Course Outcome Aligns with a PLO

Instructors can sometimes be uncertain when determining whether or not a particular course outcome aligns with a program learning outcome for a variety of reasons. Perhaps the course outcome is poorly written, or it relates to part of the PLO but not all of it. Sometimes a case can be made that the course outcome is peripherally related to the PLO. This can lead to instructors aligning all their course outcomes to all of the PLOs (Tariq et al., 2004) which is possible but not likely. Most courses do not sufficiently address all PLOs to appropriately map to all PLOs.

Some specific learning experiences require students to synthesize and apply what they have learned in an experiential setting, such as capstone courses, practicums, and internships, and these may be mapped to most or all PLOs. Sometimes an introductory course is comprehensive in scope and introduces most of the PLOs. Otherwise, most courses will only map to a sub-set of the PLOs. When many of the course maps are mostly filled in, it can be challenging to determine patterns, trends, and gaps. It can, however, lead to a discussion about redundancies – if all courses are achieving all of the PLOs, what opportunities are there to adjust at the course level.

Although there are no hard and fast rules, we suggest the following guidelines when facilitating the alignment of course and program learning outcomes:

- Map only moderate to strong alignment. If the alignment is weak, do not indicate an alignment.
- If a course outcome is peripherally associated with a PLO, do not indicate an alignment.
- Occasionally an instructor will insist that all of their course outcomes relate to all PLOs. One strategy would be to ask them to provide a rationale for their claim (how do they teach and assess each outcome?). Another would be to ask them if they can identify 3 or 4 PLOs that are most relevant to each course outcome, to identify what is most emphasized in the course outcome.

We also suggest the following strategies to clarify the mapping process and support instructors while mapping their courses:

- Encourage the curriculum leads to fill in their data first. Letting instructors know that a few of their colleagues have completed it will give them a departmental connection for simple questions and clarifications.
- Create just-in-time resources like a one-pager or short video of the basic instructions, definitions (such as the mapping scale) and FAQs.
- Offer feedback on course outcomes, either in a drop-in session or by appointment with an ED.
- Do a mock exercise with the group where everyone maps the same course. Do the resulting maps look similar? How did they make decisions? Where were the points of confusion?
- Encourage discussion of the mapping scale with the entire team prior to mapping so that people are using it in a consistent way.
- Arrange drop-in sessions facilitated by relevant experts where instructors can ask questions as they map their courses.

Common Mapping Challenges and Suggested Strategies

From experiences and cited literature, there are several common challenges and suggested strategies to consider, noted in Table 5.1. Note that your specific context often determines which strategies are appropriate.

Common Challenges with Curriculum Mapping	Suggested Strategies to Mitigate Them
The mapping process is not collecting the required information	• Prior to beginning, encourage dialogue to determine what data are needed. • Pilot the mapping process with a couple of courses and elicit feedback and discussion to refine instructions, the mapping scale, and terms used, as needed.
Curriculum maps provide insufficient data to make decisions about a program	• Curriculum maps are just one data source in a curriculum review or development process. Other data collection can also be used to triangulate results of the mapping process and provide other information (Zelenitsky et al., 2014). More information can be found in Chapter. 4
Resistance from instructors about the process (Willett, 2008)	• Build curriculum mapping into existing processes, such as departmental retreats or meetings. • Provide support to instructors during the process. • Let them know what's in it for them. For example, they can instantly use their course map to make small changes that better align their course. • Guidance and encouragement from leadership and hands-on support while conducting the mapping improve willingness to cooperate (Lammerding-Koeppel et al., 2017). • A research assistant could interview particularly reluctant instructors to gather the information needed to map.

Lack of time and resources (Baecher, 2012; Willett, 2008)	• Use existing processes to further the work:
	  • Use instructor and department meetings to discuss terms, map courses, and/or discuss aggregate curriculum maps.
	  • Hire a research assistant to support the process and relieve people from some of the more administrative tasks.
	  • Ask existing administrative staff to support the process.

Lack of agreement about the program learning outcomes and what they mean	• Discuss with all instructors and solicit feedback prior to curriculum mapping. • Acknowledge that disagreement about PLOs can be frustrating to those involved; however, it will broaden understanding of the program and is a productive part of the process.
Lack of standard terms	• Have an initial discussion about mapping terminology and meaning (Schroeder, 2015, Rawle et al., 2017). • Recognize that terms may need adjustment to suit disciplinary approaches. • Encourage clear communication throughout the process.

Challenging to map programs that have a lot of options or electives (Oliver & Hyun, 2011; Tariq, Scott, Cochrane, Lee & Ryles, 2004, p. 78)	• Map required courses only (Oliver & Hyun, 2011). • Map the most common options and electives. • Map top three common pathways through the program. • Cluster courses by similarity of outcome or role in program and map clusters.
Capturing data on multiple sections of a course	• Select a typical section of the course to be mapped. • If there is a lead instructor or course coordinator, encourage this person to do the mapping. • For comparing multiple sections of a course, have most/all instructors map their section. This strategy enables you to check for consistency of student learning experiences. • Map only the information that is true across all sections of the course.
Curriculum maps are not as useful if the data provided are not accurate (Cottrell, Linger, & Shumway, 2004)	• Promote discussion about terms used, the meaning of the mapping scale, and the process. • Clarify which version of the course they are mapping: the course as it is intended, currently being delivered, or as it was taught last?
The person who taught the course is not available to map it (sessional instructors, on leave, etc.)	• Have someone map the course based on the course outline. • Have someone who has taught the course recently map the course. • If possible, send the course map to the instructor and ask if they would be willing to check the accuracy of the data. If not, use the "best guess" data.
Determining alignment between a course outcome and a program learning outcome	• Discuss alignment as a group and determine a consistent approach. • Map courses together in the same room when possible so that instructors can discuss their approach with others who teach in the program.
Tendency for some to indicate that course outcomes align with most or all program learning outcomes (Tariq et al., 2004)	• Work through a mapping example as a group and discuss how to determine alignment. • Ask instructors to elaborate on and justify alignments (Tariq et al., 2004). • Reassure instructors that it is expected (and positive) that not every course will address every PLO.
Tendency for some instructors to map the course as they want it to look, not the actual delivered curriculum that they taught	• Emphasize whether instructors are mapping the intended curriculum (with changes they want to make to the course design) or the taught curriculum. • Consider capturing the changes instructors want to make, to add to the final report as plans for improvements to the curriculum.
Instructors take a superficial approach to curriculum mapping rather than a thoughtful, reflective approach (Tariq et al., 2004)	• Provide leadership and mentoring, perhaps as a shared leadership approach between the ED, project lead, curriculum committee and/or department head. • Indicate shared goals or purpose of the mapping. • Invite instructors to map together or discuss their mapping for peer engagement. • Recognize where mapping may have been recently done or align accreditation timelines.

Instructors struggle with mapping their course outcomes to program learning outcomes	• Discuss program learning outcomes as a group to get a shared understanding of them and examples of where course outcomes align with a PLO. • Do a mock exercise with the group where everyone maps the same course. Do the resulting maps look similar? How did they make decisions? • Discuss the mapping scale with the entire team so that people are using it in a consistent way. • Hold a drop-in session where instructors can ask questions as they map their courses. • Course outcomes may need to be revised for clarity. Often this does not involve changes to the course design, but tweaking wording so that the meaning is articulated more clearly. • It is possible that PLOs do not capture the goals of the program. In this case the group might note the gap, continue the mapping process, and include an action item to revise the PLOs at a later point in time (after discussion, deliberation, and following internal governance processes).
One or more instructors do not map their courses by the deadline	• This is common – expect it! Provide the curriculum lead with a common timeline that includes recommended reminders. Be honest about the time it takes to complete the mapping process. • Include a bit of a buffer after the official deadline to collect data for any outstanding courses. • Have someone such as a research assistant interview the instructor in person or over the phone to get the information. • Sometimes not all courses will be mapped and the data set will be incomplete.
Instructors may have recall bias when mapping courses as they were last taught: they may not have a completely accurate picture of it (Plaza et al., 2007)	• Have instructors work from their course outlines so they can accurately capture learning outcomes, student assessments, and other details. • Ensure that all involved are clear about whether they are recording details of the course as it was last delivered, what was assessed, or as it was intended.

Table 5.1. Common Challenges and Suggested Strategies

Student Curriculum Mapping

You may want students to map their learning experiences in the program in order to compare their perspective with that of instructors. One way to accomplish the task is to ask students to map their experiences at or near the end of a course. The questions you ask of students could mirror the instructor process. Instead of mapping what was taught, students provide their perspective on what was emphasized in the course. If we use the example from Figure 5.4, an introductory Psychology course, we could ask students:

- Using the scale provided, what is the depth to which you learned each of the course outcomes? (Provide the same scale that instructors used)
- What teaching and learning activities were implemented in the course to foster your learning of the course outcomes? (Provide a list and students select all that apply)
- How were the course outcomes assessed? (Provide a list and students select all that apply)

Since the instructor will be mapping course outcomes to PLOs it is not necessary to ask this of students. However, you may be interested in knowing how they felt the course outcomes were assessed, and what

teaching and learning activities were used. An online survey tool such as Survey Monkey™ or Qualtrics™ could be used to collect and collate the data. A chart such as the following could be pulled together from the data:

Introductory Psychology Course Outcomes:	**The depth to which you learned each of the course outcomes**	**Student Assessments: How were you assessed on the course outcome?**	**Teaching and Learning Activities: What teaching and learning activities were implemented to foster your learning of the course outcome?**
Describe key concept and theories in the field of psychology.	I	Midterm, Final exam	Lecture, Readings
Evaluate information reported in popular media based on psychological principles, concepts and theories	D	Paper	Lecture, Readings, Seminar
Identify research methods used in the field.		Final exam	Lecture
Distinguish differences between personal views and scientific evidence.	D	Final exam	Lecture
Learn from experience as a participant in a psychological study and communicate them in a written reflection.	D	Written reflection	Lecture

Figure 5.5. Course Map of Student Learning Experiences

One caveat if taking this approach: it would be a time-consuming task for students to map more than a course or two. Instead, you could ask them to map the program as a whole or selectively map specific courses, such as required courses. See Appendix 5.5 for an example of how students might map their learning outcome achievement across a program as a whole.

Curriculum Mapping for New Program Development

New programs under development can be composed of existing courses, new courses, or a combination of both. Typically, though, there are new courses that have not been developed yet, making it tricky to map course outcomes to PLOs. If it can be done, it can help with the development of courses in that they fit with the overall goal of the program, as they are no longer developed in isolation. If not, it might be more feasible to map courses as a whole to PLOs, creating a program summary chart. Figure 5.6 shows an example of such a chart. Additionally, you might use a Yes/ No scale or perhaps something such as Foundations/ Extensions to indicate alignment to PLOs.

Note that teaching and learning activities and student assessments will not be known at this point for new course development and are therefore not mapped.

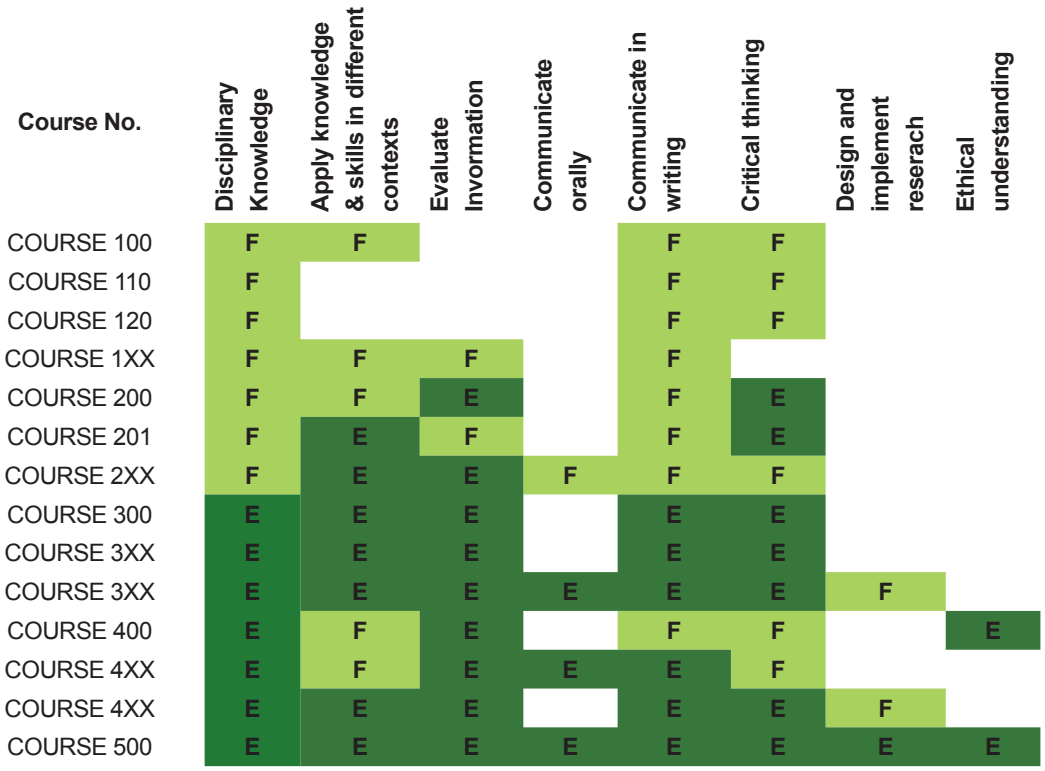


Figure 5.6. Program Summary Chart of a New Program

Mapping scale:

F = Foundations: Foundational knowledge is emphasized, including information, discrete facts, concepts, or basic skills. There may or may not be evidence of learning from participants.

E = Extensions: Learning goes beyond the foundational level to make connections between facts or ideas, relating knowledge to personal experience, understanding multiple perspectives, and/or analyzing information. Students evidence their learning in one or more ways.

Curriculum Mapping Analysis

Once all instructors' course maps are combined into a single overall curriculum map, the curriculum lead is the best person to review for completeness: to look for any unexpected gaps or missing courses based on their knowledge of the program and instructors. Sometimes a course is missing or completes the outcomes in an unexpected way, and the curriculum lead can follow up with the instructor. The success of the curriculum review process is not dependent on collecting perfect sets of data; instead, it is important to use the data collected to inform meaningful, collaborative discussions about the curriculum and how it might be improved.

Meeting with the curriculum committee or the full department provides an opportunity for instructors to see their program as a whole and to engage in reviewing the patterns and identifying areas of overlap, gaps and sufficiency. These discussions, like data analysis overall (see Chapter 4), can be ED-guided with the ED asking specific questions, ED-lightly facilitated by providing questions and inviting instructors to work in small groups on the questions, instructor-co-led with a program's curriculum lead framing the discussions and an ED providing explanations, or instructor-led where they are provided with the data and perhaps a form or specific questions. Sample questions to ask during curriculum mapping analysis are provided in Appendix 5.6.

Analyzing a Course Map

The first opportunity to analyze curriculum data occurs when an instructor maps their course. The example chart, Figure 5.7, yields some interesting information. Each row shows how the course outcomes contribute to each PLO. Each course outcome aligns with at least one PLO and therefore contributes to student learning in the program. If a course outcome did not connect to any of the PLOs, it is worth asking why: perhaps the course is not related to the program in a significant way, or possibly there is a gap in the PLOs. Figure 5.7 also shows that the majority of the course outcomes contribute to student learning at the introductory level, which is not unexpected for an introductory course, but may be a concern for an upper-level course.

Introductory Psychology Course Outcomes: By the end of the course, students will be expected to:	**Disciplinary Knowledge**	**Problem Solving**	**Evaluating Invormation**	**Communication**	**Apply Knowledge and Skills**	**Research Skills**	**Student Assessments**	**Teaching and Learning Activities**
Describe key concepts and theories in the field of psychology.	**I**			**I**			**Midterm, Final exam**	**Lecture, Readings**
Evaluate information reported in popular media based on psychological principles, concepts and theories.	**D**		**D**				**Paper, Midterm**	**Lecture, Readings, Discussion, Seminar**
Identify research methods used in the field.	**I**					**I**	**Midterm, Final exam**	**Lecture, Readings, Discussion**
Distinguish differences between personal views and scientific evidence.	**I**				**I**		**Response paper, Final exam**	**Lecture, Readings, Discussion**
Reflect and communicate experience as a psychological subject.	**D**			**I**		**D**	**Written reflection**	**Lecture**

Figure 5.7. Course Map with Student Assessments and Teaching and Learning Activities

Sometimes instructors think that their course needs to address each PLO with at least one course outcome, but this is not the case. A single course does not have to do everything; as long as there are other courses that address the PLO the instructor does not necessarily need to change their course design.

Looking down the columns prompts analysis of how the course outcomes contribute to each PLO. The first PLO, summarized as Disciplinary Knowledge, is addressed by every course outcome, which is not unusual. Often, a PLO relating to disciplinary knowledge is related to the majority of course outcomes in the program. It could potentially be a sign of coverage fallacy and lack of emphasis on alternate types of outcomes (communication, ethics, etc.). Next, we see that the PLO Problem Solving has no course outcomes that align with it. The other PLOs are addressed through at least one course outcome, indicating that the course is well aligned with program goals.

When the maps, summary charts, or equivalent aggregate data are examined, the instructor will see if there are gaps in the PLOs that might be partially met through revising their course. Looking at the student assessments reveals that the midterm and final exam assess more than one course outcome, while the paper, response paper, and written reflection are specific to a certain course outcome. In this fictitious example, it's unclear what types of exam questions are on the midterm and final, but one might wonder if there is enough variety in the student assessments if they are primarily written. Similarly, looking at the teaching and learning activities, there is heavy reliance on lectures and readings. Assuming it is a large-enrollment course, it is still worthwhile for the instructor to explore incorporating other teaching and learning activities such as analysis of a video case study or problem-solving activities.

As instructors examine the chart, they are prompted to think about course design, whether the course outcomes they have are deliberate and accurate, how well student assessments measure the course outcomes, and the extent to which teaching and learning activities foster student learning of the course outcomes (Dyjur & Lock, 2016; Fraser, Crook & Park, 2007).

Appendix 5.3 includes a list of questions that instructors can use when examining their course maps. EDs might want to select just a few questions from the list to focus instructors' attention on specific aspects of their course design.

Curriculum Maps with Aggregate Data

Courses to PLOs Summary Chart

This chart summarizes how each required course in the program is aligned with the PLOs. It provides a snapshot view of how the courses contribute to program goals, making it easier to see patterns and trends in the data. A great companion chart to this one is to include all courses in the program rather than just required courses, to examine it across the breadth of the program. However, it is important to keep in mind that students rarely take all program courses, so charts with all courses can look falsely robust. The chart gives a high-level overview of the program, revealing trends and patterns in the data. It is an excellent choice for new program development so that any gaps can be addressed in new or modified course developments prior to launching the program.

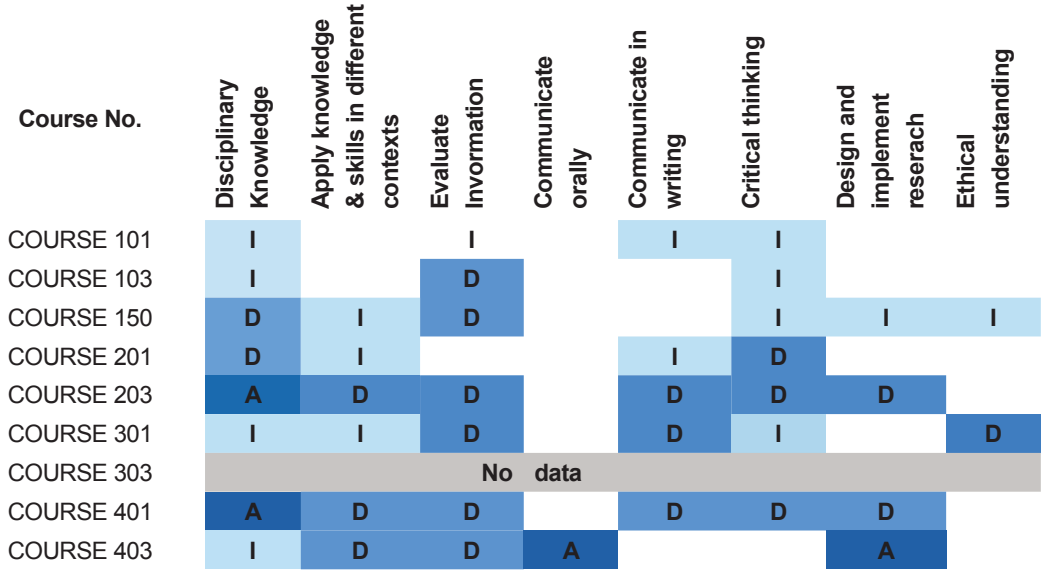


Figure 5.8. Required Courses to PLOs Summary Chart

With this example we will assume that 100-level courses are taken by first-year students, 200-level are taken by second-year students, and so on. A glance at the summary chart reveals some very interesting data. Some PLOs are addressed by most or all courses, such as disciplinary knowledge and evaluating information. Others are barely addressed, including oral communication and ethical understanding. Assuming these PLOs were selected because they are important to student learning, a question for the curriculum review group to address is whether or not these PLOs are receiving adequate attention throughout the program. While it is fine if specific courses do not address certain PLOs, it becomes problematic if few of them do. It is possible that elective courses help to fill in the gaps; however, students are not guaranteed to take those electives. It is also possible that an outcome that appears to be only sparsely covered is emphasized in a required course or two, to the extent that students are well-prepared on that outcome. These details are determined through conversations about interpretations of the data.

Another thing to note is that the PLO Communication was split into oral and written communication for the curriculum mapping process. If it is important to capture the mapping information at a more specific level, you can split a PLO into categories to see if each one is being addressed.

Summary of Course Outcomes per PLO

Another way to display the data is to create a bar chart summarizing the number of course outcomes related to each PLO for required courses in the program, and one for all courses in the program. Note that the data can look falsely robust when summarizing all courses in the program, so comparing the charts can be helpful. The bars indicate the number of course outcomes that contribute to each PLO, split into the levels of the mapping scale (in this example, Introductory, Developing, and Advanced are used).

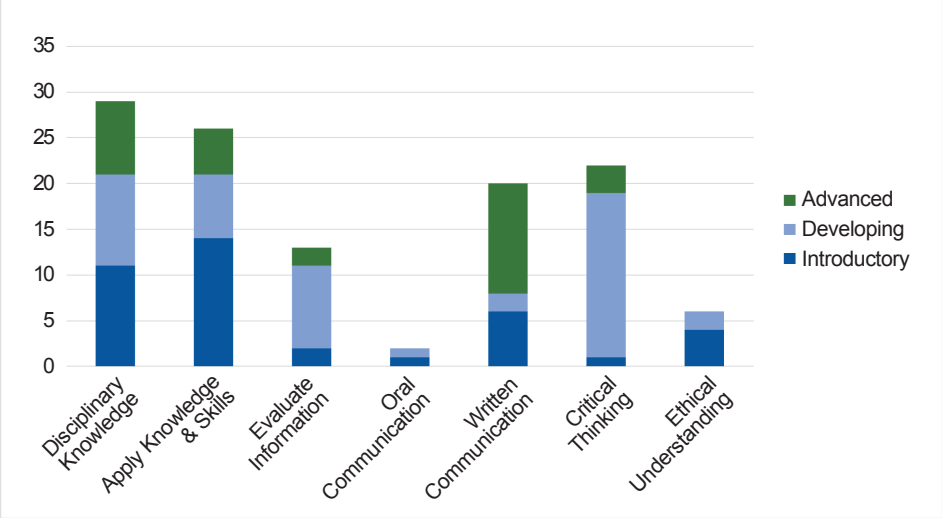


Figure 5.9. Summary of the Number and Depth of Course Outcomes per PLO for Required Courses

This summary bar chart highlights how courses contribute to overall student learning goals. In this example, disciplinary knowledge is heavily emphasized at different depths. Applying knowledge and skills is also emphasized, but the majority is at the introductory level. With this knowledge, instructors in the program could then discuss whether this is intentional, or if there should be more emphasis at a deeper level in order to stretch students or extend students' knowledge. Written communication is also unbalanced, with relatively high expectations but limited scaffolding. Again, instructors could discuss if some of the advanced expectations could be tweaked to better scaffold student learning. Two PLOs, oral communication and ethical understanding, have less emphasis across required courses in the program. Here the discussion could be to talk about whether and how they might be incorporated in more courses.

This chart summarizes the number and types of student assessments across a program of study. Examining assessment methods in aggregate across the program highlights the range of assessment methods being used and degree of reliance on them.

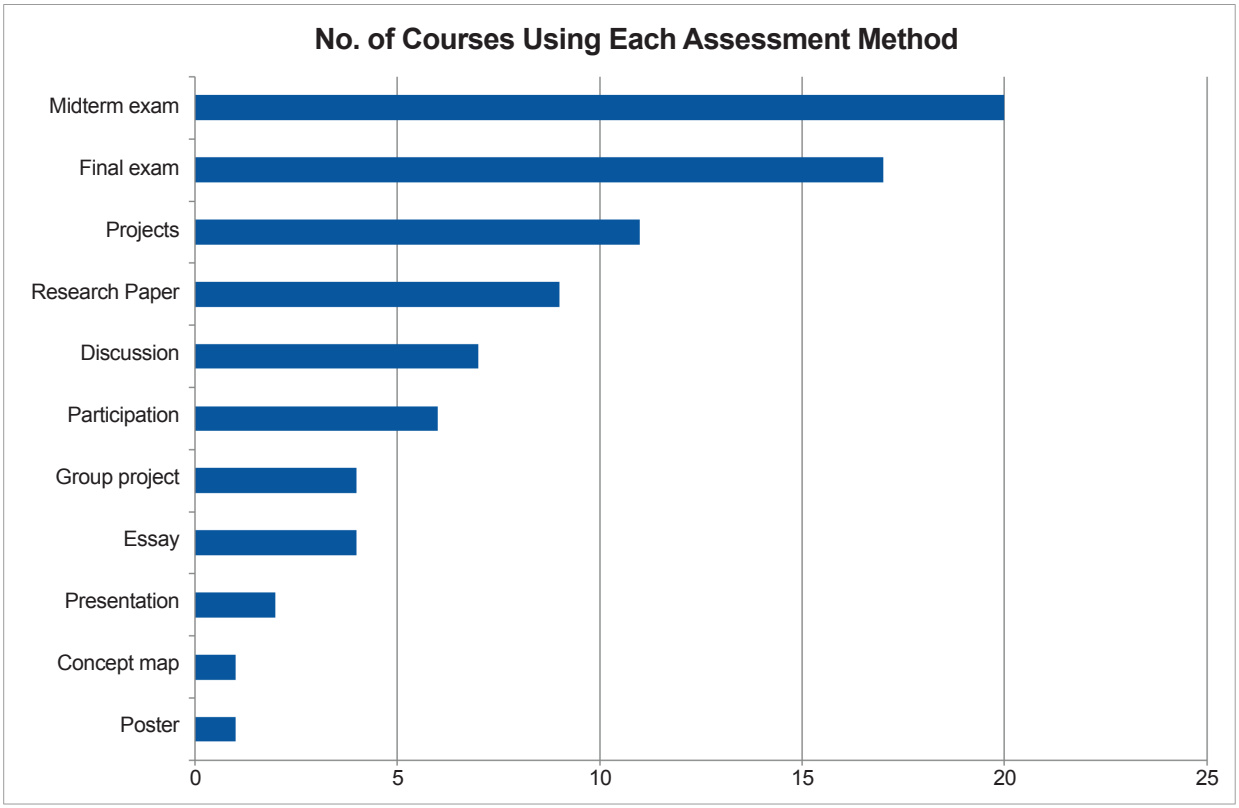


Figure 5.10. Number of Courses Using Each Assessment Method

In this example the predominant student assessment methods used across required courses in the program are midterm exams and final exams. Projects and research papers are also used in quite a few courses. Note that this group has listed research papers and essays separately; another group might opt to combine them instead. Several other student assessment methods are used as well.

When analyzing the data, the group might discuss questions such as:

- Do we have enough variety in student assessment methods? If not, how might we implement methods that allow students to demonstrate their learning in other ways?
- What types of questions are used in midterm and final exams? Are they multiple choice, written answer, problem sets, or a combination of different question types?
- To what extent do the student assessment methods measure student learning?
- To what extent do the student assessment methods support student learning?
- Are the student assessment methods used congruent with the discipline and our program's/ college's/ institution's mission and vision?
- Are the assessment methods aligned well with our program learning outcomes?

Analyzing Teaching and Learning Activities

Another approach to analyzing curriculum data is to create a chart showing the emphasis of teaching and learning activities across a program of study. If the relevant information was collected, it would be possible to construct a chart with more detailed information, associating teaching and learning activities with PLOs. The following charts illuminate differences in teaching and learning activities for each of the PLOs between first-year and upper-year courses:

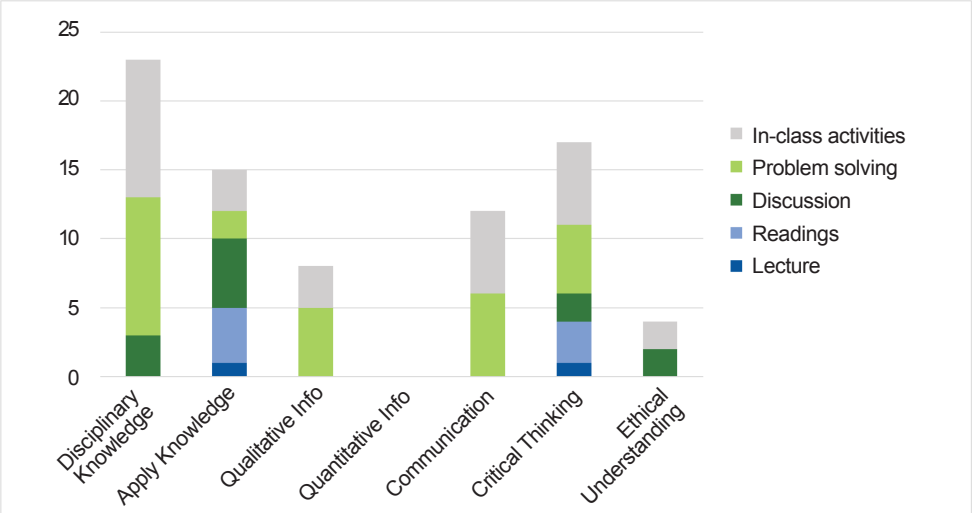


Figure 5.11. How PLOs are taught in first-year courses

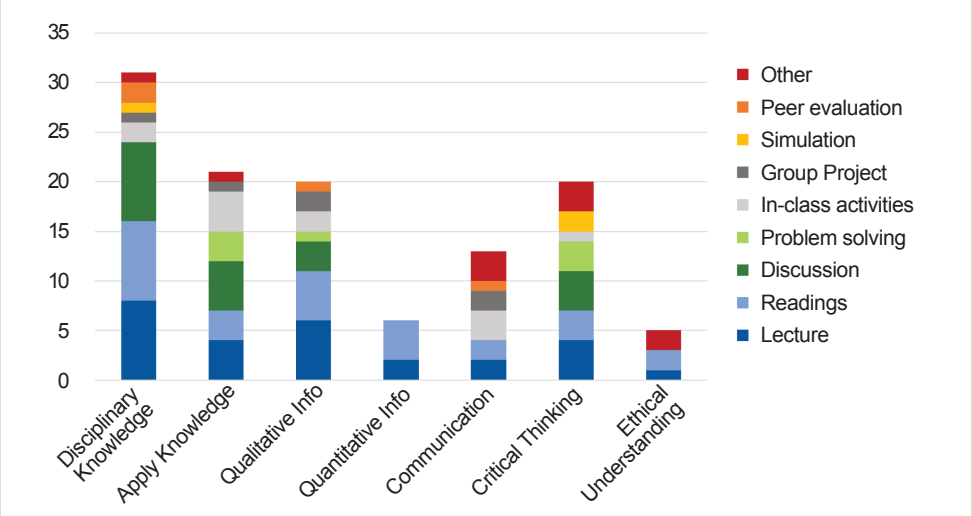


Figure 5.12. How PLOs are taught in upper-year courses

Analysis indicates that first-year courses do not incorporate much variety in teaching and learning activities. Additionally, quantitative understanding is not addressed at all in first year courses. This may be deliberate. If unintentional, this would warrant discussion for the program's instructors. The second chart shows that teaching and learning activities are much more varied in upper-year courses. Quantitative information is still not taught extensively, so perhaps it is not a focus of the program. Other PLOs are addressed to a lesser extent as well, and could be a worthwhile point of discussion for instructors who teach in the program.

A comparison of the two charts reveals fairly different approaches for first-year and upper-year courses. Without knowing the context of the program, it is difficult to surmise why, but one might wonder if first-year courses have higher enrollment and therefore instructors feel more constricted by class sizes.

Questions for instructors to analyze data for charts such as these include:

- Do we have enough variety in teaching and learning activities? If not, how might we implement more variety across the program?
- To what extent do the teaching and learning activities support student learning in first-year courses? In upper-year courses?
- What are our signature pedagogies and are we incorporating them across the program?
- How do first-year teaching and learning activities compare with upper years?
- What department, faculty, or institution priorities should we consider when looking at teaching and learning activities, such as experiential learning or Indigenous ways of knowing?

Analyzing a Summary Chart for a New Program

When looking at a summary chart for new program development, instructors might consider the following analysis questions:

- What general trends do you see in the data? Which PLOs are most emphasized? Which are least emphasized?
- Are there any gaps in PLOs that need to be addressed?
- Is there too much emphasis on a particular PLO?
- Are we missing any PLOs?
- What are our next steps to improve and align the curriculum?

For example, in Figure 5.6, disciplinary knowledge, written communication and critical thinking are most emphasized. Application of knowledge and evaluating information are also prominent in the program. Oral communication is noticeably less emphasized, while designing and implementing research and ethical understanding have very little emphasis in the program. Additionally, ethical understanding places high expectations on students as it first appears in the program at the level of 'extension'. Conversations can now happen at the program development stage, with possibilities such as:

- Introduce ethical understanding in at least one course at the 100 or 200 level.
- Discuss whether or not to include the PLO 'ethical understanding' in the program.
- Examine whether the emphasis on written communication should be balanced a bit more with oral communication, or if it currently has the right balance.

Fostering Dialogue about Curriculum

Many of the discussion questions outlined above are designed to help foster dialogue between instructors, the curriculum committee, or others involved in the curriculum mapping process. Facilitating good conversations, however, is challenging, particularly as with curriculum mapping, there can be a tendency to focus on improving the chart, rather than discussing the student learning experience.

Avoiding superficial conversations

The goal of curriculum mapping and review is not to have a beautiful map, though sometimes instructors and program leads want to have a perfect map. Occasionally groups want to debate the validity of the data or dismiss what they are seeing if they do not have confidence in the process. Where appropriate, emphasize that the goal is to have meaningful discussions about the current curriculum, and identify strengths and potential changes. Institutional norms can vary, so confirm who receives and evaluates the

reports and the institutional expectations for identifying gaps, appending data and providing action items.

Avoiding knee-jerk reactions

A quick leap from one piece of the data to a solution may reflect a pre-existing assumption or priority rather than be grounded in the data, reflection, and discussion. The reason for the gap or overlap usually requires a deeper look to confirm, describe, and view the whole curriculum at an over-arching level. Where there is substantial overlap, there might be a leap to removing associations in the curriculum map. Yet the map may represent actual heavy emphasis in the program on the outcome, a key thread in the program such as patient-centered care or argument construction, or simply an error in entry with an instructor checking all outcomes that barely applied. Gaps seeming ready to be filled in with a click, may indicate an emerging area, a missing outcome in the curriculum, a need to reconsider a learning outcome that is aspirational or insufficiently supported, or simply incomplete course entries. When conversations drift quickly from data to instructor's own individual experiences and priorities, providing prompts in handouts or in facilitation to consider a specific part of the data or pattern can help.

Chapter Conclusion and Reflections

Three common threads woven throughout curriculum mapping are the importance of collaboration, communication, and leadership when collecting data. Ongoing communication is essential (Britton, Letassy, Medina, & Er, 2008). A dean, department head, curriculum lead or other person who has been appointed to provide leadership can play an important role by setting aside some funding for the initiative, securing administrative support, emphasizing the importance of the project to instructors and adding the curriculum mapping to meeting agendas. A shared leadership approach can also be effective in moving the process along. Either way, without the support of leadership, the curriculum mapping process is likely to be more challenging. Encouraging and ensuring that curriculum discussions and maps reflect existing curriculum rather than superficial checking of boxes, recall or confirmation bias, or one person's best guesses can ground discussions and decisions meaningfully.

Critical Reflection

The curriculum mapping process can be complex, messy, valuable, and fun! There are many decisions to be made along the way that will have an impact on the process and results, such as who makes decisions on the mapping process, and who is involved. Decisions such as whether to map the intended, taught, and/or the experienced curriculum will help to shape discussions about the curriculum. As a final reflection, it would serve groups well to consider the relative importance of this data source in conjunction with other data used in the curriculum renewal or development process.

Chapter 6
Action Planning for Curriculum Development

Introduction

This chapter maps out a process for action planning that is pragmatic and grounded in the day-to-day realities of curriculum development work, combining basic skills in project planning and change-related activities, which are two key challenges in supporting ongoing and sustainable practices in curriculum development.

Supporting the ongoing collection, interpretation, implementation and evaluation of program enhancement-related activities throughout the curriculum development process is key. These are critical components for sustaining collection and reflection over the duration of the curriculum development cycle and require organization, planning, and implementing structures and timelines throughout the curriculum development cycle.

Educational developers (EDs) commonly work with academic units that are new to curriculum development as a scholarly and ongoing activity, providing opportunities to help co-create and adapt the systems and approaches used. Evolving and enacting processes and tools that encourage longer-term sustainable, efficient, and effective engagement in curriculum development is desirable to spread out the collection, interpretation, and actioning of curriculum changes over the full cycle of the review. This re-distribution of related activities is intended to embed curriculum development work as an ongoing and regular activity in the life of a program. By redistributing the timelines and tasks to a longer period, the aim is to reduce the intensity (and potential associated *curriculum fatigue*) of curriculum evaluation, and increase opportunities for ongoing reflection, formative assessment of curriculum changes, and interpreting available evidence collectively, while also being informed by shifting institutional priorities and sector-wide changes in education.

Critical Reflection: Developing Long-Term Relationships

Throughout the curriculum process, you will likely develop deep connections with key people in the unit, along with a curriculum committee of some sort, overseeing and enabling the curriculum development process. For many committee members, this may be new work, and may differ from earlier curriculum committees focused on administrative changes.

Developing a close consultative relationship with the leaders of the program will be critical in order to positively impact action planning and implementation. Being a catalyst in this role is key – drawing on your related experiences with other units to encourage effective and efficient processes; your ability to navigate your institutions' administrative and information management networks; bringing a developmental and practical approach to the practice of curriculum development; and an empathetic and encouraging spirit to energize the process when needed.

Advocating for the development of a strong and engaged committee with direct senior leadership engagement will also be key in sustaining efforts. And your role as supporter of and advocate for this group will be critical, be it as a full or ad hoc member, or as formal or informal advisor. This may include direct support of the committee in progress as an ad hoc member as they adapt to their new roles; developing systems and practices that are effective and efficient; supporting the committee through educational development; advocating for recognition for program-level efforts (new awards, funding, positive buzz, etc.). Advocacy in this regard may also include helping to determine and adapt to program, institutional, and sector-wide changes in educational priorities and practices.

Goals of Action Planning

The overall goal of action planning is to generate a systematic approach to enact positive changes in the curriculum, resulting in a higher quality student learning experience. In the process, action planning can also realize other benefits:

- Incorporate short, medium, and long-term curriculum renewal activities that allow for quick wins along with more substantive curriculum improvements.
- Keep curriculum issues front of mind for faculty members by engaging them in a regular and sustainable series of activities over the duration of the review cycle.
- Create a more sustainable balance of workload required over time.
- Foster ongoing reflection about the curriculum.
- Create processes for ongoing data collection and foster both formative and summative reflection on the data.
- Encourage iterative curriculum development processes for individual courses and the program as a whole.
- Embed culturally diverse perspectives and ways of knowing into curriculum development processes, as opposed to add-ons in ways that will normalize institutional strategies, such as Indigenization.

For those new to engaging in program reviews, formal or otherwise, much of their first effort can be filled with intense collection and analysis of data, (re-)articulation of program learning outcomes, mapping, consultations, analysis and reporting, often using templates and forms to ensure compliance, and completed with little time for deep reflection or consideration. Programs that also have external accreditation considerations often have distinct processes and timing, with their own templates and forms. On the other hand, programs that have self-directed curriculum initiatives may not have a clear plan or timeline. Action planning can be a valuable tool in moving forward.

Key components of curriculum action planning include the articulation of:

- Specific activities to be prioritized by the unit;
- Sustainable timing of related activities;
- Resources allocated (funding, humans, background docs and info, etc.);
- Specific process and results to be evidenced.

Supporting Action Planning

An ED's direct role in action planning and sustaining curriculum enhancement is key and may take many forms:

- Providing process guidance through action planning and ongoing support for curriculum renewal;
- Connecting groups to the various supports and resources available on-campus and elsewhere;
- Making available related resources, scholarship, anecdotes from other related initiatives;
- Keeping momentum through project/process management support;
- Linking to formal processes and administrative requirements;
- Furthering a scholarly approach to curriculum development;
- Helping to facilitate challenging conversations;
- Helping to motivate and celebrate achievements;
- Approaching planning and enhancement through an equity lens, ensuring diverse perspectives are represented, which may also include engaging with the Indigenous community;
- Helping to develop systems and practices that further sustainable approaches to curriculum development;
- And ultimately, to positively impact the program.

Much of the chapter provides concrete advice on action planning. However, key to the effectiveness of action planning is recognizing the importance of understanding curriculum development work as change, and the impacts curriculum development work can have on teaching culture.

Curriculum Development Work as Change

In the role of supporting of curriculum development, EDs often work with faculty and teams to enact longer-term educational change, sometimes in relation to larger sectoral shifts (e.g., technology-enabled and online learning), institutional priorities (e.g., equity and access, decolonization) and/or changing disciplinary and professional practices (e.g., experiential learning). This illuminates a need to understand complexities that can impact curriculum; with change being a constant in any developmental process.

Change is understood as altering organizational practice, structure, culture, policy and regulation (Akinbode & Al Shuhumi, 2018) and can be viewed through various dimensions:

- Individual or collective
- Internal or external
- Local or international
- Temporal or permanent
- Gradual or abrupt
- Process or product
- Intentional or unintentional
- Profound or partial (Altrichter & Elliott, 2000)

Reflecting on these dimensions within each curriculum project can help to contextualize the ways that support can be provided. In fact, replacing the term 'or' with 'and' for each dimension has proven especially

helpful in understanding the dimensions as spectrums, balancing each as appropriate. For example, new program development might be initially motivated by a desired 'product', and so imbuing the development work with 'process' will help to balance perspectives, which may orient the new program in particular directions. As well, it is not uncommon for curriculum development initiatives to be driven by a single or small group of educators or administrators, suggesting an 'individual' orientation. Thus, building in the 'collective' to ensure balance will likely be important in providing ongoing support.

Curriculum Development Work as Furthering Teaching Culture

Providing support for curriculum development action planning can be informed by the recognition that culture has a large influence on all activities. Institutional culture can be understood as the embedded patterns, behaviours, shared values, beliefs, and ideologies which help define educator and learner experiences, and can have numerous micro-cultures, while teaching culture can be considered an institutional culture that *demonstrates that teaching is valued* (Kustra et al, 2014). It should be noted that curriculum development most often takes place within the institutional values and assumptions embedded within the broader Western culture in which we practice curriculum development approaches and assumptions. Nonetheless, furthering teaching culture through action planning can contribute to a shared campus commitment to teaching excellence; impact student learning, student engagement, and student retention; and influence faculty motivation and behavior (Berger & Braxton, 1998; Bergquist & Pawlak, 2008; Feldman & Paulsen, 1999; Grayson & Grayson, 2003).

Considering the levers for teaching culture identified by Kustra et al. (2014) can also provide contextual insights on the context for action planning for program development. Using the levers as a reflective tool can illuminate ways to enhance teaching culture through program development. For example, recognizing the value of *Lever 6: Effective Teaching is Recognized and Rewarded*, you might suggest advocating for the incorporation of an institution-wide award for program development, which might also help enhance their teaching culture and practices.

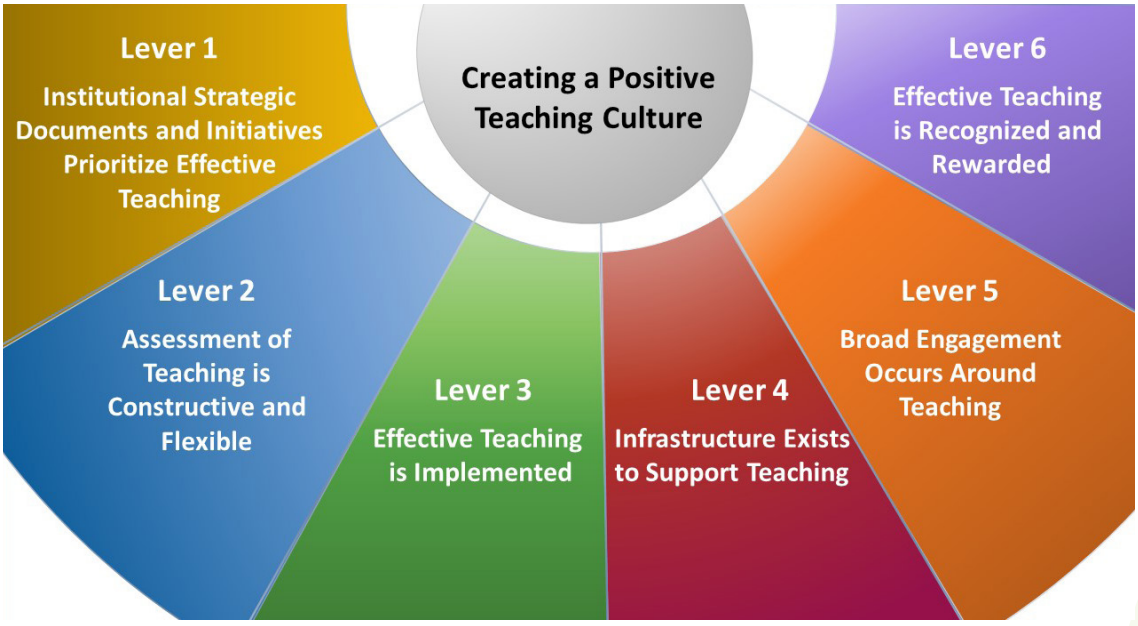


Figure 6.1. Teaching culture indicators

Critical Reflection: Curriculum Development Support as Educational Development and Advocacy

It could be argued that curriculum development initiatives may be best situated within the responsibility of the curriculum committee. However, committee members do not necessarily have the institutional contacts, awareness of or access to the evidence required. They may well not be equipped to translate available evidence into disciplinary formats that might best convey their meaning within their program, nor be aware of how other units or institutions have engaged in similar processes.

Your role at this point is both to work with units to help them develop practices and expertise related to program-level perspectives, and to help build system and support capacity to envision curriculum development work as sustainable over time, as effectively and efficiently as possible, allowing curriculum committees to focus on improving the educational impact of their programs.

An example of helping to further develop practices and expertise might be that if a program goal is to decolonize their curriculum or to integrate more diverse epistemologies or ways of knowing, you may be able to encourage and support deep engagement with attitudes and assumptions, through connecting educators to the teaching centre, equity office, Indigenous pedagogy specialist, or other units and resources within and outside the institution that can support ongoing development.

Building capacity for program development work at the unit or institutional levels can include many variations, for example:

- Improving the access, flow, and interpretation of related evidence (i.e. reduce unit time spent on locating, collating, and organizing evidence);
- Aligning external accreditation timing and requirements with institutional timing and requirements (i.e. optimize coordinated efforts to minimize administrative requirements);
- Advocating for teaching awards, scholarship, funding and other initiatives to further curriculum enhancement processes.

Often embedded within action planning activities is an assumption of ongoing cultural development and change as hand-in-hand with longer-term engagement. Thus, understanding basic concepts of change and teaching culture can greatly influence action planning support approaches.

3 Aspects of Action Planning

A critical context for action planning is the duration of the curriculum development cycle. For many Canadian institutions, for example, the provincial expectations currently extend over an approximate 7-8 year cycle, though with different oversights and expectations. Professionally-accredited programs are often driven by external expectations and timelines. Other programs EDs work with may seek to explore their curriculum as a part of their own reflections and may not be driven by external timelines at all. Thus, as you progress through this chapter, please keep in mind that an overview of action planning is provided and will need to be adapted to your context. Following is a model of 3 aspects of curriculum action planning that can be used heuristically to develop processes that fit your specific context. Each of these aspects are intended to follow-through and follow-up on all the curriculum development work to-date. Please note that there is there is no particular order to these items and each aspect is detailed below the figure.

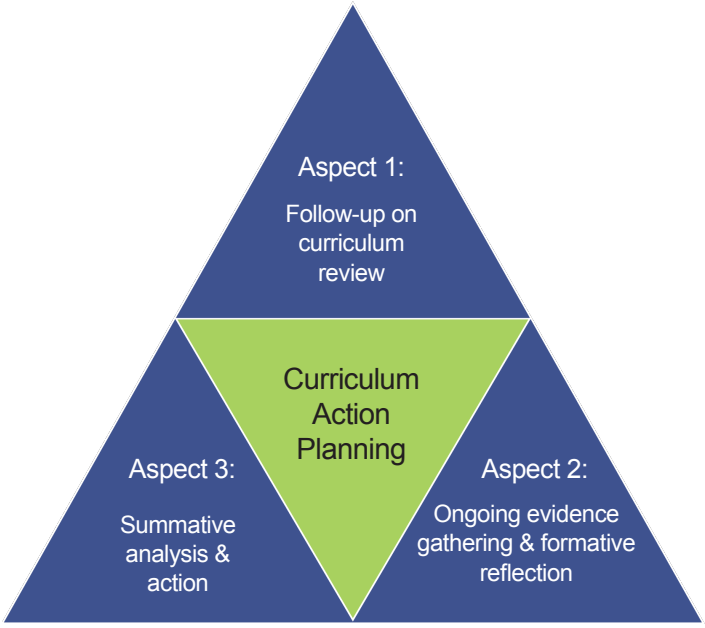


Figure 6.2. The Three Aspects of Curriculum Action Planning

Aspect 1 - Follow-up on findings and recommendations of recent curriculum review

This is the most obvious aspect; following up on external, internal, and unit-directed recommendations for program enhancement. In this aspect of action planning, the goal is to ensure that recommendations made for curriculum enhancement are addressed, appropriate actions are taken over the subsequent curriculum development timeframe, formatively and summatively.

will need to be adapted to your context. Following is a model of 3 aspects of curriculum action planning that can be used heuristically to develop processes that fit your specific context. Each of these aspects are intended to follow-through and follow-up on all the curriculum development work to-date. Please note that there is there is no particular order to these items and each aspect is detailed below the figure.

Recommendation	Activities	Timing	Responsibility
1. Further align the existing writing program learning outcome within core courses	Map creation? Review	Fall 2021	Curriculum committee
2. Further align intro and capstone courses	Ensure scaffolding through the program-by-program outcomes	Fall 2022	Relevant course instructors
3. Integrate digital literacy as a new program learning outcome	Guest Speaker / Examples from other programs New 3rd year course to be developed on Digital Humanities	Fall 2023	Educational Developer, curriculum committee

Table 6.1. Sample Recommendations Follow-up Plan

Aspect 2 – Ongoing evidence gathering and formative reflection for the next cycle

This aspect focuses on the start of the next cycle of review. The focus is on distributing the effort needed for evidence collection and reflection for the following cycle, rather than completing it all right before the next review. This is to avoid the 'rush' of last-minute collection, interpretation, and reporting of needed evidence. This aspect is key to minimizing the *curriculum fatigue* that units can experience if curriculum evaluation is attempted in a more truncated and intense period. It also provides formative evidence that can impact the curriculum at any time in the development cycle.

This includes ongoing engagement with:

- Stakeholders periodically throughout the cycle;
- Previous reports, evidence, and recommendations available for repeat use and comparison;
- New and updated evidence (e.g., National Survey of Student Engagement).

Key in this activity is not just the ongoing collection of evidence, but also the reflection on it. Considering the individual pieces of evidence collected throughout the process as formative assessments, clarifies that the evidence collected in-progress can provide the program with key feedback on actions taken to-date and allow for adjustments along the way. Encouraging collected evidence to be considered in-progress provides opportunities to engage in structured analysis and reflection with the curriculum committee, program leadership, and/or unit membership. Supporting the reflection on the evidence will depend on the evidence collected and the reasons for it having been collected. ED work in support of this can include supporting the development of visualizations and appropriate reporting, facilitating its interpretation and the reflection upon it, and determining subsequent actions to be taken, if any.

Looking at all the evidence collectively towards the end of the cycle can be considered as the *summative assessment* of any curriculum project. Important to this will be the framing of the evidence in ways that make sense to the program, and to orient the interpretation of the evidence, considering the program learning outcomes and/or other program enhancement initiatives.

Reflecting on the evidence gathered both formatively and summatively is critical in transforming formal review processes from strictly meeting requirements to those informed by the program learning outcomes or explicit questions explored through this process. Orienting the meaning of alumni surveys (or specific questions therein) into feedback that helps to validate the program learning outcomes, for example, will take intentionality and an explicit orientation to interpreting and making use of the evidence collected.

In the sample Evidence Gathering, Reflection, and Action Plans below, you will note that we have separated the plans for the collection of evidence and the plan for ongoing reflection and formative assessment. This is for illustration purposes; in your practice you may find that they are best considered as a combined chart.

Below are some emergent recommended practices for engaging in this aspect of curriculum action planning, compiled largely from hands-on experience.

- Repeating the same or similar evaluation methods over time allows for more efficient use of time and more comparable results. Hence, the evidence collected in past reviews ideally forms the foundation for the next round of evidence collection, assuming that they were effective, efficient, and worth repeating (or adapting). If past efforts of evidence gathering did not elicit relevant information or high response rates, this is the opportunity to re-visit or enhance existing methods and establish a stable approach to evidence gathering. One way to accomplish this is through a keen focus on the program learning outcomes as the pivot point for evidence gathering. Though specific evidence may change over time, maintaining a focus on the student perception, achievement, and impact of the PLOs will give a stable focus for evidence interpretation and action.
- Curriculum evaluation is a shared activity and can include students, staff, faculty, employers, alumni, etc. For example, in the plan below you will see that the student government is to lead the focus groups for entering and exiting students.
- Major stakeholders are represented as appropriate – entering, current and exiting students, TAs, alumni, employers, and faculty.
- Evidence is explicitly sought – consider both required and self-selected indicators, based on authentic queries related to the curriculum. Frame the evidence in disciplinarily appropriate formats for most effective interpretation and action planning.

Stakeholder	Guiding Questions	Frequency	Collection Method(s)	Resources
Students (entering and graduating)	• What aspects of the program most contributed to your learning? • Why this program? • What did they hope to experience, and did they experience it while in the program? • Are they confident in their abilities to be successful in their future endeavours? How do they know? • What do they hope to do after program completion?	Annually September and May	• Separate entering and graduating student focus group with pizza lunches • To be run by student association	Previous survey Questions Previous survey results Budget: $250
Student achievement of program learning outcomes	• Can they do it? • Are they improving? • Are they confident?	Years 1, 3, 5	• Review of course-based assignments • Use common rubric to collaboratively review anonymized samples of student work • To be run as an activity at a faculty retreat, facilitated by educational developer and curriculum committee chair	
Alumni Key employers	• Did the learning transfer? • Benefits of the program – career, lifelong learning, personal development? • Impact(s) of the program? • Suggestions to strengthen the program?	Years 2, 4, 6	• Alumni surveys (in coordination with Alumni Affairs) • Employer focus group (facilitated by program advisory group)	Previous survey Questions Previous survey results
Institutional planning and registrar data review	• Have the desired impact (e.g., further studies taken by graduates, employment rates, alumni reflective feedback)?	Year 4, 7	• Evaluate data: NSSE, retention, employment/further studies, student demographics, retention, etc.	Previous data
Faculty, instructors, and staff	• What are the program strengths, weakness, opportunities and challenges, given all the feedback received? • What have we done and what should we to enhance the program?	Year 7	• Done in combination with the above	To be examined and discussed at faculty retreat

Table 6.2. Sample Long-Term Evidence Gathering Plan

	Engagement Activities	Responsible	Timing
Year 1 (e.g., 2021)	Entry/exit student survey	Student Government and Curriculum Committee - Report	Fall Unit Meeting
	Review of student work	Educational Developer and Curriculum Committee - Session	Spring Retreat
	Review of Recommendations and Follow-up	Chair, Curriculum Committee Report	Spring Unit Meeting
	Curriculum Committee meetings	Chair, Curriculum Committee	Monthly
Year 2	Alumni and/or Employment surveys and data	Curriculum Committee Report	Fall Unit Meeting
	Review of Recommendations and Follow-up	Chair, Curriculum Committee Report	Spring Unit Meeting
Year 3	To be completed at start of Year 3 to accommodate changes made to-date		

Table 6.3. Sample Formative Reflection Plan

Aspect 3 - Current review – Summative analysis and action

This aspect focuses on collectively interpreting the evidence collected to-date, in a review of the initial goals set out for curriculum enhancement. A direct follow-up of the initial evaluation planning now completed, this aspect ends the current cycle of curriculum development and acts as a springboard to the next phase.

It is often completed in alignment with required quality assurance and/or accreditation processes, which typically require a summative perspective. It ensures that any new goals for curriculum enhancement that are developed build on the lessons learned in previous intentional efforts. As well, this aspect can also help future rounds of curriculum assessment and development, by providing a solid foundation for surfacing issues that are specific to the program, moving towards a more customized approach to curriculum assessment in the future. It also offers an opportunity to celebrate successful changes made to-date and to recognize the evolution of the curriculum over time. Demonstrating sustainable changes made over time can be empowering and lead to increased program-level engagement by unit educators.

Here, EDs work to bring the unit together to reflect on the actions taken throughout the curriculum development time period, along with acting as a foundation for future curriculum assessment approaches.

When summatively reviewing curriculum, there are a variety of lenses that can be used, including whether the changes made in the program were effective (i.e., Did the changes have the desired impact? Did they have a positive impact on student learning?) and/or efficient (i.e., Were the processes and resources used sustainable and appropriate?).

The goal is to bring together all evidence collected to-date, aligned with intentional actions taken to enhance curriculum. This can then be used for both the curriculum committees overseeing the enhancement processes and for the larger group of educators in the program, providing a longer-term snapshot of how the program has changed, and feedback on lessons learned for future enhancement activities. This can be accomplished with coordination by the committee through a program retreat. Below is a sample plan that can be adapted as appropriate.

Table 6.4. Sample Formative Reflection Plan: Program Retreat Process

Pre-Retreat	Provide access to formative and other available existing evidence to instructors	Curriculum Committee website What have we done over the past # of years? Articulate and review changes over time.
Pre-Retreat	Institutional Data Review Review changes made to curriculum	To be interpreted by curriculum committee and presented at retreat. Were they appropriate, effective and/or efficient?
Retreat	Unit Strengths, Weaknesses, Opportunities, Challenges (SWOC) exercise	1. Complete SWOC with curriculum committee, based on all evidence collected. Bring to retreat but do not distribute yet. 2. With all evidence made available in advance of the retreat to the unit membership, collectively complete a SWOC in small groups at the retreat. 3. Compare retreat SWOC with curriculum committee SWOC and debrief – commonalities, differences, needs further investigation. 4. Use 'dotmocracy' exercise to help prioritize key observations. 5. Brainstorm next steps and ways forward. 6. Post-retreat, curriculum committee summarizes the retreat and forwards to membership for feedback.
	Preparation of formal documents for review (if any)	Unit Strengths, Weaknesses, Opportunities, Challenges (SWOC) exercise

Feedback and Approval of the Action Plan

Once a group has created their action plan, it may need to go through an approval process before it can be officially adopted. Check with your institution's governance processes to see if and how your action plan must be approved; does it need faculty and/or institutional approval? Faculty approval may occur within a curriculum committee or faculty council. It is also possible that an action plan cannot move forward without the approval of the dean. Institutional approval could happen through the provost's office, an academic program planning committee, or by someone appointed to review action plans.

At a minimum it is critical that deans, department heads, and staff are informed of changes to the curriculum, as well as items with fiscal impact. People in an administrative role, such as department heads, will need to examine any budgetary implications before they are able to support the changes.

Bringing it all together - Annual Curriculum Action Plans

With the three aspects of curriculum action planning accounted for, all can be brought together in annual comprehensive curriculum development action plans. It is through the development of the annual plans that ensures that there is a reasonable distribution of effort across the multiple years of the curriculum development cycle.

Challenges in maintaining momentum in curriculum development over time are many and may include changes in program leadership and committee members, review requirements, shifting program priorities, and competing demands. An ED's role in the Action Planning phase can include project/process management, offering ongoing support, piquing interest, linking to other programs, helping access to evidence and resources, etc. In other cases, the curriculum review group might manage the action planning autonomously, particularly those groups who have been through the process before. Ensuring that the curriculum development cycle is indeed cyclical requires tools and practices that include the immediate tasks to be completed as well as the larger picture of the flow of the cycle for curriculum development and where the program is within that cycle. Building capacity within faculties and departments to conduct this work in a meaningful way emphasizes the point that it is a faculty-led process and ownership resides with the unit.

As you can imagine, action planning as described in this guide can create quite a workload for the curriculum committee and perhaps yourself for the coming years. Yet despite the planning, the need to be flexible over the coming years will be equally important. Context, culture, administrative requirements, workloads and priorities may well change over the time frame for curriculum development, and these can impact the work of the curriculum committee and others involved.

For this reason, the group might find it best not to articulate overly-detailed annual plans at the outset of the curriculum cycle. Rather, the samples used in this chapter are intended to provide enough details for an overview of what has been set out for any given year, considering the three aspects of curriculum action planning. These can then be used as a springboard for curriculum committees to further detail at the beginning of each year, and adapt as required, allocate resources and determine appropriate ways forward in the immediate future. Subsequent annual plans will also be impacted by any adaptation and will also likely need to be modified.

Phase	Goal	Activities	Resources	Responsible
Follow-up				
	Further align the writing PLO within core courses	Map writing Review Follow-up	TBC	Curriculum Committee
Evidence Collection				
	Feedback from entering and exiting students	Pizza focus groups	Past questions Past results Budget: $250	Student Government
Reflection and Action				
	To stay in touch with the immediate student experience	Report of Entry/Exit student surveys	None	Student Government and Curriculum Committee - Report
	To further the student achievement of outcomes through intentional scaffolding and collaborative development	Review of student work	Review of course-based assignments using a shared rubric	Educational Developer and Curriculum Committee - Session
	To inform the unit of ongoing activities	Report of Recommendations and Follow-up to-date	None	Chair, Curriculum Committee Report

Table 6.5. Sample Comprehensive Curriculum Development Action Plan - Year 1

Advancing Action Planning

If in your role you support multiple individual curriculum initiatives projects, you may be well-situated to further develop the systems and processes that support and undergird curriculum enhancement. For example,

1. Can you help ensure the collection of institutional data (e.g., retention, NSSE, etc.) is made available easily and their interpretation by the unit be better supported?
2. Can you advocate for the adaptation of distributing graduate, alumni and or employer feedback mechanisms (e.g., surveys) to seek more curriculum-specific information?
3. How can you help the curriculum committee stay on-track using the action plan, through Microsoft Teams or project management software (e.g., Basecamp)?
4. How can you help the curriculum committee easily access past reviews and related historical documentation?

For example, one area ripe for development in our context is program dashboards. Imagine one location where a unit can:

- Access historical documents
- Manage the unit curriculum action plan
- Link to key curriculum supports
- Highlight key indicators
- Access updated evidence

For example:

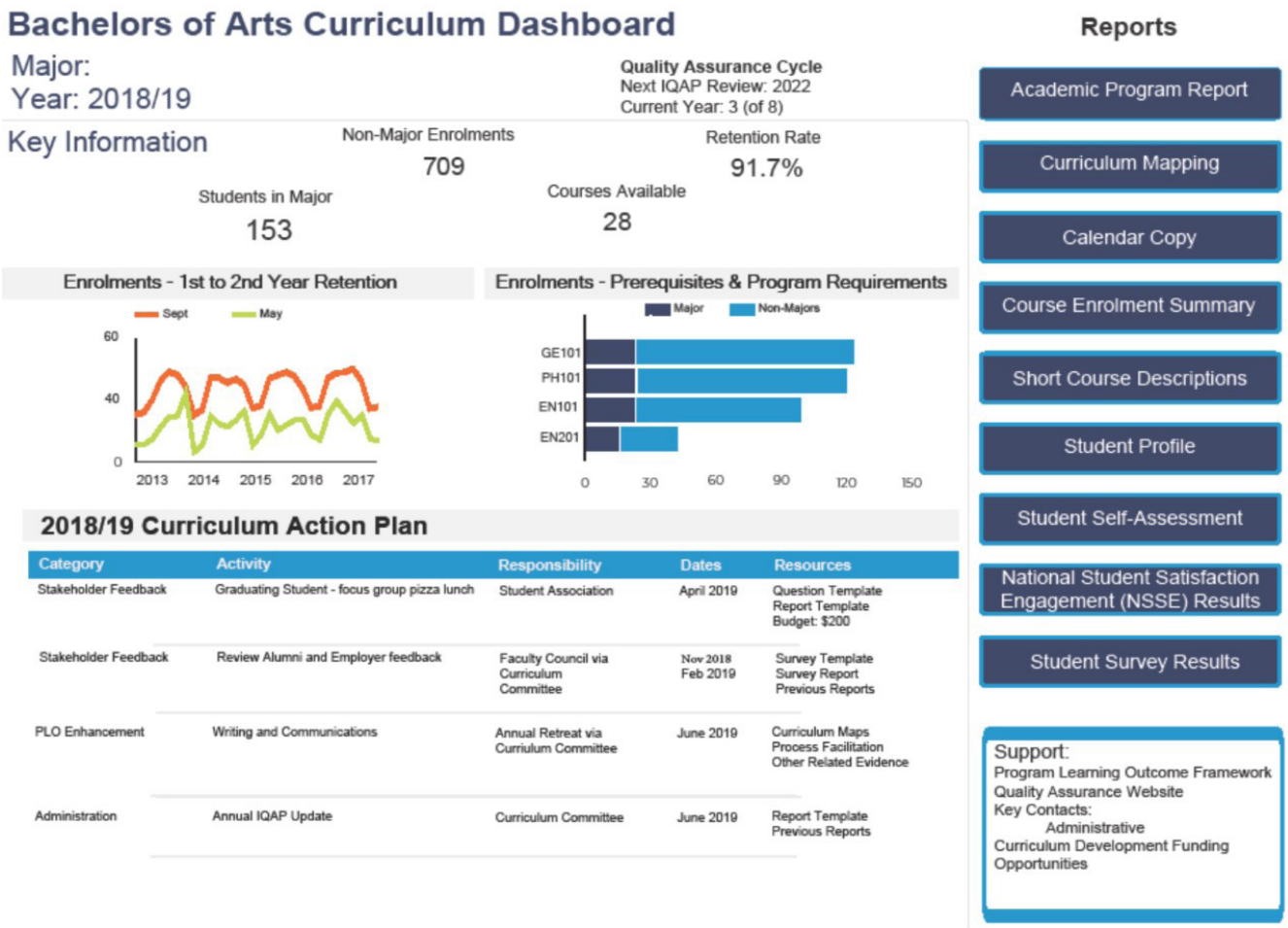


Figure 6.3. Sample Program Dashboard

To get us to this point, those supporting curriculum development can work across the various units and departments to consolidate the needed information in useable forms to the appropriate people. Not an easy task, but a critical one to ensure that educator time is well-spent on curriculum development activities. What would your program dashboard look like and do?

The future of action planning for curriculum development is ripe with opportunities. For many units, sustaining a curriculum development cycle over a number of years is a new endeavour and will require ongoing support and the scholarly development of sustainable tools, approaches and processes by those who support and engage in these initiatives.

Chapter 7
Advancing Our Current Practice

What Have We Learned?

As demonstrated throughout this guide, curriculum development is a complex process that intersects theory, practice, disciplinary sensibilities, cultures, and individual personalities. It is situated within very specific national, provincial, institutional and faculty/ departmental contexts, with their own policies, practices, and requirements. It involves significant work in collecting and analyzing information from multiple stakeholders and sectors. Juggling all of this can sometimes seem overwhelming even to experienced educational developers (EDs).

The following table is an attempt to encapsulate some of this complexity and provide a few helpful strategies.

Table 7.1 Addressing complexities of curriculum development

	What it Means	Helpful Strategies	Coping Mechanisms
Iterative	Accreditation, quality assurance, and quality enhancement all emphasize the value of continuous improvement, making curriculum review and development an ongoing process.	Where possible, encourage sustainable practices, such as building an action plan for timely review; developing strategies and timelines for collecting data, storing documents, and analyzing courses and programs.	Remember that change doesn't happen overnight: Even incremental changes can help build a culture of continuous improvement and promote effective teaching and learning.
Adaptive	Critically important that curriculum meets the needs of learners, accommodates diversity, is responsive to the social contexts of the institution, and adapts to changes in industry and disciplinary practices.	Promote and, as much as possible, facilitate inclusion of multiple perspectives throughout the curriculum development and review process, including students, industry, community members, and other stakeholders. Foster deep and critical reflection on curriculum pathways, alignment, and scaffolding, as well as outcomes.	Focus investigations on key areas and discourage attempts to answer all questions at once; consider evidence-gathering and analysis as long-term projects, with specific purposes for specific times.
Dialectical	The iterative and adaptive elements of curriculum development can also require navigating clashing perspectives, where dominant discourses meet possibilities for productive transgression and transformation.	Help identify underrepresented groups throughout the curriculum development and review process, and lobby for their inclusion, not just as token representation, but embedded throughout.	Emphasize the process, rather than the product: No curriculum is perfect, and points of dissension can offer opportunities for learning and growth.
Evidence-based	Effective curriculum development and review draws on a wide range of evidence to inform decision making.	Be aware of a range of approaches for gathering information appropriate to specific purposes for review or renewal, and comparisons over time.	Remember that it isn't necessary to be an expert on everything. Locate allies and institutional supports, and draw from their expertise where possible.

Curriculum Design and Review as Educational Development

As noted in Chapter 1, EDs have taken on a greater role in curriculum development over the last few years; what was once largely faculty working only within their own disciplinary contexts now often draws on the expertise of EDs in curriculum design, assessment, and related areas. Many factors have led to this shift: one is a greater emphasis on accreditation and quality assurance requirements, with increased government and administrative oversight of institutional processes and performance. Another is the growth in specialized knowledge around best practices for supporting student learning and improving faculty professional practice. Together, these have led to an increase in EDs that inhabit liminal (Dawson, Mighty, & Britnell, 2010) or "third space" (Whitchurch, 2018) positions with a focus on curriculum support as all or part of their job descriptions. As is common in this "third space" that bridges the academic and non-academic, administration and faculty, this role comes with both challenges and opportunities, paradoxes, and dilemmas.

Leveraging Quality Assurance & Accreditation

The growth of accreditation requirements and quality assurance procedures provides a key motivator for academic units to engage in curriculum review and renewal, a labour-intensive process that might otherwise be deferred indefinitely. EDs can – and often do – leverage this additional motivation to promote best practices in teaching and learning, integrating them wherever possible into curricula (Dyjur & Lock, 2016; Joyner Melito, 2016; Zelenitsky, 2014). At the same time, top-down mandated requirements can also create obstacles. "Have to" as an extrinsic motivator can lead many faculty to view it with suspicion or as a just another bureaucratic hoop that they must jump through, rather than as a formative exercise (Kopera-Frye, 2008). This can make it difficult to both gain buy-in for the overall project and facilitate productive participation in committee meetings and retreats.

Another challenge that comes with increased oversight is navigating ever-shifting metrics and the whims of governments or administrators as they create and manage policies regarding teaching and learning. It can be quite frustrating to spend hundreds of hours collecting information to satisfy a metric that suddenly ceases to be important because of a change in leadership, only to find yourself with a new metric or new trend and having to start over again. Added workload, particularly without a sense that the work is not meaningful can lead to curriculum fatigue.

Some strategies for navigating these tensions:

- Clarify approaches to "quality" by asking whether goals are to retrospectively defend past performance or to prospectively look for strategies to enhance quality (Biggs, 2001; Goff, 2017). The more faculty and administrators focus on the latter, the more they will be inclined to take the necessary steps to integrate sustainable and continuous practices for ongoing improvement.

Critical Reflection: What exactly do we mean by "quality" anyway?

While "quality" is quite often an aim in curriculum development, it is also notoriously difficult to define, and can mean quite different things depending on assumption and focus (Biggs, 2010). Throughout this guide, we have aimed to share a reflective and evidence-based approach to enhancing curricula, but with due recognition there may be significant disagreement as to purposes of education, which would impact both definition of quality and any indicators that might be used to evaluate it. For example, while an outcomes-based approach is well substantiated in the literature, it has also been criticized for the colonial and European worldview implicit within it. These critiques are important and highlight the importance of consultative and collaborative approaches, as well as remaining open to revisions to definitions of "quality".

- Identify legitimate points of resistance: As "third space" professionals, EDs can be precariously situated, and yet may still have unique opportunities for advocacy and resistance in a variety of arenas. Wherever located, it is helpful to remember that, despite pressures to the contrary, resistance is not futile, and can lead to a re-thinking of approaches and strategies that promote, rather than detract from, core academic values (Sauder & Espeland, 2009; Shore & Wright, 2015).
- When possible, encourage shared leadership and the distribution of tasks among different individuals and roles. Not only will this "divide and conquer" approach help make workloads more manageable for everyone, it also fosters dialogue and collaboration that can help all involved to better envision the program as a whole, as well as the role that individual courses play.
- Clearly communicate both the purposes and the steps in the process.

Meeting of Minds: Disciplinary Cultures

As noted in Chapter 2, different stages of curriculum development involve the intersection of disciplinary identity and ways of knowing for evidence, questions asked, methodologies, and ways of engaging instructors that are visible in a discipline's teaching, learning, and scholarship. Navigating these diverse epistemic arenas while staying abreast of current literature is complicated enough for those EDs who work exclusively within a specific department or faculty and can be even more so for EDs who are centrally located and work across many different academic units at once or are spear-heading institutional strategic priorities related to decolonization or EDI-related culture shifts. Some helpful strategies:

- Cultivate awareness of how your own socio-cultural positioning shapes your professional values and approaches.
- Reflect on your disciplinary assumptions and biases, with respect to the types of questions and evidence that you tend to gravitate towards.
- Recognize your own areas of expertise and limitations and be open about these when facilitating or if you are asked to support tasks outside of your realm.
- Consider your own perspectives on teaching and learning and how these inform your preferred approaches in comparison to others.
- When working with academic units who have specific terminology that they use for accreditation or other purposes, adopt their language, rather than trying to accustom them to a new vocabulary.
- Capitalize, as much as possible, on disciplinary expertise by encouraging methodologies that align with a group's preferred methods of collecting and analyzing data.

Affective Components of Curriculum Development

In many ways, curriculum development is emotional labour as much as intellectual labour. Regardless of their specific role, the ED will need to navigate political and cultural contexts, departmental cultures, and distinctive personalities. Each chapter offers some insights into the particular challenges an ED might face in each stage of curriculum development, and the facilitation section in Chapter 2 outlines more general strategies. To summarize, here are a few key considerations:

- Building trust is a key component for supporting or facilitating successful curriculum development.
- Recognizing and responding effectively to reactions when prompting people to examine or challenge their own practices is critical. (See, for example, suggestions in Chapter. 2, Table 2.1 and subsequent sections.)
- Identifying positionality and locations of privilege, both by recognizing your own and how this impacts your work, as well as reflecting on how privilege and power can shift dynamics of who speaks and who is heard.

The 'Care and Feeding' of Educational Developers

In navigating these different aspects of curriculum development, the ED is asked to take on a number of roles: teacher, consultant, advisor, facilitator, researcher, planner, coach, change manager, sounding board, and even complaints department representative. In these roles, EDs may also find themselves on the perimeter, considered an outsider intervening in a well-established process, or called in to centralize and facilitate an entire project. Where you are will depend very much on your institutional context and/or the culture of the specific department or faculty, or even curriculum committee that you are working with. With so much variation, it is difficult to always be prepared. But problems and challenges can be mitigated by:

- Investigating in advance (to the extent possible) the culture and expectations of the group with which you are working (See Chapter. 2 for more suggestions).
- Clarifying expectations, both your own and those you are working with, about your role in the project.
- Remembering that flexibility, adaptability, and willingness to accept different roles and responsibilities is key.
- Maintaining focus on the process; recognizing that changes happen slowly, often incrementally, and leadership works in mysterious ways in institutions of higher education.
- Recognizing your own strengths and weaknesses and calling in for expertise or support where needed (if possible and available).
- Engaging in self-care practices.

Curriculum Design and Review as Educational Development

Outcomes/competencies and navigating a global and uncertain world

Over the last few decades, higher education has seen a paradigm shift from teacher-centred or content-centred instruction to approaches that are more centred on learning (see for example, Barr & Tagg, 1995). With this shift has come increasing emphasis on self-directed life-long learning, interdisciplinarity, and emphasizing knowledge development in context. This shift has also led to an increase in key strategies to make higher education more accessible in diverse contexts and to an evolving understanding of the cultural perspectives that parallel Western teaching and learning approaches. As curriculum development is now being imagined through an increasingly diverse and equity-based lens, areas that re-imagine the borders of the learning environments are increasingly becoming emphasized. Two examples of this include shifts in the time-to-completion degree schedule and the location of learning:

- Micro-credentialing, badges and altered schedules for completion are helpful for students from diverse walks of life who require more flexible timelines for learning. As this approach to structuring learning and providing relevant, concrete, and specific learning experience is gaining in popularity, EDs are likely to find themselves involved in projects envisioning smaller stackable outcomes (and related credentials) to facilitate alternate pathways for certificate and degree completion.
- Online learning and open educational resources: The COVID-19 pandemic, and the pivot to online learning in particular, has accelerated the production and use of open educational resources across disciplines. EDs are increasingly being called on to support curriculum development in online contexts that often employ storyboarding, scrum, and DACUM (Developing A Curriculum) (Norton, 1998) methodologies to curriculum design. These types of projects tend to be more focused on curriculum at the course or module level, as well as supporting the micro-credentialing projects mentioned above, but complete online degrees are likely to also become more prevalent.

Students as partners

Increased diversity in the student body has also brought increased attention to principles of inclusion, to ensure that students with differing needs have opportunities to engage. There are many ways that this will continue to impact curriculum design, many of which are beyond the scope of this chapter and guide, but one clear take-way from the discussion in the chapters above is the importance of the student voice in curriculum development.

Student perspectives – whether past, present, or prospective – provide an important source of information for curricular decision making. Increasingly, students are invited not just to respond to surveys evaluating their instructors and courses at the end of the term, but also to help design the surveys and contribute their voices as co-creators of curriculum, both at the course and program level (Bovill et al., 2016). This signals a move away from the "student as passive recipient of learning" model to a more collaborative approach in which students are actively engaging in the development of some aspects of their curriculum and consequently have increased agency and voice in the process.

In these partnerships, students can take on a variety of roles from informal to formal. They may work with instructors at the course level, to help to locate and evaluate source materials to be used in specific classes, help design activities and assessments, contribute to the articulation of course learning outcomes, even research and recommend learning and teaching methods and approaches, acting as consultants, or as pedagogical co-designers (Bovill et al., 2016; Jardine, 2020). They may also be involved at the program level, invited to represent other students in curriculum committees, consulted through focus groups or surveys to provide insight into their learning experiences. (See, for example, discussions in Chapter. 2 and Chapter. 3, above.) Possible challenges faced by students and instructors attempting to work collaboratively in this way relate to boundaries, capabilities, or risk (Bovill et al., 2016), such as:

- Instructors may have concerns about potential personal and professional risk in opening their teaching practices to possible criticism by the students.
- Both students and instructors may be comfortable in their accustomed roles and thus reluctant to work together in an unfamiliar way.
- Students and instructors alike may doubt the ability of the students to contribute meaningfully to the work.
- Institutional structures, norms, and practices may not include or support this type of collaborative work between students and faculty, assuming the co-creation process is faculty initiated. For example, faculty unions at some institutions have asserted that curriculum development is the work of faculty members who teach in the program and they have the expertise and autonomy for this work.
- Instructors may on the other hand doubt that institutional priorities (retention of students, cost cutting etc.) are in accord with teaching practices and priorities (e.g., deep and meaningful learning) and thus may resist co-creation projects that are mandated from "above".
- Instructors may be ill-prepared to adequately respond to the needs of students who are from equity-deserving populations and may also be lacking institutional support that would help build capacity to foster collaborative and culturally safe relationships.

These and other challenges can be mitigated by awareness and openly discussing the challenges and possible reluctance of the participants. EDs can help with this process through awareness of potential obstacles, and facilitation of needed discussions. The aim is to create an inclusive atmosphere in which the best collaborative work can be done. This can provide students with valuable additional learning experiences, and can also allow for the development of greater autonomy and agency for all students. The result will ideally be a better quality of education.

Decolonization and enhanced efforts to bring in marginalized voices

As noted in Chapter 1 of this guide, curriculum development has traditionally been rooted in a white Eurocentric point of view, and across the world have come increasing calls to decolonize and redress inherent racism in curriculum and educational institutions (e.g., Battiste, 2013; Gaudry & Lorenz, 2018; Jansen, 2019). In addition, curricula have tended to assume homogeneity among the student body, structuring pathways, schedules, and policies grounded in assumptions of a neurotypical, cis-gendered, and able-bodied experience. Increased recognition of diversity has brought increased attention to enhancing equity, but there is still much work to be done. While thorough analysis is beyond the scope of this guide, the following will summarize some of the key issues and point to relevant resources to assist EDs.

Decolonization

Curriculum development is never neutral and reflects the assumptions, values, and history of the institution. Because of this, decolonization involves "dismantling structures that perpetuate the status quo, problematizing dominant discourses, and addressing unbalanced power dynamics" (Antoine et al., 2018, p. 6) and must engage beyond the curriculum to the whole of the institution to be effective (Pidgeon, 2016). And indeed, determining how to truly decolonize curricula will involve substantial work and conversations with equity-deserving groups taking lead roles.

Some initial considerations that might help EDs who are participating in these conversations:

- At the individual level, EDs must be prepared to engage in uncomfortable conversations around decolonization because such conversations evoke affective reactions that emerge from colonial erasure, oppression, as well as a Western-based epistemology of ignorance with regard to colonial history that is only now starting to be uncovered.
- Different epistemologies and ontologies can "coexist and be equitably compared" (Le Grange, 2019). While some disciplinary perspectives conflict with anti-colonial perspectives, this does not necessarily mean that one must adapt or assimilate to the other: approaches can be compared without morally designating one as "good" and the other as "bad".
- To effect real change, it is not enough to simply change or add content; it is also necessary to adjust the overall approach to curriculum by replacing the "factory" or "checklist" model of education with other models or approach (Le Grange, 2019).
- Decolonization is a process that enhances institutions via the incorporation of knowledges that broaden existing Western knowledge systems, not something that takes away from or compromises excellence.

Indigenization

Particularly relevant to the Canadian context is the 2015 Truth and Reconciliation Commission's Call to Action, which has sparked increasing attention to Indigenizing the curriculum across Canada. How the Call to Action has been interpreted and taken up has varied significantly in different institutions.

The most commonly adopted approaches to Indigenization thus far have been those that focus on "Indigenous inclusion" (Gaudry & Lorenz, 2018), targeting recruitment and retention, that is, numerical increases of Indigenous students and faculty, without further attempts to transform alienating structures or relationships (Pidgeon, 2016; Kuokkanen, 2007). While these efforts have led to some successes, they have also been criticized for requiring Indigenous people to "leave their ontological and epistemological assumptions and perceptions at the gates of the university and assume the trappings of a new form of reality, a reality which is often substantially different from their own" (Kuokkanen, 2008, p. 2).

The most commonly adopted approaches to Indigenization thus far have been those that focus on "Indigenous inclusion" (Gaudry & Lorenz, 2018), targeting recruitment and retention, that is, numerical increases of Indigenous students and faculty, without further attempts to transform alienating structures or relationships (Pidgeon, 2016; Kuokkanen, 2007). While these efforts have led to some successes, they have also been criticized for requiring Indigenous people to "leave their ontological and epistemological assumptions and perceptions at the gates of the university and assume the trappings of a new form of reality, a reality which is often substantially different from their own" (Kuokkanen, 2008, p. 2).

Some Canadian institutions have gone further, establishing "reconciliation Indigenization" (Gaudry & Lorenz, 2018) by creating Indigenous advisory committees, applying an Indigenous lens to their curriculum review processes, consulting with their local Indigenous communities, hiring EDs who are members of an Indigenous community, and specifically adding Indigenous course requirements. These efforts aim at more substantive changes to the structures of higher education and increasing knowledge of Indigenous peoples and traditions, but risk becoming "simply a shift in rhetoric" or "window-dressing" (p. 222) that does not actually serve to alter the university structures or change how institutions act towards Indigenous peoples.

In general, the processes of Indigenization have a long way to go before achieving a truly "decolonial Indigenization" (Gaudry & Lorenz, 2018) that reimagines relationships between the institution and the Indigenous communities and rebalances power relations between Indigenous peoples and settlers. Some additional considerations for EDs who may be involved in the work of Indigenization:

- While correcting the under-representation of Indigenous people in institutions of higher education is a worthwhile aim, focusing only on numbers can serve both as a distraction from the deeper and more challenging issue of re-thinking colonial assumptions about knowledge production and dissemination, as well as place an onerous burden on Indigenous people to be the ones to solve the problem (Gaudry & Lorenz, 2018; Kuokkanen, 2008).
- For those just beginning to learn, the Pulling Together: A guide for curriculum developers (Antoine et al., 2018) offers an introduction to Indigenization and Indigenous epistemologies, as well as resources for developing awareness of one's own role and promoting of systemic change.

Inclusivity and Accessibility

Over the years, concerns around increasing accessibility of higher education to students with disabilities have extended to include the removal of barriers for all students. Although various interpretations of inclusive education exist, an accepted consensus is that authentic inclusion creates learning conditions that are favourable and accessible to all learners within the institution (Lawrie et al., 2017). Hockings (2010) suggests that the tenets of inclusivity rest on the values of equity and fairness and identifies four broad categories or areas of focus to achieve inclusivity: inclusive curriculum design, inclusive curriculum delivery, inclusive assessment, and institutional commitment to and management of inclusive teaching and learning. However, meeting the needs of students from diverse backgrounds, with varying prior experiences, differing socio-economic backgrounds, multiple identities, and undefined complexities may seem daunting for educators. Some strategies, including the universal design for learning, support the intentional creation of access for all students, regardless of their background.

The principle of a Universal Design for Learning (UDL) originates from architecture where the intention was to design and create environments that were accessible to every user (Center for Universal Design, 2008). Applying this principle in education, the UDL framework provides a guide for creating curricula or learning experiences that are flexible and adaptable to meet the needs of diverse learners (Dalton, 2019). The three UDL principles of providing multiple means of engagement, multiple means of representation, and multiple means of expression, lay an inclusive and accessible foundation for developing teaching, learning, and assessment strategies that recognize and adjust for differences in background, motivations, language,

perceptions, and so on. By engaging learners through different means including providing a variety of choices of content, motivating learners with varying levels of difficulty, using various means to present information, and providing the opportunity for learners to demonstrate learning through various means, educators provide multiple points of accessibility. Some general considerations when implementing these principles:

- Work to reframe deficit models that focus on remediation or accommodation to emphasize asset models that strive to widen participation. Diversity of perspective can contribute substantively to both rigor and learning (Hockings, 2010).
- Encourage scrutiny of hidden and null curricula (See Chapter. 1) for areas of exclusion, recognizing that students prefer teaching that includes their social and academic identities.
- Keep in mind that common curricular strategies designed to promote inclusivity, such as collaborative or experiential learning, will not work for all students. While "universal" design aims to provide supports and structures for all students, and in so doing, enhances inclusivity, no approach is or can be truly universal.
- Consider also the oft-neglected barriers to inclusivity that can occur at the programmatic or administrative policy level, as this can help align and integrate teaching and learning with other institutional structures.

Chapter Conclusion

In many ways, the end of this guide is also a beginning. As noted in the Preface and Chapter 1, curriculum development has only relatively recently come into its own as a scholarly field and is still evolving. Changes on the horizon could easily result in re-thinking some of the most commonly accepted practices and assumptions in curriculum development. New technologies and approaches to credentialing may result in radically different kinds of programs. True decolonization and inclusion of more voices in curriculum development process may provide transformative insights for teaching and learning. One thing is certain: EDs who are called in to facilitate and support curriculum processes will have many opportunities to learn and unlearn, challenge and be challenged, lead and follow. Hopefully, this guide is successful in its aim to provoke continued reflection and nurture further scholarly inquiry, as well as provide some evidence-based and practical resources to help navigate the complexities and intricacies of curriculum development.

Appendices

Appendix 2.1: Collaborative Intentions or Working Agreements (Norms)

Curriculum Committee's Role	Educational Developer's Role
Foster a collaborative working environment	Foster a collaborative working environment
Openly explore new ideas and ways of thinking about the curriculum	Be mindful of the time and move the conversation forward when needed
Listen to each other and provide space for everyone's perspectives	Invite participation from all
Ask for clarification when needed	Ask for clarification and further reflection when needed

Appendix 4.1: Sample Student Survey Questions

For groups that do not regularly design surveys, or for those who are unsure what kinds of questions they can ask students in existing programs, example survey questions can provide a useful a starting point. Many of the following questions have been shared with permission from the Psychology Department, University of Calgary, who designed them for a departmental curriculum review. While these questions were tailored to their guiding questions, you may want to share some of them as exemplars.

Sample survey instructions

Welcome to the Student Survey for [program] majors. You are receiving this survey because you are in your third or fourth year of studies. Your feedback is very valuable to us as we review the [name of program]. The information you provide will help us improve the student learning experience of [program] majors.

The survey should take about 15 minutes to complete. Your responses are completely confidential and your name will never be associated with your responses or comments. No personal identifying information will be shared. Only aggregate data will be used for program evaluation purposes.

General Questions

I will be graduating in:

- o Fall 2021
- o Spring 2022
- o Fall 2022
- o Spring 2023

Did you complete 75% or more of your [program] courses at the [institution name]?

- o Yes
- o No

Please estimate your overall GPA for the fall 2020 and winter 2021 terms combined:

(text response)

Did you work full-time or part-time during the past academic year?

- o Yes
- o No

If so, how many hours per week did you work during the past academic year?

(text response)

Please indicate the degree you will receive at graduation:

- o (List potential degrees, including Honours)

Student Satisfaction Questions

Please rate your satisfaction with your learning experiences in [faculty or department] on each of these items (matrix table)Please rate your overall satisfaction with your learning experiences in the [program name]:

	Very Satisfied	Satisfied	Somewhat Satisfied	Not Sure	Somewhat Dissatisfied	Dissatisfied	Very Dissatisfied
Variety of courses available	o	o	o	o	o	o	o
Level of academic challenge	o	o	o	o	o	o	o
Quality of teaching in lectures	o	o	o	o	o	o	o
Quality of teaching in labs	o	o	o	o	o	o	o
Opportunities for research experience	o	o	o	o	o	o	o
Career information	o	o	o	o	o	o	o

Please rate your overall satisfaction with your learning experiences in the [program name]:

- o Very satisfied
- o Satisfied
- o Somewhat satisfied
- o Not sure
- o Somewhat dissatisfied
- o Dissatisfied
- o Very dissatisfied

How likely are you to recommend the [name of program] at the [institution name] to others?

- o Very likely
- o Likely
- o Somewhat likely
- o Not sure
- o Somewhat unlikely
- o Unlikely
- o Very unlikely

Course Availability

After starting the [program name] major, how frequently did you experience difficulties fitting [program name] courses into your academic schedule?

- o Never
- o Rarely
- o Sometime
- o Often
- o All the time

Student Perceptions About the Program

Please rate the extent to which you agree or disagree with the following statements:

	Strongly Agree	Agree	Somewhat Agree	Not Sure	Somewhat Disagree	Disagree	Strongly Disagree
There are too many students in [program name] courses	o	o	o	o	o	o	o
I was able to take all the [program name] courses I wanted	o	o	o	o	o	o	o
There should be more [program name] courses offered in the evenings	o	o	o	o	o	o	o
There should be more [program name] courses offered in block week	o	o	o	o	o	o	o
There should be more [program name] courses offered online	o	o	o	o	o	o	o
It is easy to get an A in [program name] courses	o	o	o	o	o	o	o
I am proud to be a [program name] major	o	o	o	o	o	o	o
The volume of work in the program has been manageable	o	o	o	o	o	o	o
I have found the program to be intellectually stimulating	o	o	o	o	o	o	o

Please comment on any aspect of the above.

(text box)

Why did you select [program name] as a major?

(text box)

Prerequisites

Core courses are intended to teach essential concepts and theories that are needed for success in higher-level courses. In your experience, to what extent have the following required core courses adequately prepared you for success in higher-level courses? If you have not yet taken a particular core course, select N/A

	Well Prepared	Prepared	Somewhat Prepared	Not Sure	Somewhat Unprepared	Unprepared	Not at all Prepared	N/A
XXXX 211	o	o	o	o	o	o	o	o
XXXX 231	o	o	o	o	o	o	o	o
XXXX 301	o	o	o	o	o	o	o	o
XXXX 331	o	o	o	o	o	o	o	o

Please comment on prerequisite courses and how well they prepared you for subsequent courses:

(text box)

Program-level Learning Outcomes

The following table shows the broad expectations for student learning in the program. How well do you think the coursework that you have completed so far has helped you to learn these knowledge and skills?

	A Lot	Somewhat	A Little Bit	Not at all	Not Sure
Develop a knowledge base of theories and concepts within their primary area of study.	o	o	o	o	o
Use different approaches to solving problems using well established ideas and techniques within the discipline.	o	o	o	o	o
Locate and critically evaluate qualitative information.	o	o	o	o	o
Locate and critically evaluate quantitative information.	o	o	o	o	o
Formulate and communicate oral arguments based on information, theories, and concepts.	o	o	o	o	o
Formulate and communicate arguments in writing based on information, theories, and concepts.	o	o	o	o	o
Apply knowledge and skills in a variety of contexts, including situations that are new to the student.	o	o	o	o	o
Conceptualize, design, and implement research for the generation of new knowledge or understanding within the discipline.	o	o	o	o	o

Effectiveness of Learning Experiences

Please indicate the extent to which the following experiences have contributed to your learning in the [name of program]:

	To a great extent	To a moderate extent	A little bit	Not at all	N/A
First-year courses	o	o	o	o	o
Seminar-based courses and experiences	o	o	o	o	o
Laboratory-based courses and experiences	o	o	o	o	o
Studio-based courses	o	o	o	o	o
Co-op experiences, internships, or clinical placements	o	o	o	o	o
Community-based projects or service learning	o	o	o	o	o
Writing-intensive courses	o	o	o	o	o
Undergraduate research projects	o	o	o	o	o
Capstone courses and projects	o	o	o	o	o
Study abroad program or intercultural learning experiences	o	o	o	o	o
Integrative studies and experiences that transcend disciplinary boundaries	o	o	o	o	o

Honours Program

Are you in the honours program and enrolled in the honours thesis seminar?

- o Yes
- o No

Was your honours thesis supervisor a regular faculty member in the [department, faculty] or an adjunct faculty member?

- o Regular faculty member
- o Adjunct faculty member
- o Not sure

Please rate how satisfied you are with your honours thesis supervisor:

- o Very satisfied
- o Satisfied
- o Somewhat satisfied
- o Not sure
- o Somewhat dissatisfied
- o Dissatisfied
- o Very dissatisfied

Please rate how satisfied you are with the research experience you acquired as an honours student:

- o Very satisfied
- o Satisfied
- o Somewhat satisfied
- o Not sure
- o Somewhat dissatisfied
- o Dissatisfied
- o Very dissatisfied

Please rate how useful the honours thesis seminar was to you:

- o Very useful
- o Useful
- o Somewhat useful
- o Not sure
- o Somewhat useless
- o Useless
- o Very useless

Please rate how useful each of the following honours seminar activities was to you:

	Very Useful	Useful	Somewhat Useful	Not Sure	Somewhat Useless	Useless	Very Useless
Scholarship information sessions	o	o	o	o	o	o	o
Graduate school information sessions	o	o	o	o	o	o	o
Giving presentations	o	o	o	o	o	o	o
Watching other students' presentations	o	o	o	o	o	o	o
Presentation tips and advice	o	o	o	o	o	o	o
Receiving feedback on my presentations	o	o	o	o	o	o	o
Advice on writing the honours thesis	o	o	o	o	o	o	o
Peer feedback on my honours thesis	o	o	o	o	o	o	o
Instructor feedback on my honours thesis	o	o	o	o	o	o	o
Meeting as a group throughout the year	o	o	o	o	o	o	o

Please rate your overall satisfaction with your honours thesis experience:

- o Very satisfied
- o Satisfied
- o Somewhat satisfied
- o Not sure
- o Somewhat dissatisfied
- o Dissatisfied
- o Very dissatisfied

Do you have any other comments about your honours thesis experience that you would like to share with us?

(text box)

Future Plans

Please select one of the following statements to best describe your situation in September [next academic year]:

- o I will be starting a graduate program in [program name]
- o I will be starting a graduate program in [other program associated closely]
- o I will be starting law school
- o I will be starting a graduate program not listed above
- o I will be studying in a different undergraduate program
- o I will be working full-time
- o I hope to be working full-time, but I don't have a job waiting
- o I will be traveling most of next year and not working full-time or going to school
- o I am not sure what I will be doing
- o None of the above (If you select this option, please respond to the next question

If you chose "None of the above" for the previous question, please tell us what your plans are for September [next academic year]

(text box)

Do you plan on returning to school (university, college, etc.) sometime in the next 5 years?

- o No, I do not plan on returning to school in the next 5 years
- o Yes, I will be a full-time student next year
- o Yes, I will be a part-time student next year
- o Yes, I plan on returning to school in the next 1-3 years
- o Yes, I plan on returning to school in the next 4-5 years

Concluding Questions

In your opinion, what are the strengths of the [name of program]?

(text box)

Thinking about the program as a whole, if you could KEEP one thing that was most impactful in terms of your learning, what would that be?

(text box)

Thinking about the program as a whole, if you could CHANGE one thing that would be most impactful for your learning, what would that be?

(text box)

Do you have any final comments about the [name of program] you would like to share with us? We greatly value your thoughts and opinions.

(text box)

Appendix 4.2. Data Analysis Retreat Lesson Plan

This adaptable template includes 80-minute Lesson Plan examples for the following scenarios:

1. Large Group with multiple data sources
    - Key activity: small breakout groups, one data source per group
2. Small group with multiple data sources
    - Key activity: pairs, analyze one topic across data sources
3. Small group with unfamiliar data sources
    - Key activity: guided walk through data sources, inviting observations
4. Large group with unfamiliar data sources
    - Key activity: provide data summaries with graphs or visuals, structured invitation for observations

You may want to customize your retreat by choosing activities from any of the options included in the four lesson plans.

For all retreats: Determine deliverables (outcomes)

Goals/Guiding Questions/Priorities identified earlier in the process:

- E.g., check concern - is there too much group work in the program (student survey, curriculum map)?
- E.g., Identify top concerns of the students.
- E.g., Do co-op students, co-op supervisors and alumni report alumni are achieving the learning outcomes?

Process goals

- E.g., Engage faculty in the process so it is not just someone else's data.

Reporting constraints/purposes identified earlier in the process:

- E.g., Need a summary of each data source separately as well as a list of emerging themes across the data sources.

For all retreats: Gather information or provide guidance for the setting

- Who is invited (roles, number of people):
- Where (whose space, familiar to all?):
- When:
- How long/what range of time:
- Other foci that same meeting (before or after?):

Option 1. Large Group multiple data sources – small groups, one data source

Time (80)	Activity	Materials
10	**Situated & Familiar** Welcome/introductions Locate this session within larger program review process (ideally by a departmental leader). Note the data sources the audience participated in. Note other data sources gathered, general topics addressed, and whose perspective they offer.	Slide with the process & list of data sources. If a long time since collection, show a visual of the survey or page they created / approved / completed.
5	Provide the agenda for the analysis session	
35 min + 20 debrief	**Large group with multiple data sources** - Divide into groups of 3-5 - Ask each group to have a note-taker or shared document to record notes & who will report back - Each group receives one data source to identify key findings (attend to who is in the group, and include people with background for that source to explain vague short responses; or exclude to allow for a fresh look at a program) - Visit each group to answer questions - About half-way remind them of the time remaining - Visit each group to answer questions - Ask for a reporter to be ready - Ask for top 1-2 key findings from each group to start - Debrief: o If group discusses in depth, report and write on the screen/whiteboard all the ideas then discuss o If a quieter group and few hot topics, after each group reports ask if other groups found similar or different findings *for longer retreats and larger datasets, have them report mid-way then take a bio break and return to the data*	Package: Each data source is a package provided electronically if online, or on paper if in person. Ensure pages loose, a screen is sharable, or enough copies for each person in the group. Whiteboard or shared screen to note findings
	pick up copies of the findings if they need to be restricted access	
5	Ask for additional findings and observations If any individual opinions arise, invite a look at the relevant data and balance the opinion with what is there (or not there) and what might need to be looked at in the future.	
5	Wrap up – key findings & next steps in the process - Note who will summarize and report back - Where the data goes next & if they see it again	

2. Small group with multiple data sources – pairs, one topic across data sources

Time (80)	Activity	Materials
5-10	**Situated & Familiar** Welcome/introductions Locate this session within larger program review process (ideally by a departmental leader). Note the data sources the audience participated in. Note other data sources gathered, general topics addressed, and whose perspective they offer.	Slide with the process & list of data sources If it has been a while, show a visual of the survey or page they created / approved/ completed.
5	Provide the agenda for the analysis session	
25 + 10; 20 + 10	**Small group with multiple data sources** *25 minute worktime* - Divide into pairs - Provide each pair with a package (handout the most important ones for this audience to discuss in this first round) - Visit each pair to answer questions & invite 1-2 emerging/top findings *10 minute initial sharing* - Ask for top 1-2 key findings from each group to start - Debrief: o If group discusses in depth, report and write on the screen/whiteboard all the ideas then discuss o If a quieter group and few hot topics, after each group reports ask if other groups found similar or different findings *20 minute worktime* - In the same pair either continue with the data package or if they are done, provide an additional data package - Visit each pair to answer questions & invite 1-2 emerging/top findings *10 minute final sharing* - Ask for top 1-2 key findings from each group to start	Packages: collate the data to group questions together and have them work in pairs through the datasets to draw conclusions about similar data (outcomes, infrastructure, learning experience…) Whiteboard or shared screen to note findings
	pick up copies of the findings if they need to be restricted access	
	Ask for additional findings and observations If any individual opinions arise, invite a look at the relevant data and balance the opinion with what is there (or not there) and what might need to be looked at in the future.	
5	Wrap up – key findings & next steps in the process - Note who will summarize and report back - Where the data goes next & if they see it again	

3. Small group with unfamiliar data sources – guided walk through, inviting observations

Time (80)	Activity	Materials
5	**Situated & Familiar** Welcome/introductions Locate this session within larger program review process (ideally by a departmental leader). Note the data sources the audience participated in. Note other data sources gathered, general topics addressed, and whose perspective they offer.	Slide with the process & list of data sources If it has been a while, show a visual of the survey or page they created / approved/ completed.
5	Provide the agenda for the analysis session Identify goals/deliverables and where they might be addressed in the data sources	
25	**Small group with unfamiliar data sources** - Open the first data report. Begin with the highest priority or most informative report. - Review the demographics and ask if they are who they would expect to hear from. Note any limitations or missing groups. Caveat response rates below 20% for cold-call surveys. - Show and invite observations and if the results confirmed or surprised o Start with the most overarching question (overall, general trends) o Show any (potential) patterns such as cross-tabs across years, more specific questions - Note key findings in a notepad app or whiteboard, note the source & question number. *repeat for each survey. Ideally theme or skip the qualitative responses in the initial pass, note questions to check next.	Data reports Shared Screen
10	Review the qualitative findings in pairs, identifying what fit and what did not fit with the findings. Identify any great quotes that really convey the key findings.	
25	Repeat for second data source. If more than two data sources, provide a streamlined review connecting a question you showing to earlier findings asking if similar of different. If a data set is primarily qualitative, group by theme or by a variable (e.g., overall rating or cohort/year) using cross tabs.	
5	Ask for additional findings and observations. If any individual opinions arise, invite a look at the relevant data and balance the opinion with what is there (or not there) and what might need to be looked at in the future.	
	pick up copies of the findings if they need to be restricted access	
5	Wrap up – key findings & next steps in the process - Note who will summarize and report back - Where the data goes next & if they see it again	

4. Large group with unfamiliar data sources – data summaries with graphs or visuals, structured invitation for observations

Time (80)	Activity	Materials
5	**Situated & Familiar** Welcome/introductions Locate this session within larger program review process (ideally by a departmental leader). Note the data sources the audience participated in. Note other data sources gathered, general topics addressed, and whose perspective they offer.	Slide with the process & list of data sources If it has been a while, show a visual of the survey or page they created / approved/ completed.
5	Provide the agenda for the analysis session Indicate the steps they will do	
65 = 5 +20 +10 +20 +10	**Large group with unfamiliar data sources** *5 minute Overview* - Provide the packages - Orient to the sections (organized by data source, by topic; quantitative questions at the top, quotes organized by their overall rating below). - Highlight the demographics and ask if they are who they would expect to hear from. Note any limitations or missing groups. Caveat response rates below 20% for cold-call surveys. *20 minutes Solo or small group (2-3 people) review* - You can move them into small groups and visit the groups, or provide them solo work time. - Invite them to look through each section and note observations such as if the results confirmed or surprised them the margins or notes boxes. *10 minute initial sharing* - Ask for top 1-2 key findings from each group to start or 5 findings from to large group of solo reviewers - Debrief: o If group discusses in depth, report and write on the screen/whiteboard all the ideas then discuss o If a quieter group and few hot topics, after each group reports ask if other groups found similar or different findings *20 minute worktime* - Either continue with the data package - Visit each small group or invite questions (at the front or in the chat) *10 minute final sharing* ask for new key findings then additional evidence for earlier themes - Note key findings in a notepad app or whiteboard, note the source & question number.	Data summaries with visuals and structured data such as cross-tabs or pivot tables or graphs.
	pick up copies of the findings if they need to be restricted access	
5	Wrap up – key findings & next steps in the process - Note who will summarize and report back - Where the data goes next & if they see it again	

Appendix 4.3. Making meaning of the program demographic data for your curriculum review

Some points to keep in mind while reviewing program demographic data sets

- The same data sets are drawn for each curriculum review committee. It is up to your committee to determine which data sets are of interest/importance for your context. The Office of Institutional Analysis uses a standard data template designed by the Vice-Provost Teaching and Learning.
- Different types of data are collected on different time frames, so remember to check the dates on each page of the report. Some of the data may not be as current as you'd like, but the OIA will report on the most current data they have. OIA reports data based on snapshots:
    1. Student enrolments reflect the December 1st snapshot.
    2. Course grades are run mid-June.
    3. Course data including section enrolees, sections, and course enrolees reflect snapshots as following: June 1st for Spring term, August 1st for Summer term, December 1st for Fall term, and April 1st for Winter term.
- The data can be used to respond to some of your guiding questions OR it may be used to generate some guiding questions.
- Data are neither good nor bad, but surprising results can be good conversation starters.
- Context is everything. You are the best people to interpret your data.
- NSSE data are collected every three years and reports on the experiences of first year students and fourth year students in your program (if applicable).

Questions you may want to pose based on

PROGRAM-BASED DATA

- How are our retention rates? Are there any noticeable trends in that data?
- How are our graduation and time-to-completion rates? Any surprises or concerns?
- How are the overall numbers of degrees granted by our program? What are the trends?

NSSE SURVEY DATA

- What are we doing well?
- What stands out to us? Any surprises? Could these surprises help shape our guiding questions and/or data collection?
- How do our NSSE results compare to our overall faculty results (if applicable)?
- What trends are evident in our department's NSSE scores?
- If our NSSE scores are based on low numbers of respondents, how much do we think that these trends reflect the overall program?
- Where do we see the biggest changes in NSSE results over time?
- What 2-3 areas do we want to work on over the next few years?

ALBERTA GRADUATE OUTCOMES SURVEY RESULTS

- Given that this data is designed to provide institutional-level information, is there anything significant that we can infer about our program?
- What do the data tell us about our program?

STUDENT DATA

- What trends do we notice in our total number of undergraduate students by year?
- Does the comparison of full-time and part-time student numbers provide us with any food for thought?
- Does the comparison of enrolment by gender raise any questions?
- Does the information about numbers of international students provide any insights into our current program?
- What do we notice about our grade distribution trends? Are there any possible guiding questions raised by this information? Is there anything we need to discuss as a faculty or department?
- What trends do we see in our grade distribution data (by numbers and/or by percentages)?
- What do we notice about our DFW (grades of D and F, and W - withdrawals) rates? What trends do we see in this information? Are there any surprises in this information?
- As this is a program-level review, are there any important observations from our course level DFW information? For example, are students able to succeed in courses that have pre-requisites?

WHOLE REPORT

- Based on the data in the report, what are we doing well in this program?
- What do we want to know more about, and how do we find out? For example, if we want to know more about high attrition rates, we might want to interview students who have transferred to other programs.
- What data should we take back to all faculty for discussion/interpretation? (Dyjur et al., 2019b).

Appendix 4.4. Example of student exit surveys, face to face and online programs

Student Exit Survey, On-Campus Students

What pathway are you a graduate from? [After degree or Five year Concurrent]

Q1. What was the best part of your student experience in the Bachelor of Education program?

Q2. What do you wish that you had more of in this program?

Q3. How prepared do you feel you are to meet the new teaching quality standard? [Not well prepared, Prepared, Very well prepared, No response]

Q4. How well were the following topics integrated into your coursework? [Excellent, Very Good, Good, Fair, Poor]

- Technology integration in Teaching and Learning
- Inclusive Education
- Wellness and Mental Health
- English Language Learning
- Indigenous Education

Q5. Do you have any suggestions on how they could be integrated better?

Q6. Do the courses occur in the appropriate sequences? If no, what would you change?

Q7. Do the semesters link together in a meaningful way?

Q8. What suggestions would you have to improve the continuity?

Q9. To what extent do your large lectures, smaller classes, and field experiences fit together? [Very well, Well, Somewhat, Not well, Not at all]

Q10. I feel that my student experience with this program gave me the opportunity to engage with others in a quality education setting preparing me for a great future. [Very strong, Strong, Standard, Needs improvement, Weak]

Q11. I feel that my student engagement opportunities available to me were: [Very strong, Strong, Standard, Needs improvement, Weak]

Q12. Indicate which non-mandatory student activities you were involved in (check all that apply):

- Education students' association – membership only
- Undergraduate program of education services fair
- Service-learning
- Education students' association – professional development events
- Orientation
- Education students' association – social events
- Initiatives outside of the faculty (e.g., students' union, clubs, etc.)
- Teaching across borders
- STEM field trip to Kananaskis Bio Geoscience
- Calgary Board of Education Cohort for Design Thinking
- Field trip to Blackfoot Crossing
- Field trip to Writing on Stone
- Youth Forum
- Arts Co-Curricular Enhancement
- Education students' association – executive
- Canadian Roots Exchange (CRE) National Youth

Q13. If you did not check off any of the above, please let us know if
- I was not aware of many of these opportunities
- I was aware, but didn't know how to get involved
- I was aware, but didn't have the time to get involved

Q14. If you did check off any of the student involvement opportunities, please let us know if
- These opportunities greatly enhanced my degree
- These were great opportunities, but felt separate from my degree
- I didn't get a lot out of what I became involved in

Q15. I would like to see more:
- Co-curricular opportunities, such as expansion of the Service-Learning program
- More student abroad opportunities, specifically related to Education
- More social opportunities, to get to know my fellow students and/or faculty

Q16. I feel that the support I received for navigating my program was [Very Strong, Strong, Standard, Needs Improvement, Weak]

Q17. When I had questions about my degree, the advising that I received was [Very Strong, Strong, Standard, Needs Improvement, Weak]

Q18. The advising experience could be improved by:
- An instant messaging service
- Mobile advising sessions that are attached to program events, such as field experience call-backs
- More drop-in options
- More information sessions, such as group registration events
- More consistent and/or knowledgeable advice

Q19. I feel that the career support I received was [Very Strong, Strong, Standard, Needs Improvement, Weak]

Q20. I felt that the career workshops were [Very Strong, Strong, Standard, Needs Improvement, Weak]

Q21. I felt that the one-on-one resume support I received was [Very Strong, Strong, Standard, Needs Improvement, Weak]

Q22. I would like to see more of:
- Certification and TQS application processes
- Board application processes
- What happens as a first-year graduate teacher (e.g., what to expect in terms of hiring, movement between substitute, short-term and probationary contracts, etc.)
- What school jurisdictions are looking for in the application process
- What can I do to improve my chances at being hired
- Resume review
- Interview preparation
- Education field specific considerations
- One-on-one appointments
- Workshops: more availability; more customized; more follow-up support
- Printed materials
- Web materials

- A possible D2L shell
- A moderated discussion board of student experiences with hiring and certification process with faculty support

Q21. I felt that the one-on-one resume support I received was [Very Strong, Strong, Standard, Needs Improvement, Weak]

Q23. I feel that the communication I received from undergraduate programs was [Just right, Okay, Too much]

Q24. The communication I received was [always relevant, usually relevant, rarely relevant]

Q25. I would prefer to get my information through [the website, A D2L shell, by email, in person information sessions, other: in-class or through instructors]

Student Exit Survey, Spring 2018 Community Based Online

What pathway are you a graduate from? [Four Year or After Degree]

Q1. What was the best part of your student experience in the Bachelor of Education program?

Q2. What do you wish that you had more of in this program?

Q3. How prepared do you feel you are to meet the new teaching quality standard? [Not well prepared, Prepared, Very well prepared]

Q4. How well were the following topics integrated into your coursework? [Excellent, Very Good, Good, Fair, Poor]

- Technology integration in Teaching and Learning
- Inclusive Education
- Wellness and Mental Health
- English Language Learning
- Indigenous Education

Q5. Do you have any suggestions on how they could be integrated better?

Q6. Do the courses occur in the appropriate sequences? If no, what would you change?

Q7. Do the semesters link together in a meaningful way?

Q8. What suggestions would you have to improve the continuity?

Q9. How good do you feel the quality of your online experience was? [Very well, Well, Somewhat, Not well, Not at all]

Q10.What did you appreciate the most about your online experiences?

Q11. What would you improve on your online experience?

Q12. I feel that my student experience with this program gave me the opportunity to engage with others in a quality education setting preparing me for a great future [Very strong, Strong, Standard, Needs Improvement, Weak]

Q13. I feel that the student engagement opportunities available to me are: [Very strong, Strong, Standard, Needs Improvement, Weak]

Q14. During my degree, I became involved with:

- Education Students' Association – membership only
- Field Trip to Writing on Stone
- Orientation
- Service-Learning
- Youth Forum
- Undergraduate Program of Education Services Fair

Q15. If you did not check off any of the above, please let us know if:

- I was not aware of many of these opportunities
- I was aware, but didn't know how to get involved
- I was aware, but didn't have the time to get involved

Q16. If you did check off any of the student involvement opportunities, please let us know if

- These opportunities greatly enhanced my degree
- These were great opportunities, but felt separate from degree
- I didn't get a lot out of what I became involved in

Q17. I would like to see more:

Q18. I feel that the support I received for navigating my program were [Very Strong, Strong, Standard, Needs Improvement, Weak]

Q19. When I had questions about my degree, the advising that I received was [Very Strong, Strong, Standard, Needs Improvement, Weak]

Q20. The advising experience would be improved by:

- An instant messaging service
- Mobile advising sessions that are attached to program events, such as field experience call-backs
- More drop-in options
- More information sessions, such as group registration events
- More consistent and/or knowledgeable advice

Q21. I feel that the career support I received was [Very Strong, Strong, Standard, Needs Improvement, Weak]

Q22. I felt that the career workshops were [Very Strong, Strong, Standard, Needs Improvement, Weak]

Q23. I felt that the one-on-one resume support I received was [Very Strong, Strong, Standard, Needs Improvement, Weak]

Q24. I would like to see more of:

- Certification and TQS application processes
- Board application processes
- What happens as a first-year graduate teacher (e.g., what to expect in terms of hiring, movement between substitute, short-term and probationary contracts, etc.)

- What school jurisdictions are looking for in the application process
- What can I do to improve my chances at being hired
- Resume review
- Interview preparation
- Education field specific considerations
- One-on-one appointments
- Workshops: more availability; more customized; more follow-up support
- Printed materials
- Web materials
- A possible D2L shell
- A moderated discussion board of student experiences with hiring and certification process with faculty support

Q25. I feel that the communication I received from undergraduate programs was [Just right, Okay, Too much]

Q26. The communication I received was [always relevant, usually relevant, rarely relevant]

Q27. I would prefer to get my information through [the website, A D2L shell, by email, in person information sessions, other: in-class or through instructors]

(Used with permission from the Werklund School of Education, University of Calgary)

Appendix 5.1: Potential Mapping Scales

There are a variety of scales that can be used to indicate the degree to which a program learning outcome is addressed by a particular course outcome. The following are examples that can be used or adapted.

It is critical that all instructors are using the same scale when completing their maps, and that they are on the same page regarding the meaning of the terms used in the scale. Therefore, it is recommended that a definition of the terms is provided to instructors and that they have the opportunity to discuss and work with the scale prior to using it to map their courses.

Examples of Potential Scales:

1. **Introduced, Developing, Advanced**
   - Introduced (I): Key ideas and concepts concentrate on knowledge or skills at a basic level. Instructional and learning activities address basic knowledge or sills at an entry-level complexity.
   - Developing (D): Students demonstrate learning at an increasing level of proficiency. Instructional and learning activities concentrate on enhancing and strengthening existing knowledge and skills, as well as expanding complexity.
   - Advanced (A): Students demonstrate the learning with an increasing level of independence, expertise and sophistication expected upon graduation. Instructional and learning activities focus on and integrate the use of content or skills in multiple levels of complexity.
     (Adapted from Veltri et al., 2011)

2. **Introduced, Competency, Advanced**
   - Introduced (I): Concepts are introduced in the course but not assessed.
   - Competency (C): Students are expected to reach a level of competency regarding the outcome. Students are assessed on the learning outcome.
   - Advanced (A): Students are expected to reach a level of proficiency regarding the learning outcome.

3. **Novice, Competent, Proficient**
   - Novice (N): Beginning level of understanding or performance.
   - Competent (C): Adequate level of understanding or performance.
   - Proficient (P): Advanced level of understanding or performance.

4. **Introductory, Comprehension, Applied**
   - Introductory (I): Beginning level of understanding; not assessed in the course.
   - Comprehension (C): The learning outcome is assessed for understanding.
   - Applied (A): Concepts are applied by the student and assessed. Examples: Project work, problems, calculations, and demonstrations.

5. **Introduced, Practiced, Demonstrated**
   - Introduced (I): Concepts are introduced in the course but not assessed.
   - Practiced (P): Students practice their ability and understanding of the learning outcome.
   - Demonstrated (D): Students demonstrate their ability and understanding of the learning outcome.

6. **Comprehension, Application, Evaluation**
   - Comprehension (C): Students comprehend concepts or topics. Student assessment focuses on knowledge and comprehension of material.
   - Application (A): Students are asked to analyze or apply concepts or topics. Student assessment focuses on analysis or application; for example, problem-solving or essays.
   - Evaluation (E): Students use concepts or ideas to evaluate within the discipline or create something new. Examples include project work or generating plans for a client.

7. **Introduced, Reinforced, Competence**
    - Introduced (I): Students are introduced to key concepts and skills at an introductory level of understanding.
    - Reinforced (R): Students are increasingly proficient; learning is reinforced through practice and students receive feedback on their understanding of the learning outcome.
    - Competence (C): Students demonstrate their learning at a sophisticated and independent level.

8. **Ideas, Connections, Extensions**
    - Another approach would be to use the Ideas, Connections, Extensions (ICE) model developed at Queen's University by Fostaty, Young and Wilson (2000), based on Bloom's Taxonomy:
    - Ideas (I): Ideas represent the building blocks of learning. They can be discrete 'chunks' of information; facts, definitions, vocabulary, steps in a process; or discrete skills. Assessed by tasks requiring (or allowing) recall and repetition of information from books or from lectures.
    - Connections (C): At the subject or topic level, connections are made by making appropriate links between ideas (or chunks of information). At the personal or broader level, connections are made by relating new knowledge to what is already known, in a course, in other courses, or in a student's personal or professional experience.
    - Extensions (E): Extensions involve re-working students' knowledge and understanding by extrapolating, predicting outcomes or working out implications.

9. **Taught, Reinforced, Assessed**

The following scale is used at some institutions:

- **Teach:**
    - Provide instruction and learning opportunities reflected in the course outline related to the learning outcome.
    - Devote significant time to facilitating student development of the skills/knowledge embedded in the learning outcome.
- **Reinforce:**
    - Review and/or emphasize material previously taught in other courses related to the learning outcome.
    - Strengthen or support student skill/knowledge development from previous courses/activities.
- **Assess:**
    - Assignments/tests/projects or other evaluations are designed to assess student performance of the learning outcome or some of its elements.

10. **Foundations, Extensions**

A two-step scale for non-credit learning opportunities.

- **Foundations (F):** Foundational knowledge is emphasized, including information, discrete facts, concepts, or basic skills. There may or may not be evidence of learning from participants.
- **Extensions (E):** Learning goes beyond the foundational level to make connections between facts or ideas, relating knowledge to personal experience, understanding multiple perspectives, and/or analyzing information. Participants evidence their learning in one or more ways.

11. **Core, Advanced**

A two-step scale for graduate-level degree programs.

- **Core (C):** Fundamental learning is demonstrated at a moderate level of competence. Learners demonstrate strong knowledge and skills of foundational concepts and can apply them in a variety of contexts.
- **Advanced (A):** Learners demonstrate a high degree of knowledge and skills in a variety of foundational concepts.

Appendix 5.2: Decisions to be Made about Curriculum Mapping

Decision	Notes
Who will make decisions about the curriculum mapping process?	
How will instuctors be informed about the mapping process? How will they be consulted?	
How much time will be needed to pilot the process and revise as needed?	
What method or tool will be used?	
What mapping scale will be used? How you work with instructors to calibrate the scale and ensure the data are valid?	
What information will be collected: • Alignment of course outcomes to PLOs? • Will student assessments/teaching and learning activities be mapped at the course level, or at the level of course outcomes? • Other data? For example, high-impact practices, labs, faculty of institutional initiatives? • Which courses? • All sections or one?	
How much time will instructors need to map their courses? Will it be done in a retreat or on their own time?	
How much time will you allot to gather data on courses that were not mapped by the deadline?	
Who will support the process?	
How will tech support be provided?	

Appendix 5.3: Questions to Analyze Course Maps

Course outcomes and expectations of student learning:

- Are course outcomes clearly articulated?
- Do they articulate what the course is actually about? Do they state what is important about the course? Are revisions needed? Is anything missing?
- How well do course outcomes align with PLOs?
- Is the scope of the course reasonable given the time constraints (number of credits)?

Teaching and learning activities (TLAs):

- To what extent do teaching and learning activities (TLAs) facilitate student learning of the course outcomes?
- Do TLAs emphasize factual recall only, or are students also challenged with activities that include critical thinking, application and/or analysis?
- Is there sufficient variety in the course or does it rely heavily on one approach?
- What department, faculty or institution priorities should we consider when looking at teaching and learning activities, such as experiential learning or Indigenous ways of knowing?

Student assessments:

- To what extent do assessments facilitate student learning of the course outcomes?
- To what extent do student assessments measure what students know regarding course outcomes? In other words, how valid are the student assessments?
- Do the assessments emphasize factual recall only, or are students also challenged with assignments that include critical thinking, application and/or analysis?
- Do the assessment weightings reflect the degree of work required and the importance of the work?
- Is there sufficient variety in the assessments to allow students to demonstrate their understanding in different ways, or does the course rely heavily on one approach?
- How and when are you providing feedback to students?

General:

- What changes need to be made to the course?
- Does the course focus on what is important?
- What is memorable about the course?
- Is the content accurate and up to date?
- In what ways have you incorporated mental health and wellness in the course design? For example, is the amount of work in the course reasonable for students? For the instructor?

In context with other courses:

- Does the course fit within the context of the program? How well does it fit in with the sequence of other courses in the program?
- Are expectations of student learning progressing with subsequent courses?

Appendix 5.4: List of Student Assessments and Teaching and Learning Activities

Student Assessments:

Indicate the ways in which you assess student learning of the course (or course outcome).
Check all that apply:

- Authentic assessment
- Community action project
- Documentary
- Exhibit
- Final exam
- Paper, essay or written assignment
- Performance
- Portfolio
- Presentation or oral assignment
- Problem set
- Project
- Quiz or midterm
- Reflection
- Service learning project plan
- Skill demonstration
- Other (please specify)

Teaching and Learning Activities

Indicate the teaching and learning activities associated with this course (or course outcome).
Check all that apply:

- Conduct an experiment
- Connecting with Elders
- Cross-cultural dialogues
- Discussion
- Envisioning, learning through visualization
- Field trip
- Group work/ group project
- Homework
- Internship or practicum
- Labs
- Land-based activities
- Lecture or presentation
- Observations
- Online discussions
- Online tutorials
- Participating in Indigenous Ceremonies
- Peer evaluation
- Problem solving
- Readings
- Storytelling
- Talking circles or sharing circles
- Tutorial groups
- Writing activities
- Research
- Simulations
- Other (please specify)

Appendix 5.5: Student Survey Question on Emphasis of Program Learning Outcomes

The following table shows the broad expectations for student learning in the program. How well do you think the course work that you have completed so far has helped you to learn these knowledge and skills?

	A Lot	Somewhat	A Little Bit	Not at all	Not Sure
Develop a knowledge base of theories and concepts within your area of study.	o	o	o	o	o
Use different approaches to solving problems.	o	o	o	o	o
Formulate and communicate arguments orally.	o	o	o	o	o
Formulate and communicate arguments in writing.	o	o	o	o	o
Apply knowledge and skills in a variety of contexts.	o	o	o	o	o
Locate, review and critically evaluate qualitative and quantitative information.	o	o	o	o	o

Appendix 5.6. Sample Questions to Guide Curriculum Mapping Discussions

The following questions may be used to help effectively guide collaborative curriculum discussions based on curriculum mapping data.

General

- What data presented most surprised you? Why?
- Where are our strengths? What are we doing well?
- Are there any gaps (PLOs not being addressed)?
- Do these results align or conflict with any other curriculum assessment results or past program reviews (e.g. student/faculty/employee feedback)? Why? How so? Where are there areas of congruency or divergence?
- What are the next steps we can take improve, align, and integrate our curriculum?

Instructional & Assessment Methods

- What instructional/assessment strategies are we most/least using?
- Are the instructional and assessment methods used in the courses congruent with the discipline and our program's/College's/Institution's mission/vision?
- Are the instructional and assessment methods used in the courses congruent with the discipline's signature pedagogies?
- In terms of supporting student learning, how well are the instructional and assessment methods that we use actually working?

Learning Outcomes

- What learning outcomes are we most/least emphasizing?
- Where are the strengths and gaps in the teaching and assessment of these learning outcomes?
- Do the instructional and assessment methods that we are using best align with the intended learning outcomes?
- Are these learning outcomes appropriate? Are there any omissions? Is clarification warranted?

Workload and Progression

- How is student workload distributed across the semester?
- Have students/faculty expressed concern over workload at particular times of the semester? Is there opportunity to more evenly distribute the workload?
- How is student learning progressing for each of the learning outcomes?
- Are students provided adequately with an opportunity to progress towards their achievement of each learning outcome?

(Adapted from: Dyjur et al., 2019; University of Guelph, n.d.)

Glossary

Note: The definitions in this section reflect how we use the terms in this guide and are intended to be working definitions. Your institution may have a different definition of specific terms.

Course learning outcome or course outcome: The knowledge, skills and values/attitudes that students should be able to attain by the end of a course.

Course map: A type of curriculum map showing elements of a course, such as course outcomes, teaching and learning activities, and/or student assessments, aligned with elements of a program, such as program learning outcomes.

Curriculum map: A visual representation of curriculum data. Although it may take different forms, a curriculum map is commonly a matrix showing the alignment of course elements to program elements. A common curriculum map shows courses and/or course outcomes aligned to program learning outcomes.

Curriculum mapping: A process that involves the collection and representation of information about a program such as program learning outcomes, alignment with course outcomes, teaching and learning activities, and student assessments. Curriculum maps, the resulting data visualizations of this information, are an important source of evidence for discussions about the patterns, strengths, gaps and redundancies of a program and potential changes that could enhance student learning opportunities.

Curriculum review: A critical, evidence-based examination of an academic program for the purpose of optimizing student learning and student experience and how they can be enhanced.

Data, curriculum data: Evidence or information collected to better understand a program, including curriculum mapping data, student survey information, alumni questionnaire responses, information from instructors of the program, National Survey of Student Engagement (NSSE) reports, and program demographic data, for example.

Learning outcome: *"an intended effect of the program educational experience that has been stated in terms of specific, observable, and measurable student performance"* (Veltri, Webb, Matveev & Zapatero, 2011). They define the knowledge, skills, and attitudes that students should be able to attain by the end of a unit of study. Learning outcomes can be articulated at the lesson level, course level, program level, faculty or institutional level, or by an accrediting body.

Mapping scale: A system of measurement that indicates the degree to which a course element (such as a course outcome) addresses a program element (such as a program learning outcome). See Appendix 5.1 for examples.

Program: A set of courses, some of which may be mandatory and of a particular discipline or field, leading toward a specific credential.

Program learning outcome (PLO): The knowledge, skills and attitudes/ values that students are expected to attain by the end of a program of study.

Signature Pedagogies: Forms of teaching and learning that are characteristic of specific disciplines and reflect the fundamental organizing principles for educating students in the knowledge, skills, and values required for professional practice.

Teaching and learning activity (TLA): The strategies and activities used to promote student learning in a course, which can include both graded and non-graded activities. Examples include lecture, readings, group projects, labs, and discussions.

References

A:

Akinbode, A. I., & Al Shuhumi, S. R. A. (2018). Change management process and leadership styles. *PEOPLE: International Journal of Social Sciences, 4*(2), 609-618. https://doi.org/10.20319/pijss.2018.42.609618

Altrichter, H., & Elliott, J. (eds). (2000). *Images of educational change.* Open University Press

Amundsen, C., & Wilson, M. (2012). Are we asking the right questions? A conceptual review of the educational development literature in higher education. *Review of Educational Research, 82*(1), 90-126. https://doi.org/10.3102/0034654312438409

Antoine, A., Mason, R., & Mason, R., Palahicky, S. & Rodriguez de France, C. (2018). *Pulling Together: A Guide for Curriculum Developers.* Victoria, BC: BCcampus. Retrieved from https://opentextbc.ca/indigenizationcurriculumdevelopers/

B:

Baecher, L. (2012). Integrating clinical experiences in a TESOL teacher education program: Curriculum Mapping as Process, *TESOL Journal, 3*(4), 537-551. https://doi.org/10.1002/tesj.34

Barr, R. B., & Tagg, J. (1995). From teaching to learning. A new paradigm for undergraduate education. Change: *The magazine of higher learning, 27*(6), 12-26. https://doi.org/10.1080/00091383.1995.10544672

Battiste, M. (2013). *Decolonizing education: Nourishing the learning spirit.* Purich Publishing.

Baume, D., & Popovic, C. (2016). Introduction: Some issues in academic development. In C. Popovic & D. Baume (Eds.), *Advancing practice in academic development* (pp. 1-16). Routledge

Berger, J. B., & Milem, J. F. (1999). The role of the student involvement and perceptions of integration in a causal model of student persistence. *Research in Higher Education, 40*, 641-664. https://doi.org/10.1023/A:1018708813711

Bergquist, W. H., & Pawlak, K. (2008). *Engaging the six cultures of the academy.* San Francisco: Jossey Bass. https://doi.org/0.1353/rhe.0.0106

Bester, M., & Scholtz, D. (2012). Mapping our way to coherence, alignment and responsiveness. *South African Journal of Higher Education, 26*(2), 282-299. https://doi.org/10.20853/26-2-161

Biggs, J. B. (2001). The reflective institution: Assuring and enhancing the quality of teaching and learning. *Higher Education, 4*(1), 221-238. https://doi.org/10.1023/A:1004181331049

Biggs, J. (2014). Constructive alignment in university teaching. *HERDSA Review of Higher Education, 1*, 5-22. https://www.herdsa.org.au/herdsa-review-higher-education-vol-1/5-22

Bovill, C., Cook-Sather, A., Felten, P., Millard, L., & Moore-Cherry, N. (2016). Addressing potential challenges in co-creating learning and teaching: overcoming resistance, navigating institutional norms and ensuring inclusivity in student–staff partnerships. *Higher Education, 71*(2),195-208. https://doi.org/10.1007/s10734-015-9896-4

C:

Canadian Evaluation Society. (2014). *Program evaluation standards.* https://evaluationcanada.ca/program-evaluation-standards

Canadian Federation of Library Association (2018). Position Statement: Indigenous Knowledge in Canada's Copyright Act. Retrieved from http://cfla-fcab.ca/wp-content/uploads/2018/05/CFLA-FCAB_Indigenous_knowledge_statement.pdf

Cornbleth, C. (1990). *Curriculum in context.* London: Falmer Press.

Cottrell, S., Linger, B., & Shumway, J. (2004). Using information contained in the curriculum management information tool (CurrMIT) to capture opportunities for student learning and development. *Medical Teacher, 26*(5), 423-427. https://doi.org/10.1080/0142159042000218650

D:

Dalton, E. M. (2019). UDL and Connected Laws, Theories, and Frameworks. In S. L. Gronseth & Dalton, E. (Eds.), Universal access through inclusive instructional design: International perspectives on UDL. Routledge. https://doi.org/10.4324/9780429435515

Dawson, D., Mighty, J., & Britnell, J. (2010). Moving from the periphery to the center of the academy: Faculty developers as leaders of change. *New Directions for Teaching and Learning, 2010*(122), 69-78. https://doi.org/10.1002/tl.399

Dewey, J. J. (1916). Democracy and education: An introduction to the philosophy of education. Macmillan

Dyjur, P., & Lock, J. (2016). A model to build capacity through a multi-program curriculum review process. *Journal of Professional, Continuing, and Online Education, 2*(1). https://journals.library.ualberta.ca/jpcoe/index.php/jpcoe/article/view/29/12

Dyjur, P., & Kalu, F. (2017). *Taylor Institute Curriculum Review Series #2: Guiding Questions, Creating a Review Plan, and Timelines.* file:///C:/Users/fukalu/Downloads/handout_cr_2_guiding_questions_timeline_creating_review_plan_2018_01_11.pdf

Dyjur, P., Grant, K., & Kalu, F. (2019a). *Curriculum review: Curriculum mapping.* Taylor Institute for Teaching and Learning, University of Calgary.

Dyjur, P., Grant, K., & Kalu, F. (2019b). *Guide to curriculum review.* Taylor Institute for Teaching and Learning, University of Calgary. https://taylorinstitute.ucalgary.ca/sites/default/files/Curriculum/UofC_guide_to_curriculum_review_UPDATED_2019-09%202.pdf

E:

English, F. W. (1978). Quality control in curriculum development (ED172416). ERIC. https://files.eric.ed.gov/fulltext/ED172416.pdf

F:

Fraser, G. A., Crook, A. C., & Park, J. R. (2007). A tool for mapping research skills in undergraduate curricula. *Bioscience Education, 9*(1), 1-12. https://doi.org/10.3108/beej.9.1

Fraser, K., Gosling, D., & Sorcinelli, M. D. (2010). Conceptualizing evolving models of educational development. *New Directions for Teaching and Learning, 122*, 49-58. doi: 10.1002/tl.397

G:

Gaudry, A., & Lorenz, D. (2018). Indigenization as inclusion, reconciliation, and decolonization: Navigating the different visions for indigenizing the Canadian academy. *AlterNative: An International Journal of Indigenous Peoples, 14*(3), 218-227. https://doi.org/10.1177%2F1177180118785382

Gaudry, A., & Lorenz, D. (2018). Indigenization as inclusion, reconciliation, and decolonization: Navigating the different visions for indigenizing the Canadian academy. *AlterNative: An International Journal of Indigenous Peoples, 14*(3), 218-227. https://doi.org/10.1177%2F1177180118785382

Gibbs, G. (2013). Reflections on the changing nature of educational development. *International Journal for Academic Development, 18*(1), 4-14. https://doi.org/10.1080/1360144X.2013.751691

Gibbs, P. (2017). Should contentment be a key aim in higher education? *Educational Philosophy and Theory, 49*(3), 242-252. https://doi.org/10.1080/00131857.2016.1214898

Goff, L. (2017). University administrators' conceptions of quality and approaches to quality assurance. *Higher Education, 74*(1), 179-195. https://doi.org/10.1007/s10734-016-0042-8

Gosling, D. (2010). Educational development units in the UK – what are they doing five years on? *International Journal for Academic Development, 6*(1), 74-90. https://doi.org/10.1080/1360144110043039

Grayson, J. P., & Grayson, K. (2003). *Research on retention and attrition.* The Canada Millennium Scholarship Foundation. https://www.tru.ca/__shared/assets/Grayson_2003_research_on_retention_and_attrition23683.pdf

H:

Harrison, J. M., & Williams, V. (2017). Mapping the curriculum: A low-tech model for synthesizing assessments and improving learning at multiple levels. *Intersection, Summer,* 40-46. https://cdn.ymaws.com/www.aalhe.org/resource/resmgr/docs/Int/AAHLE_Summer_2017_Intersecti.pdf#page=41

Hockings, C. (2010). Inclusive learning and teaching in higher education: A synthesis of research. *EvidenceNet.* https://www.advance-he.ac.uk/knowledge-hub/inclusive-learning-and-teaching-higher-education-synthesis-research

Hopkins, L., Saciragic, L., Kim, J., & Posner, G. (2016). The hidden curriculum: Exposing the unintended lessons of medical education. *Cureus, 8*(10), e845. https://doi.org/10.7759/cureus.845

J:

Jacobs, H. H., & Johnson, A. (2009). *The Curriculum mapping planner: Templates, tools, and resources for effective professional development.* ASCD.

Jansen, J. (Ed.). (2019). *Decolonisation in Universities: The politics of knowledge.* Johannesburg: Wits University Press. doi:10.18772/22019083351

Jardine, H. (2020). Positioning undergraduate teaching and learning assistants as instructional partners. *International Journal for Students as Partners (4)*1, 48-65. https://doi.org/10.15173/ijsap.v4i1.4032

Jeppesen, A., Hoessler, C., Fewer, J., & Mulhall, S. (2019). Responding to outcome-based curriculum development. *Transformative Dialogues, 12*(1). https://www.kpu.ca/sites/default/files/Transformative%20Dialogues/TD.12.1_Jeppesen_Hossler_Fewer%26Mulhall_Outcome-Based_Curriculum_Development.pdf

Joint Committee on Standards for Educational Evaluation. (2011). *The program evaluation standards: A guide for evaluators and evaluation users* (3rd ed.). Sage.

Joyner, H. S. (2016). Curriculum mapping: A before-and-after look at faculty perceptions of their courses and the mapping Process. *Journal of Food Science Education, 15*(2), 63-69. https://doi.org/10.1111/1541-4329.12085

K:

Kalu, F., & Dyjur, P. (2018). Creating a culture of continuous assessment to improve student learning through curriculum review. *New Directions for Teaching and Learning (155)*, 47- 54. https://doi.org/10.1002/tl.20302

Kalu, U., Dyjur, P., Berenson, C., Grant, K., Jeffs, C., Kenny, N., & Mueller, R. (2018). Seven voices, seven developers, seven one things that guide our practice. *To Improve the Academy, 37*(1), 111-127. https://doi.org/10.1002/tia2.20066

Kelley, K. A., McAuley, J. W., Wallace, L. J., & Frank, S. G. (2008). Evaluation, assessment, and outcomes in pharmacy education: The 2007 AACP institute. *American Journal of Pharmaceutical Education, 72*(5). https://doi.org/10.688/aj7205100

Kelly, A. V. (2009). *The curriculum: theory and practice* (6th ed.). Sage Publications.

Kertesz, J. (2015). U-Map: Beyond curriculum mapping. *Advances in the Scholarship of Teaching and Learning, 2*(1), 16-34. http://tlc.suss.edu.sg/research/AdvSoTL-2/pdf/2_U-Map_beyond_curriculum_mapping.pdf

Killick, D. (2016). The role of the hidden curriculum: Institutional messages of inclusivity. *Journal of Perspectives in Applied Academic Practice, 4*(2). https://doi.org/10.14297/jpaap.v4i2.203

Knight, P. (2001). Complexity and Curriculum: A process approach to curriculum-making. *Teaching in Higher Education, 6*(3), 369-381. https://doi.org/10.1080/13562510120061223

Kopera-Fry K., Mahaffy, H., & Svare, G. M. (2008). The map to curriculum alignment and improvement. *Collected Essays on Learning and Teaching, 1*, 8-14. https://eric.ed.gov/?id=EJ1055004

Kristensen, N. S., Andreasen, L. B., Kofoed, L. B., & Bruun-Pedersen, J. R. (2019, September). Balancing a change management process: A case study of how to approach curriculum change in higher education. Paper presented at the SEFI 47th Annual Conference. https://vbn.aau.dk/ws/portalfiles/portal/328877091/SEFI2019_Proceedings.pdf

Kustra, E., Meadows, K. N., Dawson, D., Dishke Hondzel, C., Goff, L., Wolf, P., Ellis, D., Grose, J., Borin, P., & Hughes, S. E. (2014). *Teaching culture indicators: Enhancing quality teaching.* Centre for Teaching and Learning Reports, University of Windsor. http://scholar.uwindsor.ca/ctlreports/5

Kuokkanen, R. (2008). *Reshaping the university: Responsibility, indigenous epistemes, and the logic of the gift.* University of British Columbia Press

Kuh, G. D. (2008). *High-impact educational practices: What they are, who has access to them, and why they matter.* Association of American Colleges and Universities. https://provost.tufts.edu/celt/files/High-Impact-Ed-Practices1.pdf

L:

Lam, B. H., & Tsui, K. T. (2014). Curriculum mapping as deliberation - examining the alignment of subject learning outcomes and course curricula. *Studies in Higher Education, 41*(8), 1371-1388. https://doi.org/10.1080/03075079.2014.968539

Lammerding-Koeppel, M., Giesler, M., Gornostayeva, M., Narciss, E., Wosnik, A., Zipfel, S, Griewatz, J., & Fritze, O. (2017). Monitoring and analysis of the change process in curriculum mapping compared to the National Competency-based learning Objective Catalogue for Undergraduate Medical Education (NKLM) at four medical faculties. Part I: conducive resources and structures. *GMS Journal for Medical Education, 34*(1), 1-17. https://doi.org/10.3205/zma001084

Lawrie, G., Marquis, E., Fuller, E., Newman, T., Qiu, M., Nomikoudis, M., Roelofs, F., & Dam, L. (2017). Moving towards inclusive learning and teaching: A synthesis of recent literature. *Teaching & Learning Inquiry, 5*(1). https://doi.org/10.20343/5.1.3

Lee, A., Steketee, C., Rogers, G., & Moran, M. (2013). Towards a theoretical framework for curriculum development in health professional education. *Focus on Health Professional Education, 14*(3), 70-83.

Le Grange, L. (2016). Decolonising the university curriculum. *South African Journal of Higher Education, 30*(2), 1-12. https://doi.org/10.20853/30-2-709

Le Grange, L. (2019). The curriculum case for decolonisation. In J. Jansen (Eds.), *Decolonisation in universities: The politics of knowledge* (pp. 29-48). Wits University Press. https://doi.org/10.18772/22019083351

Little, D., & Green, D. A. (2012). Betwixt and between: academic developers in the margins. *International Journal for Academic Development, 17*(3), 201-215. https://doi.org/10.1080/1360144X.2012.700895

Louie, D. W., Poitras Pratt, Y., Hanson, A., & Ottmann. J. (2017). Applying Indigenizing principles of decolonizing methodologies in university classrooms. *Canadian Journal of Higher Education, 47*(3), 16-33. https://doi.org/10.7202/1043236ar

M:

Matveev, A. G., Okala, C. G., & Cuevas, N. M. (2006, May). *Mapping curriculum maze: A practical model to develop and analyze program curriculum maps.* Paper presented at the meeting of the Association for Institutional Research, Chicago, IL.

McGregor, R., & Park, M.S. (2019). Towards a deconstructed curriculum: Rethinking higher education in the Global North. *Teaching in Higher Education, 24*(3), 332-345. https://doi.org/10.1080/13562517.2019.156622

McKimm J., & Swanwick T. (2017). Educational leadership. In T. Swanwick & J. McKimm (Eds.), *ABC of clinical leadership* (2nd ed.). Hoboken, NJ: John Wiley & Sons.

Metzler, E., Rehrey, G., Kurz, L., & Middendorf, J. (2017). The aspirational curriculum map: A diagnostic model for action-oriented program review. *To Improve the Academy, 36*(2), 156-167. https://doi.org/10.1002/tia2.20062

Mossop, L., Dennick, R., Hammond, R., & Robb, I. (2013). Analysing the hidden curriculum: use of a cultural web. *Medical Education, 47*(2), 134–143. https://doi.org/10.1111/medu.12072

N:

Norton, R. E. (1998). *Quality Instruction for the High Performance Workplace: DACUM.* Columbus, OH: Center on Education and Training for Employment, College of Education, The Ohio State University. (ERIC Document Reproduction Service No. ED 419 155).

O:

Oates, T. (2011). Could do better: Using international comparisons to refine the National Curriculum in England, *The Curriculum Journal, 22*(2), 121-150. https://doi.org/10.1080/09585176.2011.578908

Oliver, S. L., & Hyun, E. (2011). Comprehensive curriculum reform in higher education: Collaborative engagement of faculty and administrators. *Journal of Case Studies in Education, 2*, 1-20. https://eric.ed.gov/?id=EJ1057195

Oxford English Dictionary (OED). (2021). Develop. In *OED Online.* Retrieved May 4, 2021 from www.oed.com/view/Entry/51427.

P:

Patton, M. Q. (2012). *Essentials of utilization-focused evaluation.* Sage.

Patton, M. Q. (2013). *Utilization-focused evaluation checklist.* The Evaluation Center at Western Michigan University. https://wmich.edu/sites/default/files/attachments/u350/2018/ufe-patton.pdf

Paulsen, M.B., & Feldman, K.A. (1999). Student motivation and epistemological beliefs. *New Directions for Teaching and Learning, 1999*(78), 17-25. https://doi.org/10.1002/tl.7802

Perlin, M. S. (2011). Curriculum mapping for program evaluation and CAHME accreditation. *Journal of Health Administration Education, 28*(1), 33-53.

Pidgeon, M. (2016). More than a checklist: Meaningful Indigenous inclusion in higher education. *Social Inclusion, 4*(1), 77-91. http://dx.doi.org/10.17645/si.v4i1.436

Plaza, C. M., Reierson Draugalis, J., Slack, M. K., Skrepnek, G. H., & Sauer, K. A. (2007). Curriculum mapping in program assessment and evaluation. *American Journal of Pharmaceutical Education, 71*(2), 1-8. https://doi.org/10.5688/aj710220

Popovic, C. & Baume, D. (2016). Introduction: Some issues in academic development. In C. Popovic and D. Baume (Eds.), *Advancing practice in academic development* (pp. 1 -16). Routledge.
Posner, G. J. (2004). Analyzing the curriculum (3rd ed.). McGraw-Hill.
Prideaux, D. (2003). ABC of learning and teaching in medicine: Curriculum design. *British Medical Journal, 326*, 268–270. https://doi.org/10.1136/bmj.326.7383.268

R:

Rata, E. (2019). Knowledge-rich teaching: A model of curriculum design coherence. *British Educational Research Journal, 45*(4), 681-697. https://onlinelibrary.wiley.com/doi/epdf/10.1002/berj.3520
Rawle, F., Bowen, T., Murck, B., & Hong, R. J. (2017). Curriculum mapping across the disciplines: Differences, approaches, and strategies. *Collected Essays on Learning and Teaching, 10*(2017), 75-88. Retrieved from https://celt.uwindsor.ca/ojs/leddy/index.php/CELT/article/view/4765/4202
Rittel, H. W. J., & Webber, M. M. (1973). Dilemmas in a general theory of planning. *Policy Sciences, 4*(2), 155-169.
Robertson, A., Fowler, L., Niconchuk, J., Kreger, M., Rickerson, E., Sadovnikoff, N., Hepner, D. L., Bader, A. M., Mcevoy, M. D., & Urman, R. (2019). Application of Kern's 6-step approach in the development of a novel anesthesiology curriculum for perioperative code status and goals of care discussions. *The Journal of Education in Perioperative Medicine, JEPM, 21*(1). https://pubmed.ncbi.nlm.nih.gov/31406705/
Roxå, T., & Mårtensson, K. (2017). Agency and structure in academic development practices: are we liberating academic teachers or are we part of a machinery supressing them? *International Journal for Academic Development, 22*(2). https://doi.org/10.1080/1360144X.2016.1218883
Robley, W., Whittle, S., & Murdoch-Eaton, D. (2005). Mapping generic skills curricula: Outcomes and discussion. *Journal of Further and Higher Education, 29*(4), 321-330. https://doi.10.1080/03098770500353342

S:

Sauder, M., & Nelson Espeland, W. (2009). The discipline of rankings: tight coupling and organizational change. *American Sociological Review, 74*(1), 63–82. https://doi.org/10.1177%2F000312240907400104
Schroeder, C. (2015). Unpacking and communicating the multidimensional mission of educational development: A mission matrix tool for centers of teaching and learning. *To Improve the Academy, 34*(1-2), 20-62. https://doi.org/20-62. 10.1002/tia2.20030
Schwartzstein, R.M., Huang, G.C., & Coughlin, C.M. (2008). Development and implementation of a comprehensive strategic plan for medical education at an academic medical center. *Academic Medicine, 83*(6), 550 - 559. https://doi.org/10.1097/ACM.0b013e3181722c7c
Shay, S. (2012). Educational development as a field: are we there yet? *Higher Education Research & Development, 31*(3), 311–323. https://doi.org/10.1080/07294360.2011.631520
Shore, C., & Wright, S. (2015). Audit culture revisited: rankings, ratings, and the reassembling of society. *Current Anthropology, 56*(3), 421-431. https://doi.org/10.1086/681534
Smith, L.T (1999). *Decolonizing methodologies: Research and Indigenous peoples.* New York, NY: Zed Books Ltd.
Staykova, M. P. (2013). Curriculum pearls for faculty members. *Journal of Curriculum and Teaching, 2*(1). https://doi.org/10.5430/jct.v2n1p74
Sweet, L., & Palazzi, D. (2015). Application of Kern's Six-step approach to curriculum development by global health residents. *Education for Health, 28*(2), 138-141. https://doi.org/10.4103/1357-6283.170124

T:

Tariq, V. N., Scott, E. M., Cochrane, A. C., Lee, M., & Ryles, L. (2004). Auditing and mapping key skills within university curricula. *Quality Assurance in Education, 12*(2), 70-81. https://doi.org/10.1108/09684880410536440

Taylor, K. L. (2010). Understanding the disciplines within the context of educational development. *New Directions for Teaching and Learning, 122*, 59–67. https://doi.org/10.1002/tl.398

Taylor, K. L., & Rege Colet, N. (2010). Making the shift from faculty development to educational development: A conceptual framework grounded in practice. In A. Saroyan, & M. Frenay (Eds.), *Building teaching capacities in higher education: A comprehensive international model* (pp.139–167). Stylus.

The Center for Universal Design. (2008). *About UD.* https://projects.ncsu.edu/ncsu/design/cud/about_ud/about_ud.htm

The Council of Europe. (n.d). *Reference framework of competences for democratic culture: Guidance for implementation-curriculum.* https://rm.coe.int/guidance-document-1-cdc-and-curriculum-reference-framework-of-competen/1680991edf

Thomas, P. (2015). *Curriculum development for medical education: A six-step approach.* (3rd ed.) https://ebookcentral-proquest-com.ezproxy.lib.ucalgary.ca/lib/ucalgary-ebooks/detail.action?docID=4398487

Tomaselli, K. G. (2014). Who owns what? Indigenous knowledge and struggles over representation, *Critical Arts, 28*(4), 631-647, DOI: 10.1080/02560046.2014.929220

Truth and Reconciliation Commission of Canada. (2015). *Truth and Reconciliation Commission of Canada: Calls to Action.* Retrieved from https://nctr.ca/assets/reports/Calls_to_Action_English2.pdf

Tyler, R. W. (1949). Basic Principles of Curriculum and Instruction. University of Chicago Press.

U:

Uchiyama, K. P., & Radin, J. L. (2009). Curriculum mapping in higher education: A vehicle for collaboration. *Innovative Higher Education, 33*(4), 271-280. https://doi.org/10.1007/s10755-008-9078-8

University of Toronto. (2016). Models of course design and steps for course development. https://www.cpd.utoronto.ca/wp-content/uploads/2016/07/P02-Models-of-course-design-and-steps-for-course-development-1.pdf

University of Guelph. (n.d.). Curriculum mapping. https://www.uoguelph.ca/vpacademic/avpa/outcomes/curriculummap.php

University of Waterloo. (n.d.). *Critiquing program outcomes.* https://uwaterloo.ca/centre-for-teaching-excellence/support-faculty-and-staff/curriculum-renewal/design-and-development/critiquing-program-outcomes

V:

Veltri, N. F., Webb, H. W., Matveev, A. G., & Zapatero, E. G. (2011). Curriculum mapping as a tool for continuous improvement of IS curriculum. *Journal of Information Systems Education, 22*(1), 31-42. https://jise.org/Volume22/n1/JISEv22n1p31.pdf

W:

Wachtler, C., & Troein, M. (2003). A hidden curriculum: mapping cultural competency in a medical programme. *Medical Education, 37*(10). https://doi.org/10.1046/j.1365-2923.2003.01624.x

Whitchurch, C. (2018). Being a higher education professional today. Working in Third Space. In C. Bossu & N. Brown (Eds.), *University development and administration. Professional and support staff in higher education.* Dordrecht: Springer.

Wiggins, G. P., & McTighe, J. (2006). *Understanding by design* (Expanded 2nd edition). Pearson.
Willett, T. G. (2008). Current status of curriculum mapping in Canada and the UK. Medical education, 42(8), 786-793. https://doi.org/10.1111/j.1365-2923.2008.03093.x
Wilson, S., Breen, A. V., & Dupré, L. (2019). *Research and reconciliation: Unsettling ways of knowing through Indigenous relationships.* Toronto, ON: Canadian Scholars.
Wojtczak, A. (2002). *Glossary of medical education terms.* http://www.iime.org/glossary.htm
Wolf, P. (2007). A model for facilitating curriculum development in higher education: A faculty-driven, data-informed, and educational developer-supported approach. *New Directions for Teaching and Learning, 112*, 15-20. https://doi.org/10.1002/tl.294

Y:

Yarbrough, D. B., Shulha, L. M., Hopson, R. K., & Caruthers, F. A. (2011). *The program evaluation standards: A guide for evaluators and evaluation users* (3rd ed.). Thousand Oaks, CA: Sage https://dx-doi-org.ezproxy.lib.ucalgary.ca/10.4135/9781506326139

Z:

Zelenitsky, S., Vercaigne, L., Davies, N. M., Davis, C., Renaud, R., & Kristjanson, C. (2014). Using curriculum mapping to engage faculty members in the analysis of a pharmacy program. *American Journal of Pharmaceutical Education, 78*(7), 1-9. https://doi.org/10.5688/ajpe787139