Mapping General Education Outcomes in the Major:
Intentionality and Transparency

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One of the fundamental purposes of general education programs is to prepare students for further studies in their major by developing a broad knowledge base, foundational intellectual skills, and dispositions for lifelong learning. Indeed, a central component of faculty members' professional responsibility is "designing and implementing programs of general education and specialized study that intentionally cultivate the intended learning" (AAC&U 2006, 1.) However, the murky interface between the two domains of college curriculum—general education and specialized study in the major—has long been an area of concern for curriculum developers. Colleges and universities traditionally have been called to develop and implement mechanisms to systematically bridge institutional goals and the goals within the major curricula.

What appears to be new in the rapidly emerging global society is the increased intensity of employers' demands for institutions to significantly enhance efforts in faciliatitng and ensuring student development of transferable general education competencies. Consequently, institutions are increasingly required by accreditors, legislators, and funders to demonstrate the intentionality and transparency of their academic programs by describing how majors integrate institution-wide core competencies that traditionally belonged to the general education domain. Similarly, professional organizations such as the Association of American Colleges and Universities (AAC&U) advance integration of liberal education outcomes both in the general education program and the major (AAC&U 2009).

We propose that the development of curriculum maps is a necessary first step in addressing AAC&U's (2008) call for institutions to articulate clear and complementary responsibilities between general education and majors for institution-wide core competencies, thus laying out effective and efficient pathways for students to progress through the general education and major curricula. AAC&U (2007) advocates providing students with a compass to help them navigate through the complexities of the college curricula by articulating clear statements of intended learning outcomes as reference points. However, for the compass to serve as a navigational instrument, students need to be provided with maps that visually set the reference points or outcomes in the topographic contexts or program curricula.

This article provides a brief overview of a program curriculum mapping model—a practical tool that a number of departments at Norfolk State University (NSU) utilize—to study and improve transparency and intentionality of degree program curricula in the context of institution-wide, general education core competencies. NSU is a four-year comprehensive university offering a broad range of undergraduate and graduate programs. It is an urban, historically black university (HBCU) with a culturally diverse student population of 7,000. The NSU team participated in the inaugural AAC&U Engaging Departments Institute in summer 2009.

CONCEPTUAL FRAMEWORK

NSU's curriculum mapping model views program curriculum as a complex dynamic system with interdependent components that

are intentionally positioned relative to each other to facilitate student achievement of intended learning outcomes. In conceptualizing curriculum as a system, faculty members concentrate less on what the individual courses are contributing and focus instead on how the interactions among them affect overall student learning and development. The fundamental purpose of NSU's curriculum mapping process is to develop curriculum awareness among faculty (Palomba and Banta 1999)—an ability to look at programs at a level beyond individual courses and ensure that program curricula provide appropriate conditions for student achievement of intended program and institution-wide learning outcomes.

The NSU curriculum mapping model is based on the general curriculum alignment concept similar to mapping approaches described by Allen (2004; 2006), Driscoll and Wood (2007), and Maki (2004). A distinctive characteristic of the NSU model is that it is intentionally designed to capture the degree of curriculum coherence by systematically exploring alignment between and among five major curriculum components: intended outcomes, courses, syllabi, instructional activities, and assessment of learning through the lens of intentionality and transparency.

In the NSU model, curriculum *intentionality* is defined as deliberate and systematic alignment of intended program learning outcomes with course-level outcomes and instructional and learning activities. Curriculum intentionality is delineated along several dimensions. Intentional curricula are built on well-articulated statements of intended learning outcomes that clearly specify and communicate fundamental knowledge, skills, abilities, and dispositions that faculty members expect students to obtain at the completion of an educational program. Curricular intentionality is reflected in the extent to which each intended program learning outcome is integrated in the sequence of courses. In an intentional curriculum, students are provided with sufficient opportunities to work on each intended outcome in multiple courses that are logically sequenced to reflect the developmental, stage-like nature of learning. Each course in the program is designed to address several program outcomes so that students are able to integrate multiple competencies in the context of a single course. Also, assessment serves as an ultimate indicator of curriculum intentionality. To guide and facilitate intentional student progression through program curricula, multiple formative and summative assessment points should be designed for each outcome.

Curriculum *transparency* is reflected in the clarity of course syllabi as well as in the development of program maps.

DEVELOPMENT OF CURRICULUM MAPS

A curriculum map presents the design and sequence of courses in the context of program outcomes or general education competencies, usually in the form of a matrix or template. The NSU Curriculum Matrix is a two-dimensional data collection instrument used to organize the curriculum mapping process. The design of the matrix can be modified depending on the conceptual framework adopted by the program faculty and specific curriculum review questions that drive mapping exercises. Figure 1 presents an example of a completed matrix—a curriculum map of the NSU Interdisciplinary Studies program in the context of the university-wide general education core competencies.

The interdisciplinary studies (INT) program was selected to demonstrate the NSU curriculum mapping approach for a few reasons. INT is the second largest academic degree program in the university. In addition, the INT curriculum is constructed with the assumption that its student population—which largely consists of returning adults, transfer, military and at a distance (online) students—would be preexposed to and equipped with the skills introduced in the general education core curriculum. However, this assumption is often not met because of the diverse prior academic experiences of students entering the INT program. This poses a significant challenge to ensure that program majors adequately develop the core competencies expected of all NSU graduates. Finally, the

Program curriculum maps serve as an essential navigational tool that visually charts outcomes, courses, instructional activities, and learning assessments in relation to each other.

Course syllabi can play a critical role in ensuring that students clearly understand how a given course fits into the program of study. Well-designed course syllabi explicitly communicate to students how a given course addresses program and institutional outcomes addressing a common student question—"Why should I take this course?" Program curriculum maps serve as an essential navigational tool that visually charts outcomes, courses, instructional activities, and learning assessments in relation to each other. In this way faculty members can evaluate structures of curricula and help students understand the complexities of program progression pathways.

interdisciplinary nature of the program highlights the intentionality and transparency of integrating general education core competencies in the major.

The sample matrix, presented in figure 1, records the assignment of selected NSU general education core competencies (in columns) to core INT program courses (in rows) listed in the order that a "typical student" would follow, while identifying the level at which the competencies are addressed in each course (at the intersection of columns and rows). The INT map is built on eight INT required courses, one required elective (CSC 200), and the most popular elective for INT majors (PSY 210).

There are three subcolumns in each core competency column. The first subcolumn is "Outcome Statement (X/M)." In this subcolumn, faculty members indicate whether the given general education core competency is e*X*plicitly or i*M*plicitly communicated to students through the syllabus of a given course. In the second subcolumn, faculty members identify the level at which the content of a course integrates a specified general education competency (*I*ntroduced, *E*mphasized, *R*einforced, *A*dvanced—I, E, R, A). The level of content delivery refers to the scope and complexity of the knowledge and skills related to each general education competency. The third subcolumn is "*F*eedback (F)." At this stage, faculty review course syllabi assignments and indicate whether students

FIGURE 1. INTERDISCIPLINARY STUDIES PROGRAM MAP

Semester	Fall 2009						
College	Liberal Arts	**1. WRITTEN COMMUNICATION** Student is able to produce texts appropriate for their purposes and audiences as reflected in: (a) Form; (b) Organization; (c) Content development; (d) Language usage and style (syntax, vocabulary, grammar, and mechanics).			**2. INFORMATION TECHNOLOGY LITERACY** Student is able to: (1) Use and apply computers, software applications, and other resources to achieve a wide variety of academic, professional, and personal goals; (2) Use a set of abilities to solve problems, collect data, manage information, communicate with others, create effective presentations, and use information to make informed decisions.		
Department	Interdisiplinary Studies						
Degree	Bachelor of Science						
CORE/REQUIRED PROGRAM COURSES		[i] Outcome Statement (X, M)	[ii] Level (I, E, R, A)	[iii] Feedback (F)	[i] Outcome Statement (X, M)	[ii] Level (I, E, R, A)	[iii] Feedback (F)
INT 308: Introduction to Interdisciplinary Studies		X	I	F	X	E	F
INT 322: Critical Approaches to Analysis		X	I	F	X	R	F
PSY 210: Introduction to Psychology		X	I	F	X	E	F
INT 360: Foundations of Research in Interdisciplinary Studies		X	E	F	X	R	F
INT 375: Language and Society		X	E	F	X	R	F
CSC 200: Advanced Computer Concepts		M	E	F	X	A	F
INT 411: Ideas and their Influences		M	R	F	X	R	F
INT 412: Contemporary Globalization		M	R	F	X	R	F
INT 470: Senior Seminar		M	A	F	X	A	F
INT 477: Senior Thesis		M	A	F	X	A	F

LEGEND

[I] OUTCOME STATEMENT: The program outcome is x) EXPLICITLY or (m) IMPLICITLY reflected in the course syllabus as being one of the learning outcomes for this course.

[II] LEVEL OF CONTENT DELIVERY: (I) INTRODUCED - Students are not expected to be familiar with the content or skill at the collegiate level. Instruction and learning activities focus on basic knowledge, s basic level of knowledge and familiarity with the content or skills at the collegiate level. Instruction and learning activities concentrate on enhancing and strengthening knowledge, skills, and expanding comp edge, skill, or competency at the collegiate level. Instructional and learning activities continue to build upon previous competencies with increased complexity. All components of the outcome are addressed the use of the content or skills in multiple contexts and at multiple levels of complexity.

[III] FEEDBACK ON STUDENT PERFORMANCE / ASSESSMENT: (F) Students are asked to demonstrate their learning on the outcome through homework, projects, tests, etc. and are provided formal Feedb

in the given course have opportunities to demonstrate what has been learned on each general education competency and receive feedback in a formal way.

ANALYSIS OF CURRICULUM MAPS

From a consequential validity perspective (Messick 1989), the validity of curriculum mapping is a matter of meaningful interpretation and practical uses to which the results of analysis are applied. The NSU curriculum mapping model is designed to facilitate engagement of faculty members in a structured analysis of the extent to which program curricula intentionally and transparently integrate intended general education outcomes. The following six questions reflect our operational definition of curriculum intentionality and guide analysis and interpretation of curriculum maps.

1. Are intended general education core competencies clearly articulated? NSU general education core competencies are well articulated with clearly delineated dimensions of learning expected from NSU graduates. However, mapping of core competencies in the major exposed a challenge of interpreting and operationally defining the core competencies at the discipline or academic field level. This challenge is evident on the INT map for the fourth competency, quantitative reasoning. The curriculum map shows that nine of ten courses do not consider quantitative reasoning an area to be addressed, yet the

SELECTED GENERAL EDUCATION CORE COMPETENCIES

3. SCIENTIFIC REASONING			4. QUANTITATIVE REASONING			5. CRITICAL THINKING			6. ORAL COMMUNICATION		
Student is able to: (1) Propose relationships between observed phenomena; (2) Design experiments which test hypotheses concerning proposed relationships; (3) Predict logical consequences of observed phenomena and determine possible alternative outcomes; (4) Judge the degree to which a particular conclusion is justified based on the empirical evidence related to observed phenomena.			Student is able to solve problems within: (1) Numeric or arithmetic contexts; (2) Conceptual contexts; (3) Geometric contexts; (4) Data representation and chance element contexts.			Student is able to consistently and systematically: (1) Identify main ideas and/or themes; (2) Make comparative judgments from data; (3) Determine the validity/ credibility and implication of a supposition; (4) Identify limitations and contradictions in an event; (5) Analyze and evaluate arguments and issues; (6) Demonstrate creative problem solving skills; (7) Implement and evaluate a plan to work towards a goal or conclusion.			Student is able to express him or herself in a structured, meaningful, and productive manner. The student must also be able to convey his/ her intentions or ideas in messages crafted to introduce, inform, or persuade the listener.		
[i] Outcome Statement (X, M)	[ii] Level (I, E, R, A)	[iii] Feedback (F)	[i] Outcome Statement (X, M)	[ii] Level (I, E, R, A)	[iii] Feedback (F)	[i] Outcome Statement (X, M)	[ii] Level (I, E, R, A)	[iii] Feedback (F)	[i] Outcome Statement (X, M)	[ii] Level (I, E, R, A)	[iii] Feedback (F)
M	I	F				X	R	F	M	E	F
X	E	F				X	R	F	M	E	F
						X	E	F	M	E	F
X	R	F				X	R	F	M	E	F
M	R	F				X	R	F	X	R	F
X	E	F				X	A	F	M		
M	R	F				X	R	F	M	R	F
M	R	F				X	R	F	M	R	F
X	R	F				X	A	F	M	A	F
X	A	F	M	E	F	X	A	F	M	A	F

skills, and/or competencies and entry-level complexity. Only one (or a few) aspect of a complex program outcome is addressed in the given course. (E) EMPHASIZED - Students are expected to possess a plexity. Several aspects of the outcome are addressed in the given course, but these aspects are treated separately. (R) REINFORCED - Students are expected to possess a strong foundation in the knowl- in the integrative contexts. (A) ADVANCED - Students are expected to possess an advanced level of knowledge, skill, or competency at the collegiate level. Instructional and learning activities focus on

back.

development and interpretation of graphs and charts, utilization of ratios, and understanding of correlations—components that many INT courses integrate—directly lend themselves to quantitative reasoning. Discussions with INT faculty revealed that quantitative reasoning is essentially seen as a discipline-specific competency that belongs to mathematics and science departments. The difference in language use, definition, and interpretation of the term "quantitative reasoning" may limit INT faculty's realization of its part in the major. The mapping process shows that the transparency of articulation is two-dimensional, and perhaps multidirectional, as it can be interpreted or used according to our disciplinary jargon and definitions. Thus, it is critical that before engaging in core competency mapping exercises, program faculty should translate broad, institution-wide core competencies in discipline-specific terms to ensure more precise and meaningful curriculum maps.

2. Are students provided with multiple learning opportunities to develop general education core competencies? The philosophy of the INT program is to develop and produce graduates with transferable skills that are required in any profession. Indeed, the map shows that INT courses are well-aligned with the general education core competencies. The INT teaching modality calls for the successful student to have strong written and oral communication skills and information technology literacy. It also requires the student to be able to engage in critical thinking and scientific reasoning. Indeed, the map demonstrates a consistent emphasis on critical thinking, information technology literacy, and written and oral communication. Quantitative reasoning is clearly an area for program faculty to explore as a possible gap in constructing intentional student learning experiences.

3. Are courses in the major sequenced in the developmental pattern to facilitate student achievement of general education core competencies? INT courses begin at the 300 level and are considered junior- and senior-level courses. Ideally, prior to enrolling in interdisciplinary studies core courses, an interdisciplinary studies student would begin to develop general education competencies at the college level. Under this assumption, students taking the programmatic courses already should have been introduced (I) to general education core competencies in 100- and 200-level general education courses, and opportunities to further develop the core competencies at the E, R, and A levels are apparent. For this reason, instruction in INT core courses begins at the emphasis or reinforcement level.

In practice, this is not always the case. For example, students often take at least one general education core course while beginning their INT core curriculum coursework. In these instances, faculty advisers are often asked, "Why do I need to take a 100-level social science course when I am taking 300-level courses in my major or concentration area?" This question highlights a possible misalignment between the level of instruction and student readiness. To address this misalignment, the INT program faculty reevaluated teaching assignments in an effort to make the developmental pattern of core competencies more explicit and consistent. This reassignment of teaching loads called for senior faculty to teach introductory and capstone courses in order to improve the alignment of general education core competencies with INT core courses. In this way, INT students recognize the integral connectivity of the major and general education core competencies.

4. Do individual courses provide students with opportunities to integrate multiple core competencies? The essential question here is whether the focus of the course is broad or narrow in the context of the general education core competencies. The curriculum map demonstrates the INT program provides students with ample opportunities to integrate disciplinary knowledge as well as further develop, use and share multiple core competencies. Two elective courses address four of six competencies, seven INT courses incorporate five of six competencies, and the capstone course (INT 477) integrates all six core competencies. From the course-level perspective, the curriculum map confirms that quantitative reasoning is a competency that needs to be more explicitly integrated in various courses.

5. Are students provided with feedback on their progress in mastering core competencies? The curriculum map demonstrates that formative and summative assessments of student achievement of core competencies are consistently embedded in the courses and are clearly the strength of the program. Indeed, the interdisciplinary content and nature of the program requires an exchange of knowledge between the instructor and student to decipher, assess, and evaluate skills. Hence, feedback is an important part of the process of integrating disciplinary knowledge within a broader context of general education core competencies. The program analysis of the INT curriculum map confirms programmatic emphasis on feedback and the exchange of knowledge between instructor and student.

Curriculum maps also can assist the program faculty with identifying specific

courses for program assessment of core competencies, thus keeping the assessment focused and manageable. For example, INT 308 and INT 375 can provide information for formative assessment since they respectively emphasize and reinforce the core competencies. INT 477 can clearly be used for summative assessment since it addresses all six core competencies, with five competencies at the advanced level.

6. How well are the institution-wide general education core competencies communicated to students in course syllabi? The focus of this step of the analysis is whether students receive appropriate syllabus guidance to develop and master core competencies. If the given general education core competency is, in fact, addressed in the course, how explicitly is the competency communicated to students in the course syllabus? Explicitly tying course outcomes to general education core competencies helps students recognize their involvement in a cohesive program.

The intended institution-wide general education core competencies are formally stated in course syllabi to highlight for students their merit and applicability. How faculty members present these statements and how students interpret the statements is variable. The curriculum map shows that general education core competencies are well reflected in course syllabi, with the exception of quantitative reasoning. However, general education core competencies are expressed differently across course syllabi. For example, information technology and critical thinking are explicitly expressed as important course goals, while written communication, scientific reasoning, and especially oral communication are not directly communicated to students.

CONCLUSION

When the curriculum mapping model was developed at NSU in 2003–04, the process was new for many faculty members. As with anything new, the process caused a wide variety of reactions ranging from frustration to acknowledgment of its potential value in examining the coherence of program curricula. While implementing curriculum mapping at NSU, it was important to realize the need to invest significant time and effort in the construction, analysis, and periodic review of the maps, in building consensus in the disciplines about the use of the labels to describe levels of content delivery (i.e., I, E, R, A), and in developing a manageable and user-friendly data collection tool (curriculum matrix). Further, we fully appreciated the advice of Sumsion and Goodfellow (2004) who underscored the importance of creating a climate of collegiality, autonomy, flexibility, and transparency in order to successfully implement the complex processes of curriculum mapping.

Despite initial and ongoing challenges, curriculum mapping processes have resulted in a number of significant benefits. Visual alignment of intended learning outcomes and program core courses presented in the maps provide a structured context for ongoing reviews of new and revised course proposals as well as the development of streamlined value-added assessment designs. The maps capture and document the manner and extent to which programs address intended learning outcomes in the curricula, thus stimulating focused, evidence-based discussions about course sequencing, prerequisites, electives, and course-embedded program assessments.

By making complex academic curricula transparent, the maps provide prospective and new students with information about the program structure and faculty expectations. Thus, the maps can be used as effective tools to facilitate student recruitment and advising, enhance student-program fit, support efficient student progression throughout the curriculum, and ensure timely graduation. Further, the maps help students see the coherence of program curricula and understand how individual program courses relate to overall institutional and program outcomes, thus contributing to the development of intentional learners.

At NSU, feedback from the curriculum mapping exercises guided the development of the university-wide course syllabus format as well as criteria for the general education core course recertification process. Program curriculum maps also help the university effectively respond to a number of accreditation standards related to curriculum review and approval processes, curriculum quality, and program assessment. ▪

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