

Options for Change: A Flexible Vehicle for Curriculum Evolution and Reform

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ABSTRACT: In this article we examine a flexible curricular approach known as the "Option." The Option enables students to supplement traditional majors with a coherent set of courses and other educational experiences in a related, often interdisciplinary field. Options can act as curricular bridges between mainstream academic fields and problems of professional practice. They can also give students experience with emerging subject areas (e.g., biomedical engineering). Options serve as laboratories for experimenting with new subject areas before incorporating them fully into the curriculum as majors and minors. Hence, Options promote creativity and risk-taking by providing a proving ground for potential new academic programs.

KEY WORDS: curriculum; reform; development; experimentation; laboratory.

In a time of rapid change, academic programs must experiment and evolve in order to keep pace with advances in knowledge, changes in professional practice, and shifting conditions in society. The need for malleable, responsive academic programs is particularly a concern in scientific and technological fields where the growth of knowledge is exponential. However, education in every academic field must adapt to accommodate changing student interests, new approaches to teaching and learning, and new interpretations and applications of the discipline. Educational programs designed to prepare students for a dynamic future must be dynamic themselves, or they will become increasingly unpopular and irrelevant.

This article describes an approach Michigan State University employs to adapt its curriculum to emerging fields and shifting student interests. It is a technique other institutions can adapt to increase the flexibility and responsiveness of their educational programs in an era of fiscal constraint and unprecedented change.

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Critics of higher education (e.g., Association of American Colleges, 1991; Barr & Tagg, 1995; Boyer, 1987; Guskin, 1997; Levine, 1989, 1990, 2001; Marcy & Guskin, 2003; Wingspread Group on Higher Education, 1993) have complained that college curricula are slow to change, mired in tradition, and designed more for the convenience of professors rather than to meet the needs of students, employers, or the larger society. Traditionally colleges have revised their educational programs through accretion—by adding new courses and degree programs, by designing new majors and minors, and by setting up additional departments or other academic units to manage and deliver new fields of study that have won a place in the curriculum (Cohen, 1998; Gaff & Ratcliff, 1996; Stark & Lattuca, 1997). Rarely is curriculum reformed by deleting courses or programs or by reassembling existing learning opportunities in new ways.

The process for adapting the college curriculum is typically slow, laborious, costly, and cautious (Levine, 1978; Stark & Lattuca, 1997). Institutions carefully weigh the costs and consequences of a move in a new academic direction before they commit limited resources to new academic programs or educational reform proposals. This very deliberate process has led to the charges that higher education is slow, out-of-touch, and unresponsive (Zemsky & Massy, 1995).

In dynamic times, higher education must think “outside the box” imposed by the standard curriculum structure (e.g., majors, minors, rigid and complex decision making processes). New options are needed to make educational programs more flexible and adaptive in a dynamic environment where change is a constant and rigid, one-size-fits-all programs and procedures are inefficient and impede needed reforms. Additional ways of fostering curriculum innovation and experimentation are needed if higher education is to serve a diverse society effectively.

“The Option”: A Creative Approach to Curriculum Change

Michigan State utilizes a non-traditional approach in the curriculum change process which has the capacity to encourage experimentation, enhance curricular flexibility and responsiveness, and lower barriers to major curriculum change. At MSU, this mechanism is called “an Option.”¹ An Option² is “a discrete set of courses or courses and

¹Other labels for this curriculum technique/vehicle are also appropriate provided they are meaningful and useful in the disciplinary and institutional context where they are employed.

²We capitalize the word Option whenever it refers to the specific curricular approach we are discussing. When option is not capitalized, we are using it in the more conventional way.

other academic requirements within or supplementary to the major” (Registrar’s Office, Michigan State University, 2002). Options appear on a student’s transcript and document educational experiences in a defined subject area such as biomedical engineering or information technology. For example, an Option in biomedical engineering can supplement a major in mechanical engineering and give students a wider array of educational and employment opportunities upon graduation. The student would graduate with a major in mechanical engineering and an Option in biomedical engineering. Her transcript would record both her major and her Option.

At MSU, Options can be defined by a single department, collaborating departments, or by a college as a whole. In addition, more than one college can also sponsor an Option jointly (e.g., MSU’s Option in Information Technology is co-sponsored by the Colleges of Engineering, Business, and Communication Arts and Sciences).

Frequently, Options are defined in emerging fields (e.g., biomedical engineering, global studies, health promotion) that have not yet been fully integrated into the curriculum as a major or program area. The “Option” option (no pun intended) allows departments or colleges within the University to define a coherent set of courses that provide a foundation of knowledge and skills in a specialized, often interdisciplinary subject field. Usually, Options are comprised of courses and other learning opportunities that are already available at the institution. Sometimes supplementary courses (e.g., a survey course, a capstone course) in the Option field are added to integrate this academic component more fully. Packaging discrete courses as an Option provides a carefully coordinated exposure to a field rather than the random exposure that may result when students make individual elective and distribution requirement choices. An Option not only allows a student to complete a widely recognized and broad-based major like civil engineering but also to demonstrate interest and acquire a core knowledge base in a related specialized subject field (e.g., environmental studies). In this respect, Options parallel traditional academic minors. (See Table I for sample Options in Michigan State’s College of Engineering).

However, Options differ from minors in key ways that account for their greater flexibility and responsiveness. First, Options are not rigidly defined by predetermined requirements. They are defined by their sponsoring unit (i.e., department(s), college(s)) and, unlike many majors and minors, require no fixed number of courses or credit hours. Options can be any number of courses plus other types of educational experiences (e.g., clinical practice, internships, research experience) as

Table I
Sample “Options”: Michigan State University College of Engineering

Chemical engineering: Environmental option (18 credits)
Required courses
Introduction to Environmental Engineering
Biochemical Engineering
Fundamentals of Microbiology
Complete three of the following courses:
Environmental Engineering Chemistry
Water and Wastewater Treatment
Solid and Hazardous Waste Management
Microbiology for Environmental Health Engineering
Materials science and engineering: Biomaterials engineering option (27 Credits)
Required courses
Human Gross Anatomy & Structural Biology
Quantitative Human Biology
Organic Chemistry I
Tissue Mechanics
Biomaterials & Biocompatibility
Complete one of the following courses
Ceramics and Refractory Materials
Fracture and Failure Analysis
Physical Metallurgy of Ferrous & Aluminum Alloys
Technical electives
Nine credits from an approved list of technical electives

long as the sponsoring entity makes a compelling case for the package of educational experiences it wishes to include in the Option.

Second, to be listed on a transcript,³ an Option does not require review at the state level as majors frequently do. The Option must be approved by the appropriate department and college curriculum committee(s) as well as the University curriculum committee. However, the absence of a state-level review requirement simplifies and accelerates the approval process. This allows Options to be developed and approved more quickly with less bureaucratic red tape. It also allows an institution to make a more qualified commitment to a new or changing subject area before it chooses to seek state-level approval for a new academic program or major. Furthermore, the Option’s flexibility makes it relatively simple to modify its content and structure over time as the Option’s subject area develops and as related employment and/or post graduate opportunities evolve. Hence, the Option encourages more

³To be “transcriptable” is the terminology used at Michigan State.

educational and programmatic experimentation and more risk-taking because it consumes less time to design, test, and revise a potential new program. It also requires a lower initial investment of limited resources to try out a new academic program idea with uncertain enrollment potential or only tentative support from some key academic stakeholders.

In a nutshell, Options can be more quickly designed and assembled than traditional majors and minors. Due to the absence of fixed course or credit-hour requirements, Options are more malleable than standard majors and minors. Essentially, Options can be tailored to the distinctive nature of a subject area and the specific purposes for which the Options are designed (e.g., preparation for graduate school, professional school, employment opportunities).

Likewise, Options can be used to supplement basic (and more traditional) academic programs. Options can provide students with specialized knowledge and skills in interdisciplinary areas that bridge traditional academic disciplines. They can also be employed to address key problem areas in professional practice (e.g., joint replacement in medicine [a marriage of engineering and orthopedics]). In an era when academic disciplines are often faulted for their narrow focus on complex problems (see, for example, Wulf and Fisher, 2002, “A Makeover for Engineering Education”), Options offer a means to overcome the sharp segmentation of knowledge that is both a strength and a weakness of higher education today. Options are a creative way to respond to the educational challenge of connecting theory to real world problems and professional practice. For example, an English major could take an Option in technical writing or a nursing major could take an Option in environmental/interior design. Each Option would enhance students’ knowledge of their major field while expanding their professional expertise and career opportunities.

Stakeholder Support

At Michigan State, Options have proven to be attractive to three important constituencies—faculty, students, and administrators—for different reasons. Among engineering faculty members, for example, Options are viewed as non-threatening to the standard academic majors. As supplementary education and credentialing, they leave the core of existing academic programs intact. They achieve some of the objectives of curriculum change without uprooting well-established

programs. Options also permit faculty and academic units to experiment with new program initiatives before launching a major new educational program or even a department which may require substantial resource reallocation and potentially jeopardize program enrollments and reputations. For faculty, a new program Option may be seen as a trial balloon. If the Option sets sail and remains afloat for a lengthy period, a new major, program, or department in the same area may seem like a far less risky venture.

In addition, faculty like Options because they can serve as recruiting tools for mainstream subject fields. For example, an Option in superconductivity can enhance students' interest and enrollment in underlying core fields such as chemistry, physics, and engineering. Likewise, Options in fields such as biomedical engineering can also attract students from underrepresented groups (e.g., women) to disciplines like engineering.

Students like the Option opportunity because it gives them a means to flesh out their educational program in areas of specialized or topical interest within the time constraints of a standard 4-year degree program. It also provides an added credential that may be beneficial to one's career. Options can make a traditional degree more current and adaptable in today's ever more competitive job market. For instance, a graduate with a major in history and an Option in museum studies may have an advantage when competing for jobs with other liberal arts majors.

At Michigan State, students are pleased with the Option label as long as the Option they have pursued is recorded specifically on their transcript. Some of the new Biomedical Options approved for implementation in MSU's College of Engineering are analogous to existing biomedical engineering (BME) programs and degrees at other institutions. For example, Ohio State University offers a minor in BME that consists of a core that integrates engineering, biomedical and life science courses worth 20 credit hours. The BME Option in Biomedical Materials at MSU is comparable in scope (at 23–24 credits) to the Ohio State Minor (at 20 credits). Although MSU does not offer a Biomedical major or minor in engineering at present, the BME Option enables MSU engineering students to have an educational experience comparable to BME programs at other institutions.

Options receive a friendly reception from administrators and university-wide committees because they do not appear to create too much change too fast and generally do not increase the time needed for graduation beyond 4 years. Most of the courses and other appropriate learning experiences included in an Option are already available at

the institution. Some Options involve the addition of one or more new courses (e.g., survey of the field, a capstone experience) designed to make the Option a coherent learning experience. However, Options usually do not require major new staffing and resource commitments before trying out a new program initiative. Because of their limited scope, Options provide a less threatening opportunity to experiment with curriculum reform.

Furthermore, academic administrators like Options because they are easier to abolish than majors, minors, and stand alone programs if they prove to be unpopular or too costly to maintain. Students in an abolished Option would still reside in a core major program. Hence, their basic educational program would remain intact. Furthermore, most courses within an abolished Option would still count as elective credits toward a degree.

Essentially, Options can serve as a proving ground or a test kitchen for innovative educational programs. If an Option proves successful, it may eventually move into the curriculum as a major. Alternatively, the Option may eventually take on a different identity as related mainstream academic fields mutate and take on new features and subject matter by absorbing aspects of successful Options. The history of higher education is rich with fields that emerged at the intersection of other disciplines. Psychology, ecology, and chemical engineering are a few examples. Options provide an interim mechanism to nurture and test the viability of cutting-edge and innovative subject areas. Like an apprenticeship, an Option provides a probationary phase where novel academic initiatives can be refined and strengthened before potentially entering the curriculum as full-fledged academic programs.

Quality Control

The Option offers an attractive supplement to more traditional means of curriculum change and reform. Options are not without risks, however. Careful monitoring and management are necessary to insure that Options provide a positive learning experience for students and a high quality educational outcome. We recommend the following actions to make sure that Options are carefully implemented and maintained:

- Approve only Options that are well-designed and build upon sufficient existing resources. A coherent package of educational experiences (courses, other learning opportunities) is necessary for an Option to provide a credible educational product. Options that are merely a collection of discrete, uncoordinated courses are not

likely to succeed. Likewise, Options must be built upon adequate resources. If a department or institution lacks appropriate courses and other resources (e.g., faculty expertise and teaching time) to implement a quality Option, it should not be approved.

- Manage and supervise Options carefully. Responsible management and supervision are necessary to implement and sustain quality Options. A department chair, director, or coordinator should be assigned responsibility for monitoring an Option's implementation and performance. At the very least, the responsible party should keep track of the number of students who select an Option over time, assess student satisfaction with the educational experience their Option provides, and gather information on the placement and performance of graduates who complete the Option. Before converting an Option to a more traditional academic program, it is important to know how well the Option is performing. It is also important to assess the level of demand for the Option from students, employers, and post-graduate institutions.
- Communicate with key stakeholders concerning the nature, objectives, and status of Options. Ongoing communication is necessary for an Option to work effectively. Options represent a novel curricular approach. Stakeholders such as faculty members, administrators, and students must understand the purpose and goals of Options in order to give them serious consideration and make them priority concerns. All stakeholders need to know why Options are available. Students need to know how they can benefit from selecting an Option. Faculty need to know why supporting an Option can benefit both them and their students. Potential employers and graduate and professional schools also need to understand what an Option is and how completing an Option can enhance a student's education and career preparation. At minimum, Options must be clearly defined in catalogs, on academic program websites, and on material accompanying transcripts. Clear explanations of Options and their uses can help to legitimize this curricular device and encourage its adoption on a wider scale.

Conclusion

Table II summarizes where Options can fit into the curriculum development process by comparing Options to two standard curriculum change vehicles—new courses and new degree programs. As Table II demonstrates, Options offer a middle course through the complex,

Table II
The Option as a Vehicle for Change

New single course	New "Option"	New degree program
Minimal change	Coherent but cautious change	Major change
Requires additional resources (e.g., faculty time, expertise)	Requires modest new resources (faculty time, expertise; money)	Requires a great deal of resources (faculty resources; money)
Not explicitly linked/integrated with other aspects of curriculum/program	Draws upon and integrates existing courses, other learning opportunities	May stand alone or be well integrated with other programs
Easy to institute but course tends to be tied to/dependent on the instructor	Experimental; easy to implement and abolish	Hard to implement
	Little resistance to change; does not threaten existing programs	May threaten established programs; hence, difficult to garner support
	Tests viability of larger changes/reforms, new majors/programs	

and often dangerous, curriculum change process. Options are more ambitious and integrated than the piecemeal addition of single new courses. Yet Options are less risky and less resource driven than major new initiatives like new majors and new degree programs. Due to their more cautious and experimental approach to educational program development, Options can foster creative responses to changing educational needs without generating substantial resistance from stakeholders and programs that feel threatened by major new program initiatives that require extensive resource investments. In some cases, Options may represent an alternative to major curriculum change while still responding to a defined educational need. In other cases, Options may represent an experimental step on the path to a major new program housed in its own department or cross-disciplinary unit.

Many powerful forces require higher education institutions to re-think their missions and how they can best serve society. Business as usual is no longer a viable option. As colleges and universities search for effective strategies to make their educational programs more flexible and responsive, the Option is a curricular tool they can employ

judiciously. This device is helping Michigan State University to cope creatively in a turbulent educational environment where major new academic program investments are costly, contentious, and often risky. Other higher education institutions can also benefit by experimenting with the Option option.

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