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ABSTRACT

Prompted by requirements of the 1990 Perkins Act and a growing dissatisfaction among employers with college graduates' skill levels, many schools have undertaken curricular reform through tech prep and school-to-work, with most of the efforts working toward the integration of academic content into vocational programs. In general, however, tech prep implementation has been more active at the K-12 level than at community colleges. Research on curriculum integration in community colleges has revealed eight main approaches: general education requirements; applied academic courses; the incorporation of academic skills into occupational programs; the incorporation of academic modules into occupational courses; multidisciplinary courses combining academic and occupational concerns; tandem courses or learning communities; colleges-within-colleges, where students take all of their classes together; and remedial programs with an occupational focus. Benefits of curriculum integration include an improved ability to meet the needs of occupational and transfer students; bridge isolated sectors of the college; and form industry partnerships; while the considerable barriers include problems in articulating courses; faculty reluctance to change; and lack of expertise, leadership, and resources. In Michigan, a statewide curriculum integration project was undertaken to develop new courses and identify barriers to integration. Pilot projects were funded at four colleges, with the Wisconsin Instructional Designs Systems (WIDS) framework being used for curriculum writing. Lists of future directions and recommendations for further integration are included. Contains 17 references. (AJL)

Curriculum Models: Integration of Academic and Occupational Content

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Curriculum Models: Integration of Academic and Occupational Content

Introduction

The 1990 amendments to the federal Carl Perkins Applied Technology Act, commonly called the Perkins Act, require that federal money be spent on vocational programs that "integrate academic and vocational education . . . through coherent sequences of courses, so that students achieve both academic and occupational competencies." (Section 235)

Since 1990, many schools across the nation at the secondary and postsecondary level have struggled with how to accomplish the intended outcomes. Most have settled for course requirements, for example requiring separate and distinct courses in English and Drafting, to meet the requirements. Others have felt that the outcomes would be enhanced if the contents were better integrated, believing that English integrated with Drafting may provide a more powerful learning experience. Accomplishing integration within courses and programs has been a difficult challenge. As we approach reauthorization of the federal legislation in 1996, along with anticipated dramatic reductions and funding program consolidations in the current Congress, the impetus to make progress on this agenda has increased. The purpose of this paper is to explore the following questions:

1. What rationale or justification exists to support the benefits of an educational approach that would integrate academic and occupational content?
2. What are the barriers to integrated curriculum implementation at the community college level?
3. What models exist for curricular integration?
4. What are the approaches in use in Michigan's pilot integration projects?
5. What recommendations should be made to community college instructional leaders regarding how they can accomplish curricular integration?

In "Reflections on Course Planning: Faculty and Students Consider Influences and Goals," by Joan S. Stark et al, it is reported that the primary course planning influence is Discipline, which is followed at a distance by Student Characteristics and Instructor Background. James Davis, in the chapter on "The Subject" in Better Teaching, More Learning defines discipline as "a specified academic domain with agreed-upon rules for discovering and transmitting knowledge." He continues:

> *While the disciplines may serve well the "academic priesthood," most of life's problems in the information age, both in the world of work and in the society at*

large, do not come in the tidy packages suggested by the academic disciplines. Students trained exclusively in a system of academic disciplines may be ill-equipped to deal with the problems of the real world. Students often have trouble seeing the relationships among disciplines, and the rigid boundaries and specialized language of the disciplines often hinder communication. Although the academic disciplines provide an excellent framework for the discovery of knowledge, they do not necessarily provide the best (and certainly not the only) means for the transmission and application of knowledge."

Davis describes organizing principles as philosophies which govern the "how and why" for the way things are done. Examples of organizing principles include: Discipline, Great Books, Personal Development, Competency-Based, and Social Change. The move toward integration of disciplines has the potential to bring many of these organizing principles into play if a comprehensive approach is developed. Faculty collaboration becomes an essential component of the successful integrated curriculum. In their work on Faculty Collaboration, Ann Austin and Roger Baldwin write:

Breaking down the barriers that discourage collaboration by faculty is probably the most needed reform. By implementing supportive policies and creating organizational structures to facilitate collaboration across disciplinary and institutional boundaries, higher education could better reap the range of benefits that faculty collaboration promises."

Add to this content approach the values of faculty collaboration, and the power of this education reform is potentially great.

A Case for Integration

The proper balance between academic and job-specific preparation has been a topic of extensive debate for decades. This debate is traced back to the nation's founders when Benjamin Franklin reportedly had a preference for a pragmatic, utilitarian education while Thomas Jefferson believed that possession of basic academic skills equipped one to move into almost any realm. Other writers trace this development to the work of John Dewey. Career education is midway between a liberal and a technical education. The different viewpoints are not likely to be reconciled easily or soon - particularly if the dichotomy of the two persists. James Davis writes:

It is not difficult to predict what would happen if they were all asked to serve on the same curriculum committee. There would be, no doubt, heated arguments about vocational vs. Liberal education (the "cash vs. culture" debate), egalitarian vs. Elitist education (the "all vs. best" debate), and applied vs. Basic education (the "useful vs. theoretical" debate)" (Davis, 1993, p. 39).

As long as we consider the issue to be either/or, there will be competition. Today's environment calls for an end of the competitive model and the nurturing of the collaborative one. The question is not that of one versus the other; it's a question of how we can most efficiently and effectively accomplish both to the highest possible levels. There is much to suggest that integrating the contents will take us far toward achieving these goals. Because little real integration exists in community colleges, the case for integration of the curriculum is less well defined than it is for the secondary level. However, much of the research at the secondary level appears to transfer well, and preliminary evidence would suggest that similar improvements should be expected.

In addition to the Perkins Act cited above, many additional factors contribute to the heightening interest in significant curricular reform. Nationally, high drop out and illiteracy rates in some districts have been major forces driving curriculum reform. Employers' criticisms of the schools regarding the preparedness of graduates have been escalating, especially as unemployment is lower and employers have had increasing difficulty in hiring qualified workers - many times resorting to the hire of less qualified individuals. Vocational educators are criticized in some cases for providing overly specific training, while academic educators are criticized for providing instruction that neither is participatory nor connected to the real-world's requirements. Accountability expectations are increasing from many sectors: communities, employers, accrediting agencies, governments, and others. Students question our requirements, seeing little value to some of the requirements we have established. Many occupational programs have suffered declining enrollments in recent years. James Davis says:

> *In the years ahead, the emphasis will be on new knowledge, new abilities to derive and manage technical information, and new interpersonal skills necessary for working in a globalized environment (Davis, 1993, p. 38).*

High-skill workplaces, with flatter organizational structures, place greater responsibilities on each worker for thinking, problem solving, and communications. Individuals need to be better prepared for the high-skill workplace as well as to be productive as lifelong workers and learners, regardless of the nature of the work, as jobs increasingly disappear and virtual corporations are more prevalent.

A 1995 statement from the Advisory Board of the National Center on the Educational

Quality of the Workforce (EQW), "On Connecting School and Work," offers the following commentary:

> *Few American employers see schools as effective partners in their search for skilled workers. This growing disconnection between the nation's schools and its businesses threatens to undermine the educational quality of the workforce on which American productivity depends. The challenge is to develop initiatives that require neither new funds nor another government agency; rely on the market to create the incentives for firms to invest in human and physical capital; and lower the costs to employers of screening and hiring new workers.*

The 1988 work of the Commission on the Future of the Community College recommended "exploring new ways to combine technical and general studies throughout the undergraduate experience," and "community college faculty should take the lead in closing the gap between the so-called "liberal" and the "useful" arts, particularly by developing "up-to-date programs that integrate the core curriculum and technical education."

A widely acclaimed 1984 work called Involvement in Learning, Realizing the Potential of American Higher Education by the Study Group on the Conditions of Excellence in American Higher Education recommends that "faculties and chief academic officers in each institution should agree upon and disseminate a statement of the knowledge, capacities, and skills that students must develop prior to graduation. It continued in Chapter 8 (Study Group, 1984, page 39):

> *We are hereby recommending that postsecondary institutions be less grandiose in their statements of goals and far more specific about their objectives. It is not sufficient that the lists generated by faculty and academic officers recite symbolic terms like "critical thinking," "problem solving," or "creativity." We recognize that not all of the outcomes of an undergraduate education can be specified in such a way to be easily quantified. But this does not relieve us of the responsibility to define the knowledge, capacities, and skills we expect students to attain.*

In Chapter 10 (pages 43-44):

> *Liberal education requirements should be expanded and reinvigorated to ensure that (1) curricular content is directly addressed not only to subject matter but also to the development of capacities of analysis, problem solving, communication, and synthesis, and (2) students and faculty integrate knowledge from various disciplines. . . But simply adding requirements--or offering students a larger set of liberal arts courses from which to select--does not achieve one of the principal*

aims of liberal education, the ability to integrate what one has learned in different disciplines . . . the reform of liberal education must be based on collaboration among faculty from different departments; establish specific integrative mechanisms such as senior seminars and theses that require reflection . . . and require that students actively apply learning from different disciplines in individual or group projects that open the windows of their learning to the world beyond.

John Cleveland, Director of Continuous Quality Improvement at Grand Rapids Community College, in a presentation to the faculty of Northwestern Michigan College in the fall of 1995 said:

Colleges should be institutions where people are always learning about learning. Administrators should be obsessed with the needs of faculty; faculty should be obsessed with the needs of students.

The calls for education reform at the postsecondary level have been loud, clear, and consistent. The response has been negligible. If the constituents we serve are not delighted with our product, for which there appears to be sufficient evidence, then approaching our work differently must become a priority. James Davis writes:

In an age of such rapid change, filled with so many surprises, it is imprudent to answer with an unequivocal "no"; but the organizing principles have deep roots, and because education has been a conservative and conserving enterprise, it is unlikely that these principles will suddenly drop out of sight. What is more likely, instead, is that they will take on new forms, become more highly elaborated, differentiated, and synthesized. The disciplines will not go away; to the contrary, there will probably be more of them, but more interdisciplinary studies surely will be elaborated. . . A new curriculum, better suited to the present and the future, will be a protean curriculum that changes shape to fit the needs of many different subjects being taught to many different kinds of students in a variety of institutional settings. It will be "pluralistic," achieving many goals and connecting in creative and enriching ways the singular strands of earlier organizing principles. (Davis, 1993, p. 40-41)

In Active Learning Creating Excitement in the Classroom, the authors offer the following: "Students learn what they care about and remember what they understand" (Eriksen 1984, p. 51). Barbara Davis in the chapter on "Motivating Students" writes that instructors should "help students find personal meaning and value in the material." (B. Davis, 1993) When required learning is embedded in a context of interest to the student, both the meaning and the value can be

enhanced.

Integration as an Educational Construct

An interesting phenomena is that most of the thrust is for integrating academic content into occupational courses vs. the alternative, integration of career specialty instruction into academic courses. As School-to-Work programs gain momentum nationally, with their emphasis upon the need to provide ALL students with work-based experiences, changes may be anticipated. Occupational students all have required academic and/or general education requirements as a part of their programs of study, but transfer students do not typically have required occupational experience. If ALL students will be preparing for work, regardless of when they plan to enter their careers, then ALL students' programs of study should incorporate learning of both academic and occupational content.

As is common in most research projects, one can find multiple curriculum models. A simple one which should serve all purposes well is the following:

Step 1: Diagnosis of needs;
Step 2: Formulation of objectives
Step 3: Selection of content;
Step 4: Organization of content
Step 5: Selection of learning experiences
Step 6: Organization of learning experiences; and
Step 7: Determination of what to evaluate and of ways and means of doing it

If these steps are followed and faculty work in cross-disciplinary collaborative groups, integration as a dominant educational or curricular theme should emerge.

Curriculum Integration and Tech Prep

Curriculum development associated with the Tech Prep statewide and national implementation has been more active at the K-12 level than in community colleges. Integration of academic and occupational learning is a tenet of the Tech Prep philosophy, which is designed to serve the majority of students who need to be better prepared for work and for continued education. Applied academic courses were a common response in K-12 as many Michigan schools moved to implement different systems; many extensively utilized CORD's (Center for

Occupational Research and Development) materials for Applied Mathematics, Applied Communications, Principles of Technology (an applied physics), and Bio-Chemistry (the newest addition to the courseware). Students in most Michigan high schools have the opportunity to participate in very different learning experiences than were evident just a few years ago, in large part because of the pervasiveness of the Tech Prep effort in local communities.

Few examples exist of entirely new courses being developed at the post-secondary level, even though community colleges are major partners in the state's and their communities' efforts. Applied courses which previously existed, such as Technical Math and Business Communications, continue to be offered. In fact, many colleges "dismissed" the need to develop new courses or approaches, taking a wait-and-see approach to whether students would really come out of schools with different and higher skill levels. The jury is still out on these outcomes, even though the research is now underway, but it is clear that the community colleges' "customers" have had enough different experiences in their K-12 education to expect a different learning environment at the college level. Integrating academic and occupational content is one important way to develop a different and effective learning environment.

A January 24, 1995, Community College Times opinion editorial by J. Michael Horan, director of Mid Florida Tech Prep Consortium, called "Tech Prep Update," with a subtitle of "Community College Reform and Tech Prep: Leading, Following, or Business as Usual?" expressed concerns about the progress with Tech Prep among community colleges. He wrote:

> *Concerns that community colleges have failed to accept the challenges of curriculum reform are being voiced nationally. For example, Pennington (1994, p. 2) suggests: 'There may be more innovation happening in the high schools than in many community colleges in terms of contextual learning, learner-driven teamwork, project-oriented learning, and interdisciplinary activities." Another states that 'changes in teaching and curricula are underway at the secondary level, but are moving at a slower pace at the community college level.'*
>
> *Community college general education 'common core' courses would seem to be an ideal arena to study for any substantive changes as a result of the tech prep initiative. The need to integrate academic and technical education is a vital reform element that will serve the best interest of students. It could be argued that for genuine and lasting change to occur at the postsecondary level, traditional academic courses such as Freshman Composition and College Algebra must do more than prepare students for entrance to a university."*

The emergence of the School-to-Work movement is a natural extension of Tech Prep's school-based efforts as all students will be required to have meaningful work-based learning experiences as a part of their educational programs. A fundamental expectation is that the school-based learning will be connected to workplace requirements.

One of the several Tech Prep books produced by Dale Parnell, Dan Hull, and others through CORD is LogoLearning. Parnell argues that we must turn the system right-side-up by making teaching and curriculum the variables and results the constant. The right-side up principles follow (Parnell, 1994):

1. Purpose Directs the Organization
2. Real-life Problems Take Precedence Over Subject-Matter Isolation
3. Students Gain Understanding Through Problem Solving
4. Academic and Vocational Concerns Are Integrated Whenever Possible into an Applied-Learning Process
5. Competence is the Constant; Time the Variable

LogoLearning is not an either/or education. Instead, it is an integrated approach that provides a bridge between:

- purpose *and* outcome
- head *and* hand
- academic *and* vocational
- knowing *and* doing
- theory *and* practice
- time *and* competence
- education *and* training

National Perspectives on Community Colleges' Curricular Integration

The research most directly related to curriculum integration in community colleges was reported in the research of Norton Grubb and Eileen Kraskouskas of the University of California at Berkeley, published by NCRVE, entitled "A Time to Every Purpose: Integrating Occupational and Academic Education in Community Colleges and Technical Institutes." (1992) In this document, Grubb and his colleagues describe the eight community college approaches to integration.

1. General Education Requirements

2. Applied Academic Courses
3. Cross-Curricular Efforts: Incorporating Academic Skills in Occupational Programs
4. Incorporating Academic Modules in Expanded Occupational Courses
5. Multidisciplinary Courses Combining Academic Perspectives and Occupational Concerns
6. Tandem and Cluster Courses and Learning Communities
7. Colleges-Within-Colleges
8. Remediation and English as a Second Language (ESL) Programs with an Occupational Focus

Because these establish a context for the review of curriculum integration, a description of each of these models follows.

Model 1

General education requirements are the most frequent form of integration. In most institutions, programs of study require the taking of several such courses. The courses are not generally modified to meet the unique requirements of different student groups. If the student does not complete the program, the likelihood is high that s/he may not complete the general education requirements, since this is a part frequently left to last by the career-focused student. Consequently, the requirement results in no improvement in many students' performance because they do not participate. The courses do not encourage the integration of competencies; this is left for the student to assimilate.

Model 2

Applied academic courses are expanding greatly at the secondary level, and they are also a common approach at the postsecondary level. Courses like business math and technical writing are examples. Most of these courses have been available for many years. They are generally required for only students of occupational programs, resulting in some concerns about tracking. Content from traditional academic courses are generally adapted with practical applications.

Model 3

A common cross-curricular effort is "writing across the curriculum." In this model, all faculty are encouraged to incorporate more of this skill into their courses both as a way of teaching writing and as a way of reinforcing learning. There are other examples, but they are far less common than the writing program.

Model 4

The incorporation of academic modules into expanded occupational courses is typically the effort of one or a few instructors with an interest in introducing additional content. One frequent example is the introduction of ethics into an occupational course. The focus is on a specific course.

Model 5
In multi-disciplinary courses it is common for academic and occupational faculty to work together in the development of content which takes broad perspectives. Themes are a frequent approach, as students explore topics such as Work or Technology from its many perspectives: occupational, literary, psychological, etc. The extent of this type of course is attributed primarily to the infusion of resources from the National Endowment for the Humanities. When the funding ends, many of these courses also do.

Model 6
The tandem and cluster-course or learning communities approach is to develop two or three or more complementary courses that students take simultaneously. This allows instructors to coordinate the content and the assignments to reinforce material from one or more of the other courses. Not only is the linkage in content enhanced but the sense of community among students is also enhanced, as they get to know each other better from their multiple classes.

Model 7
Colleges-within-colleges are extensions of model 6, where students take all of their classes together. This approach is less flexible, especially for the adult student, because of the time commitments. There are few examples of this approach. However, this is an increasingly popular model in high schools with the development of career and trade academies - a major Michigan economic development and education strategy.

Model 8
Remediation and English as a Secondary Language with an occupational focus provide greater motivation for students who feel that they are making progress with their occupational goals while developing their basic skills.

Grubb cites four schools as appearing most active nationally in integration efforts: Bunker Hill Community College, Boston, MA; Southern Maine Vocational Technical College, Portland, OR; Springfield Technical Community College, Springfield, MA; and LaGuardia Community College, Long Island, NY.

At a June 1995 workshop in Beaver Creek, Colorado, "Integrated Learning: The School-to-Work Connection," Norena N. Badway presented on "Models of Integrating the Community College," based extensively on the research from the National Center for Research in Vocational Education. She shared a continuum with four major blocks: General Education; Combining Content in Individual Courses; Multidisciplinary; and Clusters of Courses.

In the first are courses required for certificates or degrees. In some cases these are enhanced by designating core courses most relevant for occupational students, such as Human

Relations, Psychology, or Career Development. In the second box, "Combining Content," are:

- Infuse Work-Related Applications into Academic Courses
- Infuse Academics into Vocational Courses
- Infuse SCANS Skills into Vocational or Academic Courses
- Simulate Workplace in Classroom
- Applied Academics
- ESL in Occupational Context

In the third stage, "Multidisciplinary," are:

- Combine Academic and Vocational Perspectives
- Content such as History of American Health Care or Sanitation in Biology
- Workplace, such as Technology and Civilization or Working in America
- Capstone Courses

In the last, the "Clusters of Courses":

- Co-enrollment of two or more courses
- Linked - such as Business Law, Introduction to Business, and Ethics
- Learning Communities - often a freshman group
- College Within College - Sometimes License or Industry- Developed Programs (Badway, 1995)

The successful models rely heavily upon collaboration and they move away from the isolated course as the basic unit of postsecondary institutions. Both top-down and bottom-up efforts are required to assure that the innovation is sustained.

Other Integration Perspectives or Models

The literature reviewed included many approaches to and models of integration. A 1991 NCRVE publication by Norton Grubb listed the eight models of integration for the secondary level. His later publication, summarized above, modified these models for the community college.

Forms of integration, primarily secondary, from grubb, et al, 1991:

1. Incorporating More Academic Content in Vocational Courses
2. Combining Vocational and Academic Teachers to Enhance Academic Competencies in Vocational Programs
3. Making Academic Courses More Vocationally Relevant
4. Curricular "Alignment": Modifying Both Vocational and Academic Courses
5. The Senior Project as a Form of Integration
6. The Academy Model

7. Occupational High Schools and Magnet Schools
8. Occupational Clusters, "Career Paths," and Occupational Majors

In these models, he identifies the following elements of success:

- Vision and Commitment from All Levels
- Consistent Support from District Administrators and State Officials
- New Resources for Funding
- Autonomy for Teachers
- Teacher Training and Retraining
- Evaluation of Efforts
- Adequate time for implementation

The Academy Model, number 6 above, is a major current political educational thrust in many states, including Michigan. The Michigan Jobs Commission, at the direction of Governor John Engler, is working with communities to establish trade academies. Several are already operating and the 1996 agenda calls for the opening of ten more, including the Grand Traverse Manufacturing Academy, which will open with 30 high school juniors enrolled in the Fall of 1996. The program will be progressive and continue through a baccalaureate-level education ultimately, with one class added in each of the next several years.

In The Mindful School, How to Integrate the Curricula, Robin Fogarty classifies the models in the following ways (Fogarty, 1991):

- Fragmented - The traditional model of separate and distinct disciplines, which fragments the subject areas.
- Connected - Within each subject area, course content is connected topic to topic, concept to concept, one year's work to the next, and relates idea(s) explicitly.
- Nested - Within each subject area, the teacher targets multiple skills: a social skill, a thinking skill, and a content-specific skill.
- Sequenced - Topics or units of study are rearranged and sequenced to coincide with one another. Similar ideas are taught in concert while remaining separate subjects.
- Shared - Shared planning and teaching take place in two disciplines in which overlapping concepts or ideas emerge as organizing elements.
- Webbed - A fertile theme is webbed to curriculum contents and disciplines; subjects use the theme to sift out appropriate concepts, topics, and ideas
- Threaded - The metacurricular approach threads thinking skills, social skills, multiple intelligences, technology, and study skills through the various disciplines.
- Integrated - This interdisciplinary approach matches subjects for overlaps in topics and concepts with some team teaching in an authentic integrated model.

- Immersed - The disciplines become part of the learner's lens of expertise; the learner filters all content through this lens and becomes immersed in his or her own experience.
- Networked - Learner filters all learning through the expert's eye and makes internal connections that lead to external networks of experts in related fields.

The first three models are within single disciplines; the next five cross several disciplines; and the final two are both within and across learners. An extensive number of diagrams and exercises in the book help to explain the concepts.

Fogarty's premise is that of an integrated learner, where "learners must continually constantly and make connections. As they proceed on their journeys, they single-mindedly dig into an idea and at the same time they network with others for breadth across related fields."

Miami University in Ohio also has contributed to the integration topic. In the Miami faculty's Guide to Interdisciplinary Syllabus Preparation, they discuss levels of integration as multidisciplinary, pluridisciplinary, cross-disciplinary, and interdisciplinary. Although their terminology is different, they utilize many of the Wisconsin Instructional Design System approaches, discussed later in this paper. They have a "hook" or "grabber" at the beginning that draws students into the issue; explicit subtexts - the 'real' education agenda - which reads much like Core Abilities, etc. Their Interdisciplinary Course Evaluation by Students may be a useful tool for assessment of the Michigan projects.

"Frameworks" is another approach in use in Michigan for structuring the Michigan Model Core Curriculum. Many K-12 teachers and administrators have worked extensively with this model.

Alverno College in Milwaukee, Wisconsin, has been a premier leader in educational reform. Their approaches and assessment are national models and thousands attempt to learn more each year about the Alverno experience. They have an Ability-Based Learning Program. The eight abilities identified which are central to their approach are:

- Communication
- Analysis
- Problem Solving
- Valuing in Decision-Making
- Social Interaction
- Global Perspectives

- Effective Citizenship
- Aesthetic Responsiveness

These areas are the frameworks for learning, in contrast with a discipline focus. Each faculty member is a member of both a discipline department and an ability department. The expected performance for each level of achievement in each of the above is identified for each course and major. A sample follows.

> **Ability 5**: Develop Facility for Social Interaction
> Level 1 - Identify own interaction behaviors utilized in a group problem-solving situation
> Level 2 - Analyze behavior of others within two theoretical frameworks
> Level 3 - Evaluate behavior of self within two theoretical frameworks
> Level 4 - Demonstrate effective social interaction behavior in a variety of situations and circumstances

In majors and areas of specialization:

> Level 5 - Demonstrate effective interpersonal and intergroup behaviors in cross-cultural interactions
> Level 6 - Facilitate effective interpersonal and intergroup relationships in one's professional situation

Kathleen Harris of California State University, Sonoma, is also recognized as a leader in curricular innovation and integration. She has recently conducted many workshops in Michigan with secondary vocational educators, among others, and was a major presenter at a February conference on curriculum integration in San Antonio, which many community college educators attended, including a Northwestern Michigan College faculty member. Among Harris's premises is that when it's something students care about, they will learn it; she argues for having curriculum jointly developed and contextual. She starts from a foundation of common goals and learning objectives. She gives examples of how to contextualize content to meet students' interest and experience.

It is said that integration is less about what is taught than <u>how</u> it is taught. It is outcome driven. It is performance based. It builds on connections . . . in a context that matters or challenges or excites. In "Meeting the Mandate: Renewing the College and Departmental Curriculum," William Toombs and William Tierney write:

> *In the fullest sense, the curriculum is intended to serve all students by means of an experience that has enough unity to sustain a common discourse among the*

best training and education. If students are to be in tune with a world few of their mentors have known, the course of study will have to be changed in fundamental ways still to be determined, discovered, or made. . .

Analysis of the curriculum, for whatever purpose, at whatever level, is a critical feature of the practice situation in the academic profession. . . Changes in the curriculum to meet contemporary challenges are made in one of three ways: (1) modification or reform, the most familiar; (2) integration, perhaps the most difficult; and (3) transformation, a type of change that responds to complexity and uncertainty.

In "Getting Oriented," Chapter 1, in Course Design, A Guide to Curriculum Development for Teachers," Posner and Rudnitsky write:

Curriculum development entails selection and organization of a set of intended learning outcomes. Selecting intended learning outcomes is made more rational by basing them on the educational goals to be served. Educational goals should indicate what the learning should lead to, not what it consists of; they describe intended educational results in much the same way curriculum describes intended learning outcomes. Educational results derive from the complex, interactive, and cumulative effects of actual learning outcomes, intended and unintended, both in school and outside school, in addition to maturation and other forces acting on students. . . Thus, the ***curriculum*** *indicates* ***what*** *is to be learned, the* ***goals*** *indicate* ***why*** *it is to be learned, and the* ***instructional plan*** *indicates* ***how*** *to facilitate learning. None of these three planning processes--curriculum development, goal setting, and instructional planning--results in any learning. Only the instruction process does that.*

Benefits of Curriculum Integration

As more experience is gained in community colleges, the benefit can be more confidently identified, but preliminary findings are that the integration of curriculum will/does yield the following benefits:

- Better meeting the needs of occupational students
- Better educational preparation of transfer students
- Increased mastery of fundamental competencies important for education and work success
- Increased student motivation in academic and developmental courses
- Superiority of contextual instruction
- Incorporation of moral, humanistic, and political perspectives into occupational programs--the general education purpose
- Bridging the independent "islands" of the community college

- Re-energizing the faculty
- Encouragement of innovation and entrepreneurism
- More student-centered curricula
- Improved preparation of students for work
- Enhanced collaboration and teamwork among faculty
- Improved respect among faculty and administrative colleagues
- Development of a community of learners
- Increased retention of students
- Improved grades of students
- Changed teaching practices
- Better career choices
- Scheduling flexibility
- More interaction around teaching and learning issues
- Interdisciplinary cooperation
- Industry partnerships

Barriers to Curricular Integration

The barriers list is nearly as long and very challenging. Identified in the literature and from discussion among Michigan community college faculty teams are the following constraints:

- Universities' acceptance of transfer credit for "new" courses (statewide task forces must address articulation issues)
- Acceptance of competency-based exams or performances
- Reluctance of faculty to change
- Lack of expertise in nontraditional instruction
- Lack of expertise of individual faculty members in disciplines other than their own
- Pervasive disciplinary specialization
- Perceptions of status differences between academic and occupational faculty
- Lack of leadership in support of curriculum reform
- Lack of resources for release time, planning, purchased materials, and professional development
- The development of the community college as "an archipelago of independent divisions, each serving an independent mission" (Grubb)
- Lack of institutionalization of integration
- Lack of support from administrators
- Lack of support from faculty peers - for many reasons, including a fear that if this form of instruction catches on, students will be attracted away from their classes
- Breaks from tradition; in many instances an established course has little chance to be significantly modified
- Innovation is not a part of the culture
- Lack of knowledge of how to integrate

In Designing and Improving Courses and Curricula in Higher Education, A Systematic Approach, by Robert M. Diamond, a list of essential conditions for significant academic improvements is provided:

- The faculty must have ownership in the process, retaining responsibility for teaching and academic content
- The academic administration of the institution must support these activities and provide the resources necessary for these efforts to be successful
- Priorities must be established, projects selected, and resources allocated accordingly.
- Evaluation must be an integral part of the process, with the success of all instructionally related projects being measured on the basis of changes in student performance

Description of the Michigan Community College Integration Project

A state-wide community college curriculum initiative came as a result of a challenge by Dr. James Jacobs of Macomb Community College as an outgrowth of a lively discussion at the annual Trends in Occupational Studies Conference in Grand Rapids, Michigan, in October of 1994. A session featuring how general education contributes to the development of workplace skills was presented by representatives of the liberal arts community. The room was crowded as people wanted to learn more about how Michigan educators would continue to develop the skills important for success in the workplace. Trends attendees are primarily occupational faculty and administrators, which comprised the great proportion of the audience. Not unlike the differences in philosophy which have persisted since the 1800s between career educators and liberal arts disciples, cynicism was evident within the audience. The question-and-answer session evolved into more of a challenge of whether the assumptions were valid - whether it was accurate to conclude that general education courses necessarily contribute to the development of critical thinking, communications, and teamwork skills. When time had elapsed, there was still much dialogue. In after-session discussions, the belief was shared that it was possible that many occupational courses could also accomplish the "general education" goals that we all shared for our students. The presenters, leaders in the LAND organization, invited Dr. James Jacobs and Roberta Teahen, of Macomb and Northwestern, respectively, to posit their perspective as presenters at their annual conference the next February.

During the interim period, conversations took place to explore whether resources could be committed to continuing the dialogue and beginning development work. The October meeting suggested that our mutual understandings were not strong but that the importance of improving our communication about our common goals was critical. Jim Folkening of the Michigan Department of Education agreed to fund a pilot project in Michigan if a small number of schools wished to pursue the topic further. At the February 1995 meeting, the presenters were not only able to explain why they think there are alternative methods for achieving our shared goals - and that the very limited research which exists may corroborate our hypothesis - but that we were eager to work toward continuing to assure that the goals are accomplished - through the joint development of appropriate content and strategies.

Individuals attending this session, which included representatives from many of Michigan's community colleges, were invited to become partners. Delta, Henry Ford, Macomb, and Northwestern volunteered to become the pilots. Several other colleges expressed interest, but the timeline was fast. An additional challenge was not only would we participate in instructional design training and jointly develop a course that accomplished our shared objectives, but we would do so before the next meeting of Trends in early October - so that we could report back to our colleagues that we had "stopped talking and had started doing."

By April the details of the project had been finalized, and dates were set for an in-service session in Traverse City in July of 1995. The project would be called "Curriculum Development: Integration of Liberal Arts and Occupational Education." Consultants from the Wisconsin Instructional Design System (WIDS) were invited to conduct a two-day seminar with faculty and administrative teams who attended. Efforts began in earnest to identify "experts" in academic and occupational curriculum integration at the post-secondary level, and the challenge was greater than we had imagined. Some K-12 resources were contacted, but the decision was ultimately made that the approaches were sufficiently different that they may not be the best use of our only two days of in-service. However, the value of their work is significant and provides valuable assistance for us and others who are engaged in these learning or development activities. Some of the resources utilized are listed within the Appendix and described earlier in this paper.

The purposes of the pilots are:

1. To develop curricular learning models and/or courses which integrate liberal arts and general education in occupational programs.
2. To identify and document the collaborative process of work between liberal arts and occupational faculty which results in formulating the new model.
3. To document and illuminate the barriers which interfere with the integration process at a team level.

At their July session, teams were asked to present their projects by summarizing the following points:

1. Describe the team project. Include the courses involved.
2. What are the objectives of the model?
3. What learning outcomes are sought by the model?
4. What strategies are anticipated to reach the learning outcomes?
5. Describe the working relationships between the faculty team. Team meetings: frequency, length, and productivity?
6. What time lines are anticipated for completion of the team project?

The WIDS system provided a framework for curriculum writing. Each of the teams ultimately adapted the system in a variety of ways, so that none of the final products is designed like other WIDS courses, but many of the instructional terminology will be consistent.

The Wisconsin Instructional Design System

The Wisconsin Instructional Design System was introduced to the teams by Dr. Betty Brunelle and Judith Neill for the system's potential value as a structured curriculum writing approach. Many Michigan educators have experience with Peaks Software because Michigan purchased a license. We found the approach to be similar and therefore generally comfortable, at least for occupational educators . The WIDS system is, however, more developed than earlier Peaks Curriculum Writing software.

The WIDS system utilizes Core Abilities. These abilities are to:

- Begin with an action verb
- Describe broadest outcomes--abilities, talents, skills (such as communication, critical thinking, information management)
- Are addressed throughout the course
- Identify integrated, transferable skills that are essential to all (and go beyond the context of the course)
- Encourage learners to perform at high levels

Core abilities are threaded throughout the course rather than addressed in specific lessons. A learning cycle is also a central component of the system as settings should be arranged to motivate, learn, practice, and apply. Other components of the WIDS design are Competencies, Performance Standards, Performance Criteria, Performance Conditions, Learning Activities, and Performance Assessments.

Team members felt the system was a useful tool, very comprehensive, easy to use, and especially valuable for those with limited curriculum development background. While the tool was useful, it provided little direct information on the actual characteristics of integrated curriculum and how to accomplish it, but it was a springboard for continued work.

In "Benefits of a Systematic Approach to Course and Curriculum Improvement," in answer to the question "Why a Model?," Diamond writes: Following a specific, effective model for course or curriculum design provides those who are involved in the project with several important advantages.

- It identifies the key factors that should be considered in a sequential order
- It serves as a procedural guide for those directing the project
- It allows those involved to understand where they are in the process and their role within it.
- It improves efficiency by reducing duplication of effort and ensuring that critical questions are asked and alternative solutions explored.

Abstracts of the four projects under continuing development are provided as an attachment to this paper.

Common Themes in the Michigan Experience

While the projects and approaches were different, the process of integration has had many common themes.

- **Innovation** - Each project started with at least one internal champion and then at least some support and encouragement existed to develop the concept. The question for the future: How do we move from here to institutionalization? Should we? Most recognize that community colleges will be threatened if they fail to innovate, because other providers will.

- **Pedagogy** - Teaching took on new meaning: self-discovery, learning, facilitating,

coaching, and other descriptors describe the student **and** teacher roles. None had ever experienced a class like they were creating.

- **Disconnect** - The relationship of these new hybrids to regional high school curricula, to other offerings in the community colleges, and especially in recognition in transfer to universities is not developed and potentially problematic. These models are richer than many "applied" courses, but how will they be acknowledged?

- **Communications Skills** - The integration of writing, speaking, listening were central to each of the projects, demonstrating the extent to which communication skills cut across all disciplines.

- **Target Audiences** - There was a clear target for each project - individual students in a particular program of study, often more mature, and often bringing other experience to the learning setting. The market was specifically identified and the content and delivery customized.

- **Climate/Culture** - These efforts persisted in environments where many question the validity; faculty involved often received little peer support or encouragement. The most progress was made in the institutions which provided extensive support for the efforts through professional development, grants, technology, and more.

- **Assessment** - All recognized the importance for valid and reliable assessment, but all are still struggling with this challenge. A great need exists for careful documentation, and the development will be timely with increased expectations from accrediting agencies and others.

Early Presentations and Initial Feedback

All four teams presented (in two separate sessions with two teams in each) at the Trends in Occupational Studies Conference in Grand Rapids in October, 1995, and at the LAND (Liberal Arts Network for Development) conference in February 1996. Attendance in each session was good, indicating considerable interest in the topic among Michigan community college faculty and administrators. Comments from attendees included the following:

Very important topics. Excellent information in reference to the direction we must take to further improve career education.

The enthusiasm of the teams was overwhelming.

Great presentation - Long Overdue.

Attendees were eager for more details about how courses would fit into traditional educational settings, seeking answers to questions about faculty load, release time, credits, gaining administrative support, and more. In addition, evidence about possible models and especially research on outcomes is important to continued development.

Although the courses developed within the four projects are quite different and designed to serve different audiences, the consistency among the core abilities is stunning. Whether it is in nursing, manufacturing, automotive assembly, or physics testing, the goals of collaboration, communication, thinking, and understanding prevail.

As the NMC course was being developed, insights about the importance of academic topics to the employer community was sought from members of the Advanced Manufacturing Skills Standards Committee. James Mullarkey, Associate Dean for Career and Workplace Education, at Waukesha County Technical College, wrote:

> *"At the present time employers are saying they are not getting a sufficient return on their training investment (ROI) dollar with the seasoned incumbent or the new entrant. Second, employers do not see a link between academic, general education or liberal arts training and the job. Yet, employers are continually asking for workers adept in oral and written communication--individual and team, better computational skills--especially those related to applied algebra and geometry, and critical thinking skills associated with the job, department, and organization. Finally, employers are saying, "Education is not responding to my need.' Translated, employers are saying, "Educators are not delivering the skill-based curriculum on the employers' terms, on the employers' timeframe or on the employers' turf. . . If the modules you are thinking about are developed with the notion of company specific customization, just-in-time education/training, linkages with customized labor training, or as the next step or stage in workplace education or workplace literacy, they will be well received."*

The Student Experience

At this writing, only two of the four pilots have been implemented. The other two are scheduled to begin in the fall of 1996. Therefore, student feedback is only available from two schools: Delta and Macomb. The students' evaluations and follow-up assessments should become the subject of future reports.

The Faculty Experience

What was learned by each faculty team was somewhat different, but there were some common themes. The following represent the experience of at least one team or more than one team's members:

- As learning goals and objectives were developed, the commonality of our expectations became increasingly evident, in spite of our often very different disciplines. Identifying core abilities as curricular themes was generally easy.
- As the content and approaches were merged, economies of "instruction" were identified, as multiple learning goals could be accomplished in interdisciplinary activities or projects.
- The inclination to divide up the course and have each work independently on sections to be re-combined was an early first instinctive response to the curriculum development.
- The importance of assessment became more clear, to not only know where students are beginning but also whether the goals have been achieved and the strategy effective.
- An emphasis on not only what a student must know but what they must be able to do to demonstrate their knowledge was difficult but important
- The extent of students' learning will be greater as parts relate to other parts - causing a student to have a more complete understanding
- Technology is an essential component in the development of a quality curriculum, but it presents its own challenges as faculty need to have increased computer literacy - with advanced word processing capabilities, presentation software, spreadsheets, databases, curriculum development software, and more.
- Appreciation for the depth, breadth, and value of the skills possessed by other faculty and the rigor and integrity of the disciplines was increased
- Collaboration takes much more time
- Discovery can be a powerful learning approach, but framing it within a course with an instructor as the resource and just-in-time instruction or tapping the power of the team's expertise requires entirely new instructional approaches
- Enthusiasm and energy rises among team participants

Implementation Considerations

As mundane as these may seem, the administrative details can create obstacles. Consideration must be given to credits, pre- and post-assessment, faculty load (team teaching, course development), and costs. A vehicle for resolving difficult areas must be in place.

Future Opportunities and Directions

- Virtual courses, programs, and colleges are a likely part of our future. Responsiveness to student and community (including employer) requirements will necessitate a more flexible and timely development of curriculum. Benefits cited in "The Virtual Curriculum:

Computer-Assisted Curriculum Development" by Thomas Leitzel and Dan Vogler include: (a) industry executives and faculty as design teams, (b) an instantly created product based on client needs, (c) reduced staff time in course development, (d) mutual dependency on subject matter exchange, and (e) improved college-industry relations.

- Leitzel and Vogler cite The Virtual Corporation: Structuring and Revitalizing the Corporation for the 21st Century, by W.H. Davidow and M. S. Malone in defining "virtual" as a product that is available at any time, in any place, and in any variety. "Davidow and Malone posit that building a virtual product requires an organization to revise itself, employ more sophisticated types of information, and master new organizational and production skills. Through revision, what emerges will have little in common with what previously existed."

- Technology has the potential to increase the effectiveness and efficiency of curriculum development and delivery. Data bases, interactive distance education, information networks, and more can be maximized in the enhancement of education.

- National networks of educators and business representatives interested in integration should be established; preliminary informal ones already exist as a result of independent projects across the nation, including the Michigan community college project. NCRVE has suggested that they would be convening such a group. Building upon others' experience will expedite the process, which is known to be slow.

- Incorporation of work-based learning components into integration models will become more important as all students will have this experience. The strategies for moving the learning from the classroom to the board room or tool room will be different still from those developed for multi-disciplinary courses.

- Alignment of these courses with high school curriculum, especially the model core curriculum and/or the state proficiency exams, will be an important articulation activity.

- Statewide recognition of "Best Curriculum Development" should be created so that others know who is innovating and can learn from others' experience. There is a great need to celebrate successes and build on others' work.

- A Michigan Community College Curriculum Integration Guide should be produced. This is a natural sequel activity of the work of the original four teams.

- More research and publication concerning successful models and their approaches and outcomes must be conducted.

- Transfer agreements with upper-division institutions need to recognize alternative curricular approaches.

Recommendations

1. Publish curricula from existing projects in formats that could be adapted for use in other settings
2. Perform follow-up assessments of the students who participated in pilot courses
3. Continue the research into integrated curriculum - including visits to national community college sites which are more advanced in their development.
4. Continue the "dialogue" among the pilot projects for the professional development potential of continuing to share learning experiences
5. Utilize the existing teams to provide in-service education for future teaching and leadership teams
6. Continue funding of current-year projects to publish the curriculum, share the findings with many groups, and conduct evaluation studies
7. Launch a second project year with four-six additional community colleges; several have expressed interest in future efforts.
8. Convene a Dialogue group or association around this topic. Curriculum learning and discussion opportunities are now limited among community college faculty. Information networks can be a valuable vehicle in this development.
9. Coordinate this work with that of the Michigan Science Initiative
10. Conduct professional development seminars to provide assistance on the "how" of integrated curriculum.

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