Program Review and Enhancement

GUIDEBOOK

Paul R. MacPherson Teaching Fellowship
McMaster University, (MIIETL)
McMaster Institute for Innovation and Excellence in Teaching and Learning

Lynn Martin and Lori Goff

McMaster University

The Paul R. MacPherson Teaching Fellowships

at McMaster University were established in 2011 as the result of a generous donation from Paul R. MacPherson. This program seeks to identify, through a competitive application process, faculty members who have demonstrated exemplary teaching practices and who show promise of becoming outstanding educators and of inspiring others. It allows Fellows to work for a portion of their time (typically over a one-year period) in the McMaster Institute for Innovation and Excellence in Teaching & Learning, where they will have opportunities to enhance their own teaching by exploring innovative approaches, to collaborate with a network of colleagues on scholarly teaching and learning, and to provide educational leadership across campus. During this time, Fellows are expected to develop and to work through a project leading to a tangible outcome that will enhance teaching and learning on campus and/or beyond.

Lynn Martin is a Teaching Professor within the School of Nursing at McMaster University. She is the inaugural recipient of the Paul MacPherson Teaching Fellowship that resulted in the development of this guidebook. The focus of this fellowship was on building capacity related to quality assurance / quality enhancement in higher education that could be applied within the School of Nursing as well as the broader McMaster University. The project evolved out of the increased focus on quality assurance at the institutional, provincial, national and international levels, including the recently established Quality Assurance Framework and the Institutional Quality Assurance Process in Ontario. The ultimate goal of the project was to by provide departments at McMaster with the tools necessary to engage in program review aimed at facilitating the enhancement of teaching and learning.

Lori Goff is the Manager of Program Enhancement within the McMaster Institute of Innovation and Excellence in Teaching and Learning at McMaster University. Approaching program review through the lens of educational development and continuous enhancement, she works with departments and schools across campus to support the development of new program ideas and the cyclical review of existing programs.

MIIETL McMaster Institute for Innovation and Excellence in Teaching and Learning

Introduction

This guidebook provides a step-by-step approach to program review and enhancement based on the guiding principles of McMaster's Institutional Quality Assurance Process (IQAP):

1. **Curriculum development should be carried out at the departmental level.**
2. **Curriculum should be reviewed regularly to improve programs and enhance student learning.**
3. **Curriculum development and enhancement is an ongoing and iterative process.**

The guidebook's first section defines program review and presents an overview of the program review process. Subsequent sections detail each stage of the process and present practical strategies and useful links to help all departments and units in each of the university's six faculties implement program review and enhancement.

What is Program Review and Enhancement?

Program review is a scholarly activity that helps improve student learning. It is a process of gathering and analyzing information from multiple sources that aims to understand and enhance teaching and learning in any undergraduate or graduate program. Ideally, it occurs during the academic year.

Program review and enhancement answers the following questions:

1. **What does the department value and intend to teach its students?**
2. **What and how well do students learn during their educational experiences?**
3. **How can the department enhance students' experience?**

Program review and enhancement is also known as assessment, program evaluation, quality enhancement and quality improvement. However, McMaster has adopted the term "program review" for consistency across all faculties.

Why Undertake Program Review?

Departments conduct program review to determine what and how well students learn within their program of study. Program review helps departments clarify their mission and vision, pinpoint strengths and weaknesses, improve class-

The McMaster Institute for Innovation & Excellence in Teaching & Learning (MIIETL) offers all departments numerous resources that facilitate program review and enhancement of the student experience.

You are encouraged to work closely with MIIETL staff and access the many available services as you implement program review within your department.

room effectiveness and determine the value of students' learning experience. In the context of this guidebook, the overarching goal of program review is to enhance teaching and learning within departments' respective programs.

How is Program Review Implemented in Ontario?

Each publicly assisted Ontario University that grants degrees and diplomas is responsible for the quality of its educational programs, as well as for the modes of delivery and the academic and student services that affect program quality. The process by which institutions meet such accountability is outlined in the Council of Ontario Universities' (COUs) Quality Assurance Framework (QAF). The QAF framework requires that all Ontario university programs develop program learning outcomes that align with university goals and degree level expectations. For more information on the Quality Assurance Framework, visit the Council of Ontario Universities Council on Quality Assurance website at **http://www.cou.on.ca/quality**.

How is Program Review Implemented at McMaster?

McMaster outlines program review requirements in its Institutional Quality Assurance Process (IQAP) that meets the protocols established in the QAF. McMaster's IQAP compliments existing review and enhancement mechanisms and facilitates ongoing improvement of undergraduate and graduate programs by recognizing the uniqueness of each program. McMaster engages in a continual process of program review to solidify its international reputation for innovation in teaching and learning and to ensure the quality of its programs. The entire process is outlined in the Senate-approved Policy on Academic Program Reviews which can be accessed on the McMaster website at **http://www.mcmaster.ca/policy/AdminAcad/AcadAdmin/AcademicProgramReview.pdf**.

Frequently Asked Questions

What is the difference between degree level expectations and program learning outcomes?

Degree level expectations outline the requirements for all degree recipients in Ontario at the undergraduate and graduate level (**http://cll.mcmaster.ca/COU/degree/index.html**). Program learning outcomes are speci ic, measureable statements that indicate what students in the program will know and will be able to do upon completion of the program. Program learning outcomes are unique to and re lect the learning that occurs within each program; they are derived from institutional goals and are linked broadly to degree level expectations. Curriculum maps (discussed later) explain how a course contributes to program learning outcomes and in turn how such learning outcomes contribute to broader degree level expectations.

Why would we need program review if our program is already working well?

The primary purpose of program review is to enhance student learning. Even if the quality of a program is good, there may be room for improvement because discipline-specific knowledge and the scholarship of teaching and learning are constantly evolving. Ongoing program review and enhancement keeps pace with such changes and always strives for excellence.

What is the difference between course assessment and program review?

Course assessment evaluates student learning in a single course. Program review examines student learning for the duration of an entire program. The purpose of program review is to determine if students acquired a program's intended learning outcomes upon graduation. Information gathered during program review helps enhance a program over time.

How can we measure complex learning?

While it may be challenging to measure certain types of learning (e.g., critical thinking), indicators of acquired learning outcomes often can be observed or measured upon review of students' work. Students also can be asked directly whether they believe they have developed qualities that correspond to programs' learning outcomes.

Does program review violate student privacy?

McMaster Research Ethics Board (MREB) approval is not required for the program review processes described in this guidebook. It is important however to ensure that individual students cannot be identified or would not be harmed by disclosure of their responses beyond the scope of program review. **Note:** If program review is conducted for grant-funded projects or for publication, it is important to first consult with MREB (**https://reo.mcmaster.ca/**).

How does the IQAP differ from other models of program evaluation?

McMaster's IQAP meets the protocols for program review outlined in the QAF and is founded on an outcomes-based approach to education. In this model, the emphasis is on identifying and enhancing students' learning in a given program. Other frequently used program review models include:

(a) stakeholder-focused approaches,

(b) values-focused approaches; and

(c) continuous quality improvement approaches.

These different frameworks provide a process or structure to help gather, organize and understand information pertaining to a program. Other frameworks may be used to interpret and make use of information gathered during program review for certain disciplines.

Program Review and Enhancement Process

While there are many examples of program review cycles, the program review and enhancement process most often includes the following elements: a defining or planning stage, an aligning stage, an assessment stage, and an enhancement stage whereby the goal is to use review results for program improvement.

Stage 1: DEFINE

The **first stage** defines outcomes on which the program review will be based. This includes defining and planning program goals and program learning outcomes.

Stage 2: ALIGN

The **second stage** addresses institutional and curricular alignment. Institutional alignment ensures program learning outcomes align with broader institutional outcomes and degree level expectations. Curricular alignment brings program learning outcomes and student experiences into agreement.

Stage 3: ASSESS

The **third stage**, includes selecting methods of assessing program learning outcomes, identifying expected levels of achievement, setting review parameters, and determining responsibility for program review. Information is gathered and interpreted, and conclusions are drawn to determine student achievement of learning outcomes.

Stage 4: ENHANCE

In the **fourth stage**, opportunities for curricular enhancement intended to improve student learning are identified, prioritized, and implemented. Results of the program review are reported, shared with stakeholders and incorporated into future program review plans.

IQAP Tip

Not all activities suggested in this guidebook are required as part of the IQAP process. The IQAP policy and self-study documents available on the McMaster website outline the requirements of the formal program review. IQAP tips provided throughout the guidebook link program review activities directly to pertinent sections of the IQAP self-study document.

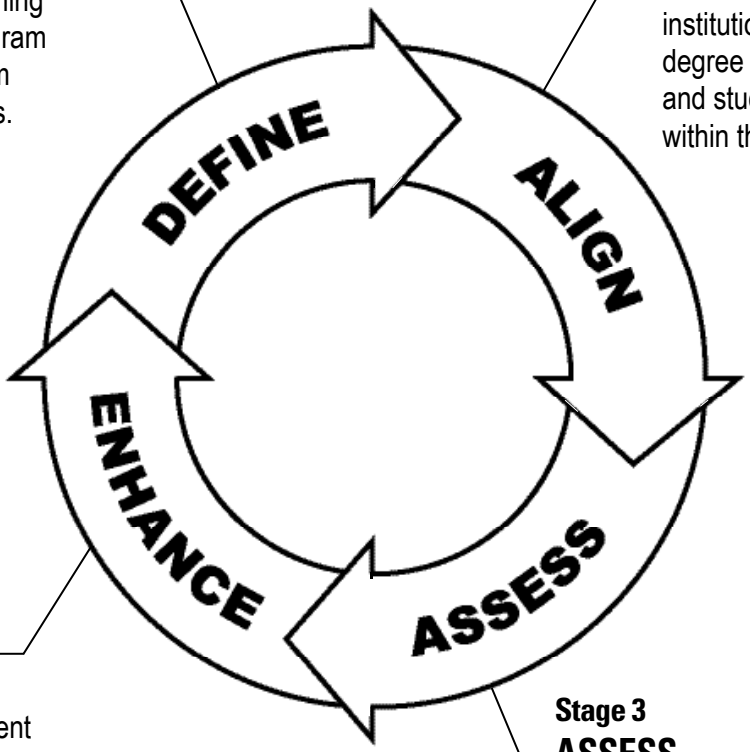
Program Review and Enhancement Process

Stage 1
DEFINE

Define the outcomes on which the program review will be based. This includes defining and planning program goals and program learning outcomes.

Stage 2
ALIGN

Align progam learning outcomes with broader institutional outcomes and degree level expectations, and student experiences within the program.

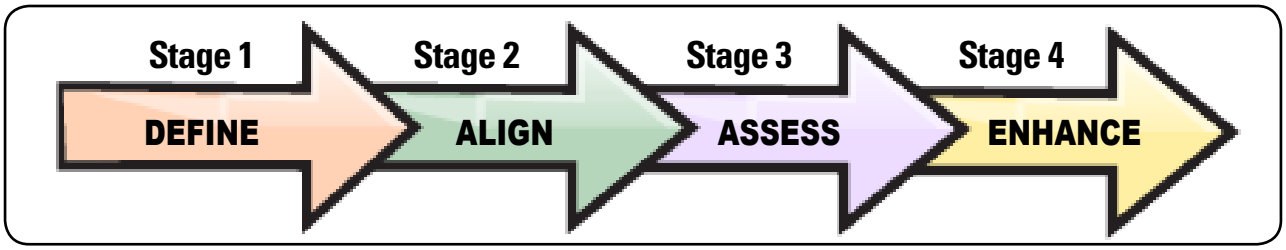


Stage 4
ENHANCE

Opportunities for curricular enhancement intended to improve student learning are identified, prioritized, and implemented.

Stage 3
ASSESS

Create and implement the program review plan. Gather and interpret information, and draw conclusions to determine student achievement of program learning outcomes.



Understanding Your Audience

When beginning the process of program review, it is important to consider the audiences or stakeholders who may be involved in the review. Program review is most effective when it includes representatives from across and beyond the educational community.

Stakeholders who do not participate in program review may still benefit from learning program review results. Begin by asking who would benefit from knowing what, and why that information would be helpful. Consider when the information is required and how it will be reported. Doing so ahead of time will ensure information gathered during program review addresses the needs of all relevant audiences.

IQAP Tip

Section 13.1 of the IQAP self-study asks for the names of all faculty, staff and students who have contributed to the self-study and how their views were obtained and taken into account.

Audiences to Consider

- Internal Faculty Educators
- External Faculty Educators
- MIIETL Liaison
- Students
- Teaching Assistants (TAs)
- Alumni
- Community Organizations/Partners
- Industry Contacts
- Potential Employers

Activity #1 - Understanding Your Audience

Who?	Needs to know what?	Why?	When?	How?
Department	If strategies for teaching & learning are effective. Any areas that can be improved.	Improve teaching & learning. Enhance students' experience.	Yearly	Written report
Institution (McMaster)	If and how IQAP requirements are being met.	Report to Council of Ontario Universities	Every 8 years	Written report
Accreditors	If program meets disciplinary standards.	Accreditation review	Varies	Varies
Other - Students, Donors, Alumni, Community Partners	Pertinent program - specific information; may vary for each group.	May be used for communication, recruitment and fundraising activities.	Varies	Website, newsletters etc.

(See Appendix A for the worksheet version)

Stage 1 - DEFINE

Stage 1 defines the outcomes upon which the program review is based. This includes defining:

- **Program Goals**
- **Program Learning Outcomes**

McMaster's IQAP is grounded in an outcomes-based approach to education that above all else seeks to demonstrate the student learning that has occurred. Learning outcomes are statements derived from program goals that specify what a student should know and be able to do as a result of learning.

Program Goals

Program goals answer the question "What should program graduates know and be able to do?" They are concrete descriptions of a program's mission or vision. In identifying program goals, it is helpful to ask "what hopes and aspirations do we have for program graduates three to five years after graduation?" Reviewing the initial program approval submission or more recent academic program review reports may help identify the program's purpose and goals. For additional information on identifying and expressing program goals and articulating graduate attributes, view the following video on the COU website **http://cll.mcmaster.ca/articulate/COU/From%20Attributes%20to%20Outcomes/player.html.**

Program Learning Outcomes

Program learning outcomes are action-oriented statements that indicate what students will know or be able to do after a sequence of learning (course or program). Ideally they are developed collaboratively and form the foundation for the rest of the program review process.

Programs usually identify three to five broad program learning outcomes (the number may vary depending on how the outcomes are expressed and the types of learning that occur). Not all program outcomes may need to be reviewed each year. Depending upon the number of outcomes identified, your program review plan might include a time frame for sequential reviews of specific program learning outcomes.

The terms outcomes, objectives, aims and expectations are used interchangeably.

This guidebook uses the term program learning outcomes, consistent with McMaster's IQAP vocabulary.

While your department may use alternative terms, it is important that you are aware of (and perhaps adopt) your audiences' preferred terminology.

The MIIETL can work with you to convene a group or by facilitating departmental retreats and collaborative conversations to guide your program through the process of identifying or revising goals and learning outcomes of the program.

Sample activities include graduate visioning, appreciative interviewing, and articulating learning outcome statements exercises.

The first step in writing program learning outcomes is to think about attributes that students must demonstrate upon graduation to indicate program goals have been achieved. Such attributes inform program learning outcomes. While program learning outcomes may differ, certain guidelines are applicable to all departments:

1. Write program learning outcomes that flow directly from and support program goals and degree level expectations.

> *IQAP Tip*
>
> *Section 1.2 of the IQAP self-study asks how program learning outcomes align with degree level expectations.*

2. Write program learning outcomes that relate directly to the academic discipline and reflect attributes students should acquire. Learning outcomes commonly emphasize writing or critical thinking, so specify how students are expected to demonstrate such skills within the context of the particular discipline.

3. Write program learning outcomes that students can demonstrate in observable or measurable ways. Focus on actions and behaviours that demonstrate students' appreciation, thinking or understanding. Think carefully about what students should be able to do with their newfound knowledge and understanding.

4. Write program learning outcomes that are short, concise, and focused on a single goal. Longer statements tend to be vague or tend to include multiple, overlapping outcomes.

5. For programs with specialized accreditation or certification, write program learning outcomes that incorporate these assessment expectations.

6. Write program learning outcomes that build on program prerequisites or admission requirements and will help interpret program review findings.

In addition, the following comprehensive webinar will walk you through the writing learning outcomes process.

http://cll.mcmaster.ca/articulate/COU/Writing%20Learning%20Outcomes/player.html

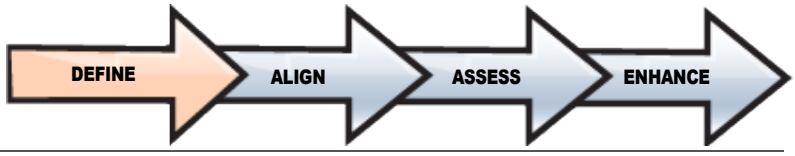
The following Program Learning Outcomes will be used in the activities throughout the guidebook to illustrate the content described. These examples are intentionally broad to apply to a variety of departments.

1. Program graduates will be able to communicate effectively with diverse audiences using written, oral, and digital media.

2. Program graduates willbe able to examine and evaluate the strengths and weakness of one's own ideas and arguments as well as those of others.

3. Program graduates will recognize the need for, and engage in lifelong learning, professinal growth and service.

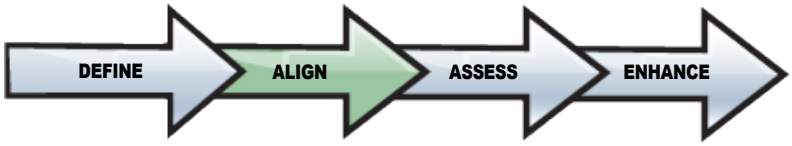
Worksheet versions for each activity are available in appendices to use with your own program learning outcomes.



Activity #2 - Program Learning Outcomes

Sample Program Learning Outcomes	Consistency with guidelines?	
Program graduates will be able to communicate effectively with diverse audiences using written, oral and digital media.	✓ directly related to discipline ✓ observable and measureable ✓ short, concise, single outcome ✓ supports program goal	✓ aligns with DLEs ✓ aligns with external standards (if applicable) ✓ aligns with admission requirements
Program graduates will be able to examine and evaluate the strengths and weakness of one's own ideas and arguments as well as those of others.	✓ directly related to discipline ✓ observable and measureable ✓ short, concise, single outcome ✓ supports program goal	✓ aligns with DLEs ✓ aligns with external standards (if applicable) ✓ aligns with admission requirements
Program graduates will recognize the need for, and engage in lifelong learning, professional growth and service.	✓ directly related to discipline ✓ observable and measureable ✓ short, concise, single outcome ✓ supports program goal	✓ aligns with DLEs ✓ aligns with external standards (if applicable) ✓ aligns with admission requirements

(See Appendix B for the worksheet version)



Stage 2 - ALIGN

After they are defined, program learning outcomes must be aligned at both the institutional and curricular level. **Stage 2** includes:

- **Institutional Alignment**
- **Curriculum Alignment**
  - Curriculum Maps
  - Inventory of Educational Practices

Institutional Alignment

Institutional alignment ensures program learning outcomes are congruent with the institutional mission and priorities as well as degree level expectations. The institutional mission is the foundation upon which departmental mission statements and program goals are based and supported. Program review planning is an excellent opportunity to ensure program learning outcomes are aligned with university, faculty and departmental goals.

Activity #3 - Institutional Alignment

Begin by reviewing the institutional and departmental mission statements, priority documents, and degree level expectations. Doing so provides the context from which your program goals and learning outcomes should flow.

University Mission: At McMaster, our purpose is the discovery, communication, and preservation of knowledge. In our teaching, research, and scholarship, we are committed to creativity, innovation, and excellence. We value integrity, quality, and teamwork in everything we do. We inspire critical thinking, personal growth, and a passion for learning. We serve the social, cultural, and economic needs of our community and our society.

http://www.mcmaster.ca/univsec/reports_lists/mission.cfm

Current Priorities: The key priorities are the development of a distinct, effective and sustainable undergraduate experience, the enhancement of the connections between McMaster and the community, and the support of continuing excellence in research that informs and integrates with a reconceived educational mission.

http://www.mcmaster.ca/presidentsoffice/priorities.html

University Degree Level Expectations: Outline the expectations for all degree recipients at the undergraduate and graduate level in Ontario.

http://www.cou.on.ca/related-sites/the-ontario-universities-council-on-quality-assura/pdfs-%281%29/quality-assurance-framework---guide-may-2012

Faculty Mission or Vision: Refer to the appropriate website for your faculty.

Program Goals: Write out your own program's mission, vision, purpose or priorities. Indicate how they align with:

- university mission and current priorities
- university degree level expectations
- faculty mission or vision

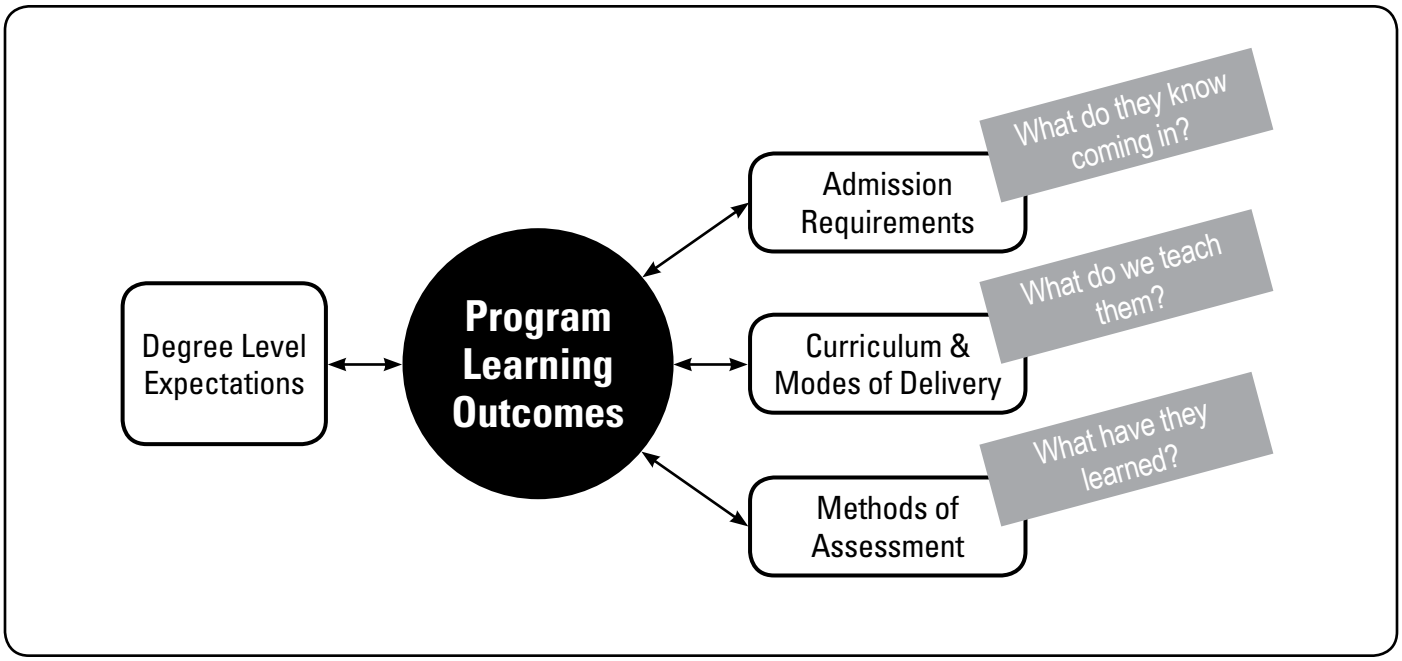
IQAP Tip

Section 1.1 of the IQAP self-study document asks how the program is consistent with the university's mission and academic plan.

Curriculum Alignment

Curriculum alignment identifies specific experiences within the curriculum that enable student learning and help achieve program learning outcomes. Curriculum alignment matches teaching/learning activities and student experiences to identified learning outcomes. It is important to identify how and where learning occurs in the curriculum, how it is reinforced and how it is assessed. Creating a curriculum map and inventory of educational practices facilitates curriculum alignment.

Given the diversity of learning at McMaster and students' varying abilities, motivation, and readiness to learn, it is useful to know about levels of achievement upon entry to university. This establishes a baseline for your diverse student population and also provides a way to track students' achievement within the context of their educational practices.



IQAP Tip

Section 2.2 of the IQAP self-study asks how admission requirement align with program learning outcomes.

Curriculum Maps

Curriculum mapping helps align student experiences with program learning outcomes and degree level expectations. Curriculum maps categorize learning by courses; they identify how a course contributes to learning outcomes, and in turn how learning outcomes contribute to degree level expectations. Curriculum maps also pinpoint where learning was introduced, reinforced or mastered within the curriculum. In short, the underlying goal is to demonstrate the relationship between the parts and the whole.

Example 1 illustrates how learning outcomes can be mapped onto degree level expectations.

Example 2 shows how learning within a course can be mapped onto program learning outcomes.

Example 1

	Degree Level Expectations					
Sample Program Learning	**Depth of Knowledge**	**Knowledge of Methods**	**Application of Knowledge**	**Communication Skills**	**Awareness of Limits of Knowledge**	**Professional Capacity/ Autonomy**
Program graduates will be able to communicate effectively with diverse audiences using written, oral and digital media.		✓	✓	✓		✓
Program graduates will be able to examine and evaluate the strengths and weaknesses of one's own ideas and arguments as well as those of others.	✓	✓	✓			✓
Program graduates will recognize the need for, and engage in lifelong learning, professional growth and service.				✓	✓	✓

Example 2

I = Introduced
(outcome is introduced, assuming no or limited prior knowledge)

R = Reinforced
(outcome is reinforced, assuming introduction in a previous course)

M = Mastery/Met
(outcome is mastered or met, assuming introduction and reinforcement in prior courses/levels)

	Lower Level Courses			Upper Level Courses		
Program Learning Outcomes	**Course 1**	**Course 2**	**Course 3**	**Course 4**	**Course 5**	**Course 6**
Program graduates will be able to communicate effectively with diverse audiences using written, oral and digital media.	I	R	R		R	M
Program graduates will be able to examine and evaluate the strengths and weaknesses of one's own ideas and arguments as well as those of others.		I	R	M		
Program graduates will recognize the need for, and engage in lifelong learning, professional growth and service.	I			R	R	M

(See Appendix C for the worksheet versions)

IQAP Tip

Section 4.1 of the IQAP self-study requires that you prepare a curriculum map showing how your program addresses degree level expectations. MIIETL staff can help you prepare your curriculum map.

Curriculum maps are an excellent way to identify: how a program is organized for teaching and learning; teaching strategies that ensure learning takes place; how faculty and staff interact with students; and how student learning is assessed – items that are all closely connected to a program's learning outcomes. In other words, the curriculum map reveals if there is alignment between teaching/learning strategies and achievement of program learning outcomes.

Inventory of Educational Practices

An inventory of educational practices lists the variety of educational experiences that students have throughout the curriculum. Consider the following questions:

1. **What educational philosophy, principles, theories, models of teaching or shared assumptions underpin curricular and instructional design, pedagogy or use of educational tools?**

> *IQAP Tip*
>
> *Section 3.1 of the IQAP self-study asks how the curriculum aligns with the current state of the discipline. Section 3.3 asks about significant innovation or creativity in delivery of content.*

2. **What pedagogies or educational experiences develop students' demonstrable knowledge, critical thinking and problem-solving skills that are valued by the institution or program?**

3. **How do students become acculturated to the ways of thinking, knowing and problem-solving in the field of study?**

4. **How do faculty and staff intentionally build on each other's courses and educational experiences to achieve program and institutional learning priorities?**

Activity #4 demonstrates the link between educational experiences as outlined above in the inventory of educational practices course assessments, and broader program learning outcomes and degree level expectations.

Refer to the MIIETL's Teaching and Learning at McMaster Guidebook (http://miietl.mcmaster.ca/site/resources) for a full description of educational theories, models of teaching and curriculum design that will help you develop your inventory of educational practices.

Your inventory may include some or all of the following:

- Problem-based learning
- Self-directed learning
- Technology enhanced learning
- Community-engaged learning
- Online learning
- Experiential learning
- Inquiry
- Co-op experiences
- Student placements

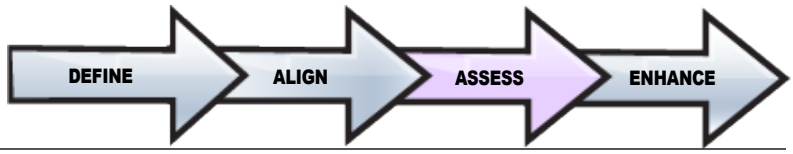
Activity #4 - Curriculum Alignment

Degree Level Expectation(s)	Program Learning Outcomes	Educational Experiences How does the program design help students meet the outcomes? What course assessments provide evidence of achievement?
Knowledge of Methods Application of Knowledge Communication Skills Professional Knowlege/ Autonomy	Program graduates will be able to communicate effectively with diverse audiences using written, oral and digital media.	• program philosophy based on small group learning and students assessed on oral communication in each theoretical course. • written communication skills taught and assessed developmentally over first 3 years and culminate in a comprehensive 3rd year paper. • digital media used in the majority of courses and students create an ePortfolio. Students work added to ePortfolio each year and summary of learning created in final course. • small oral presentations required and assessed in second and third year. Students create a comprehensive presentation with a small group of peers in a 4th year capstone course.

(See Appendix D for the worksheet version)

IQAP Tip

Section 4.2 of the IQAP self-study asks for the assessments implemented to demonstrate achievement of program learning outcomes and degree level expectations.



Stage 3 - ASSESS

Although defining and aligning program components is important, if the cycle ends there, the opportunity to collect data and make evidence-informed decisions to enhance student learning and achievement is lost. **Stage 3** involves selecting methods for assessing student achievement of program learning outcomes, setting review parameters, collecting information and interpreting results.

In this context, assessment refers to the measurement of student achievement of program learning outcomes over the course of a program. While classroom assessments (e.g., assignments and exams) may contribute to program review, often multiple and varied methods are used for a holistic understanding of learning.

Stage 3 includes:

- **Selecting Assessment Methods**
  - Review Current Methods
  - Direct and Indirect Methods
- **Setting Review Parameters**
  - Levels of Student Achievement
  - Scope of Assessment
  - Timing of Assessment
  - Responsibility for Assessment
- **Collecting Information**
- **Interpreting Results**

Selecting Assessment Methods

Once program learning outcomes are identified and student experiences mapped throughout the curriculum, it is time to identify assessment methods to determine students' level of achievement on the identified program learning outcomes. Numerous methods of assessment are available and the goal is to identify the most suitable methods for each program learning outcome within the context of the program and discipline.

Review Current Methods

Before determining methods to assess student achievement of program learning outcomes, it is important to be aware of methods currently used in the program. Knowing what has been or is currently being collected will ensure available information is used effectively and will identify additional methods that might be helpful.

Consider the following questions:

1. **What information is being currently collected within each of the required courses in the program? What assessments and projects currently exists that might provide evidence of student learning and achievement of learning outcomes?**

2. **What information related to student learning is currently collected at the departmental level? At the institutional level?**

3. **What processes and timelines are in place for gathering such information?**

4. **How is information currently interpreted and used to influence teaching and learning within the program?**

5. **Who is involved or responsible for these processes?**

Begin by selecting assessment methods already embedded in the program and add additional methods to fill gaps in information gathering. When choosing a method, consider how well it represents the learning described in the learning outcome, and how it can identify consistent patterns of student strengths and weaknessess.

You may already have access to the following program and institutional information:

Program

- Scores and scoring for tests and assignments
- Course evaluations
- Information on employment and subsequent education
- Surveys of students or alumni
- Scores on published tests (placement, certification/licensure, SATs)
- Retention and graduation rates
- Information assembled to meet disciplinary accreditation requirements

Institution

- National/Institutional survey results (i.e., National Survey of Student Engagement)

Direct and Indirect Assessment Methods

Numerous direct and indirect methods can be used to collect information about student learning in a particular program. Direct methods focus on demonstrable evidence of student learning, whereas indirect methods provide information from which inferences can be drawn about student learning to better understand the learning process.

Direct Methods

Direct methods are based on student activities that demonstrate students' learning and allow observers to determine how well program learning outcomes are being met. Direct methods include any activity through which students tangibly demonstrate attributes identified in the learning outcome. Often, direct methods can be identified within the existing curriculum, embedded in the coursework that students are expected to complete.

Common Direct Methods

Course Assignments	Measure student learning through predetermined tasks (e.g., papers, exams, online discussions, design projects, and artistic performances) in areas related to identified learning outcomes.
Portfolios and ePortfolios	Provide a chronological account of each student's learning as evidenced by a collection of work that demonstrates progress toward or achievement of one or more learning outcomes.
Capstone Projects	Represent the culmination of students' learning in their program of study, demonstrating their ablility to integrate general education outcomes and self-reflection on their chronological learning.
Ratings by field supervisors, internships, practica	Measures of learning provided by experts in the field that provide valuable feedback on student performance in the practice setting related to achievement of learning outcomes.

Common Direct Methods	
Presentations/ Oral Defenses/ Publications/ Masters' Theses/ Doctoral Dissertations	Measures that are commonly employed at the graduate level to demonstrate achievement of student learning outcomes.
Certificate or Licensure Exams	Provide standardized scores and measures within specific disciplines (expecially in health related disciplines).
Standardized Tests	Provide scores that can be interpreted consistently across sites due to tests' uniform construction, conditions for administration and scoring.

Indirect Methods

Indirect methods are used to collect information about students' experiences, including their beliefs and opinions of what they learned, how and why they learned it, and the extent to which they feel it was learned. Indirect methods include surveys, questionnaires, interviews, and focus- group meetings. Course grades and distributions are also indirect methods as they provide an indication of how well a student performed in a course.

Both direct and indirect evidence are necessary and should complement each other.

Indirect evidence can shed light on students' experiences, learning processes, and ideas for assessment or provide information that help interpret or guide application of program review results.

Direct evidence can be used to test the validity of students' opinions or self-assessments.

Student learning is sufficiently complex that multiple approaches are often needed.

Common Indirect Methods

Student Surveys • in-course surveys • exit surveys • graduate surveys	Provides students with the opportunity to identify components of course work they found effective or ineffective for their learning. Captures students' perceptions of their learning and the educational practices that support that learning.
Course Grades and Distributions	Provide an indication of student learning within a course. Often difficult to link directly to learning outcomes (as they represent a broad overview of learning) but may provide a red flag for further exploration.
Retention and Graduation Rates	Provide information on students' progress through the program and number of students who successfully meet program requirements.
Student Focus Groups	Hear students' perceptions of learning successes or challenges in a course or may help explain students' performance levels.
Faculty and Staff Surveys	Gather information on faculty and staff perceptions of student learning and their learning environment.
Course Evaluations	Provide feedback about student experiences in the course. Can also provide students chronological opportunities to describe their learning experiences.
Alumni Feedback	Provide a retrospective view of graduates' educational experience and opportunity to recommend improvements in education based on current employment, profession or graduate education.
Employment Rates/Job Placement Data	Provide information on students' success in securing employment within the field following graduation.
Admission to Graduate/ Professional Programs	Provide information on students' success in being admitted to graduate programs within their field.

The McMaster Alumni Association can provide support for conducting alumni surveys (http://alumni.os.mcmaster.ca/s/1439/start.aspx) as part of the program review process.

IQAP Tip

The IQAP requires at least two indirect measures of learning. Section 6.1 of the IQAP self-study requires a grade distribution for students, and for the undergraduate programs, a survey is sent to in-course students and recent graduates regarding their experiences in the program. There is an opportunity to add questions to these surveys to measure unique componenets of your program.

When choosing assessment methods, it is important to consider how well the method represents the learning described in the program learning outcome and how consistently patterns of students strengths and weaknesses are identified. It is important to consider the methods' reliability and validity – that is, whether they are robust, accurate and support the interpretation of results. Methodological strengths and weaknesses of the chosen methods should be reviewed so that the information is used appropriately.

There is no perfect method to measure student learning, so it is important to consider perceptions of evidential quality held by students, educators, administrators, practitioners, and other consumers of the information when interpreting the data. It is important also to select methods that are meaningful to faculty and students in the discipline and that can be conveyed easily to relevant audiences. Using multiple methods helps to ensure a deeper understanding of student learning.

Guidelines for choosing suitable methods:

1. Avoid creating additional tests or other assessment activities simply to satisfy program review information -gathering needs. Instead, identify assignments and projects that already occur as part of the existing instruction and testing activities.

2. Course grades are often inappropriate measures of individual program learning outcomes as they reflect achievement of course requirements. It is better to use the grade on a particular exam or assignment that measures student learning on a specific learning outcome. Course grades are based on achievement of course requirements rather than performance on a specific program learning outcome. Those course requirements typically include several course level outcomes that are likely related to more than one program learning outcome. Course grades frequently include extra credit for attendance, class participation, or other items unrelated to program learning outcomes; alone, they do not provide specific information on concepts mastered by students or those that proved challenging – important information for faculty to consider if they want to improve student learning over time. Likewise, course completion may be an insufficient measure of student learning, so avoid completion of a single course or block of courses as evidence to make decisions about the extent to which students are meeting a particular learning outcome.

3. Try and identify multiple methods for each program learning outcome. Consider including at least one direct method, one indirect method and, if possible, a third method that makes the most sense within the disciplinary context.

4. Identify specific measures. Instead of using "tests", indicate "final exam in senior course". Identifying a specific exam or assignment in a specific course creates a more accurate information-gathering plan for program review. For surveys, indicate the specific item(s) that will be used to assess the program learning outcome (e.g., "exit survey items that ask the extent to which the program helped students to develop their analytical thinking skills"). Otherwise information gathering may be left to chance and fail to collect explicit and relevant information about students' learning.

5. Be concise when describing the method. It is not necessary to describe the content of an exam or assignment, a rationale for its inclusion in the assessment or the scoring method that will be used.

6. Often, the methods chosen within the program relate to more than one learning outcome. Capstone projects, doctoral dissertations and other complex culminating assignments typically measure student performance on multiple program learning outcomes, and are rich sources of information about students' ability to apply knowledge from all such outcomes. It is appropriate and often preferable to use the same measure for more than one program learning outcome, as long as each outcome is assessed independently (i.e., through the use of a rubric). This is discussed in greater depth in the Interpreting Results section.

7. Ignore any of the preceding suggestions when you have good reason to do so.

Activity #5 provides an example of how direct and indirect methods are selected for program learning outcomes.

Activity #5 - Direct and Indirect Methods

Program Learning Outcomes	Assessment Methods	Consistency with guidelines?
Program graduates will be able to communicate effectively with diverse audiences using written, oral and digital media.	**Direct Methods** • written comprehensive paper in 3rd year • presentation in 4th year capstone course • ePortfolio developed over 4 years **Indirect Methods** • graduate survey items on communication • focus group questions with employers on communication	✓ no unnecessary tests ✓ no course grades ✓ no course completions ✓ multiple methods used ✓ no long description ✓ specific measure identified ✓ at least one direct method ✓ at least one indirect method

(See Appendix E for the worksheet version)

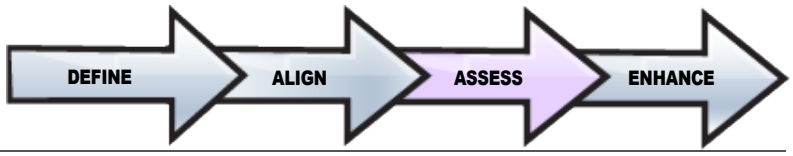


Table 1 is an example of how direct and indirect methods can be used together to provide information about each program learning outcome. It also illustrates how assessment methods can demonstrate achievement of more than one program learning outcome. Curriculum mapping often helps programs determine which assessment methods within the program are best suited to assess each program learning outcome.

Table 1 - Direct and Indirect Methods and Program Learning Outcomes

Program Learning Outcomes	Capstone Experience	ePortfolio	Focus Group	Graduate Survey
Program graduates will be able to communicate effectively with diverse audiences using written, oral and digital media.	Direct	Direct	Indirect	Indirect
Program graduates will be able to examine and evaluate the strengths and weaknesses of one's own ideas and arguments as well as those of others.	Direct	Direct		Indirect
Program graduates will recognize the need for, and engage in lifelong learning, professional growth and service.		Direct	Indirect	Indirect

Setting Assessment Parameters

Once the direct and indirect methods of assessing student learning are selected, parameters are set to identify expected levels of student achievement on each assessment method and to focus the scope, timing and responsibility for assessment.

Levels of Student Achievement

Prior to the collection and interpretation of information, desired levels of student achievement on program learning outcomes are identified. Desired level of achievement (also called benchmarks) is expressed as a statement that indicates students will achieve (or exceed) a certain level on the measure; for example: "XX% of students will earn a rating of YY or higher on the [name of exam/project]". Not all students in a program will perform perfectly on every measure, so program faculty must identify a threshold above which they will be satisfied that students possess the attribute specified in the outcome.

While it may be tempting to set levels and standards that are unreasonably high ("nothing but the best") or unreasonably low ("guaranteed to show success"), both practices can be defeating. Over time, it is far more beneficial to a program and its students alike to set reasonable expectations and work toward meeting them.

Guidelines for identifying levels of achievement:

1. Involve others in the discussion such as students, employers and faculty members teaching in other programs.

2. Use exemplars of student work to inform the discussion when setting expectations.

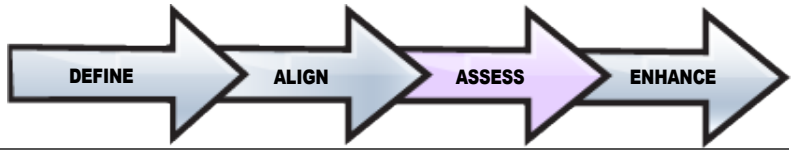
3. Ensure the level of achievement is directly related to the method selected. If the measure is an exam, the level of achievement will be a threshold perfomance on the sections of the exam related to the program learning outcome. If the method is a survey item, the level of achievement will be a threshold of respondents' ratings on that particular item.

4. Focus on the specific exam or assignment used to measure student learning on the outcome of interest, instead of using only course grades or completion as a level of achievement.

Programs that set unreasonably low levels of achievement to meet outcomes face certain ramifications.

Unreasonably low targets deprive program faculty of the opportunity to identify strengths and weaknesses in their students' achievements, thus depriving present and future students of the benefits of program enhancements that might otherwise occur.

Low targets also convey to current and potential students that the faculty have low expectations, which in turn may not push students to achieve at their maximum potential, and may not attract the most qualified applicants.



5. Consider setting multiple targets (e.g., at least 90% of students score above the adequate level, and at least 30% score above the exemplary level).

6. Think of a reasonable standard and set the threshold at that level. Avoid setting a level of achievement that says that "100% of students will …". If a student in a large program did not meet the expectations on a measure, is it reasonable to conclude that program graduates do not possess the attributes of the program learning outcome?

7. In the context of quality enhancement the goal is to identify elements of the program that can be enhanced. Don't be afraid to set thresholds that are slightly out of your current reach. This provides program goals to work towards and establishes a culture of continuous improvement.

Activity #6 demonstrates how levels of achievement are set for each direct and indirect method.

Activity #6 - Levels of Achievement

Program Learning Outcomes	Assessment Methods	Levels of Achievement
Program graduates will be able to communicate effectively with diverse audiences using written, oral and digital media.	**Direct Methods** • written comprehensive paper in 3rd year	• at least 90% score above "adequate" level and 30% above "exemplary"
	• presentation in 4th year capstone course	• at least 90% score above "adequate" level and 30% above "exemplary"
	• ePortfolio developed over 4 years	• 95% of students complete at "adequate" level
	Indirect Methods • graduate survey items on communication	• 80% of respondents report being "satisfied" with communication
	• focus group questions with employers on communication	• themes identify that employers are satisfied with graduate communication

(See Appendix F for the worksheet version)

Managing Scope

The number of students may be quite large if all students enrolled in a large class are included; it may be smaller if only a sample of those students are included; or it may be only one or two students if the program is quite small (e.g., a doctoral program).

Consider the complexity of the information and subsequent analysis when deciding the number of students.

If the method is relatively simple (such as exam scores, survey responses or first-time pass rates on certification exams), sampling would not significantly reduce the amount of time and effort required.

If the method is more complex and requires a rubric to yield sub-scores for separate components of the assignment, it may be time consuming to enter the information for all students; therefore, a representative sample may be appropriate.

Rubrics

Rubrics help identify the expected dimensions and levels of achievement of student work. Rubrics translate learning outcomes into criteria and identify students' strengths and weaknesses. A rubric is valuable because it allows more explicit (and helpful) information; instead of merely stating that "students' average on the assignment was B," the rubric may denote that "students strengths on the assignment were … and their weaknesses were …". This leads to enhancements in teaching and learning within the program. Internally developed rubrics can be used to track students' learning over time against institution, program or course level learning outcomes. Rubrics can be threaded throughout students' undergraduate or graduate education to help them see connections between and among courses, and how educational experiences contribute to their learning and development. While rubrics at the course level may focus on components of learning (e.g., how to write, how to solve certain kinds of problems), institution- and program-level rubrics create integration. An example of how rubrics are used in program review can be found on the Valid Assessment of Learning in Undergraduate Education (VALUE project) website (**http://www.aacu.org/value/**).

Scope of Assessment

Part of program review planning includes determining the extent to which information is collected or sampled. Determining this in advance helps ensure involvement of an appropriate group of individuals. It is not necessary to select a statistically representative sample (although this may be an option); however, it is important to collect information that is reasonably representative of the group about whom inferences will be drawn.

Consider the following questions in deciding on the scope:

1. How many individuals will be included in the assessment?
   (e.g., All students in the course or program? A random sample from each level? Alumni from the past 5 years?)
2. Who will the individuals represent?
   (e.g., 4th-year students? Local employers?)
3. What time frame is associated with assessment?
   (e.g., When the course is offered? When the outcome is best assessed?)
4. What unique parameters should be considered?
   (e.g., Which courses? What level of students? Are there students from other programs in the courses?)

Timing of Assessment

Ideally, information gathering occurs throughout the learning (formative assessment) and at the end of the program (summative assessment). The curriculum map helps determine the year or course in which certain types of learning can be best measured. Some methods may be embedded into required courses, while others will occur outside of class time (e.g., focus groups). A timeline helps align program assessment along the continuum of student learning.

Responsibility for Assessment

Completing program review can be an arduous task. In addition to determining what information will be gathered, it is important to decide upon the processes used to manage the collected information. The number of information gathering methods selected (or already in place) as well as the resources and expertise within the department will influence the process that works best. Different methods for collecting and storing information can be used and should be decided upon early in the program review process.

It is suggested that a coordinator or committee administers the program review. The committee's responsibilities include gathering, storing and assembling the information, and interpreting and reporting the results. Because program review and enhancement is a collaborative process, all faculty, staff and administrators should be familiar with the program review plan and the timeline for information gathering. Tasks are shared by all and coordinated by the program review committee.

Creating a diagram that shows the correlation between information gathered on student learning and departmental decision-making can help interpret the information and improve the way it is used. It is important not only to determine if there is enough information but to ask also if it is the right kind of information, and to identify if decisions are perhaps being made without relevant information. Rather than collecting more information, a good first step is to improve how information is shared and used by various decision-makers.

Rather than selecting students, faculty may decide to sample course selections.

For a large program offering many sections of a course that has exams or projects used as assessment methods, it may be preferable to use a sample of student work from those course selections.

As explained above, the goal is to identify a reasonably representative group of students or individuals for information-gathering purposes.

IQAP Tip

Section 8.1 of the IQAP self-study asks about the system of governance for program review.

Activity #7 - Program Review Scope and Timing

Program Learning Outcomes	Assessment Methods	Scope of Assessment	Timing of Assessment
Program graduates will be able to communicate effectively with diverse audiences using written, oral and digital media.	**Direct Methods** • written comprehensive paper in 3rd year	• all students in level 3 course	• end of level 3
	• presentation in 4th year capstone course	• random selection of capstone presentations	• end of level 4
	• ePortfolio developed over 4 years	• 10% randomly selected from each level	• end of each year
	Indirect Methods • graduate survey items on communication	• all survey respondents	• 6 months after graduation
	• focus group questions with employers on communication	• all major employers of program graduates will be invited to attend	• every 3 years

(See Appendix G for the worksheet version)

The planning phase of program review is now complete and can be summarized in the program review worksheet in **Appendix H**. This plan will act as a guide for the remainder of the program review cycle.

Collecting Information

Once the program review plan is created, it is time to implement the plan and gather the information as outlined. If the program has numerous program learning outcomes and methods of assessment, information gathering may be divided over a number of terms or years. It may be overwhelming to try and gather all the information at once. Establishing a manageable plan to gather information during regular courses and to use assessments that provide a reasonable representation of students within the program will make the process more efficient.

While McMaster's IQAP requires a formal self-study every 8 years, departments are encouraged to engage in annual program review initiatives.

Suggestions to make the process manageable include:

- Establish a committee or coordinator to be responsible for program review.
- Develop and maintain a program review plan so that everyone knows what is coming.
- Start small and focus on important goals or program learning outcomes.
- Embed assessment in existing courses wherever possible.
- Identify existing opportunities such as internships, field experiences, undergraduate research opportunities etc. to collect evidence of student learning.
- Extract samples of student work related to program learning outcomes along the continuum of their studies.
- Allow students to identify work they believe represents their achievement of program learning outcomes.
- Work with information from a sample of students rather than whole populations, if possible.
- Start with easier information gathering methods and build in complexity.
- Focus on approaches that yield the most information for time and resources invested.
- Pick one program learning outcome per year for review and follow-up discussion and action.
- Stagger program review activities across the curriculum and faculty.
- Employ a graduate student to do the front line work of information gathering and analysis.
- Establish departmental review day once a year to concentrate efforts.
- Develop inquiry groups of faculty, staff, students etc. to examine important topics related to program learning outcomes.
- Adapt faculty performance expectations (or recognize them if already there) to explicitly acknowledge their participation in review of student learning.
- Recognize the scholarship of teaching and learning as a legitimate and important part of research in the department.

Just as the program review plan identifies information to be gathered, it also outlines information that determines the extent to which students met desired levels of achievement on program learning outcomes. There are numerous ways to assemble and represent the gathered information based on selected methods and the stakeholder expectations. Thinking about this early in the process ensures the information is easily stored, interpreted and used.

Consider the following:

- What format for presenting results will prompt conversations that are most conducive to enhancing student learning in the program?
- How will reporting formats help answer questions about student learning and achievement of program learning outcomes?

Much as how multiple assessment methods provide more comprehensive information about student learning, multiple reporting formats broaden understanding and appeal to a wider range of audiences. Information may be summarized as tallies, percentages, scores or qualitative summaries. Patterns of performance may be represented for different cohorts or groups. Information can be compared between groups, over time, or with peers. Other kinds of patterns may include chronological performance patterns indicating high and low achievement areas based on a common rubric; students' comparative performance patterns on a first year assignment and a similar second year assignment; or patterns that emerge from student feedback. Comparing students' achievement in the program with entry level abilities and admission requirements is another way to gauge student achievement patterns. Again, the approach chosen is based on the program learning outcome identified and selected methods.

It is often helpful to decide during the information-gathering process how the results will be summarized and reported. Classroom work, for instance, can be summarized in a couple of ways: Instructors could report students' strengths and weaknesses on rubric scores on individual assignments or portfolios related to a program learning outcome, which could then be aggregated with other instructors' reports; another option is to have a separate group of readers (e.g., the program review committee) select a sample of student work then prepare and distribute a single report.

Interpreting Results

Interpretation of results should be a collaborative effort by a program review committee (comprising representatives from faculty, staff and administration) to discuss overall student learning that occurred within the program, the extent to which program learning outcomes were met and the context within which the program review was completed. Dialogue and self-reflection are encouraged at this stage.

As the IQAP is an outcomes based approach to education and program review, the format used to interpret the results in this guidebook are focused on student achievement of the program learning outcomes. Still, this does not negate the importance of questions related to what students do in a course or program, how they experience it, and what they "read between the lines" and hear between the lectures. Such information may be as important as data pertaining to the attributes more explicitly covered in the program review.

Determine if desired levels of achievement were met

The first step in determining the extent to which program learning outcomes were met is to look at the information gathered for each method (direct and indirect) and learning outcome to determine if the desired levels of achievement were met.

For each program learning outcome, review the corresponding methods and level of achievement identified. Look at each method and each criterion. Was the level of achievement met? What does this say about student learning in relation to the program learning outcome? Think about any factors that may have contributed to this finding. Consider the strengths and weaknesses of the methods chosen.

Activity #9 - Interpreting Results

Program Learning Outcomes	Assessment Methods	Level of Achievement	Results and Contributing Factors
Program graduates will be able to communicate effectively with diverse audiences using written, oral and digital media.	**Direct Methods** • written comprehensive paper in 3rd year	• 90% score above "adequate", 30% above "exemplary"	• criteria exceeded (45% met exemplary)
	• presentation in 4th year capstone course	• 90% score above "adequate", 30% above "exemplary"	• criteria met
	• ePortfolio developed over 4 years	• 95% complete "adequately"	• criteria not met, only 75% adequate; new technology being used
	Indirect Methods • graduate survey items on communication	• 80% of respondents "satisfied"	• criteria met
	• focus group questions with employers on communication	• themes indicate employers are satisified	• criteria met, suggestion to increase quality of report writing

(See Appendix I for the worksheet version)

If levels of achievement were met:

If student achievement on each method met expectations, try and identify components of the program (or program review process) that may have contributed to the result. Has a recent program change helped improve student learning related to the method? Also consider if the method(s) used were particularly well-suited to the program learning outcome and provided high-quality information. Even though the level of achievement was met, perhaps the method used was not the best possible indicator of student knowledge or ability in relation to the program learning outcome. Or maybe the level of achievement was set too low and should be revised in the next program review plan to "raise the bar" for students.

If levels of achievement were not met:

If the information gathered indicates that student achievement did not meet expectations on a method, think about factors that may have contributed to this finding. Did parts of the program (or program review processes) contribute to this result? Are there foundational concepts or theories that students did not adequately apply near the end of the program? If so, at what point in the curriculum could such content have been more strongly emphasized? Was one of the methods not sufficiently related to the curriculum to adequately measure students' knowledge? Are admissions standards for the program too lenient? Was the level of achievement

set at an unrealistically high level? Program faculty who are experts with the curriculum can evaluate why student learning on a method did not meet expectations.

Think about any planned changes (program, curriculum, instructional) reported the previous year. Are there changes implemented in the current academic year that may have an impact on student learning? Think about what this may mean, and discuss whether those changes were implemented. If not, provide an explanation along with any plans for future implementation. Is there any evidence yet of previously implemented changes' impact on student learning? It is possible that any impact will not be observable after only one year, so be sure to address any changes that are likely to yield results over the coming years and also any plans to monitor such changes.

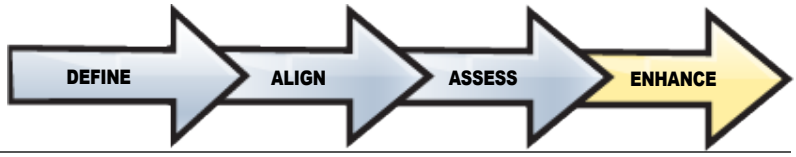
Determine if program learning outcomes were met

Now, consider each program learning outcome. For program learning outcome 1, were the desired levels of achievement met for all measures? Were the desired levels of achievement for all measures not met? What about mixed results? These situations require the professional judgement of faculty, staff and administrators. There is no "right" answer. The important thing is to interpret information about student learning and determine whether students have satisfactorily demonstrated the attributes of the program learning outcome.

Although student achievement of identified learning outcomes is an important part of the IQAP process, other information about student learning may be equally important in enhancing student learning within the program. Do not negate or ignore identified patterns of information that do not apply directly to the program learning outcomes. Instead, such information provides important feedback into the program review process.

Program review and enhancement is not intended to tally the number of programs that met (or did not meet) program learning outcomes.

Its purpose is to provide an honest and accurate look at how (or if) students fully meet our learning expectations, where we've identified room for enhancement, and the strategies we've identified to improve student learning.



Stage 4 - ENHANCE

Stage 4 involves creating, prioritizing and implementing opportunities for curricular enhancement or improvements in student learning. Results of the review are also reported, shared with stakeholders and incorporated into future program review plans.

Stage 4 includes:

- **Identifying Opportunities for Enhancement**
  - Areas for Improvement
  - Areas for Enhancement
- **Selecting Action Items**
- **Sharing the Results**

Identifying Opportunities for Enhancement

Having reviewed and interpreted the information gathered as part of the program review process, it is now time to identify opportunities for enhancement or improvement within the program based on the program review results. Begin this process by reviewing each program learning outcome and the conclusions reached about student learning within the program. Note: just because learning outcomes were met does not mean that no further action is required.

IQAP Tip

Section 10 of the IQAP self-study asks for information on areas requiring improvement. Section 11 asks for information regarding areas that holds promise for enhancement.

Opportunities for Improvement

Opportunities for improvement in the program arise from concerns about student achievement in any one area. If student achievement fell below expectations, a dialogue is needed on what opportunities for improvement exist within the program. The types of questions to consider include:

- Were students admitted to the program not prepared to perform at the expected level? If not, revisit entry level abilities and consider implementing curriculum support for student learning.
- Were students weak in foundational concepts that prevented them from achieving in upper-level course work? If so, consider revisiting the curriculum to find out where content was introduced and reinforced, and where students had the opportunity to apply the learning prior to the program review (curriculum maps can help with this). If a review of the curriculum shows inadequate coverage, then faculty must decide how to resolve the issue which may include a look across courses. Be sure to develop a clear plan for implementation of any changes, including timelines and responsible persons.

Opportunities for Enhancement

If the level of student achievement on any one outcome meets expectations, and no changes have been made to the curriculum, a common assumption is that no change is needed. Instead, ask:

- Does this program learning outcome need to be reviewed again next year? Should the desired level of achievement be raised for that particular program learning outcome next year? If so, are changes to the curriculum needed to reach the desired improvement.

If performance has not changed but changes were made in the curriculum, consider if the changes were not effective or insufficient time has passed. In this case, consider reviewing the program learning outcome again the next year.

If the level of achievement improved, and it is likely because of a change made, then consider continuing the change with no modification. If the change was only pilot tested this year, consider expanding it.

Selecting Action Items

The last step in program review is action. At this stage, the information gathered is used to enhance student learning, what is sometimes called "closing the loop" of program review. Having identified areas within the program for improvement and enhancement, the next step is to prioritize action items.

Ask these 3 questions:

1. **What are the most important findings?**
2. **Which areas show the greatest challenges with learning?**
3. **What is feasible right now and what might be addressed in the future?**

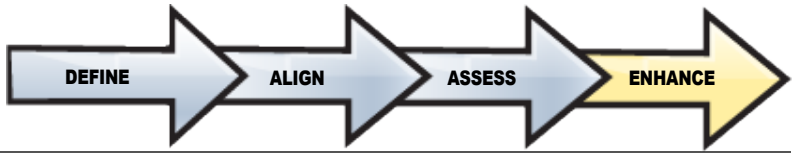
Consider what changes can be made within the department and what would require the involvement of others. Include other stakeholders in these discussions. Also, decide if additional information is needed prior to taking action; this might include a review of the literature on teaching and learning or conducting a small research project on the program learning outcome in question.

Once action items are identified and discussed with relevant stakeholders, create a follow-up plan. Follow-up should include a clear plan for the implementation of any changes, including timelines and responsible persons.

IQAP Tip
Section 7.1 of the IQAP self-study asks about initiatives undertaken to enhance teaching and learning environments.

Information gathered during the process of program review may lead to research questions that can be answered through the Scholarship of Teaching and Learning (SoTL).

The MIIETL has a guidebookon researching teachingand learning (http://cll.mcmaster.ca/resources/pdf/redo_guidebook.pdf) and provides support to those wishing to engage in SoTL.



Sharing the Results

A formal self-study and IQAP report is completed every 8 years at McMaster. The format and content for this report is outlined on the McMaster website. The IQAP report includes much of what has been covered in this guidebook, as well as additional information related to human, physical and financial resources at the departmental level.

While interim reports are not required between IQAP program reviews, it is recommended that an annual report be created by the departmental program review committee (if one exists) and relevant results shared with the key audiences. Creating an annual summary allows ongoing review and enhancement of teaching and learning within the program, as well as priority setting for the coming year.

Suggested items to be included in an annual summary are:

- The assessment methods and identified levels of achievement for each program learning outcome.
- The results and whether or not program learning outcomes were achieved.
- Action items identified and plans for folllow up.
- Future program review priorities/strategies based on current findings or changes planned.

Activity #10 provides a template for a comprehensive program review report.

Venues for sharing program review results include websites, emails, newsletters, alumni magazines, departmental memos, press releases, brochures, presentations, posters or banners.

Each department will have different formats and audiences with whom they will want to share results.

Activity #10 - Program Review Summary

Program Learning Outcomes	Assessment Methods	Results	Action and Follow Up
Program graduates will be able to communicate effectively with diverse audiences using written, oral and digital media.	**Direct Methods** • Written paper • Capstone presentation • ePortfolio **Indirect Methods** • Graduate survey • Focus group question with employers on communication	• Expected level of achievement for communication met on written paper (expectations exceeded) and capstone presentation(using rubric for grading). Expected level of achievement for ePortfolio not met as only 75% completed adequetly (goal is 95%). New technology was being used and may have influenced results. • Level of achievement met as 80% of respondents on on graduate survey were satisfied with communication skills. Focus groups showed employers were satisfied with communication skills of graduates, but did suggest a need for improved report writing. • Overall this program learning outcome was partially met with potential areas for enhancement related to ePortfolio use and report writing.	• Working group to look at ePortfolio process and development across the curriculum and need for additionalfaculty/ student assistance with technology. Continue to reassess ePortfolio use next year. • Review program learning outcome/course outcomes rekated to written communication with a focus on reportwriting. Ensure educational experienecs prepare students to meet this outcome. Work with instructors to revise curriculum/ assessment methods as appropriate.
Outcome 2			
Outcome 3			

Program Review and Enhancement

APPENDICES

Appendix A - Understanding Your Audience

Activity #1 - Understanding Your Audience

Who?	Needs to know what?	Why?	When?	How?
Department				
Institution (McMaster)	If and how IQAP requirements are being met.	Report to COU	Every 8 years	Written report
Accreditors				
Other - Students, Donors, Alumni, Community Partners				

Appendix B - Learning Outcomes Review

Activity #2 - Program Learning Outcomes

Program Learning Outcomes	Consistency with guidelines?
	□ directly related to discipline □ observable and measureable □ short, concise, single outcome □ supports program goal □ aligns with DLEs □ aligns with external standards (if applicable) □ aligns with admission requirements
	□ directly related to discipline □ observable and measureable □ short, concise, single outcome □ supports program goal □ aligns with DLEs □ aligns with external standards (if applicable) □ aligns with admission requirements
	□ directly related to discipline □ observable and measureable □ short, concise, single outcome □ supports program goal □ aligns with DLEs □ aligns with external standards (if applicable) □ aligns with admission requirements

Appendix C - Curriculum Maps

	Degree Level Expectations					
Program Learning Outcomes	**Depth of Knowledge**	**Knowledge of Methods**	**Application of Knowledge**	**Communication Skills**	**Awareness of Limits of Knowledge**	**Professional Capacity/ Autonomy**

I = Introduced
(outcome is introduced, assuming no or limited prior knowledge)

R = Reinforced
(outcome is reinforced, assuming introduction in a previous course)

M = Mastery/Met - (outcome is mastered or met, assuming introduction and reinforcement in prior courses/levels)

	Lower Level Courses			Upper Level Courses		
Program Learning Outcomes	**Course 1**	**Course 2**	**Course 3**	**Course 4**	**Course 5**	**Course 6**

Appendix D - Curriculum Alignment

Activity #4 - Curriculum Alignment

Degree Level Expectation(s)	Program Learning Outcomes	Educational Experiences How does the program design help students meet the outcomes? What course assessments provide evidence of achievement?

Appendix E - Direct and Indirect Methods

Activity #5 - Direct and Indirect Methods

Program Learning Outcomes	Assessment Methods	Consistency with guidelines?
		☐ no unnecessary tests ☐ no course grades ☐ no course completions ☐ no multiple methods ☐ no long description ☐ specific measure identified ☐ at least one direct method ☐ at least one indirect method
		☐ no unnecessary tests ☐ no course grades ☐ no course completions ☐ no multiple methods ☐ no long description ☐ specific measure identified ☐ at least one direct method ☐ at least one indirect method

Appendix F - Levels of Achievement

Activity #6 - Levels of Achievement

Program Learning Outcomes	Assessment Methods	Levels of Achievement

Appendix G - Review Scope and Timeline

Activity #7 - Program Review Scope and Timing

Program Learning Outcomes	Assessment Methods	Scope of Assessment	Timing of Assessment

Appendix H - Program Review Plan

Activity #8 - Program Review Plan

Program Learning Outcomes	Educational Experiences	Assessment Methods	Expected Level of Achievement	Scope and Timing of Assessment	Responsibility for Assessment

Appendix I - Interpreting Results

Activity #9 - Interpreting Results

Program Learning Outcomes	Assessment Methods	Levels of Achievement	Results and Contributing Factors

Appendix J - Pogram Review Summary

Activity #10 - Program Review Summary

Program Learning Outcomes	Assessment Methods	Results	Action and Follow Up

Resources

Banta, T.W., Jones, E.A., & Black, K.E. (2009). *Designing effective assessment: Principles and profiles of good practice*. San Francisco: Jossey-Bass.

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