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Rethinking Program Assessment through the Use of Program Alignment Mapping Technique

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Curriculum mapping is a well-known assessment tool used to articulate and align a curriculum. The authors present an improved method of curriculum alignment that combines the traditional curriculum mapping with what is often called prerequisite mapping. This improved method of curriculum alignment mapping we label Program Alignment Mapping (PAM) offers the added value of (1) identifying the different points of assessment for each learning benchmark, (2) showing the logic behind developmentally sequenced course offerings, and (3) allowing for the diagnostic identification of sequential errors or "holes" in a curriculum. Using a case study approach, the authors discuss the utility and versatility of this revised method.

Keywords: curriculum alignment; program assessment; program alignment mapping

Statement of the Problem and Rationale

With the increased attention to assessment among higher education institutions in the last two decades, more institutional resources are now being allocated to design innovative and effective methods of evidence-based assessment. A recent joint statement by the Association of American Colleges and Universities (AAC&U) and the Council for Higher Education Accreditation (CHEA) (2008) speaks unequivocally to the importance of assessment in higher education:

> We in higher education must constantly monitor the quality of student learning and development, and use the results both to improve achievement and to demonstrate the value of our work to the public. (p. 1)

Furthermore, the National Communication Association (NCA) recognizes the importance of assessment in communication programs and provides various

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assessment resources, including communication assessment criteria and guidelines, on its homepage (see http://natcom.org.).

A key issue for program-level assessment is curriculum alignment. Webb (2002) defines curriculum alignment as the extent to which "expectations and assessments are in agreement and service in conjunction with one another to guide the system toward students learning what they are expected to know and do" (p. 1). Researchers and practitioners have developed tools and procedures to either facilitate curriculum alignment or to measure the degree of alignment among curriculum, instruction, and assessments. Presented here is a new method of curriculum mapping that enables academic programs to visually represent their curriculum, to identify key components in the curriculum and the inter-relationships among them, and to realize and address program alignment issues such as sequential gaps.

Curriculum mapping is a simple yet effective tool for improving teaching and learning (Jacobs, 2004). It considers when, how, and what is taught, as well as the assessment measures used to examine the achievement of specific learning outcomes (Harden, 2001). Curriculum maps draw explicit connections between learning benchmarks, learning experiences, and assessment tools. They help ensure that various aspects of students' learning experiences are aligned with each other (i.e., internal program alignment) (Drake & Burns, 2004). They also help align learning benchmarks with mandated standards (i.e., external program alignment). An idea pioneered by Hausman in the 1970s, curriculum mapping has become a common practice in K-12 and post-secondary education (Willett, 2008).

Several benefits of curriculum mapping have been identified. Jacobs (1997) suggests that when done in a collaborative format, the curriculum mapping process helps faculty identify alignment, gaps, overlaps, inconsistencies, and strengths within a program. Uchiyama and Radin (2009) argue that the curriculum mapping process fosters increased collegiality and collaboration among the participating faculty members, in addition to the intended outcomes of a stronger curriculum and better alignment of goals and objectives. Harden (2001) suggests that for medical educators, curriculum maps serve two main functions: to make the curriculum more transparent to all stakeholders (including faculty and students), and to demonstrate links between various components of the curriculum. As with all forms of program assessment, the biggest winner of meaningful curriculum mapping is student learning.

A less known mechanism for visually representing a program of study is the prerequisite or sequence map. Often taking the form of a flow chart, these maps indicate the intended sequence of courses within a program of study and identify key relationships such as prerequisites and co-requisites. These maps are used primarily as an advising tool or guide for students as they plan their program of study (*Course Prerequisite Map*, n.d.).

The new method of curriculum alignment presented here (hereafter referred to as Program Alignment Mapping) combines these two methods by using the visual representation of prerequisite maps to (1) identify the different points of assessment for each learning benchmark, (2) show the logic behind developmentally sequenced

course offerings, and (3) allow for the diagnostic identification of sequential errors and "holes" in a curriculum. Compared with the traditional curriculum mapping method, this new method is more visually engaging, better represents relationships such as prerequisites and co-requisites, and illustrates the assessment process as a fluid, ongoing, and longitudinal one rather than one that is static and disconnected. For these reasons, Program Alignment Mapping (PAM) is a more effective diagnostic tool for assessment than curriculum mapping alone.

Program Alignment Mapping (PAM)

The proposed Program Alignment Mapping technique uses the flowchart format of sequence maps to illustrate internal program alignment (i.e., how learning benchmarks, courses, and assessments are aligned). Program Alignment Maps are created for each track (or concentration or emphasis) in the program to illustrate the interrelationships among learning benchmarks and courses (see Appendix). The map uses arrows to illustrate relationships between prerequisites and co-requisites and different symbols to represent where in the curriculum each learning benchmark is addressed and assessed.

Creating Program Alignment Maps

The goal is to create curriculum maps that graphically represent existing courses and their interrelationships. First, identify the complete list of required courses for a given program and arrange them in order by course level (100-level courses with other 100-level courses, 200-level courses with other 200-level courses, and so forth). Draw a square box for each course and label it with the course number. Draw all the 100-level courses in a horizontal line across the page. Move down the page to a new line, and repeat the process with the 200-level courses, then again to a new line for the 300-level courses, and finally to a new line for the 400-level courses. Each course that requires prerequisites should then be connected using a solid arrow with its prerequisite(s) on the previous level. Some courses may not be official prerequisites but are recommended, through advising, to take before certain courses. Such relationships may be represented using a dotted arrow between the courses. The goal of this step is to map the curriculum based on the time sequence as well as the logical connection between the courses. In other words, whether students take two years to finish the curriculum or five, the way they progress through the curriculum should be similar based on prerequisite requirements and recommendations.

The next step is to add program learning benchmarks to the map. Using a unique symbol to represent each learning benchmark, the map identifies where the benchmarks are addressed and assessed. For instance, while most if not all learning benchmarks are manifested in the final capstone course, some are introduced early in the curriculum and addressed in various courses that follow. The map shows where each learning benchmark is first introduced and addressed, and where and how it is addressed progressively throughout the curriculum.

An optional step is to insert individual course learning objectives (as are typically found on course syllabi) into the map. To simplify the process, for instance, only two to three key learning objectives may be identified for each course. Adding key learning objectives to the map allows one to connect course objectives to program learning benchmarks and to track learning from course to course.

Using PAM as a Diagnostic Tool

We argue that the Program Alignment Map can be used as a tool for aligning the curriculum and diagnosing potential assessment problems. Specifically, the objective is to illustrate how learning is assessed throughout the curriculum. In general, learning is assessed through three mechanisms:

(1) In individual courses: Each course uses assessment tools such as exams to assess learning.
(2) In higher-level courses: When a lower level course is a prerequisite for a higher-level course, the higher-level course can be an assessment tool for learning that takes place in the lower-level course.
(3) In the capstone experience course: The capstone experience course, if one exists, which students take at the end of their program, serves as the cumulative assessment tool.

From an assessment point of view, it is problematic if:

- Course A is not a prerequisite for Course B, yet learning in Course A is assessed in Course B.
- Course A is a prerequisite for Course B, yet learning in Course A is not needed or assessed in Course B.
- Courses are required but do not contribute to a learning benchmark of the program.

Other questions to consider while using the Program Alignment Map as a diagnostic tool include:

- Is the curriculum balanced in addressing the different learning benchmarks?
- Is there continuity in how each benchmark is addressed in the course sequence?
- Is there redundancy?
- Are there courses that should be sequenced together but are not?
- Are there courses currently sequenced together while the contents are not connected?

Evidence is needed while using the Program Alignment Map as a diagnostic tool. For instance, programs often use a senior assignment or a capstone course as a key

assessment tool. Data generated from evaluating such student work provides key evidence regarding how various learning benchmarks are being achieved and where more efforts may be needed. Hypothetically, data may indicate that students in one track are weaker in theoretical knowledge but stronger in presentational skills than students in another by the time they take the capstone course. This assessment would warrant an effort to examine the Program Alignment Map to compare the tracks and trace the two learning benchmarks back throughout the curriculum to see what may have caused the differences. The team of faculty members in the current study, for example, noticed that in one of the tracks (but not in the others), students in the senior capstone course invariably applied one of a few basic theories in superficial ways, and sometimes applied them after the fact rather than using the theories to guide their senior projects. This led to faculty discussion on how the learning benchmark of theoretical knowledge is addressed in this track, using the Program Alignment Map.

Also, longitudinal data allow tracking of learning benchmarks over time, which is useful if a program is implementing new instructional methods (such as Online teaching, new teaching materials, and/or new teaching methods such as service-learning or problem-based learning) and concerned with how learning may be affected. Other useful evidence may include data from program review and exit student interviews, especially when evidence points to certain problem areas in the curriculum, possibly an indicator of problematic internal alignment. For instance, if student and faculty feedback revealed concerns of problematic alignment between program benchmarks, course work, and the senior capstone course, the faculty could then design specific questions to ask graduating seniors during their exit interviews about their learning experience throughout the program and their capstone course. Specifically, the exit interviews could ask how well students felt their course work prepared them for their capstone course and what specific skills and knowledge areas were most/least useful for their capstone projects. Data collected with such questions may then facilitate a discussion about internal (mis)alignment using the maps. Also, if applicable, student performance data on exams following externally generated guidelines (such as certification) can also help identify areas of problematic internal or external alignment.

Also useful as evidence for this method is input from faculty and students as well as assessment data from the courses. For instance, faculty and student input regarding a 200- or 300-level course may indicate a disconnect in learning of a certain learning benchmark. Students may be under-prepared for technical writing, which is a key learning objective for a lower-level course and is needed for a higher level course. Using the Program Alignment Map to address this problem, one can identify where else students should have been exposed to technical writing in order to prepare for the class, and whether adding a prerequisite is needed. Similarly, formal assessment data, such as exam scores, from courses may also be used as evidence for the use of this mapping method.

Applying Program Alignment Mapping: A Case Study

The Department of Speech Communication at a mid-sized university in the Midwest engaged in a series of program assessment processes, for which the new program alignment method was used. The undergraduate program offers degrees in three different tracks, namely, corporate/organizational communication, interpersonal communication, and public relations. A major assessment tool is the senior project course. The program-level learning benchmarks include presentational skills, writing skills, theoretical knowledge, research and application, and professionalism. Track specific benchmarks reflect the different emphases in each track. This section discusses the outcomes of a program assessment process focusing on the corporate/organizational communication track.

Using the Program Alignment Map (see Appendix), the team of faculty identified issues of concern relating to sequential gaps between courses, improper pre-requisite requirements, and misalignment between learning benchmarks and courses. Following these observations, the team solicited input from the faculty regarding rationale for the course sequence within each track. Using the Program Alignment Map as a diagnostic tool, the faculty presented the following analysis and recommendations regarding the track.

Issue 1: Sequencing Problems Between Required Courses and the Capstone Course

Small Group Communication and Interviewing are required for corporate/organizational communication students to graduate. However, the program alignment map for the track indicates that the current structure allows students to take these courses concurrently with or after the Senior Projects class, their capstone experience course. The problem is that students in Senior Projects need small group communication and interview skills to be successful. They work with group members on their senior projects and conduct informational interviews to understand needs and expectations of their clients.

Recommendation: Add Small Group Communication and Interviewing as pre-requisites for Senior Projects.

Issue 2: Sequencing Gap in Addressing a Program Benchmark

Corporate/organizational communication students currently learn organizational communication theories in a 300-level theory class required for all tracks (Communication Theories), where on average four such theories are introduced. However, this class is not a pre-requisite for Organizational Communication Theory and Application, a requirement for the track. The Program Alignment Map revealed that the first time that theory is addressed and assessed is in Communication Theories and/or Organizational Communication Theory and Application. Course assessment data and input from students and faculty indicate that students often come to Organizational Communication Theory and Application without an adequate knowledge of organizational communication theories. Furthermore,

assessment data from Senior Projects indicate that some students also have difficulty in applying organizational theories and models in their senior projects. This indicates a gap in how a key learning benchmark ("Theory") is addressed throughout the curriculum.

Recommendation: Two different solutions were recommended: adding a 300-level organizational communication theory course as a prerequisite for Organizational Communication Theory and Application and/or making Communication Theories a pre-requisite for Organizational Communication Theory and Application.

Issue 3: Orphan Course

Students are required to complete Interpersonal Skills, a 100-level course, before declaring speech communication as their major. Yet, on the Program Alignment Map, this course is not tied to any course in the program, and therefore learning in this class is not assessed in any follow-up courses. Moreover, the map indicates that the course of Interpersonal Skills is not connected to any learning benchmark, thus raising the question of why is it required for the program.

Recommendation: Connecting it to another course, such as Interviewing, and tying it to a specific learning benchmark (such as "Professionalism") will integrate Interpersonal Skills into the overall assessment process and remedy the situation.

Issue 4: Misalignment Between Program Benchmark and Required Courses

Communicating effectively in groups and teams is an essential skill for students in the corporate and organizational communication track. Therefore, Small Group Communication is a required class for students in this track. The Program Alignment Map revealed that learning in this class is assessed in Senior Projects in the form of effective participation in group senior projects. The problematic fact, however, is that no learning benchmarks in the track reflect what students learn in Small Group Communication.

Recommendation: Adding Group Communication Skills as a learning benchmark best captures the learning in Small Group Communication and, therefore, improves the program alignment for the track.

Lessons Learned

Depending on the program's specific assessment needs, the Program Alignment Map is versatile and can be adapted for different uses. For instance, a more comprehensive map may include the course learning objectives and the core assignments. Such a map would allow faculty members to conduct a more comprehensive and thorough analysis of alignment among courses at various levels. The authors created a Program Alignment Map that included the course objectives and key assignments and observed that group assignments existed in most of the courses. This indicates that group communication is deemed as an important learning objective for our students.

This further reaffirms the need to add group communication skills as a program learning benchmark. Such a comprehensive map may allow for a more thorough and multi-dimensional assessment of alignment issues.

For programs that must meet accreditation requirements, one way to use the Program Alignment Map presented here is to integrate accreditation requirements into the map and examine what Drake and Burns (2004) call external alignment (i.e., alignment between curriculum and mandated standards). The map could serve as a diagnostic tool to identify potential problem areas before accreditation. Once accreditation is completed and needs for improvement identified, the map could serve as a strategic planning tool for addressing the problem area in a systematic and outcome-oriented manner.

The National Communication Association (n.d.) recommends that communication departments conduct program assessment to measure student achievement in three areas, cognitive outcomes (general and specific knowledge), skills outcomes (basic, higher order, and occupational), and attitudes/values outcomes (personal goals, attitudes, motivational factors). Using the new Program Alignment Map presented here, a communication department can assess the balance of its curriculum in addressing student learning in these three areas. The map is a visual illustration of where outcomes in each area are introduced, enhanced, applied, and assessed. For instance, an evaluation of the Program Alignment Map presented in the case study may indicate that the required courses focus primarily on skills (such as the presentational courses) or knowledge (such as the theory courses), or a combination of both. However, the third area (attitudes/values outcomes) of student learning is yet to be fully incorporated into the department assessment plan. The only area where this is addressed is within the senior capstone course through exit interviews.

Plaza, Draugalis, Slack, Skrepnek and Sauer (2007) conducted an innovative analysis by comparing faculty-drawn curriculum maps (in the traditional form) with student-drawn maps in an effort to compare the "intended" curriculum with the "perceived" or "received" curriculum. Similarly, the Program Alignment Map presented here could also facilitate such a discussion. One way to do that is to survey the graduating class, possibly as part of the exit interview, and ask them to use a map to represent and discuss their program of study. Students can reflect on their experiences in the courses and discuss how the courses are connected in their experiences. Comparing the student maps with faculty maps may help identify potential issues of disconnect between the "intended" curriculum and "received" curriculum.

The Program Alignment Map can also be used as a strategic planning tool. To do this will involve starting from the intended program benchmarks and working back through the courses at different levels to "build" a path to that outcome. In the map presented here (see Appendix), courses at the various levels correspond roughly to the levels in Bloom's taxonomy (Bloom & Krathwohl, 1956) and even more so to its revised and updated version (Anderson & Krathwohl, 2001). Objectives in the 100-level classes tend to revolve around basic knowledge and memory; the 200-level classes then move into application, the 300-level classes into analysis and evaluation,

and the 400-level courses, and in particular the Senior Projects class, engage students in creative application of their learning. To use the Program Alignment Map as a strategic planning tool, programs identify a learning objective (such as cultural competence), and work through each taxonomic level by identifying or creating course(s) to satisfy learning needs at each level.

Finally, the maps can help foster faculty involvement and collaboration focused on assessment. Faculty involvement is essential for meaningful curriculum alignment and successful program assessment. Without faculty buy-in, "alignment efforts can be a fruitless exercise" ("The benefits", 2004, p. 57). One way to involve faculty is to have everyone create their own program alignment maps and engage in discussions based on commonality and discrepancy. Understandably, faculty who teach courses at different levels may create different maps and a discussion could lead to a shared understanding of how courses are aligned with each other and with program objectives. Such a process, Uchiyama and Radin (2009) argue, will also foster a collaborative and supportive culture of assessment.

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