

Interdisciplinary Curriculum Development

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THE PROMISE OF INTERDISCIPLINARITY

I had the opportunity last year to sit down with alumni of the interdisciplinary University Studies / Weekend College Program at Wayne State University and ask them what they had gotten out of their education. Many of their responses seemed to reflect the **quality** of their education, not its interdisciplinary nature. They spoke of analytical thinking, critical thinking, how to write and do research and organize their thoughts, and how to communicate with others. They agreed that they had developed a deeper understanding of the world around them, an understanding that came from repeatedly asking “why?” instead of regurgitating memorized answers. In short, they gave some of the same responses we would look for from students who had received a high-quality discipline-based liberal arts education. Students in other interdisciplinary programs may emphasize clarity and precision in reading, thinking, and writing, or on how their assumptions about themselves and their world have been challenged, but the general conclusion is the same — interdisciplinary courses provide an effective vehicle for promoting traditional liberal arts skills.

The students at Wayne State also mentioned the spirit of mutual respect that developed between faculty and students in the program, and even between students of widely divergent backgrounds. Several revealed that lifelong friendships had grown out of the seminars. These outcomes seem to

reflect primarily the **ambiance** of the program, though interdisciplinary courses that stress the complementary role of diverse disciplinary perspectives certainly set a tone of respect for diversity which promotes that ambiance. While interdisciplinary courses can be taught in a formal, traditional manner, they lend themselves nicely to more student-centered, interactive teaching styles associated with progressive education and its outcomes.¹

Some of the outcomes they mentioned, however, seem to flow directly from the **interdisciplinary** nature of the program. They reported being able to “see all sides of the story,” to appreciate another’s perspective of the same situation. They felt able to evaluate the testimony of experts, knowing that “they don’t have the final word.” And they had confidence in their ability to write on a wide range of subjects. These outcomes are grounded in the lesson from interdisciplinary courses that each discipline has a valuable but limited insight into the issue at hand, as are the demystification of experts and the feeling of empowerment to examine issues in their full complexity.

Results from longitudinal comparisons of students in the interdisciplinary Paracollege with their counterparts in traditional majors at St. Olaf College show that students in that interdisciplinary program showed more tolerance of ambiguity or paradox — in fact, they seem to seek out ambiguity.² These findings are confirmed by students in other interdisciplinary programs who show more receptivity to new ideas or who move beyond tolerance to a celebration of diversity.

Beyond these outcomes, the questionnaires completed by directors of interdisciplinary programs for *Interdisciplinary Undergraduate Programs: A Directory*³ provided anecdotal evidence that their students show:

More sensitivity to ethical issues (stemming, no doubt, from the humanities perspective included in courses traditionally limited to the social or natural sciences)

Ability to synthesize or integrate (from the distinguishing feature of interdisciplinary courses, that they pull together limited disciplinary insights into a more holistic understanding)

Enlarged perspectives or horizons, reduced privatism, and greater awareness of communal or public issues (from the topical, issue-oriented focus of most interdisciplinary courses)

More creative, original, or unconventional thinking (perhaps from the difficult task of integration)

More humility or listening skills (as students become conscious of the partial validity of *any* perspective including their own and how it can be enriched by learning from other perspectives)

Sensitivity to bias, whether it be disciplinary, political, or religious (probably from probing the assumptions underlying disciplinary perspectives)

Interdisciplinary courses have advantages for institutions beyond these educational outcomes for students:

The topical or issue-oriented approach of most interdisciplinary courses is inherently **more interesting** to students than survey courses or introductions to disciplines. For students who are often resentful of required general education courses, the motivation of an interdisciplinary approach may be invaluable.

Interdisciplinary courses can be designed to provide an efficient **introduction to the disciplines** themselves by showing how each discipline arrives at its distinctive perspective on the issue.

Interdisciplinary programs can provide an opportunity for administrators faced with tenured faculty in underutilized departments to **reallocate faculty resources** to where there is more student demand.

Interdisciplinary teaching offers an exciting form of **faculty development** since it necessarily stretches faculty, demanding that they come to grips with new perspectives that challenge long-held assumptions from their own disciplinary training.⁴

These desired outcomes must be kept clearly in mind as interdisciplinary courses and programs are developed. Different strategies for organizing and teaching interdisciplinary courses have different educational outcomes. While it may only be of semantic interest whether a particular course design is “truly” interdisciplinary by any one definition, its educational outcomes are what ultimately determine the value of the course. The recommendations that follow for developing interdisciplinary courses and programs are designed to produce courses which fulfill the promises held out above.

Interdisciplinary Courses

Definition of Interdisciplinarity. What I have in mind are courses that “critically draw upon two or more disciplines and...lead to an integration of disciplinary insights.”⁵ While the discussion that follows assumes that interdisciplinary courses are organized around a topic, the suggestions apply with equal force to courses organized around a theme, problem, issue, region, cultural or historical period, institution, figure, or idea.⁶

Breadth of Topic. An integrative course “covers” reductionist perspectives (typically disciplines or schools of thought) the way a disciplinary course covers subject matter. Topics need to be quite focused in order to allow sufficient time for each perspective in a 10-15 week course. For example, an integrative social science course might focus on “U.S. Unemployment,” drawing on the disciplines of economics, history, political science, psychology, and sociology to examine the causes of unemployment and its “solutions.” Such a course might start with a week on some provocative pieces (e.g., articles, films, short stories) on unemployment that “hook” the students’ interest. It might then spend one to two weeks per discipline on the insights afforded by each perspective, and then conclude with a week devoted to synthesizing them into a more holistic perspective. Similarly, an interdisciplinary humanities might examine “abortion” from the perspectives of philosophy, religion, history, and literature, and an interdisciplinary natural science course might focus on “the energy crisis” from the perspectives of chemistry, physics, geology, and biology. (See the distinctions among multidisciplinary, pluridisciplinary, crossdisciplinary, and interdisciplinary in the section of this article on *Indicators of Levels of Integration*.)

There is a temptation in designing interdisciplinary general education courses to cover too much subject matter. One might prefer the topic of “U.S. Urban Problems,” for example, to the seemingly narrower course on unemployment. However, if the course is to cover even the most major of urban problems — housing, race, education, government, crime, renewal, as well as unemployment — there will be no time left in the semester to explore more than one perspective on each topic. What appeared at first to be the narrower course on unemployment turns out to be much broader in terms of perspectives presented. Similarly, an interdisciplinary humanities course on “contemporary moral issues” (instead of “abortion”) or an interdisciplinary natural science course on “energy” (instead of “the energy crisis”) might appear preferable, but each would find itself over-extended as well. As long as an interdisciplinary course focuses on a topic of inherent interest to students and faculty, it is unlikely that the topic will be too narrow.

Instead of attempting to present the most important concepts and theories of each discipline in an interdisciplinary introduction to the social sciences, humanities, or natural sciences, it is preferable to give students a “feel” for each discipline by learning how it attacks a single problem. That way, students come away with some comparative sense of the disciplines. Since it is impossible anyway to include **all** major concepts and theories (even in a disciplinary course), the topical approach provides a rationale for selection that

is apparent to students as well as faculty. Coverage is complete because every discipline's perspective is presented.

Interdisciplinary courses tend to appear fragmented and incoherent to students as the term progresses because they shift from one disciplinary perspective to another. Teachers have a special obligation in interdisciplinary courses to keep the logic of the course organization in front of the students. The narrower and more tightly defined the topic, the easier it is for students and teacher alike to keep track of where the course is heading.

The Role of Disciplines in an Interdisciplinary Course. It is important for interdisciplinarians to keep in mind the value of the disciplines. It is easy to dismiss them as arbitrary or artificial ways of dividing up reality, ignoring the extent to which they offer alternative ways of viewing reality, each grounded in a worldview that has demonstrated its fruitfulness over time for a range of topics studied by an ongoing group of scholars. The disciplines can provide valuable insight into the complexity of an issue as a whole, not just into different pieces of that whole. To ignore the disciplines as interdisciplinary courses attempt is to ignore the accumulated wisdom of different approaches to understanding as well as the specific insights they afford.

Disciplines and not substantive facts are the raw materials of an interdisciplinary course. Students need to understand not only what each discipline has to say about the topic but *why* it says it. In the course above on "U.S. Unemployment," for example, students need to confront not only the arguments of a Milton Friedman but the supply and demand curves lying behind them, and they need to probe those supply and demand curves to see the assumptions in which they are grounded. Similarly, students in the course on "abortion" need to understand *why* different religions take the positions they do on abortion; in the course on "the energy crisis," they need to understand *why* powerplants are inherently inefficient. Instead of simply initiating students into a single disciplinary craft or guild, teaching them to accept the "truth" of that discipline's perspective, we need to help students appreciate the powerful contributions of the disciplines at the same time that they come to recognize their inherent limitations and biases. There is a remoteness and detachment from the disciplinary activity when we merely read about it, and an incomparable feel for that activity when we experience it. Students come to understand the scientific perspective, for example, much better when they put on scientific lenses than when they read the pronouncements of scientists.

Integration. I used to think of integration as analogous to completing a jigsaw puzzle (when disciplinary insights are complementary, as they often are in the natural sciences) or as a problem in identifying and choosing among assumptions underlying disciplinary insights (when they conflict, as they often do in the social sciences). In the course on “the energy crisis,” the jigsaw analogy might fit, in which geology explains the location and extent of fossil fuels, physics explains how their energy is released in a power plant, and chemistry and biology explain the environmental consequences of the pollutants given off in the process. In the course on “abortion,” one might argue that the integrative task is to choose among competing ethical or moral assumptions. Over the years I have come to realize, however, that the external reality scholars confront is often complex, variegated, and contradictory, so that mutually incompatible assumptions can all be “correct.” Human beings, for example — the building block of the social sciences and the focus of much of the humanities — are rife with internal contradictions; consequently assumptions of freedom and determinism, for example, may both be correct at the same time for a particular individual in a particular situation. I now see integration in interdisciplinary study as essentially holistic thinking, in which the different facets of a complex reality exposed through different disciplinary lenses are combined into a new whole that is larger than its constituent parts, that cannot be reduced to the separate disciplinary insights from which it emerged. Whether we call it integration, synthesis, or synergy, this process is more organic than mechanical, involving coordination as well as cooperation among disciplinary perspectives. It requires an act of creative imagination, a leap from the simplified perspectives that give the disciplines their power to a more holistic perspective of a richer, more complex whole. That leap is motivated by a dissatisfaction with the partial insights available through individual disciplines.

Models of integration such as systems theory, structuralism, and marxism are examples of the standard repertoire available to the interdisciplinarian. Neophyte interdisciplinarians may be well advised to study these models for their heuristic value. Yet there is some advantage to moving beyond well-established strategies for integration, since they tend to lose their responsiveness to disciplinary insights as they develop into a new school of thought with an orthodoxy of its own. While there are no firm guidelines for developing one’s own integrative strategy, since it is an essentially creative act, there are a number of books that suggest techniques for promoting creativity that may prove beneficial to interdisciplinarians.

Indicators of Levels of Integration

Ever since *Interdisciplinarity: Problems of Teaching and Research in Universities* was published by the OECD in 1972, the extent of integration in a course has been indicated by the labels “multidisciplinary” (the serial presentation of disciplines with no integration attempted), “pluridisciplinary” (disciplinary insights into the topic are compared or contrasted but still not integrated), “cross-disciplinary” (one discipline is applied to the characteristic subject matter of another, yielding new insights but not an integration of the insights of both disciplines, and providing a new but not a larger perspective) and “interdisciplinary” (the insights of the disciplines are integrated into a larger, more holistic perspective). For a more complete discussion of the various uses of these terms since 1972, see Julie Klein’s *Interdisciplinarity: History, Theory, and Practice*.⁷ Less apparent from the literature is that there are characteristic patterns of course development and design indicative of each of these levels, even when faculty from different disciplines collaborate.⁸

In multidisciplinary courses, faculty tend to work separately on “their” part of the course. They tend to see the topic only from the perspective of their discipline, and that perspective is unaltered by the course development process. Indeed, the course topic itself may be grounded in the perspective of a single discipline (perhaps that of the faculty member who proposed the topic). There is no section at the end of the course reserved for integration, and any integration is undertaken by the students without faculty assistance. The methodologies and epistemologies underlying the disciplines are unexamined, perhaps even unstated.

In pluridisciplinary courses, a section at the end of the course becomes “ours,” where faculty involved in the course can talk to each other even though no explicit integration takes place. Faculty members begin to understand each other’s perspective, though their own remains unaltered. There is still no explicit examination of epistemology or methodology, though it may become implicit in the discussion at the end of the course.

In cross-disciplinary courses, faculty interactions follow a dominant/subordinate pattern and one faculty member prevails. There is a conclusion to the course resulting from the new insights, but still no integration because only one perspective is evident.

In an interdisciplinary course, faculty tend to work together as much as alone, interacting instead of merely working jointly. The topic may well have shifted as the course evolved, and faculty perspectives on it have been altered. In the integration section at the end of the course, faculty work with

students in forging a new synthesis, which results in a larger, more holistic perspective. In order to bring about that synthesis, the world view and some of its underlying assumptions of each discipline are brought to light and made explicit.

Implicit in these indicators are some strategies for faculty participating in team-course design. In addition to some modest expertise in their discipline if not in the topic, faculty must come into the course development process with an openness to hearing what other faculty say about the topic from the perspective of their discipline, and with enough humility to recognize that much of what they thought they knew (and their colleagues back in the department are still sure they know) is at best partial truth if not misleading, distorted, or just plain wrong. Faculty should be representatives of their disciplines in the sense of a senator or congressperson who embodies the value and local wisdom of her or his constituency but who listens to the debate, studies the issues, and votes according to his or her own judgment. They should not emulate the member of the House or Senate who takes polls back home on each issue and then votes in Washington the way folks back home want even though they cannot see beyond the horizons of their county. Faculty need to work together on the course, representing their discipline by virtue of having been trained in it but not fighting on its behalf.

Once individual faculty members have had sufficient experience designing and team-teaching interdisciplinary courses, they should be ready to "go it alone." Beyond the obvious requirement of commitment to holistic thinking and the interdisciplinary process, two tests of readiness stand out. One is their command of the perspectives and underlying assumptions of disciplines other than the one(s) in which they received graduate training. Can they present those perspectives not just accurately, but sympathetically, persuasively, and comfortably to their students? Second, are they prepared to guide their students through the integrative process?

Disciplines do not need protection, nor do their pet theories, concepts, and methods. The problem the faculty member faces is not getting enough economics, say, into the course, but figuring out what economics can best contribute to the topic, and how that contribution relates to the contributions of the other disciplines. If there is insufficient time to include the entire theory of pure competition, for instance, in the course, no harm is done. If economics is well represented in the course, so that students come away with a respect for what economists have to say on the topic and some sense of how the economist's insights differ from those of other disciplines,⁹ those students who find that way of looking at the world congenial will be more inclined to sign up for economics courses (and more likely to pass them) than

students who have a mistaken impression of what economics is about. Interdisciplinary courses are the discipline's chance to "strut its stuff"; to learn the discipline, students will have to take a course in that department.

Enforcing Interdisciplinarity

Even the best team-developed interdisciplinary course can degenerate into a disciplinary course when it is taught by one faculty member from one disciplinary perspective. This problem occurs most frequently when a faculty member is "drafted" to teach a section of a required interdisciplinary general education course (though it can appear in any individually-taught interdisciplinary course). In the interests of economic feasibility, these courses are often team-developed but each section is individually taught and the faculty recruited to teach these sections were often not involved in developing the course. While faculty development (discussed below) is essential in preparing these faculty members, it can be supplemented by several structural features:

The different sections should share a common syllabus and readings. Even where a team has designed a "model" course when the requirement was adopted, the faculty actually teaching the course need a specific topic with which they feel comfortable. The process of tailoring the course to their interests ensures that they get some exposure to other perspectives on the topic *and* that their discipline's perspective is represented.

It is also useful to have all sections meet once a week for a common lecture (given by the faculty member with the most expertise on that week's material). Students get some exposure to each discipline's perspective from an adherent of that discipline. The lecture also provides a regular point of contact among sections, giving students and faculty alike the sense that they are part of a larger, cohesive course.

A weekly faculty seminar is invaluable. Faculty teaching different sections of the same course should meet weekly to go over what will go on in section the next week — issues to raise and their order, key questions, educational objectives; faculty take turns leading the seminar, depending on who has the most expertise in that week's material.

Finally, paper topics and examinations should be common to all sections, with grading standards worked out or at least ratified in faculty seminar. The first time around, one faculty member might grade several papers from her or his section, selecting out examples of A, B, C, D, and F papers and circulating them among the other faculty teaching in the course. They would be discussed in faculty seminar before others started grading.

Interdisciplinary Curricula

Factors Promoting Interdisciplinarity. The long term prospects for an interdisciplinary curriculum are best if it fits logically into the educational mission of the institution. As long as proponents can demonstrate its centrality to the mission, they can defend it in time of budget shortages or periodic curricular restructuring. Otherwise, scarce faculty or financial resources are likely to be reallocated to other programs more attuned to the institution's guiding vision.

Distinct interdisciplinary programs stand a better chance of longterm survival if their faculty have full-time appointments in the program. Faculty whose professional rewards of tenure, salary increases, and promotion emanate from the interdisciplinary program are taking much less of a professional risk to devote the considerable time required to learn other disciplinary perspectives and develop interdisciplinary research agendas. In fact, the interdisciplinary program is well advised to use those professional incentives to promote the interdisciplinary professional development of its faculty; otherwise, they may choose to redefine its interdisciplinary mission at some later date when institutional problems with enrollment or budget create pressure for retrenchment.

Institution-wide interdisciplinary curricula such as a required core of interdisciplinary liberal education courses must borrow faculty from disciplinary departments, so a different long-term strategy is required. Central administrators with responsibility for liberal education must provide sufficient faculty development opportunities over a period of years to create a critical mass of tenured faculty who are experienced in interdisciplinary curriculum development and pedagogy and committed to interdisciplinary education. Some of these faculty need to be widely recognized within the institutions as excellent teachers and scholars to dispell any claim that interdisciplinary courses are of inherently low quality. Others need to be leaders in the institution's governance procedure who can come to the defense of the interdisciplinary curriculum if it is threatened politically.

Administrators need to foster a spirit of innovation in order for interdisciplinary education to thrive. Faculty need to experiment, to take risks; they need to be able to fail with impunity. It takes time to learn how to organize and teach an interdisciplinary course in the context of a particular institution for a particular student body. It is threatening for faculty new to interdisciplinary study to teach outside their area of expertise, to seek help from their colleagues, and to admit to their students that they are co-learners to some extent. It is unsettling for faculty to discover that long-cherished assumptions

of their discipline are sometimes misleading if not wrong, and it is harder still to admit it to their colleagues.

Finally, faculty should be encouraged to come to some consensus about the nature of interdisciplinary study (perhaps through the faculty seminars discussed above). Without at least some boundary conditions on what is and is not good interdisciplinary study, it is very difficult to elicit high quality proposals for interdisciplinary courses and to improve existing interdisciplinary courses. The problem is especially serious for faculty who were not involved in the process of setting up the curriculum and designing the initial courses.

Sequencing. Interdisciplinary courses represent a significant departure from the course structure and style of teaching and learning to which students are typically exposed in high school. They are most likely to accept the unfamiliar roles of faculty and students and the structure of an interdisciplinary course, and embrace its active, critically questioning style of learning, if they are exposed to it in the first semester of their first year in college, when studies indicate that the significant changes normally take place in college students. It is true that the relativistic thinking required in an interdisciplinary course may clash with the concrete thinking of some entering students,¹⁰ but interdisciplinary courses are an effective vehicle for moving students through Perry's stages (because they demonstrate the inadequacy of concrete thinking and the necessity of relativistic thinking and commitment), and the first semester of the first year is the time in college when they are most open to new thinking styles. Thus there are important advantages in introducing students to an interdisciplinary curriculum their first semester in college.

Since interdisciplinary study builds directly on the disciplines while offering a holistic counterbalance to the reductionist perspectives they afford, a curriculum that intersperses disciplinary and interdisciplinary courses allows each to build on the strengths of the other. For example, after taking intermediate theory courses in economics, sociology, and political science, students might take interdisciplinary topical courses drawing on those analytical tools; e.g., an interdisciplinary course on modernization (replacing currently offered courses on political modernization, economic development, and the sociology of modernization). With the assistance of interdisciplinary courses, students can place in perspective the disciplinary tools they are acquiring, keeping sight of their limitations as well as their strengths, and assessing their relative contributions to complex issues. Through disciplinary courses, students can extend and refine their command

of the analytical tools they bring to an interdisciplinary course, yielding more sophisticated insights into its complex topic.¹¹ And the slow process of moving students through Perry's scale can be continued, to the benefit of disciplinary as well as interdisciplinary courses.

After students have taken the bulk of their upper-division coursework in a single discipline, steeping themselves in its specialized way of looking at the world, it is important to conclude their undergraduate education with an interdisciplinary course that humanizes their new-found expertise by placing it in a larger context. One effective strategy is to conclude with a senior capstone seminar where students from a variety of disciplinary or professional majors gather to discuss a complex interdisciplinary issue. Topics in the general area of science, technology, values, and society are particularly effective in eliciting insights from the full range of disciplines and professions. Since the students themselves bring the requisite disciplinary expertise to the course, it can be staffed by a single faculty member broadly interested in the topic. Different capstone seminars can be offered by individual faculty members, each on a different topic.

In general, upper-division interdisciplinary courses can gain in sophistication and depth of analysis if they build on any required general education core or if they have disciplinary prerequisites that allow the discussion to move beyond introductory concepts and theories. Disciplinary prerequisites also simplify the task of making explicit the disciplinary worldview and its underlying assumptions. Students are then able, in an upper-division interdisciplinary course, to focus more attention on the challenging process of integration.

Resource Requirements. Interdisciplinary programs, especially institution-wide general education programs of interdisciplinary core courses, necessitate extra initial resources and special administrative structures not required by their disciplinary counterparts. This is not, however, because they are more expensive to teach in the long run, but because they require more faculty time to design the courses and prepare to teach them. As discussed above under *Indicators of Levels of Integration*, once faculty have gained the requisite command of other disciplines, they can teach an interdisciplinary course (or their own section of it) by themselves. The on-going major expense of team-teaching (with more than one faculty member teaching in the same room at the same time) is not required for high quality interdisciplinary courses. On the other hand, special administrative structures *must* be on-going to solicit and evaluate proposals for future courses and to ensure that they are adequately staffed.

Even after faculty committees have invested considerable time in designing an interdisciplinary curriculum and sketching out sample interdisciplinary syllabi in preparation for a faculty vote on a new interdisciplinary program, the demand for extra institutional resources has just begun. The faculty who will be teaching a given interdisciplinary course need to be the ones to select its substantive topic if they are to be expected to put the requisite effort into preparing themselves to teach it. Consequently, syllabi developed during the program approval process must be viewed as purely illustrative models only, and new syllabi will have to be developed by the actual teaching teams. It takes a lot of time to develop a good interdisciplinary course even when working from well-thought out models. It takes time to negotiate with colleagues from other disciplines over which sub-topics to include under the agreed-upon topic, and which disciplinary concepts and theories are most needed to explore those sub-topics. It takes time to find the appropriate readings, films, exercises, and so forth when working outside the area of one's expertise. The institution needs to provide either released time or summer stipends to faculty preparing these courses, both to free up the requisite faculty time and to send the message to faculty that the administration recognises and values the time it takes to prepare interdisciplinary courses.

Once a teaching team has been assembled and a common syllabus prepared, a major faculty development task remains to prepare faculty to actually teach the course they have developed. Since each faculty member must be prepared to present to her or his own students *all* the disciplinary perspectives in the course (and not just that of his or her own discipline), faculty need both assistance and extra time to develop the requisite grounding in the other disciplines. The most effective way I know to prepare first time interdisciplinarians to teach their own sections of a multisectioned interdisciplinary course is to have them meet weekly in a faculty seminar where they can take turns training each other in their respective disciplines. Such a seminar represents a major intellectual undertaking by faculty and a considerable expenditure of time. To ensure that they can put adequate time and effort into the seminar, it is desirable that it count in their teaching load. (If stipends are offered in lieu of course-load reductions, it must be accompanied by dramatic reduction in committee assignments to free up enough time for faculty to prepare adequately for the seminars.) Two times through an interdisciplinary course is usually sufficient to prepare them to handle discussions without the assistance of the faculty seminar, though at least one veteran would need to continue to work with any new additions to the staff of the course.

The cost to the institution of providing inadequate resources for course and faculty development are predictable and serious. Inadequate preparation time for designing and teaching interdisciplinary courses will result in weak, ineffectually taught courses. In a few years, the faculty as a whole will grow disaffected with what they will have come to see quite rightly as intellectually irresponsible core courses, and the program will be voted out of existence. Not only that, interdisciplinarity itself will probably come to have a bad name on campus (“We tried the interdisciplinary approach already and it didn’t work”) and opportunities for future innovations will be lost as well. Faculty frustration with interdisciplinary courses can also be avoided by exposing them to the interdisciplinary literature, which is replete with warnings about strategies that have failed at other institutions as well as tips on ideas that have worked. With the publication of Julie Klein’s comprehensive bibliography,¹² the scattered and fragmented nature of the literature on interdisciplinary education need no longer force faculty to reinvent interdisciplinary wheels.

Since an interdisciplinary course of necessity falls outside normal administrative structures, interdisciplinary programs require their own coordinator. That person needs access to support staff and enough power to ensure that courses are staffed with appropriate faculty even when department chairs balk at releasing them from departmental teaching duties. That person should also have some input into the promotion and tenure process at the institution-wide level to help balance out departmental assessments that may not take participation in interdisciplinary programs as seriously as departmental teaching or research; otherwise, faculty may feel that the extra expenditure of time and psychic energy required for participation in an interdisciplinary program will not be rewarded (and may even be penalized). For institutional-wide general education programs, that person has to have the stature of a dean or vice-provost, and for large institutions it is a full-time job. It takes someone with considerable stature within the institution to serve as an effective advocate for interdisciplinary programs, protecting them from the inevitable attacks at some point in the future by faculty whose vision of education values a more narrow professionalism. That tension between different visions of education will always be with us. Institutions need to find structural mechanisms to ensure an on-going balance between reductionist and holistic perspectives within the curriculum, much as do individual interdisciplinary courses.

Community. Interdisciplinary courses, with their holistic perspective on complex topics, lend themselves well to the development of living-learning

communities, which take a holistic view of students (and faculty) as complex individuals who live as well as learn. Both perspectives emphasize the importance of moving beyond relativistic understanding to commitment. Both stress praxis, the application of classroom theories to real world issues we face in our lives. A program of required interdisciplinary core courses has the potential of contributing to the development of a coherent intellectual community. Students not only have a common vocabulary and set of intellectual skills, but they (and many of the faculty) have confronted a common set of issues within those courses and each has had to develop a personal position that takes the different disciplinary perspectives into account. But the formal curriculum alone cannot create a community. If the ideas, ways of thinking, and sensibilities students (and many faculty) share from these courses are to become connected to the rest of their lives, they must be placed in an environment that facilitates those connections. The institution can do much to promote such a sense of community by focusing its lecture and concert series, residence halls programming, exhibits, and so forth on themes raised in the required core courses. The coordination of these efforts would need to come from the office of the person administering the interdisciplinary program.

Individualized Interdisciplinary Programs

Many so-called interdisciplinary programs are more accurately individualized or self-designed majors that students put together from disciplinary offerings, though they may be used by students to explore an interdisciplinary topic. I conclude with some criteria for evaluating these programs. These criteria overlap with those for other kinds of interdisciplinary programs discussed above, but they are reiterated here for convenience's sake:

Explicit focus. Each student's proposal should have a brief title that captures the essential integrating thread that ties the courses together.

Coherence. Students should provide a well-thought-out rationale that explains why a particular set of courses was selected.

Depth. There should either be a set number of credit hours in upper-division courses required, or they should meet more generic criteria for depth, such as acquisition of higher-order thinking skills, appreciation of the complexity of a discipline, and awareness of its epistemology.

Breadth. Students should be asked to demonstrate that their major is not so narrowly technical that it is inappropriate for a bachelor's degree. They

should be encouraged to take courses that offer significantly different perspectives; e.g., English and business, not speech and theater.

Capstone experience. Students should take an interdisciplinary seminar or write an interdisciplinary senior project that gets them to pull together their major.

Interdisciplinary method. Students need an introductory interdisciplinary course that is explicitly designed to prepare them to integrate the courses they take in different departments. It should prepare them to draw effectively and critically on the disciplinary courses in their concentration and to place them in a holistic framework.

Appropriate program title. Truth-in-packaging considerations demand that an institution decide whether it is truly offering a flexible interdisciplinary major or merely an individualized major, and then label it accordingly. Students have enough trouble explaining these majors to prospective graduate schools and employers without being further burdened with an inappropriate label.

Publicity. Even if the institution wishes to keep the program small (or low-visibility for fear of losing the program through departmental turf protection), it is still important to make sure that students, especially non-traditional ones most likely to benefit from the program, are made aware of its existence. On campuses where the program is of particularly high quality, it may be important in terms of campus politics to publicize its successes even though the program may not be able to grow in size.

Student ownership of their education. Students in these programs have a special need to clearly articulate their educational goals for their program and explain how each course within their concentration contributes to those goals.

Administrative location. These programs are most likely to thrive when they are housed administratively in divisions or schools with a commitment to innovation and student-centered education, and that support broad-gauged (if not interdisciplinary) approaches.

Explicit guidelines. Since program directors come and go, written guidelines for preparing proposals (aimed at students) and for evaluating them (aimed at faculty or administrators) provide a valuable institutional memory of the criteria currently in use.

Faculty. Since the perceived caliber of individualized programs rests in the eyes of the faculty at large with the reputation of the faculty sponsoring them, it is important to attract faculty to the program with some stature within the institution. If such faculty are not interested in participating, it would be useful to ask them how the program might be changed to make

them interested. Then the program's structure should either be reexamined in the light of their comments, or faculty misperceptions about the program need to be corrected.

Faculty advisory committee. These programs are normally well served by a formal advisory committee that provides oversight as well as review.

Faculty rewards. In most programs, the rewards for faculty are only intrinsic. This is fine as long as the primary institutional emphasis is on teaching and advising over research and publication. Problems arise when institutions shift this emphasis while leaving the reward structure unaltered.

Testing the waters. Individualized programs are a useful institutional tool for identifying potential future programs or majors, since any groundswell in student demand should be felt there first. Institutions need to monitor these programs and probe the sources of any unusual increase in the numbers of students putting together concentrations on any one topic.

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Endnotes

1. William H. Newell and Allen J. Davis, "Education for Citizenship: The Role of Progressive Education and Interdisciplinary Studies," *Innovative Higher Education* 13:1 (Fall/Winter, 1988), pp. 27-37.
2. Allen J. Davis and William H. Newell, "Those Experimental Colleges of the 1960's: Where Are They, Now that We Need Them?" *The Chronicle of Higher Education* (November 18, 1981), p. 64. Reprinted in Stephen H. Barnes (ed.), *Points of View on American Higher Education*, Volume 2 Institutions and Issues (Lewiston, NY: Edwin Mellen Press, 1990), pp. 38-43.
3. William H. Newell, *Interdisciplinary Undergraduate Programs: A Directory* (Oxford, OH: Association for Integrative Studies, 1986).
4. Forrest H. Armstrong, "Faculty Development Through Interdisciplinarity," *The Journal of General Education* 32:1 (Spring, 1980), pp. 52-63.

5. For an extended examination of this definition, see William H. Newell and William J. Green, "Defining and Teaching Interdisciplinary Studies," *Improving College and University Teaching* 30:1 (Winter, 1982), pp. 24-25.
6. The interdisciplinary process underlying this definition is set up in some detail in Barbara Hursh, Paul Haas, and Michael Moore, "An Interdisciplinary Model to Implement General Education," *Journal of Higher Education* 54 (1983), pp. 42-59.
7. Julie Thompson Klein, *Interdisciplinarity: History, Theory, and Practice* (Detroit: Wayne State University Press, 1990).
8. See Forrest Armstrong, "Faculty Development Through Interdisciplinarity," *The Journal of General Education* 32:1 (Spring, 1980), pp. 52-63.
9. Again, see Hursh, et al., op. cit.
10. William Perry, *Forms of Intellectual and Ethical Development in the College Years: A Scheme* (New York: Holt, Rinehart, and Winston, 1970).
11. William H. Newell, "The Role of Interdisciplinary Studies in the Liberal Education of the 1980s," *Liberal Education* 69:3, pp. 245-255.
12. Julie Thompson Klein, op. cit.