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ABSTRACT

Major changes in the workplace have profound implications for education systems. School-to-work reform, in response to the changing educational and training needs of the work force, emphasizes the importance of an "all aspects of an industry" approach to learning. This approach integrates vocational and academic education for the purpose of producing well-rounded individuals prepared to continue learning in either postsecondary institutions or the workplace. The following strategies may be used to incorporate an all-aspects of an industry approach into school-to-work systems: (1) take inventory of existing projects and classes; (2) expand work-based learning opportunities; (3) redesign school curricula; (4) encourage school-based enterprises; and (5) develop teacher internships. Examples of effective practices include the Oakland Health and Bioscience Academy in Oakland, California, and the Rindge School of Technical Arts in Cambridge, Massachusetts. (Resources listed include five organizations and five publications.) (KC)

★RESOURCE★ BULLETIN SEPTEMBER 1997

All Aspects of an Industry

Today's businesses, more than ever, require high-performance workplaces and streamlined operations with decentralized decision-making. Workers must stretch to think beyond the immediate and obvious impacts of their choices and consider the ultimate consequences of their decisions on the organization as a whole. Employees need to comprehend the mission, vision, and objectives of the organization, identify with the purposes of various departments within the organization and understand how these different groups work together to achieve common organizational goals. As a result, businesses demand that their employees possess a wider range of skills, including the ability to learn quickly, solve problems and work in teams.

These major changes in the American workplace environment have profound implications for education systems. School-to-work reform, in response to the changing educational and training needs of the workforce, emphasizes the importance of an "all aspects of an industry" approach to learning. This approach integrates vocational and academic education for the purpose of producing well-rounded individuals prepared to continue learning in either postsecondary institutions or the workplace. As defined in Section 4 of the School-to-Work Opportunities Act of 1994, all school-to-work opportunities should provide for exploration of and experiences in, "All aspects of the industry or industry sector a student is preparing to enter, including planning, management, finances, technical and production skills, underlying principles of technology, labor and community issues, health and safety issues, and environmental issues, related to such industry or industry sector." This helps students gain a better understanding of an industry as a whole and the many roles they can play in it.

The all aspects approach improves students' chances for success in the workplace. As employees, these students, trained to perform a variety of functions across an industry, can adapt when advances in technology make job-specific skills obsolete. Because they have learned how to learn, these individuals are more open to the idea of continual development throughout their working lives. Armed with a variety of skills and an understanding of how these skills can be applied throughout an industry or transferred to other industries, youth with basic experiences in all aspects of an industry are better informed to make initial career choices and may have more options throughout their careers.

This resource bulletin focuses on incorporating an all aspects of an industry approach into school-to-work systems. The remaining portions of this bulletin include strategies for implementing all aspects, examples of effective practices, and a list of resources for additional information.

Strategies for Incorporating All Aspects

Take inventory of existing projects and classes. Teachers can incorporate an all aspects approach into existing projects and classes, benefitting students by making the best use of available resources and reducing some of the more immediate classroom disruptions that might be caused by a change in teaching and learning methods. A complete inventory and evaluation of current activities may result in the discovery of previously unrealized opportunities for linking different classes or projects within an industry or career cluster.

For instance, an inventory of existing projects and classes might reveal that students in the

tenth grade hold a car wash every year to raise money for a class trip. Teachers could incorporate all aspects into this activity by involving students heavily in planning, management, marketing, finance, labor relations, and environmental safety. Students might be asked to break the overall process into tasks and schedule shifts and assignments. They could help choose a location for their venture and negotiate with the owners. They could identify production needs (hoses, buckets, soap, wash mitt, towels), research the costs of different products available in the market and make recommendations, cognizant of environmental and worker safety impacts. Students might estimate a price for their services, based on a reasonable projection of business levels, costs of production, and a comparison of prices in the market. Students might create a marketing campaign advertising the car wash. Lessons in social studies, science, English, and math could be linked to provide students with the knowledge and abilities to make decisions about the car wash.

Expand work-based learning opportunities. Employers can greatly augment a student's work-based learning by providing him/her with experiences in each aspect of the industry. School-to-work administrators and teachers can work with employers to help them understand the components of and reasoning behind an all aspects approach to industry. Educators can also encourage and assist employers in organizing students' workplace experiences so that they include all aspects of the industry.

Job rotations, one technique for expanding work-based learning opportunities, provide students with introductory training in a range of occupations and departments, broadening their knowledge of the industry. Job rotations work best if activities are coordinated within and across departments. In some cases, each department defines the skills the student will be exposed to in the course of his/her stay in the department and then becomes responsible for providing the student with certain pre-established experiences to ensure broad coverage overall.

For example, a student interested in art might decide to intern at a museum, intending to gain experience in art restoration or as a curator. A creative employer, by systematically rotating the student through different departments upon skill mastery, presents the student with many more options. The student could gain experiences as a tour guide, an exhibit or graphic designer, an administrator, or maybe a teacher if the museum offers classes. He/She could learn aspects of marketing, sales, and finance unique to the art industry. The student might find that he/she likes working with potential donors on developing the collection. The student learns to apply his/her skills in a number of different ways to complete tasks successfully in all aspects of the industry.

Many students work after school and on weekends for experience or money, independent of school- arranged opportunities and placements. In some cases, all aspects of an industry can make these extracurricular activities more meaningful. Teachers might ask a student to explore his/her own interest in terms of the particular industry he/she is working in. For example, a student interested in law, working for a lawn service, could examine worker safety or environmental laws and talk with people at the lawn service to determine how they remain in compliance.

Redesign school curricula. School-based activities, particularly multi-disciplinary projects and other experiential learning methods, can be excellent opportunities for incorporating all aspects. Many curricula that incorporate all aspects approaches are structured in a multi-year progression of courses within career-related pathways. Students encounter all aspects in a variety of interrelated classes, projects, and work-based learning experiences across the curriculum. The school-based curriculum should link to work-based leaning experiences that become more complex and intensive as the student progresses through a pathway.

Work-based learning may be more easily integrated with various academic disciplines when defined in relation to all aspects of an industry. For example, if English teachers find it difficult to provide a context for instruction to students studying auto mechanics, they might

relate reading and writing exercises to activities focused on broader, but associated, themes, such as transportation or entrepreneurship. Students could be tasked with writing advertisements or training manuals, linking an applied exercise in an English course to other aspects of the industry.

In addition, students can create portfolio work samples that demonstrate their knowledge, understanding, and application of the different aspects and how they relate to a particular industry. Teachers can incorporate all aspects into guidelines for portfolios to help students reflect on the different activities they have undertaken.

Encourage school-based enterprises. School-based enterprises, actual businesses run by students, can illustrate the connections among different aspects of an industry. When students are involved in all aspects of a school-based enterprise, they often have an opportunity to take on a variety of workplace responsibilities, giving immediate relevance to classroom lessons. For example, students can assess the effects of marketing on their own business and witness first-hand the impacts of laws, technology, and labor issues on the balance sheet. In addition, learning how to establish and run a business may foster a sense of entrepreneurship in some students, opening the door to new career options, including possibilities for self-employment.

Develop teacher internships. Teachers do not need to be experts on all aspects of an industry, but they may find it easier to connect classroom concepts to workplace applications if they can tie them back to their own practical experiences. Teachers may also find it easier to communicate with employers, other educators, and students if everyone shares a degree of common knowledge. Some teachers may be better able to support their students involved in all aspects of an industry if they are able to speak about their own accomplishments and frustrations in the workplace.

For example, the Jackson County Intermediate School District in Jackson, Michigan, in cooperation with area businesses and a local community college, offers K-12 teachers an opportunity to participate in a Business/Industry Fellowship Program. Through the program, teachers are placed in local businesses for six weeks of the summer, learning about the workplace and gaining exposure to all aspects of the industry. Teachers are awarded two graduate credits upon completion of the program.

Effective Practices

Students at the **Oakland Health and Bioscience Academy** in Oakland, CA achieve a broad understanding of all aspects of the health care industry. Through a variety of learning experiences and teaching techniques, students become involved in aspects of planning, management, and finance. They also have opportunities to apply production skills and technology, and deal with labor, community, and environmental issues as they pertain to the health care industry. Eleventh grade students spend a total of 100 hours rotating through the business, administrative, and clinical departments of a health care facility.

Students create portfolio work samples to demonstrate the application of a variety of skills to different aspects of the health care industry. Portfolio contents might include a photo essay on laboratory safety or an interview with a hospital attorney. The portfolios should help students contemplate their experiences.

Student projects help youth explore how different aspects of the industry interrelate. Projects often simulate the decision-making processes of a health care provider. In one example, a group of students played the role of a public health service organization by reading a case study of a lead-poisoned child, and then interpreting the results of lab tests and creating a medical management plan. In another instance, student teams explored health care delivery systems by planning a school-based clinic. They confronted a variety of decisions

surrounding the clinic's location, design, focus, financing possibilities, public relations, and confidentiality needs.

The **Rindge School of Technical Arts** in Cambridge, Massachusetts prepares students through a variety of experiences on the premise that the more students can offer potential employers, the more career options they will have. For students at Rindge, the community becomes a classroom. The community serves as the context for lessons in more traditional subjects such as English, social studies, math, and science; and also as a laboratory for multi-disciplinary, community and economic development projects designed to help students learn all aspects of industry.

In City Works, a class for ninth graders, student teams apply elements of both their academic and vocational training, using a combination of critical and creative thinking skills, technical skills, and communications skills on projects designed to enhance the quality of life in the community. Students in the tenth grade take part in a Career Pathways program, studying different elements of the workplace. Students rotate on a quarterly basis through career clusters with school-based projects and job shadowing experiences. Rindge tenth graders gain exposure to diverse workplace environments and explore all aspects of each career cluster industry, examining different approaches to managing financial, human, educational, environmental, and technical resources.

Students in the eleventh and twelfth grades choose a specific industry to investigate further as they work towards their certificates of mastery. Students take part in internship experiences and school-based enterprises, such as the school's desktop publishing service or the restaurant, in addition to carrying a full load of vocational and academic courses. These work-based experiences are linked back to academic lessons. For example, students apply algebraic formulas to solve problems in their respective technical areas--a student studying culinary arts might be given a recipe for one cake and asked to determine the quantities of raw materials needed to produce eight cakes. Students explore all aspects of their chosen industries by learning to apply vocational skills, but are also taught how to market themselves, their abilities and talents, and become experienced in essential business components such as planning, management, finance, and worker safety.

FOR MORE INFORMATION ABOUT THIS TOPIC, CONSULT THE FOLLOWING ORGANIZATIONS AND JOURNALS:

Effective Practices

Jackson-Hillsdale School-to-Work System: Scott Menzel, School-to-Work Coordinator, South Central Michigan Works, 2075 West Bacon Road, Hillsdale, MI 49242. (517) 437-0990.

Oakland Health And Bioscience Academy: Patricia Clark, 4351 Broadway, Oakland, CA 94611. (510) 879-3050.

Rindge School of Technical Arts: Alif Muhammad or Maria Ferri, 459 Broadway, Cambridge, MA 02138. (617) 349-6752.

Organizations

Center for Law and Education. The Center's VOCED Project helps low-income students and their communities redirect vocational education programs to better meet their long-term educational, social, and economic needs. The Center has produced a variety of publications and provides technical assistance on the concept of all aspects of an industry and other school-to-work issues, including delivery services to special populations. 1875 Connecticut

Avenue, NW, Suite 510, Washington, DC 20009. (202) 986-3000. cledc@erols.com.

Jobs for the Future (JFF) is a non-profit organization that conducts research, provides technical assistance, and proposes policy innovations on the interrelated issues of workforce development, economic development, and learning reform. JFF has worked with a variety of schools across the nation, helping them to design and implement school-to-work initiatives that include incorporating all aspects approaches. One Bowdoin Square, Boston, MA 02114. (617) 742-5995. info@jff.com.

Learning Research and Development Center (LRDC) has probed the nature of thinking, knowing, and understanding in and beyond school. Its twofold mission has been to broaden scientific insights into all aspects of learning and to support the use of research in a variety of instructional settings, such as classrooms, industry, and museums. LRDC, 3939 O'Hara Street, Pittsburgh, PA 15260. (412) 624-7020. http://www.lrdc.pitt.edu/. AskLRDC@LRDC1.LRDC.PITT.EDU.

National Center for Research in Vocational Education (NCRVE) was established under the Carl D. Perkins Vocational Education Act to sponsor applied research and development in the field of occupational education. NCRVE has funded a variety of projects and published several reports on all aspects of an industry. University of California at Berkeley, 2030 Addison Street, Suite 500, Berkeley, CA 94720-1674. (510) 642-4004. http://ncrve.berkeley.edu. ASKNCRVE@ncrve.berkeley.edu.

Northwest Regional Education Laboratory (NWRL) provides workshops on using all aspects of the industry as a framework for integrated learning. Shorter workshops provide participants with an introduction to the all aspects of an industry approach to learning. Longer workshops are available for participants interested in using all aspects to develop integrated curriculum. NWRL, 101 SW Main Street, Suite 500, Portland, OR 97204. (503) 275-9500. http://www.nwrel.org.

Publications

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Bailey, Thomas, Ross Koppel, and Roger Waldinger. *Education for All Aspects of the Industry: Overcoming Barriers to Broad-Based Learning.* Berkeley, CA: National Center for Research in Vocational Education, 1994.

Center for Law and Education. *Resources for Teaching All Aspects of and Industry.* Washington, DC: Center for Law and Education, 1996.

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Weckstein, Paul. "Teaching Workplace Competencies and All Aspects of an Industry." *Successful Strategies: Building a School-to-Career System.* Alexandria, VA: American Vocational Association, 1995.

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