SECTION 3

**MAKING LEARNING OUTCOMES MATTER:
DESIGNING AND REVISING COURSES
USING LEARNING OUTCOMES**

5. Mapping Assessments in a Course

5

Mapping assessments in a course

SCENARIO

REVISING AN
EXISTING COURSE

Munib inherited a course from a previous instructor (complete with learning outcomes, assignments, and assessments). The course was offered online and was set to be delivered in 6 weeks time. The previous offering of the course received extremely poor student evaluations.

Munib, along with 2 educational developers, was tasked with revising the course to better meet learner needs. To determine where the course needed attention, the educational developers began by examining the course assessments which consisted of: 5 multiple choice quizzes along with a final multiple choice exam consisting of 35 questions.

Upon closer examination, it didn't take long for the educational developers to determine why the course was receiving such poor reviews. The multiple choice exams had duplicate questions, many of which were poorly worded and did not directly assess the learning outcomes. To meet the learning outcomes and pass the exams, students were required to complete extensive amounts of reading.

However, the required reading listed in their course syllabus did not directly help learners to successfully complete the assessments. In addition, the course provided little or no time for instructor-student and student-student interaction.

Faced with limited time to make any significant changes to the course, the educational developers helped Bob to improve the course assessments, to map these to existing learning outcomes (revising when necessary) and to identify targeted readings which would help learners answer questions on their quizzes and exams.

Given the time limitation, the primary goal was to improve the course and address student concerns in the most expedient way.

Whether an instructor decides it is time to refresh their course or they inherit a course which doesn't seem to be working well, an important part of the job of teaching is regularly reviewing and making improvements to courses.

In a well-designed course, the learning outcomes, assessments, feedback, and teaching and learning activities are all aligned and support each other, and situational factors must be taken into account (see Chapter 2 of this guide). Fink (2003) suggests that after defining the learning outcomes, the next step is to craft the feedback and assessments in the course.

- Ask yourself, "What would the students have to do to convince me that they had achieved those learning goals?" (p. 63).

- After this question is answered, choosing teaching and learning activities becomes easier "What would the students need to do during the course to be able to do well on these assessment activities?" (p. 63).

Figure 6. Components of integrated course design (Fink 2003).
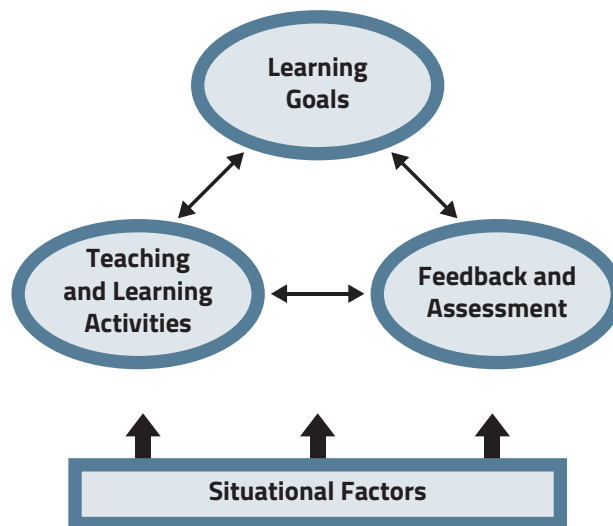
While a full discussion of all these components of course design is beyond the scope of this guide, an important place to start is to consider whether your assessments are aligned with your learning outcomes.

QUESTIONS & ANSWERS

Q1 **HOW DOES AN INSTRUCTOR DETERMINE IF THE EXISTING COURSE IS MEETING LEARNER NEEDS?**

A First, pay attention to learner feedback. If you have taught the course before, review the course evaluations. When possible, identify where minor changes can be made to improve the course.

Where student comments indicate a more significant issue, you may need to determine if the course is delivering on its promises: Is the course doing what it states it will do?

In other words:
- are the learning outcomes communicated clearly?
- are learners able to meet the learning outcomes?
- are learners being assessed on their ability to meet these outcomes?
- are learners being provided with the necessary support, strategies, resources, tools, etc. to successfully complete assignments and assessments?

Q2 **WHY IS ASSESSMENT SO CRITICAL WHEN IT COMES TO LEARNING OUTCOMES?**

A From a student's perspective, assessment (particularly summative assessment) is critical. Students want to know what they will be graded on and how. Exams and assignments that are graded and weighted accordingly also communicate to students what is important for them to learn, so learning outcomes which match the assessment must be clearly communicated in advance.

For instructors, it can be useful to map an assessment to the course learning outcomes as a way to ensure assessments of each outcome are appropriately spread throughout the course and to evaluate the effectiveness of any given assessment. The following is an example of how the questions in a trigonometry final exam were mapped to the course learning outcomes:

Learning Outcome	Questions	Worth	Std. Score
I can verify a trigonometric identity numerically and with the use of graphing technology	4a	3	
I can develop, explain, and apply strategies for proving trigonometric identities algebraically	2, 3, 9,11	12	
I can determine the non-permissible values of a trigonometric identity	5a	4	
I can differentiate between trigonometric identity and a trigonometric equation	4b	3	
I can explain and apply strategies for determining the exact value of a trigonometric ratio by using sum, difference, and double-angle identities	6, 7, 8,10	12	
I can determine whether or not a trigonometric statement is a trigonometric identity	1	2	

Q3 HOW DO I CREATE AN INVENTORY OF ASSESSMENTS AND LEARNING OUTCOMES IN MY COURSE?

A An instructor may want to map their assessments and course-level learning outcomes to program-level outcomes (see Chapter 7) to articulate how their course addresses program goals. An example of a simple way to do so is:

Course Level Learning Outcome(s)	Assessment Instrument	Program Learning Outcomes	Weight
LO 1, 2, 4	Weekly group activities	Communication; Collaboration	40%
LO 1, 3, 4	Weekly quizzes	Knowledge	20%
LO 6	Online discussions	Reflection; Communication	10%
LO 5	Research proposal	Argumentation; Innovation	30%
Total			**100%**

Finally, programs and courses can also be mapped by the "level of mastery" expected.

Course and Experiences	Apply the scientific method	Develop laboratory techniques	Diagram and explain major cellular processes	Awareness of careers an job opportunities in biological sciences
Key: **I** (Introduced); **R** (Reinforced and opportunity to practice); **M** (Mastery at the senior or exit level; **A** (Assessment evidence collected.				
BIOL 101	I	I		I
BIOL 102	R	R	I	
BIOL 303	R	M, A	R	
BIOL 404	M, A		M, A	R
Other: Exit interview				A

adapted from https://www.rit.edu/academicaffairs/outcomes/

This kind of map helps to ensure that learning outcomes are introduced before they are reinforced and to identify any gaps across a program. Curriculum mapping is discussed further in Chapter 7.

☑ EXAMPLE - When Learning Outcomes Fall Short

The Faculty didn't know where things were going wrong. They had course-level learning outcomes which were explicitly focussed on developing student writing skills. However, students were still struggling on course assignments and their writing skills were not improving. Upon closer examination, it was determined that learners did not have the resources, strategies or activities which would enable them to get to the skill level at which they were being assessed.

Working with the Writing Across the Curriculum Program at the University of Alberta, Faculty began to address these gaps in their teaching. Specific activities and instructional strategies were integrated into the classroom to address writing-related learning outcomes. Students were also provided with additional support which gave them opportunities to practice their writing and receive feedback prior to completing major assignments. These changes led to improved student performance on course assignments.

At the end of the day, without opportunities or support to learn the necessary strategies/ resources/activities, the learning outcomes will merely be a list of statements with no inherent value to learners, no matter how well-written they are.

Learning outcomes should align with instructional strategies, content & learning resources and assessment of learning.

This means that for every learning outcome, careful thought must be given to each aspect of the teaching and learning process. Alignment often refers to effectiveness: What is themost effective way to teach and assess a particular knowledge, skill or attitude? Which instructional and assessment strategies make the most sense given the learning outcome, the students, content and knowledge area? What specific content needs to be covered? What corresponding handouts, resources, and tools will be the most relevant and useful for students?
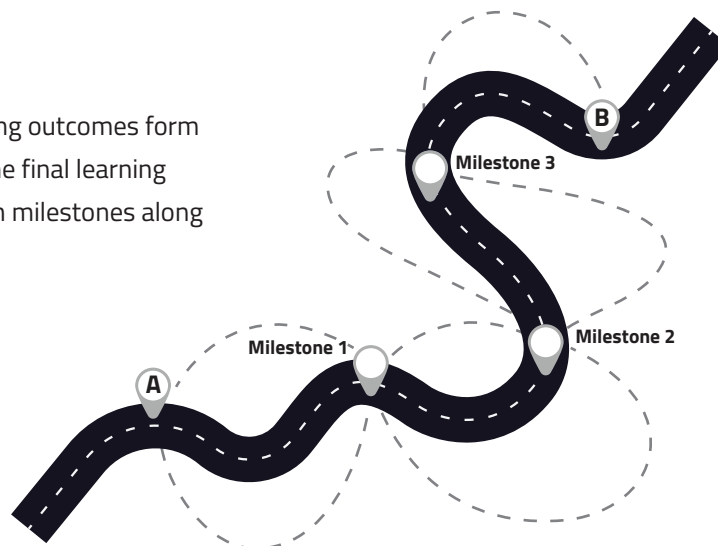
CONSIDERATIONS

1. CLARIFY YOUR DESTINATION

Let's revisit the map. Imagine your learners come into the learning experience at point A and, as the instructor, you want to get learners to point B. Point B represents ultimate destination—or the desired results you want to achieve. What is your point B?

- Who are your learners (e.g. needs, characteristics)?

- What is the position of your course relative to the entire program of study?

- What are the overall goals of the program?

- What are the course learning outcomes?

- What enduring understandings are desired? What are the important understandings we want students to truly grasp and retain after they have forgotten many of the details?

- What is important for students to know, do, or reflect on?

Figure 7. Learning outcomes form a road map to the final learning destination, with milestones along the way.

2. CREATE A MAP TO YOUR DESTINATION

Given the nature of your content area, identify the path that makes the most sense for the learner to follow in order to reach the course outcomes. To do so you will need to consider the following questions:

- How can you get a learner from point A to point B?

- What are the steps along the way? What are the major units of learning?

- How can you sequence the topics/theme in a way so they:
  (1) make sense to the learner;
  (2) reflect the nature of the knowledge being taught;
  (3) are organized in some way (theme, topic);
  (4) establish a step in a larger, more complex, process?

- What are the specific learning outcomes for each unit of learning?

- Are they sequenced from simple to complex?

- How will you know when learners have met the learning outcome?

- What activities, assignments, and learning resources are needed to help the learner along the way?

- How much time do the learners require to meet the specified learning outcomes of a particular unit? How many units can you reasonably cover in the time given?

- How will you know when a learner has reached point B?

3. PROVIDE THIS MAP TO THE LEARNER

Effective instruction takes what is implicit and makes it explicit for the learner. By providing a map for the learner, the instructor is making the implicit instructional design decisions explicit. This allows instructors and students to use this map to:

- identify where they are going and how to get there;

- stay on track;

- recall the main points of their journey and assess their learning.

TRY IT

1. **Think about one of your upcoming courses:**
   Have you taught the course before?
   What has been the student feedback on the course to date?
   Identify any minor changes that can be made to improve the course.

   _____
   _____
   _____
   _____

2. **Write an inventory of learning outcomes for this course. Identify misalignment, gaps and extraneous learning outcomes.**

3. **Examine the learning outcomes themselves and ensure they are:**

   S pecific.

   M easurable (assessable, demonstrable).

   A ttainable by students at current level and matched to purpose of the course.

   R elevant for students, course, program and degree and results focused.

   T ime-bound or can be completed in the time given.

4. **Evaluate the quality of each assessment or activity. Determine what minor improvements/changes can be made**

5. **Identify the corresponding resources, readings, lectures, activities, etc. which will help students meet the learning outcomes.**

   _____
   _____
   _____
   _____

TRY IT

As illustrated by the examples above, this map can take many forms; there isn't a 'correct' way. Write each learning outcome on a post-it note. Play around with the order, grouping and sequencing of learning outcomes. Explore what arrangement seems to make the most sense. When you have an arrangement you are comfortable with, this can form the basis of your map.

TYING IT ALL TOGETHER

In an effort to plan learning experiences which are meaningful and have the potential to impact learners significantly, consider the following:

- Is the learning timely and relevant? Does it take into consideration the learners' characteristics? (see Chapter 2).

- Are topics and themes arranged in a logical sequence? Is there sufficient time between when a KSA is introduced to when it is assessed for students to learn the particular KSA?

- Is the learning authentic? Does it require learners to apply what they are learning to real-worlds authentic problems?

- Are there opportunities for the learners to actively engage with course content? Are there opportunities for learners to engage with each other and the instructor?

- Are the learning resources reputable, relevant, applicable, practical and easy to access?

- Is there space and time for students to reflect about their learning?

Recognize, too, that from the perspective of the student, assessment and grades matter. If you want learners to meet specific learning outcomes, assess them on their ability to demonstrate them.

Also see:
SECTION 1. Definitions and Considerations
SECTION 2. Writing Learning Outcomes
SECTION 4. Program Level Outcomes