New ways of work and new workers and workplaces need education and training systems and occupational classification systems based on the skills that different occupations share rather than on the industry sectors to which they belong. This new approach to providing occupational information (career majors or clusters or pathways) corresponds to requirements of the School-to-Work Opportunities Act and has been promoted for a long time as an approach to integration of academic and vocational content to prepare students for the workplace. Issues involved in career pathways include inconsistency in the clustering of occupations (both in career pathways and in occupational information systems), resistance to career pathways, and implementation problems. But there are success stories about overcoming barriers and concerns, and the Office of Adult and Vocational Education in the U.S. Department of Education has introduced 16 new career clusters and begun setting up partnerships to establish curriculum frameworks and standards for each cluster. The potential effectiveness of career pathways has been enhanced by the U.S. Department of Labor's new public online, skill-driven occupational information system O*NET, which replaces the task-driven "pictionary of Occupational Titles." (This document contains an annotated bibliography listing 28 references, including four Web sites.) (KC)
Career Pathways

The changing nature of work, work, and the workplace means that information about them needs to be organized and provided in a different way than in the past. Education and training systems and occupational classification systems should be based on the skills that different occupations share rather than on the industry sectors to which they belong (McCage and Olson 1993). This new approach to providing occupational information corresponds to requirements of the School-to-Work Opportunities Act with its expanded concept of integrated learning organized into coherent sequences of academic and occupational study around broadly conceived career majors (National School-to-Work Learning & Information Center [NSWLC] 1996).

Such broadly focused career majors, or clusters, or pathways, had been advocated and used for some time as one of a variety of approaches to integration of academic and vocational content to prepare students for the workplace (Graud 1995; Pucel 2001). As more attention was focused on career pathways as a tool for career decision making and workplace preparation (Jansen and Lewis 1996; NSWLC 1997), more states took action to consider, develop, or adopt a set of career pathways (Finch et al. 1997; Wills 1997).

Issues involved in career pathways have also surfaced, including inconsistency in the clustering of occupations, both in career pathways and in occupational information systems (ibid.), resistance to career pathways (ibid.), and implementation problems and pitfalls (Hochander 1999; Paris and Huie 1998). On the other hand, success stories focused on overcoming barriers and concerns (Linn 1998; Lozada 1997; U.S. Department of Education 1998). Most recently, the Office of Adult and Vocational Education in the U.S. Department of Education introduced 16 new career clusters and began setting up partnerships to establish curriculum frameworks and standards for each cluster; it is too early to know what effect the 16 new career clusters will have ("Will ED's Career Clusters Change Voc Ed?" 2000).

The potential effectiveness of career pathways has recently been enhanced by the U.S. Department of Labor's new public, online, skill-driver occupational information system O*NET, which replaces the task-driven Dictionary of Occupational Titles (Mariani 1999). O*NET joins state online career information systems (CareerZone 2000; CIS for Windows 2000) as perhaps the cutting edge of systems to organize and provide information about work, workers, and the workplace based on the skills shared by occupations rather than on industry sectors—in other words, based on the same concept that is the foundation of career pathways.

The resources and websites listed here provide additional information about career pathways.

Resources


Horne, R. L., and Thuli, K. J. School to Work Fact Sheets: Making School to Work Opportunities Happen for Youth with Disabili-
Gives an overview of the School-to-Work Opportunities Act; discusses how career pathways and contextual learning can be used as a strategy for serving all youth, including youth with disabilities.

Practical overview of career pathways as preparation for both work and further learning; lists instructional programs and recommended courses for six career pathways.

Survey found cluster programs used in other states were positively accepted by industry and educators; local Colorado directors reported cluster programs were more effective than traditional programs in career decision making and workplace preparation.

Discusses the role career pathways can play in a unified education system integrating academic and skill standards.

Contrasts the differences of one student's dropout and failure in a high school general track versus persistence and success in a postsecondary career pathway program.

Describes the rationale for development of ONET as a skills-driven rather than task-driven occupational information system.

Recommends building an occupational classification system based on skill groupings rather than industry sectors and organized under 12-14 major occupational families; defines what the process would require.

School-to-Work Opportunities Act requirements broaden the meaning of curriculum to integrated learning organized into coherent sequences, around broadly conceived career majors, including work experience as well as academic and occupational study.

Explains the nature and purpose of career pathways; discusses issues and effective practices in implementing pathways; cites organizations providing relevant resources.

Discusses integration issues including goals, strategies (e.g., occupational clusters and majors, career paths), action options, pitfalls, different viewpoints, and illustrative cases.

Provides a rationale, model, and procedures for implementing career-based education as an applied, context-based, community-based approach to high school reform.


Summarizes the positive and negative experiences of a secondary technical school whose innovative curriculum, involving career pathways, has been considered a model.

Explains background, purpose, and details of 16 new career clusters established by the Office of Vocational and Adult Education, U.S. Department of Education; describes first partnerships established to develop curriculum standards and framework for schools.

Reviews the history and theory of occupational clusters and their role in academic-vocational integration, career pathways, and career progression; Attachment D lists state career pathway/major/cluster status at the time of publication.

Websites


intoCareers. <http://cis.uoregon.edu/organization.htm>
Website of a national network of 12 states using the Career Information System (CIS) to deliver career planning information to students in schools and adults using career and employment training services.

National Skill Standards Board (NNSB). <http://www.nnsb.org>
Information on NNSB, its 15 industry sectors, convening groups, and voluntary partnerships (developing skill standards, assessment systems, and implementation plans for specific industry cluster).

O*NET Online. <http://online.onetcenter.org>
Interactive public website for the U.S. Department of Labor's Occupational Information Network ("searchable by occupation or skill; search results include most important features and specific details of selected occupation, related occupations, and crosswalk to other occupational classification systems.

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