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ABSTRACT

A study adopted a sociocultural perspective to examine work-based learning (WBL) in different types of programs in Los Angeles that served similar populations of mostly minority students. The programs were a transportation career academy, a medical magnet high school, and a school-based enterprise. To understand workplaces as learning environments, the study attended to the social context for learning and working and examined certain characteristics of WBL. First, it focused on the social means by which tasks are initiated, accomplished, and processed, for this is when the process of education is set in motion. Second, it examined students' relationship to the existing community of practice in the work setting that is often responsible for learning and establishes important norms of behavior and performance standards in the workplace. Third, it studied the organization's own philosophy toward learning and training that can influence the types of learning opportunities provided to students. Fourth, it studied the connections between school and work that are meant to enhance students' learning. Analysis of workplaces as learning environments showed the social context varied markedly across the programs studied. Findings indicated the following: understanding the social context of work was important; schooling may undermine learning at work; WBL sites varied with respect to teaching strategies and expertise; and school and work were often only loosely connected and any connection was difficult to establish. (YLB)

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LEARNING HOW TO LEARN AT WORK

During the 1990s, work-based learning—a planned program of work experience linked to school—has gained prominence as one element of federal, state, and local school reform strategies. The federal School to Work Opportunities Act of 1994 (STWOA), for example, calls for redesigning educational programs to include both school-based and work-based learning (WBL). A recent evaluation of states receiving funds under the Act indicates that developing work-based activities is a top priority (Hershey, Hudis, Silverberg, & Haimson, 1997).

Work-based learning has a long history in American education and is provided in many different types of programs. Cooperative education, the most common form of WBL, has been recognized by federal authority since the 1917 Smith-Hughes Act. WBL is also provided through career academies, school-based enterprises, youth apprenticeships, and occupational focus high schools. Programs vary in intensity and duration, and in the goals of the work experience. Job shadowing experiences, for example, are typically of short duration and primarily serve career awareness and motivational purposes. Longer-term paid or unpaid internships provide opportunities for learning general or specific knowledge and skills related to employment.

As more students take part in school-supervised WBL experiences, it is important to gauge program effectiveness. Most research on WBL has examined a range of outcomes associated with learning, schooling, and employment. Recent reviews of the research show mixed results. On the positive side, WBL provides opportunities for students to learn a variety of skills and to develop other competencies that may prove valuable at work or in pursuit of higher education and training. Participation may also improve students' grades and course-taking patterns, motivate them to stay in school, and inform their career or higher education choices. Students in cooperative education may enjoy an immediate labor market advantage if they continue to work for their employer after graduation. On the other hand, WBL participation is also associated with negative outcomes, such as poorer school performance, dropping out, or forgoing higher education. Methodological and conceptual problems with the research on WBL, and the sheer variety of WBL experiences that students may have, limit the ability to draw strong conclusions about its effectiveness overall. (For recent reviews see Stasz, 1997; Stern, 1997; Urquiola et al., 1997).

An important question that remains unanswered concerns the quality of work-based learning opportunities and the ways these experiences affect students' intellectual and occupational development. Research has not addressed the process of learning at work or the quality of workplaces as learning environments for young people. To begin to fill this knowledge gap, researchers at RAND studied WBL in different types of programs in Los Angeles: a transportation career academy (TCAP), a school-based enterprise (SBE), and a medical magnet high school (MMHS) (Stasz, 1996; Stasz & Kaganoff, 1997). The study adopted a sociocultural perspective for understanding learning at work. At each site, students completed a survey about their WBL experiences, and the study team interviewed students, teachers, mentors, employers and other adults associated with the programs. Researchers observed students at work to gather in-depth information about WBL from the students' own perspective. We were interested in two main questions: (1) What are the characteristics of workplaces as learning environments? and (2) What do students learn in them? This brief addresses the first question and discusses implications for policy and practice.

WBL Programs and Work Settings

The three programs operate in the same large, metropolitan school district and serve similar populations of mostly minority students.

Transportation Career Academy

About 170 participate in TCAP, which began in 1992 as an industry-education partnership led by the local public transportation agency. TCAP emphasizes preparation for entry-level jobs in transportation-related occupations and for technical and professional careers in related industries. During their junior and senior years, students can participate in an eight-week, paid internship in a transportation-related field, primarily for the purpose of career exploration. The program is still developing written training plans to spell out work and learning objectives, although a few employers developed these on their own. A coordinator monitors student progress at work sites and also provides orientation for industry mentors. Researchers observed two of the students who were working at engineering construction firms. Students' work was primarily clerical, but in some cases related to technical areas.

Medical Magnet High School

MMHS started in 1982 through the efforts of a local medical university faculty that wanted to increase the number of minority youth pursuing health-related careers. The school emphasizes a college preparatory curriculum for students in grade 10-12 and provides unpaid internships aimed at career exploration in a variety of medical settings. Students rotate in several placements for one morning a week throughout the school year and receive elective course credit for their

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intern work. The school coordinator has developed learning objectives for the internship sites, but mentor training is not offered. Students keep journals of their work experiences, which are collected by the teachers who monitor student attendance. Researchers observed two of the students hired to work over the summer as laboratory assistants on high-level neuromuscular research projects in the science department of a local university.

School-Based Enterprise

SBE began in 1992 following the civil disturbances in Los Angeles. The students at the high school housing the SBE were already working a quarter-acre garden and they decided they wanted to give something back to the community. Building on their garden activities, they did some research and learned that salad dressing is a top-selling product. Thus, 40 student-owners began to make and sell salad dressing and produce from their garden. Students work after school for a few hours, odd hours over weekends, and during the summer. The program emphasizes entrepreneurship—students learn all aspects of running a business—and college preparation. Student-owners make most of the business-related decisions and receive points for their work, which are exchanged for the dollar value of company shares upon high school graduation.

Characteristics of Work-Based Learning

To understand workplaces as learning environments, the study attends to the social context for learning and working and examines certain characteristics of WBL. It first focused on the social means by which tasks are initiated, accomplished, and processed, for this is when the process of education is set in motion. It also examined students' relationship to the existing community of practice in the work setting. This community is often responsible for learning and it establishes important norms of behavior and performance standards in the workplace. A third area examined was the organization's own philosophy toward learning and training, because this can influence the types of learning opportunities that are provided to students. The final area of study comprised the connections between school and work which are meant to enhance students' learning, such as their opportunities to apply academic learning in real work contexts. This analysis of workplaces as learning environments shows that the social context varies markedly across the three programs studied. The following discussion will provide some specific examples.

Means for Establishing, Accomplishing, and Processing Tasks

Work-related learning occurs when students are required to master a task or solve a problem in an environment that provides information concerning the nature of the problem; the knowledge, human resources, and skills necessary for its solution; and relevant criteria for assessing their performance (Moore, 1981).

In terms of task establishment, research suggests that greater autonomy and discretion over work tasks enhance motivation and help develop decision-making capacities. The SBE gave the most latitude to students with respect to choosing work tasks and even work times. Work at the other two sites was more closely monitored and scheduled, but students had some leeway over the sequencing or pace of their work, within a specific time frame. At the research lab, for example, the design of the experiments often dictated the order or priority in which student tasks were assigned, thus necessarily constraining the degree of task autonomy.

To successfully accomplish a task, students need information and resources in the environment, and may also need social skills to interact with others and enlist their help. If they can readily find what they need, the work is easier to accomplish. Conversely, if resources are not accessible, work can be slow, frustrating, or unsuccessful, especially if the task is difficult or challenging. By and large, the work environments the students encountered in the three programs were very supportive; material resources were generally available, as were coworkers or other students who could provide needed assistance. Many tasks given to students were also fairly easy to accomplish. They were straightforward and only required following instructions. MMHS students, however, experienced some difficulties because some lab staff did not want to be bothered with helping high school students.

Successful task accomplishment also depends on provision of performance expectations and feedback. Problems may arise if expectations are unclear or if students' work is not monitored. Providing appropriate guidance can be a complicated undertaking, since mentors must provide enough information and feedback for students to proceed with the task, but not so much that the task presents little challenge or no longer provides an opportunity for learning. In this study, we found that students generally received ample feedback on task performance from supervisors or coworkers. Some tasks, particularly computer-based work, provided real-time feedback that could help students gauge their own progress. Appropriate completion of simpler tasks, like copying, was self-evident. On the other hand, students did not always know what social behavior was expected of them. The university laboratory, for example, was an active and busy environment where people worked hard, for long hours. Students had to learn complex rules of behavior and were scrutinized by lab staff, who

might report any off-task behavior to their supervisor. Students at the SBE, by contrast, created their own social environment and rules, and there were clearer procedures for dealing with lackluster performance.

Approaches to Training and Teaching

Another characteristic of the work-based learning environment concerns the pedagogy of worksites: the manner of training and learning opportunities available. Perhaps not surprisingly, training for the TCAP students, who worked in private, for profit companies, followed a "show and tell" model. When a student needed to learn something to complete a task a coworker would demonstrate how to do it. This approach seemed suited to the level of students' work, which was primarily clerical. One firm was also dedicated to training and staff development, and its intern had more learning opportunities unconnected to productive work.

In contrast, the MMHS students were apprentices in a university science laboratory where teaching is embedded in nearly every activity. The mentor had extensive teaching experience, and she created a curriculum tailored to the students' needs. Likewise, the SBE advisors had a strategy for teaching students the skills they needed to make a positive contribution to the business and, more generally, to be successful in academic pursuits and in life. To accomplish a variety of learning goals, the SBE utilized a talented mentor pool, outside conferences and workshops, free advice from experts, and opportunities to practice in a fail-safe environment. Adult advisors were also experienced, skillful teachers. When worksites were located in school-based settings, such as the SBE or MMHS, the training and teaching had purely educational purposes in addition to enabling students to engage in productive work.

Participation in Communities of Practice

The communities of practice which students entered were also strikingly dissimilar. This meant that in some cases students had a more difficult time being accepted as legitimate participants in a working community. The TCAP students were seen as "junior" employees and, for all practical purposes, were treated as such. They were expected to make a productive contribution to the work and were included in all business activities appropriate to their position. Similarly, the SBE students created their own social environment, with guidance from their advisors. SBE student-owners worked in a nurturing environment, where their biggest social challenge was to learn to work with one another. MMHS students had a more difficult time, as they lacked status in the research laboratory and had no real means to acquire it. To be successful, they had to interact in a complex, sometimes unfriendly, social environment. They were included in social activities, like basketball games, but not in the weekly meetings that dealt with the lab's program of research. They were peripheral participants in this community.

Connections to School Learning

Since work-based and school-based learning are meant to complement one another, we hoped to see explicit links between school and work. The TCAP program seemed to do a good job of preparing students to enter the workplace. Staff conducted workshops to help students adjust to an adult working environment, and the school program gave them solid skills that employers could use. But since the work experience was not concurrent with school, the students were left to make many connections on their own. In this case, school learning appeared to enhance learning at work.

The MMHS program incorporated several structural features for connecting school and work, such as agreements with resource sites that identified learning objectives for students and required students to write journals about their work experiences. The teachers had little communication with the different worksites, except to monitor student attendance. The university lab work was so advanced that students had little prior knowledge from their school science classes, although they found some opportunities to apply mathematics or chemistry knowledge. In this case, work experience appeared to enhance school learning, but was otherwise unconnected to it.

The SBE's primary connection to the high school was its location on school property. The only teacher connected to the program was one of the SBE's original founders. Although the students' school classes were not connected in any way to the SBE, the program strongly supported academics. Student-owners could be tutored in any subject, receive preparation for SAT and ACT testing, and get personal assistance in applying to college. Doing well in school and raising academic aspirations were as important as running the business. The SBE clearly enhanced school learning and overall academic achievement: nearly all the student-owners go on to college, compared to fewer than half of the graduating seniors in the same high school.

Conclusions and Implications

Overall, most of what was learned from studying teaching and learning opportunities in these three programs was quite positive. The longer term, fairly intensive WBL experiences provided opportunities for students to learn many work-related skills and attitudes. These learning opportunities varied across sites, however, depending on jobs and tasks that students were assigned, the nature of

the work, and so on. Students were generally satisfied with their work experience, although, on average, they felt the work was not very challenging. Although the programs varied with respect to purpose, the WBL experiences provided generally met each program's goals. The study does raise some questions and implications, and they are offered here not as criticisms of the programs but as general concerns to consider when developing educationally valuable work-based learning opportunities for young people.

Understanding the Social Context of Work Is Important

Workplaces vary considerably as learning environments in ways that can affect the quality of the work experience. Program developers can enhance the students' learning experiences by gaining a deeper understanding of that social context and using the information in several ways.

First, such information can help ensure that students are ready for work. Workplaces have different policies and practices for training and learning on the job. Some expect students to work productively and learn how to do a job quickly, when it needs to be done. In this kind of setting, students need social skills to learn from coworkers, since learning on the job is very informal. In other settings, training may be more formal or planned. This was often the case at the university laboratory where MMHS students worked, and at the SBE when, for example, a mentor provided lessons on principles of accounting. Some settings demand more of students because the work is complex or difficult, or the environment is high-pressured.

An understanding of the social context can also help program coordinators better match students to work sites. Even when coordinators and employers work closely to identify appropriate students, they may fail to consider characteristics that turn out to be crucial in the work setting. At one TCAP site, for example, the previous summer's intern did not work out at all because, although she was a top student in school, she was also shy and worked slowly. Similarly, MMHS students were sent to the university research lab because they had high grades, but grades mattered far less for success than a student's social skills: the ability to pick up social cues, ask questions, and learn how to behave in a new social situation. Thus, program coordinators might make better matches by considering whether a student is well-suited to a particular social context in addition to assessing knowledge or interest.

Schooling May Undermine Learning at Work

Students interact within the social setting to learn their tasks so they can eventually carry them out on their own. They must have the confidence to solve problems, and know when to ask questions and take initiative and how to work together. Students must take responsibility for their own learning. Unfortunately, researchers heard numerous times that schooling does quite the opposite. Students reported that learning at school meant listening, not asking questions. It meant working alone, not with other students. It meant asking the teacher what to do, not figuring it out for oneself. In school, a good excuse was all a student needed to get out of doing something.

This problem has two very different solutions. One obvious remedy is to simply provide WBL experiences for more students, because they will likely offer the best opportunities for students to learn how to learn at work. The problem, then, is scale-up: providing long-term, intensive school-supervised WBL to more students.

An alternative remedy is to improve school-based teaching to produce active, engaged learners who can work alone and with others, and who will be better prepared to learn how to learn at work. But this remedy will likely require significant changes in curriculum, assessment, teacher preparation, and staff development. Like the first remedy, this one also entails a long-term, and costly, school reform strategy.

Who Teaches at Work?

The work-based learning sites in this study were very different with respect to teaching strategies and expertise. Students at the SBE and the university laboratory generally found experienced, skilled teachers who paid much attention to students' personal needs in designing different learning activities. In contrast, staff at the TCAP work sites had no particular experience teaching high school students and did not receive any special training. While some programs incorporated some form of mentor training, they rarely required that mentors or supervisors attend such training as a condition of participation. Many programs also lacked written agreements specifying the qualifications of mentors. Further, it has been found that even if such agreements exist on paper, they may not be monitored in any systematic way.

It is curious that educators and the public often express concern when teachers teach with only emergency credentials or little formal knowledge of the subject matter, but seem oblivious to the qualifications of the adults who teach students at work. This study suggests that much more serious attention needs to be paid to providing appropriate training to work site mentors and to monitoring their performance as teachers.

Must School and Work Be Connected for WBL to Have Value?

This study corroborates other research on school-to-work programs by finding

that school and work are often only loosely connected and that any connection is difficult to establish (Hershey et al., 1997). Nevertheless, students can learn many things when school and work are unconnected. Students at the science lab, for example, have the opportunity to learn a much higher level of science than can be offered in their high school program. Their work experience may be irrelevant to high school, but it provides excellent preparation for college. A school-based enterprise may be located at a high school, but have no explicit connection to the school curriculum. It can still provide very valuable learning experiences and also avoid difficulties associated with recruiting and maintaining employer relationships.

Given the difficulty of making meaningful connections, it seems important to more precisely understand the value of work-based learning connected to school. Does the absence of a connection to science class—or for that matter, English, chemistry, or mathematics—make the work experience less valuable to students? What connections are important and necessary? How should they be designed to promote learning?

Perhaps the real power of the WBL concept is pedagogical: authentic work experiences should give students opportunities to apply knowledge in useful contexts. They thereby can gain a deeper understanding of both their abilities and the opportunities they can create for themselves through experience and/or education. In the end, learning is a personal, developmental transformation, so it is crucial to pay attention to whether that transformation occurs, as well as to the context that will enable such a transformation. It is this context that educators and teachers, in and out of school, have the most ability to shape.

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