Assessment Series Part 3: Curriculum Mapping for Program Assessment

J. Dickinson
Provost’s Faculty Fellow for Assessment
Goals for today’s session:

• Introduce curriculum mapping as part of the overall assessment planning process and discuss its value

• Break down the stages of developing a curriculum map into ”doable” chunks

• Look at and try out some worksheets and other tools to begin curriculum mapping

• Leave with clearly articulated “Next steps” for your program
Goals of assessment

• Clear identification/description of program characteristics and expectations for student achievement

• Systematic collection of different kinds of (helpful) data to evaluate student progress towards/achievement of those expectations

• Use of analyzed data to inform curricular revision

• Repeat
Program Assessment is a Departmental Effort

• At different stages of the process, different groups may participate, or a ‘core’ of faculty may focus on curriculum and program assessment

• Multiple perspectives are necessary in developing outcomes and assessing student progress towards those outcomes
Few programs start at zero

Even if they do not have clearly stated/updated outcomes, most programs have been gathering and, to some degree, reviewing some data on student success in their program all along:

- Faculty impressions/frustrations
- Student satisfaction/dissatisfaction/pain points
- Grades or other course-level assessments that indicate student skill levels
- Anecdotal evidence about student success after graduation
Steps in Program Assessment – Where are you?

• Develop program-level outcomes with input/drafts by faculty
• Map curriculum to identify places where students learn, practice and demonstrate their mastery of the outcomes
• Gather additional information about student progress within this curriculum:
  • Surveys of majors and/or alums
  • Faculty summaries of students’ performance on expected skills
  • Other indicators (retention of skills from prerequisite courses; identifying predictors of students success, etc.)
• Use this initial information to develop a plan for assessment of student progress towards/achievement of learning outcomes
What is a curriculum map?

A curriculum map or matrix is a tool to link elements of a program (usually required courses and experiences) to learning outcomes.

The goal of curriculum mapping is to identify how graduation-level mastery of the outcomes is scaffolded across the program curriculum, as well as where students’ progress is assessed and feedback given.
Why map your curriculum?

• Create a shared understanding of the program
• Check for “drift” in course goals - the role of courses in the curriculum may have changed over time
• Do a gap analysis to see where overlaps in emphasis, or gaps in coverage, may slow student progress
• Ensure that students are receiving sufficient feedback on key skills and knowledge as they develop the level of mastery expected
• Identify points in the curriculum where existing assessments can provide insights into student progress
Map formats
The basic form

While curriculum maps can take many forms, most are presented as a chart that lists learning outcomes on one axis and key courses, experiences or assessments along the other

<table>
<thead>
<tr>
<th>Courses and Experiences</th>
<th>Program Learning Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Apply the scientific method</td>
</tr>
<tr>
<td>BIOL 101</td>
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<tr>
<td>BIOL 202</td>
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<td>BIOL 303</td>
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<td>BIOL 404</td>
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<td>Other: Exit interview</td>
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</table>
Filling in the map

The chart is filled in using a key (usually letters) that record information about what is being taught and the level of skill or knowledge students are demonstrating in the course.

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<td>BIOL 202</td>
<td>R</td>
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<tr>
<td>BIOL 303</td>
<td>R</td>
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<tr>
<td>BIOL 404</td>
<td>M, A</td>
</tr>
<tr>
<td>Other: Exit interview</td>
<td></td>
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</table>

Sample template from RIT
Sample map worksheet: UVM Philosophy

<table>
<thead>
<tr>
<th>Courses in which outcomes are assessed</th>
<th>Learning Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LO1: Read philosophical writing closely, discerning the structure of philosophical argumentation</td>
</tr>
<tr>
<td></td>
<td>LO2: Accurately and critically analyze arguments and positions</td>
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<td>LO3: Write clear and coherent philosophical prose</td>
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A different format (and a complex map):

<table>
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<tr>
<th></th>
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<tbody>
<tr>
<td>Learning Objectives</td>
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<tr>
<td>NR 1 - Natural History &amp; Field Ecology</td>
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<tr>
<td>NR 2 - Nature and Culture</td>
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<tr>
<td>NR 3 - Social-Ecological Systems</td>
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<tr>
<td>NR 6 - Race and Culture In Natural Resources</td>
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<tr>
<td>NR 103 - Ecology, Ecosystems, and the Environment</td>
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<tr>
<td>NR 104 - Social Processes and the Environment</td>
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<tr>
<td>NR 205 - Integrating Science, Society, and Policy</td>
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<tr>
<td>NR 206 - Environmental Problem Solving and Impact</td>
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<tr>
<td>NR 207 - Power, Privilege, and the Environment</td>
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</tr>
<tr>
<td>Core Knowledge Area Learning Outcome Statements</td>
<td>Students will be able to identify and describe basic ecological processes and systems.</td>
<td>Students will be able to identify, interpret, and analyze cultural, economic, historical, and political dynamics of environmental issues.</td>
<td>Students will be able to describe effective strategies in ecological planning, management, stewardship, and conservation of natural resources.</td>
<td>Students will be able to discuss social, economic, and ecological principles of sustainability.</td>
</tr>
</tbody>
</table>

Levels of Instruction
- 1: Exposure
- 2: Emphasis
- 3: Capstone

Level of Learning
- Exposure
- Building Capacity
- Literacy
<table>
<thead>
<tr>
<th>Key courses ↓</th>
<th>Sub-outcome 1</th>
</tr>
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</table>

| Year 1       | Year 2-3     | Year 4       |

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<td>Literacy</td>
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Step by step How-to’s

1. Identify the axes
2. Populate the axes
3. Choose or create a key
   a) Which key do you recommend?
4. Gather data from faculty
5. Compile
6. Alignment
7. Using what you have learned
First step: Identify the axes

• Most curriculum maps have outcomes across the top, and courses listed down the left-hand side; these axes can be reversed.

• However, you can also use this matrix approach to organize many kinds of data, e.g. where different kinds of course-level assessments occur, or how types of learning experiences are distributed across required vs. elective coursework.

• Take 5 minutes to look at the sample map and think about what would be most useful to map for your program.
Step 2: Populate the axes

• Decide how much detail you want in the outcomes axis. For example, if you have a few learning outcomes with a number of sub-components, you may choose to stay with the larger outcomes or split each outcome into its components.

• Choose whether to include only required courses/experiences, or whether to also map out elective coursework or coursework for optional tracks.

• Let’s discuss how you would populate the axes
Step 3: Choose or create a key

- There are almost as many sets of descriptors utilized in curriculum mapping as there are books on assessment.

- One of the most common ones is: I/R/M/A
  - I=introduced; R=reinforced; M=mastery (graduation level); A = assessed

- Stassen et al. use I/E/U/A
  - Introduced/Emphasized/Utilized/Comprehensive Assessment

- Other keys focus more on student behavior, e.g. I/P/D
  - Introduced/Practiced/Demonstrated

- And/or level expectations for progress on an outcome e.g. B/I/A
  - Beginning/Intermediate/Advanced
Alternative approach:

RSENR Core – level of instruction/learning
Step 3a: Is there a key you recommend?

I recommend a key that fits the way your program is organized and your immediate goals for the curriculum mapping process.

For example:

• A key focused on faculty behaviors (e.g. IRMA) will help identify where faculty are teaching aspects of the outcomes

• A key focused on student performance (e.g. IPD) will help focus on where students are asked to demonstrate progress on the outcomes

• A key focused on level (e.g. B/I/A) will help identify whether elements of the outcomes are sufficiently scaffolded across the curriculum
What if we want to know all of this?

• Curriculum mapping can be an intensive process that moves through several levels, or you may find that a single ‘pass’ through the courses is enough.

• You can have faculty fill out several matrices using different keys

• I recommend keeping the matrices separate at first, so you can see patterns emerging that are relevant to each key, before combining the data.
Step 4: Gather data from instructors

• Some data may be available from syllabi, however instructors will be able to quickly identify the outcomes/outcome components covered in their courses as well as assessments of student progress on those outcomes

• For a first pass, simply ask instructors to fill out the rows of the matrix for the classes they teach, using ONLY the key that you have chosen – no notes, asterisks or caveats

• Depending on your department/curriculum, this can be done together or individually
Give it a try

• List the courses you teach, or courses in your program that you are familiar with

• Using the key you think is most helpful, try filling in the matrix for those courses

• Now that you have tried it, what difficulties do you anticipate when you ask your faculty to complete a matrix?
Step 5: Compile

If individual instructors have filled out the matrix, combine their results into a single matrix, noting any areas of variation across instructors for a single course.

Before discussing alignment, it may be productive to have a discussion about the mapping process.
Step 6: Alignment

• Is course content/work aligned with the outcomes?

• Are there any gaps? Overlaps? If so, are these problematic?

• Is student progress appropriately scaffolded across the curriculum?

• Where are students assessed on their progress?

• Are there direct or indirect course-level or program-level assessments in place that can be used to check alignment?
Step 7: Use what you learned

• The curriculum mapping process may highlight some areas for immediate change (e.g. a gap in your coverage of outcomes)

• The map can also serve as the basis for developing an assessment plan.
  • Are students actually working at the expected level in these classes?
  • Which course-level assessments can provide information on student progress?
  • At what point in the program will students achieve graduation-level achievement of the outcomes?
Questions?

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