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ABSTRACT

The growing emphasis on accountability and the demand for better prepared students is pressing institutions of higher education to examine restructuring. Student experiences represent an important arena for school restructuring, and a useful approach to changing student experiences is the Tech Prep Mapping (TPM) process. The TPM process requires high schools and postsecondary vocational, technical, and adult education districts to work together through joint curriculum and articulation workshops. The process consists of four phases. Before entering phase I, the secondary school district determines the target program area at the technical college and then in the first pahse identifies a course sequence that will lead to that area. Then, academic and vocational competencies are aligned in Phases II and III, based on entrance requirements at the technical college. In Phase IV, applied lessons and teaching strategies are developed to integrate the competencies found to be in both academic and vocational courses. For school restructuring to occur via the TPM process, structural changes within the school district's board and central office administration, within the school principal office, and among teaching staff are necessary. These changes include the decentralization of curriculum decisions, scheduling support by the school principal for workshop attendance, and the establishment of curriculum teams to ensure faculty involvement and support. (PAA)

Restructuring Student Experiences Using Tech Prep Mapping to Integrate Vocational and Academic Curriculum

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5th Annual Summer Institute on Institutional Effectiveness and Student Success

Sponsored by: Community College Consortium, The University of Michigan, Michigan State University.

Exemplary Practices Session

Wed. June 23: 11am-12:15pm with Glenn Davison, WBVTAE, Mary Darrow, Southwest Wisconsin Technical College and Jerry Redman, Western Wisconsin Technical College.

College: Fox Valley Technical College

Spokesperson: Don Pirozzoli, Tech Prep Curriculum Specialist (414)735-4823

Presentation: One example of what Fox Valley Technical College is doing to develop and implement Tech Prep. The practice I am about to share centers on staff development **internally** at our college relative to Tech Prep. Specifically, this practice focuses on **curriculum integration.**

Curriculum Integration Efforts: Gen Ed

A. History of FVTC's general education department in Tech Prep

1. provided secondary schools with "entry level" and "introductory level" competencies (90-92).
2. provided assistance to secondary schools in curriculum development.
3. these efforts externally focused.
4. need for internal focus.

B. How internal focus was initiated

1. development of a Tech Prep team in general education.
2. team meets 2x month to discuss Tech Prep, role of secondary, role of postsecondary.
3. pilots a curriculum integration strategy from: How to Integrate the Curricula, Robin Fogarty. 1991. Palatine, Illinois. with technical staff at FVTC.

C. Results

1. **Direct positive** impact on students.
2. excitement about discoveries of how and what general education competencies are applied in the technical areas.
3. need to do more!
4. need to change!
5. meet with technical instructors on a "regular" basis.
6. modify lessons.
7. learn technical applications and skills.
8. lack of by in by other staff members.

* cite examples of math, natural resources, and mechanical design/CAD (Nancy Danielson, Bruce Cecka, Ilona Ridgeway).

D. Other major contributing factors

1. industry experience for FVTC math instructor at Allis Mineral Systems, Appleton, WI. who manufactures crushing and screening equipment for mining companies.
2. openness of selected staff to trying something new.
3. continued support from Tech Prep Curriculum Specialist.
4. support of Tech Prep team members.

Restructuring Student Experiences Using Tech Prep Mapping to Integrate Vocational and Academic Curriculum

Nationally, as well as internationally, more and more schools are embracing the concept of restructuring. Terms such as Total Quality Management (TQM), participative management, site-based decision making, shared decision making, systemic (rather than systematic) change, and empowerment are frequently mentioned. The likes of Deming, Juran, Crosby and other "quality" gurus are frequently quoted, their programs often serving as models for schools beginning to look at possible ways they might restructure.

The need for schools to restructure, or minimally, to take a long, hard, introspective look at what they are doing is arguably long overdue. The growing demand for a better prepared and more highly skilled workforce; the national lament regarding our low world class ranking in math and science achievement; a more culturally diverse student population; the need to address a wide range of learning styles; and the emphasis on greater accountability are but a few of the forces pressing schools to look at ways they can restructure to improve the educational environment.

Overview

My focus here will be on school restructuring as it relates to "student experiences". Specifically, I will provide rationale for this focus; define the aspect of the student experience arena that I will deal with; provide a process that might be used to achieve this restructuring; and discuss how the roles, rules, and relationships of the organization might be affected by this restructuring effort.

Newmann (1991) outlines four arenas for school restructuring. They are: 1) student experiences; 2) professional life of teachers; 3) school governance, management and leadership; and 4) coordination of community resources. In addition, he lists criteria in the form of questions for each of these arenas. These criteria according to Newmann can be used to measure the extent to which a school is restructured. The rationale for focusing on the student experience arena here rests in the fact that schools exist to educate students. Although the arenas of professional life of teachers; school governance, management, and leadership; and coordination of community resources are important, any changes in these arenas should directly reflect positive changes in student experiences. As David (1990) states:

> "Thus it [restructuring] is not a matter of implementing peer evaluation or clinical supervision or school-based management for its own sake, but because each contributes to the larger goal of creating more effective teaching and learning."

In contrast, David (1990) goes on to say that schools must avoid planning and changing policy if doing so does not directly affect issues related to learning. It seems clear then that restructuring efforts in any of the four arenas mentioned should focus on changes that will positively affect the student experiences arena. One approach to changing student experiences is through integrating vocational and academic curriculum using a Tech Prep mapping process.

Tech Prep Mapping

Tech Prep Mapping is a process that has evolved as a result of a national and statewide initiative called "Tech Prep". Short for "technical preparation", the goal of Tech Prep is to provide high school students with a coherent sequence of applied academic (integrated vocational and academic) courses as well as technical courses to better prepare them for technical education and/or employment. Until now the Tech Prep Mapping process has been used to develop a sequence of existing high school courses already in place that will lead to technical education and/or employment.

By expanding Tech Prep Mapping into the four (4) phase process (see table 1) that will be discussed here, student experiences can be restructured through curriculum integration.

In terms of integration, this framework goes one step beyond Newmann's (1991) idea of integrating academic disciplines in the curriculum. It will provide for the integration of vocational and academic curriculum. This seems like an natural extension given the fact that one criteria under student experiences calls for production rather than reproduction of knowledge (Newmann, 1991). Rather than reproducing factual knowledge that results from the traditional lecture approach to teaching and learning, students should be able to demonstrate practical applications of learned knowledge. This is a natural outcome of integrated vocational and academic curriculum.

Table 1: Four Phase Tech Prep Mapping Process

Phase I:	High school course sequence based on existing curriculum
Phase II:	Align competencies of academic courses between secondary/ postsecondary
Phase III:	Align competencies of vocational/technical courses between secondary/postsecondary
Phase IV:	Develop new "applied" teaching strategies where vocational/academic competency overlap occurs (integration)

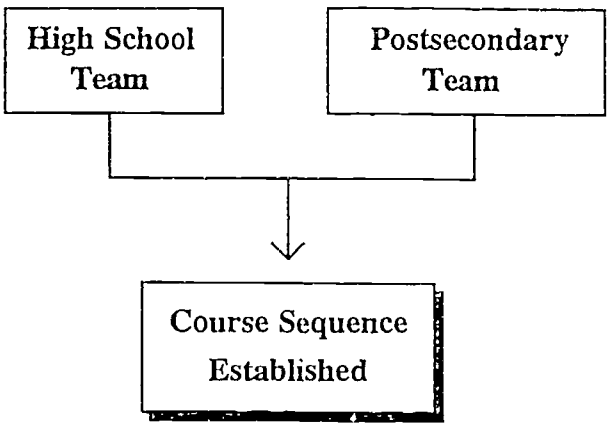
The Tech Prep Mapping process requires that high schools and postsecondary vocational, technical, and adult education districts work together through joint curriculum and articulation workshops. Two major reasons drive this. One, through cooperative efforts secondary staff and students will be more aware of the high level skills required for postsecondary technical education and work; and two, students will be better prepared for this transition by exiting high school with higher skill levels than they might have otherwise.

The Tech Prep Mapping concept consists of an overall goal/objective and four phases of development. The goal of Tech Prep Mapping is to identify (in the high school) a coherent sequence of integrated vocational and academic (applied academic) courses, as well as technical courses, that outline a path of study designed to better prepare students for technical education and/or work. The four phases are identifying a high school course sequence, aligning academic and vocational/ technical competencies with a local technical college, and integrating curriculum.

Prior to entering phase I development, the secondary school district must decide what program area at the technical college the high school course sequence will lead to. This can be done one of two ways. One way is by choosing a specific associate degree program area. The other is by choosing an occupational cluster area. For example, a school could choose Electronics Technician (specific program, Fox Valley Technical College) or Electronics Careers (cluster area, FVTC) that would include specific programs such as Electronics Technician, Avionics Technician, Electromechanical Technology, and Airframe and Power Plant Mechanic. Phase I in this process would then follow.

Phase I (see diagram) in the Tech Prep Mapping process would result in the joint secondary-postsecondary development of a sequence of courses based on already existing curriculum in the high school. At this point no curriculum integration occurs. Secondary and postsecondary teams of teachers and counselors would jointly determine the high school course sequence. Once phase I is completed, competency alignment should occur between the secondary and postsecondary institution. This occurs during phase II of Tech Prep Mapping.

PHASE I: COURSE SEQUENCE BASED ON EXISTING CURRICULUM

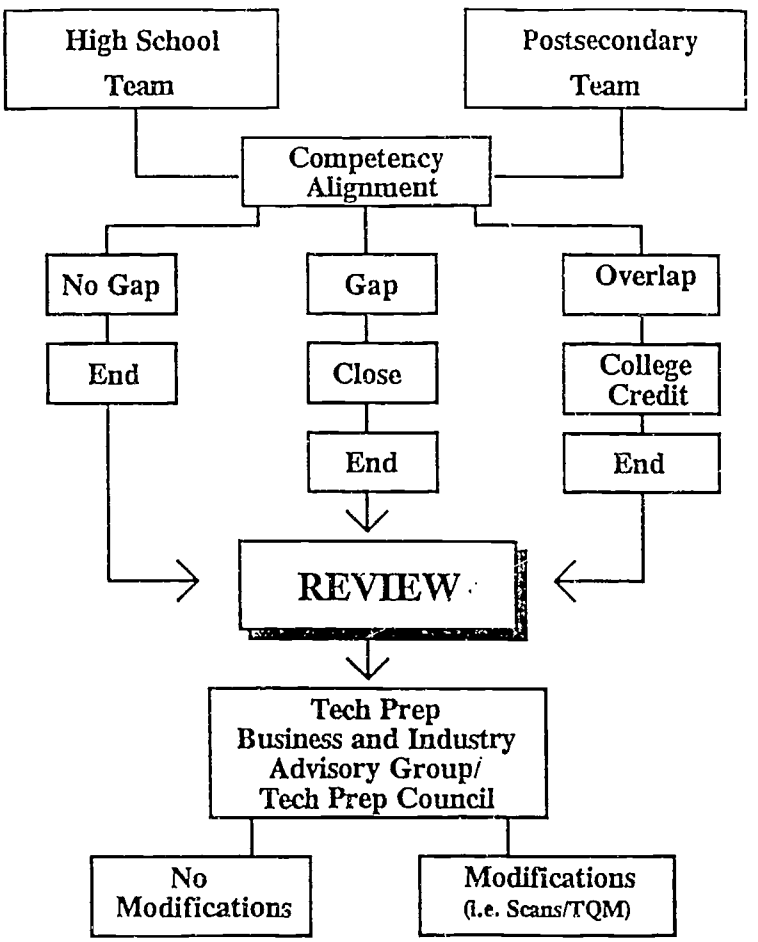


During phase II (see diagram) of Tech Prep Mapping competency alignment of academic disciplines occurs. For example, math, communication, and science courses identified in the course sequence are "aligned" based on entrance requirements at the technical college. The goal here is to ensure that there are no significant gaps between what a student leaving high school knows and is capable of doing/performing and what is expected for successful entry at the technical college (or university).

Three possible outcomes can occur during this phase. First, no gap exists between high school and postsecondary competency attainment; second, a gap exists; and third, overlap exists. If no gap exists, this phase ends. If a gap exists it is closed. If overlap exists discussion of offering high school students advanced standing at the technical college occurs. This leads to phase III.

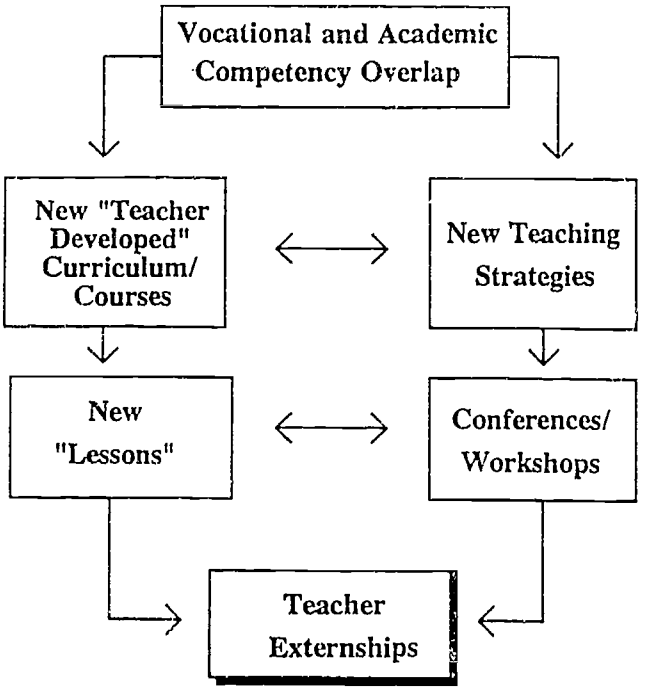
Phase III of Tech Prep Mapping involves aligning vocational/technical course competencies. This phase follows the same steps and results in the same three possible outcomes as in phase II. The goal, again, is to align curriculum between secondary and postsecondary to ensure that students are able to make a smooth transition from secondary to postsecondary technical education and/or work. These three phases set the stage for phase IV: integration of vocational and academic curriculum.

PHASE II/III: ACADEMIC/VOCATIONAL COMPETENCY ALIGNMENT



During phase IV, significant changes in terms of course content and teaching methodology occur. Areas for integration have been identified through the curriculum alignment phases (II and III) of the Tech Prep mapping process. Where the same competencies are found to be in both the academic and vocational/technical curriculum, lessons and strategies can now be developed to integrate these curricula which will result in new approaches to teaching and learning through applied methods.

PHASE IV: INTEGRATION



Strategies for integration are a major area of concern. It should be mentioned, however, that a thorough discussion of the various strategies for integration and what structural changes, if any, that they require of schools is available in "The Cunning Hand The Cultured Mind: Models for Integrating Vocational and Academic Education." (Grubb, Davis, Lum, Plihal & Morgaine, 1991).

The Tech Prep Mapping process as outlined here provides a coherent process for developing integrated (applied) vocational and academic curriculum. In addition, it provides the opportunity for students to more adequately prepare for technical education and/or careers. The issue that needs to be addressed relative to this framework is how it will occur. Specifically, how does this framework affect the roles, rules, and relationships of administration, and more importantly staff and students, at both the secondary and postsecondary levels.

In order for restructuring in the student experience arena to take place via the Tech Prep Mapping process, structural changes within the school organization need to occur. According to Bolman and Deal (1984) organizations have three major structural levels-institutional, managerial, and technical. In terms of a school this translates into the school district's board and central office administration (institutional level); the school principal (managerial level); and the teaching staff (technical level).

Institutional Level Changes

At the institutional (district/central office) level the most significant changes that need to occur are in terms of the school board, superintendent and curriculum director. First, the school board and superintendent would have to ascent to this change in order for it to occur. In addition, the board and superintendent would need to show commitment to this change by allocating significant budgetary resources for staff development and training at all levels. The superintendent would also need to provide the leadership necessary to move this restructuring effort forward.

The other important institutional change that would need to occur is in terms of curriculum decisions. Decisions regarding curriculum would need to be decentralized from the institutional and/or managerial level to the technical (teacher) level. The role of the curriculum director would need to be that of resource person. For example, it will be critical for the curriculum director to ensure that adequate funds are available for appropriate staff development in areas such as team building, group leadership and facilitation skills, and new teaching techniques/methodologies. In addition, the curriculum director would need to seek out appropriate training and staff development opportunities.

The curriculum director would also need to work closely with the principal to enable teachers to participate in curriculum development workshops with their local technical college, as well as to attend staff development activities. For example, this will mean allowing teachers to attend off-campus workshops regrading curriculum and articulation activities, and applied teaching and learning strategies.

These represent significant changes for a traditionally bureaucratic organization. Decentralizing curriculum decisions, however, will result in significant changes that will directly affect student experiences.

Managerial Level Changes

Changes at this level will affect the principal, who is the school manager. It will, of course, be critical that the school manager truly support this restructuring effort. Like the curriculum director the principal, who may make curricular decisions in some schools, will need to become a facilitator and resource person.

She or he will need to use creative scheduling strategies to ensure that selected staff are able to attend staff development activities, and curriculum and articulation workshops with their postsecondary counterparts. In addition, the school manager will need to work at creating a safe environment for staff. For example, the school manager will need to encourage teachers to be innovative and try new teaching approaches and at the same time assure staff that if the new approach "fails" that this is okay. This new role for the school manager may present a drastic change, especially if the organization is a traditional bureaucratic one.

Technical Level Changes

Changes at this level are the most critical in terms of positively impacting student experiences relative to restructuring curriculum via Tech Prep Mapping. The biggest change (and challenge) at this level is in getting academic teachers to see the need to work with, and to actually work with the vocational/technical teachers. Fragmentation through the traditional disciplines approach has helped prevent different departments from working together. The need to work together will require inservicing on Tech Prep, including the rationale for this change.

Following this will be the establishment of a Tech Prep curriculum team. This team should consist of a representative from each academic and vocational area as well as a counselor and a special needs person. In addition, the team may include the curriculum director. However, it will be important that the curriculum director not serve as group leader. Once established, the Tech Prep team will need to be trained in group process, problem solving, and other relevant areas to enable them to function positively as a group. These skills become especially important since functioning positively as a group may be a new experience for many teachers.

The Tech Prep team becomes the decision maker in terms of restructuring curriculum via Tech Prep mapping. Team members will need to meet regularly (i.e., once or twice monthly) as a group to determine-with input from their colleagues-the type of Tech Prep program (see above) to be developed. In addition, this group will need to meet with their local Tech Prep Council, established through the local technical college, the technical college Tech Prep team, and the local business and industry Tech Prep advisory group. These networks are critical and will help to establish outcomes for students based on expectations for adequate preparation for technical education and/or careers.

In addition, the secondary and postsecondary Tech Prep teams will work together in the Tech Prep mapping process through joint articulation and curriculum workshops to affect curriculum change. Once the Tech Prep mapping process is completed, the next step will involve staff training in applied academic teaching strategies.

The technical level changes and accompanying activities and workshops hinge on the support of the institutional and managerial levels in the organization. Specifically, philosophical, fiscal, and leadership support from these levels will be requisite for this restructuring to occur.

The technical level changes here represent significant changes for teachers. Their roles shift from passive to proactive, from being lead to leading. As well, the relationships to fellow staff will also change. Hopefully an environment of fragmented disciplines will give way to one of collegiality and cooperation. Successful integration of vocational and academic curriculum cannot occur if departments do not see the need to work together, and do not work cooperatively toward this vision.

Barriers to Implementation

The Tech Prep mapping process can significantly effect student experiences through the integration of vocational and academic curriculum. The structural changes necessary for implementation, however, are not without their barriers.

Administrative (institutional) barriers such as insufficient planning and lack of support; school (managerial) barriers such as not allowing equivalent credit toward graduation for applied (integrated) courses and the traditional time structure of the school day; and teacher (technical) barriers such as lack of incentive for changing and some teachers feeling isolated and uninvolved in the process (Schmidt & Jennings, 1991.) are but a few of the barriers that exist and need to be overcome if this restructuring effort is to work. In addition to these barriers, the decentralization of curriculum decisions has been found to be the least likely area for schools to restructure (Wohlstetter & Odden, 1991.).

Conclusion

The need for schools to embrace the concept of restructuring in an effort to better serve students seems quite compelling. The national lament regarding low science and math scores, the need for a more highly skilled workforce, and the growing diversity of our students are but a few of the rationale for change. Even more compelling is the fact that half of all students do not attend college (O'Neil, 1991) and of the those who do only half complete a baccalaureate degree (Joint WBVTAE/WDPI Task Force, 1991).

It also seems quite clear that restructuring efforts need to affect the arena of student experiences. We need to look at teaching through practical applications of knowledge (National Center for Effective Schools, 1990.) Approaches such as Tech Prep Mapping to restructure student experiences through integrating vocational and academic curriculum can do this.

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