Educational Policy Institute

Work-Based Learning & Higher Education

A Research Perspective

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Preface

This project was conducted by the Educational Policy Institute in association with the New England Association of Schools and Colleges (NEASC), and funded through a task order from the U.S. Department of Education.

The main component of this project involved the development and administration of a national survey, The *Higher Education – Students Speak II,* also developed by NEASC and EPI for a pilot version of this project in 2000. The revised survey was administered in spring 2002 to eight institutions across the United States. A literature brief was written to provide background information for the research project, including a discussion of work-based learning with respect to higher education, as well as an extended bibliography to provide reference information for interested readers.

Because the issue of work-based learning and higher education is relatively new, the research literature is somewhat limited. Most of the available literature focuses on the secondary education levels, particularly high school and the transition to community colleges. Little has been written about work-based learning at the postsecondary levels, which is one of the reasons for this project.

The conclusions drawn from this study remain those of the authors of the report, and do not necessarily represent those of the sponsoring organization, the U.S. Department of Education. Please note that we were instructed to use the term "work-based learning" for this project. However, this term is synonymous with "school-to-work" learning, its precursor.

Executive Summary

The *Higher Education – Students Speak II* survey was developed by the New England Association of Schools & Colleges (NEASC) and the Educational Policy Institute to identify the types and breadth of work-based learning activities that four-year college students experienced during high school, and to determine the correlation of these activities on their postsecondary experience. The survey, administered to eight institutions in spring 2002, queried first-year students at four-year institutions about their work-based learning experiences during high school and about their learning preferences. A subsequent transcript analysis allowed us to collect outcome data, including cumulative Grade Point Average, credits earned, and persistence. Following are the findings in brief:

The Sample

- 1,613 freshman students completed the Higher Education – Students Speak II survey.
- Women comprised 57 percent of the sample.
- 87 percent of the sample was 20 years of age or under. Only 4 percent were 24 years or older.
- The majority of students sampled for this study were white (71 percent).
- 93 percent of the students were enrolled in a four-year program.
- Two-thirds of the survey population (76 percent) expected or planned to complete an academic program beyond the Baccalaureate (BA). Only 24 percent planned on a BA as a terminal degree. (All respondents were undergraduates at 4-year institutions that in some cases also carried graduate programs.)

Patterns of Engagement

Students were asked about their participation in nine separate work-based learning activities during high school. These activities included job shadowing, short- and long-term internships, community service, cooperative education, youth apprenticeships, career academy, school-sponsored enterprise, and tech prep programs.

- Two-thirds (69 percent) of the sample participated in at least one work-based learning activity. One-third (31 percent) experienced two or more activities, and 11 percent engaged in three or more activities during their high school experience.
- Forty-seven percent of all students participated in a school-sponsored, community-service program during high school, 24 percent participated in a job shadowing program, and 13 percent in a school-sponsored enterprise.

- Students who participated in more than one work-based learning activity were more likely to participate in career/technical activities, such as tech prep, job shadowing, and youth apprenticeships.
- There was no statistically significant difference in work-based learning activity participation by race or ethnicity.
- Females were more likely than males to participate in at least one work-based learning activity (73 vs. 63 percent, respectively). However, the gender gap dissipated as the number of activities increased.
- Fifty-seven percent of the cohort expected to pursue academic studies beyond the four-year bachelor's degree. Students' expectations increased with their participation level in work-based learning activities. For example, 64 percent of students who participated in two or more activities expected to go beyond the BA.

Characteristics of Work-Based Learning Activities

- Sixty-nine percent of participants who participated in a work-based learning activity reported that their high school arranged the experience and 57 percent had a mentor at the work site.
- Forty-eight percent of the responses indicated that activities were discussed in class or were connected to classroom work (48 percent).
- 71 percent of respondents indicated that they learn better through hands-on projects and real-world application than through classroom or textbook instruction. A similar percentage of students planned to participate in work-based learning activities in college if they had the opportunity, but only 49 percent said that their college or university provides enough of those types of activities.
- Almost half (45 percent) of the participants said that high school work-based learning activities furthered their interest in higher education.

Work-Based Learning and Academic Outcomes

- The average cumulative freshman GPA was 3.06 on a 4.0 scale for study participants. Students who did not participate in a high school work-based learning activity earned a 2.99 GPA, while students who participated in one activity earned a GPA of 3.08.
- Students who participated in a high school community service program earned a college GPA of 3.11 versus 3.02 for students who did not participate.
- Sixty percent of students who participated in at least one high school work-based learning activity and 64 percent of those who participated in two or more activities earned a college GPA above 3.0, compared to 58 percent of the entire cohort.
- Participating in a work-based learning activity did not appear to have any significant effect on the percent of students who were registered to return for the following academic year in these 4-year postsecond-

ary institutions. In all, 88 of students participating in this study were registered for the following semester.

Conclusions

We conclude that students who participate in a high school work-based learning activities achieve at the four-year postsecondary level as well or better than students who do not participate in these activities. Given that vocationally-oriented students are less likely to enroll in a four-year institution of higher education, our findings that work-based learning students, as defined by those who participate in two or more activities, do enroll at the postsecondary level AND do as well as other students has implications for admissions and recruitment practices.

Another interesting finding of this study is that almost three-quarters of all postsecondary students believed they learn better through hands-on projects — the type of learning that occurs in work-based learning activities — than traditional, lecture-style practice.

Overall, we believe that these findings encourage enrollment planners, researchers, and public policy leaders to support and promote increased attention to this cohort of students. In particular, these data suggest that new attention should be given by selective admissions colleges to identify students with work-based learning backgrounds and use that information in their admissions processes. The results, we believe, will illuminate current enrollment, admissions, and recruitment strategies to both expand opportunities and gain a desirable cohort of dedicated, focused, and serious students who are likely to persist to degree.

Part I: A Literature Primer

Introduction

Work-based learning is not a new trend in education. In fact, what we term vocational and technical education was the premise of John Dewey's assertions during the late 19th and early 20th century. Dewey firmly believed that life and learning should be uniquely integrated. "The inclination to learn from life itself and to make the conditions of life such that all will learn in the process of living is the finest product of schooling" (Dewey, 1916, p. 51). Dewey believed that the best way to do this is to integrate the working world with education curriculum. In speaking of this connection, Dewey wrote:

> When exercises which are prompted by these instincts are a part of the regular school program, the whole pupil is engaged, the artificial gap between life in school and out is reduced, motives are afforded for attention to a large variety of materials and processes distinctly educative in effect, and co-operative associations which give information in a social setting are provided (Dewey, 1916, p. 195).

Dewey believed that this was the model for all education, not just for what we previously ascribed to vocational education or in today's career and technical education programs. He saw the K-12 system as a precursor, or apprenticeship, to the working world. Thus, education should emphasis the skills, social conditions, and attitudes of that world into the general education mix, or learning process. While Dewey's thesis did not transform the American education system as he had hoped, a renewed belief in this thought has emerged:

> Schooling for the Real World offers many practical ways of teachers and schools to provide young people with a genuine education that gives them experience in the world. Such experience adds considerable value to what is studied in school and helps young people see themselves as citizens of their places, persons who are highly valued for their seriousness of purpose and hard work by adults in their communities. (*Vito Perrone, Harvard School of Education*[1]*)*

On the vocational and technical education end, the 1990s brought with it new federal legislation leading to the renaming of vocational education to career and technical education and renewed support for linking high school, postsecondary education, and the workforce. Through the School-To-Work Opportunities Act of 1994, the federal government attempted to strengthen existing linkages and programs to expand the vocational development of students and various strategies for workforce development. In essence, the School-to-Work Act "intended to facilitate the education and career preparation of young people during their forma-

[1] *Quoted from Steinberg, Cushman, et al., 1999.*

tive secondary school years, expanding pathways to post-secondary education, productive work, and self-sufficiency" (Hughes, Bailey, and Mechur, 2001, p. 5).

Research findings during the past decade have generally supported the notion that work-based learning activities can invigorate the learning process and act as a positive force for students in both academic and career and technical education programs. In the context of the 21st century, Copa and Wolff (2002) found that learning needs to: (a) be progressive in achieving external standards, (b) engage learners in relevant and challenging experiences, (c) be learner-centered, (d) use real-life experiences and be project-oriented, (e) integrate academic and career and technical education, (f) use and closely coordinate non-school and school learning settings, (g) use multiple and continuous forms of assessment to improve learning, and (h) create and nurture learning communities.

Hughes et al. (2001), in their review of research related to work-based learning literature at the secondary education level, found that work and learning students tended to stay in school and complete their diplomas, maintain difficult grades, and take difficult courses. Swail's (2001) recent study of data from the College Board's student descriptive questionnaire found that a higher percentage of students with work-based learning experiences in high school had a B or better Grade Point Average (GPA) in high school compared to all SAT test takers, even though they were more likely to be from less-advantaged backgrounds. As well, a higher percentage aspired to attain at least a bachelor's degree than 1999 SAT takers overall. Kampits and Swail (2001) found that 80 percent of college students surveyed in their study indicated they learn better through projects and real-world applications than through classroom and textbook instruction only, and that 83 percent planned to participate in work-based learning experiences during college (Kampits and Swail, 2001).

Hughes et al. (2001) also concluded that work and learning students were well prepared for both two- and four-year postsecondary institutions. This findings coincided with a rise in dual-enrollment programs across the country, where high school students enroll and participate in postsecondary courses at community colleges and four-year institutions. Dual enrollment successes further establish a more seamless linkage between the secondary and postsecondary levels, at the same time as they gave new access to a broader curricula for high performing students as well as reducing financial costs.

In 2000, a study of high school students found that students engaged in work-based learning activities during high school scored significantly higher on certain student motivation/aspiration measures than other students (Kampits and Swail, 2001). And Chin, Hugh, and Hutchinson (2000) found that students, through work-based learning activities, acquire "knowledge and skills in particular occupations; providing career exploration and planning; learning all aspects of an industry; improving personal and social competence related to work in general; and enhancing students' academic achievement and motivation through contextual learning."

The various types of work-based learning activities within our interest can be described as follows.

Job-shadowing programs allow students to observe a person during a typical workday in a chosen field. They usually take place in a few hours of one day or can be set up for a longer period of time.

Short- and long-term internships allow students to gain a structured hands-on experience in a given occupation for a specified period of time.

Community service programs are school-sponsored, credit-bearing educational experiences where students participate in organized service activities that meet identified community needs. Student participation, whether school-sponsored or self-initiated, have enjoyed increasing participation in the past decade.

Co-operative education experiences are school-supervised, structured, paid work experience arranged by a school and employer to lead to an occupational goal.

Youth apprenticeship programs are formal training programs designed to help youths 16 and older learn skills related to a specific occupation.

Career academies (school within a school). Career academies generally organize learning as a school-within-a-school, place learners in a cluster with the same teachers for a two- to four-year period to form a learning community; create partnerships with business to provide career awareness and work-based learning, and integrate academic and occupational curriculum (Kerka, 2000). Active for more than thirty years, they are found in at least 1,500 high schools nationwide.

Tech prep programs. Tech prep programs provide high-level academic and technical preparatory education linking high school and post-high school learning experiences. As part of these programs, partnerships among students, faculty, employers, and community agencies are formed and share responsibility for authentic and performance-based assessment achievement of learning expectations and program evaluation (Wolff & Copa, 2002).

Work-Based Learning and Higher Education

Much of the research on work-based learning has focused on the secondary school, since that has been the emphasis of most public policy and classroom-based practice. But work-based learning isn't foreign to higher education. Over 90 percent of colleges and universities offer internships for students which provide experiential learning opportunities. As well, teacher preparation programs are formulated largely on a work-based experience strategy, and medical education and business programs are examples of the incorporation of the ideals of

work-based learning into the education process. The main differences in professional and vocational programs are largely attitudinal.

In addition, more than half of all students registered in credit-bearing courses at colleges and universities, do so through study at community colleges; in 1996, over 60 percent of undergraduates in higher education participated at less-than-four-year institutions. The Community College Research Center (CCRC) has been a significant lever to conducting and publicizing research on this cohort. Tom Bailey, CCRC's Director maintains that this contributes to a growing body of research on postsecondary occupational education "anchored in community colleges," with numerous collaborative projects including data collected from intensive fieldwork at 16 community colleges in seven states.[2] Their focus, however, does not expand into our review of work-based learning in relation to baccalaureate institutions—a field which has engendered limited study to date.

According to a 2001 study by Kampits and Swail, approximately two-thirds of postsecondary students participated in at least one work-based learning activity during high school, and 32.2 percent experienced two or more activities. Students enrolled in four-year degree programs were more likely to have participated in work-based learning activities than other students surveyed among a cohort that included some 2-year colleges. In total, 69 percent of four-year students participated in at least one activity, and 34 percent in two or more activities. According to the *National Survey of Student Engagement (NSSE)*, two-thirds of all college seniors are involved in community service and volunteer work and 72 percent participate in internships (*NSSE Viewpoint*, November 2001).

A study of a school-to-career initiative in Boston Public Schools found that high school graduates who participated in the program were more likely to attend college the year after graduation and remain in college and earn a college degree than students in the comparison group who had not participated in the program. As well, these students were more likely than their peers to be working and earned, on average, higher wages than those in the control group (*School-to-Career Initiative Demonstrates Significant Impact on Young People,* Jobs for the Future, 2000).

The remainder of this brief review will focus on specific areas of work-based learning collected from the available literature.

Internships

Internship activities provide a "planned transition from the classroom to the job, and … are a natural bridge between college and the work world" (Coco, 2000). Specifically, internships are generally coordinated activities and agreements that allow students to work in a work place for a significant period of time. Intern-

[2] Personal Interview; see also, http//www.tc.Columbia.edu/ccrc.

ships are generally categorized as short-term (one month or less) or long-term (more than one month).

Internships enjoy widespread use on postsecondary campuses, particularly four-year institutions. According to a survey conducted by Coco (2000), about half of students who participated in an internship program attended only one-third of postsecondary institutions in the survey. That is, a smaller number of institutions are providing a majority of the internship opportunities. Of those who did participate in internships at the four-year level, almost all (91 percent) were undergraduates, with the remainder at the graduate level. These programs appear to have a significant impact on the post-undergraduate opportunities for these students. Approximately 58 percent of graduating seniors who worked in an internship program had a job before graduation, compared to 30 percent of all graduating seniors (Coco, 2000).

Wentz and Trapido (2001) found that internships helped students clarify their career aspirations, develop soft skills (e.g., communication, office management, problem solving, critical thinking, and time management), and become part of the professional network that guides their future job development. Additionally, these students find they can have an impact on "real work" through contributions to the community. According to Wentz & Trapido-Lurie (2001), the internship program has the ability to benefit all stakeholders, including:

- Students, who develop work-based skills, both tangible and intangible, which are transferable to other types of employment. They explore a variety of career paths, make contact with professionals outside the academic environment who can assist with attaining a job after graduation, and contribute to endeavors that have a positive impact on the community.
- Employers, who benefit from the use of interns to complete small-but-necessary tasks that contribute to larger projects. Perhaps the greatest benefit is the opportunity to review a potential employee in the process.
- Participating faculty and institutions, who benefit from the ability to augment the student experience through a hands-on, subject-matter relevant experience that could only happen in a workplace.

The programs in operation demonstrate considerable latitude in terms of type, focus, and breadth. For instance, Bruggink (2001) describes a short-term, one-week internship program for college students at Dow AgroScience in Indiana, providing students with exposure and experience in the sciences related to their studies. Farnsworth et al. (2001) describe a long-term (10-week) summer internship program at the University of Connecticut, called REAL Team (Rapid Ecological Assessment of the Landscape), where students are trained in ecological concepts and specific taxonomic skills, knowledge that could be used working with a conservation organization.

Of the literature reviewed for this project, most describe some level of student success through the programs. Dillon and Van Riper (1993) found that students benefited from internship projects, like those aforementioned, in a number of ways, including:

- directly applying classroom concepts to real-world problems,
- observing professional role models,
- developing a sense of place by contributing to their local community,
- honing teamwork skills, and
- adopting efficient time management in meeting deadlines (Dillon and Van Riper, 1993).

Internship programs require a commitment from both the university and the sponsoring agency (Farnsworth et al., 2001). However, a commitment must be made on behalf of participating students, since, in the case of the REAL program, the internship portion follows the classroom experience.

With regard to how internship programs at the postsecondary level work best, Wentz & Trapido-Lurie (2001) suggest that structured programs have the following characteristics:

- Academic credit based on hours worked.
- Employment with reputable agencies.
- Work tasks that help students learn specific job skills.
- Direct supervision at the place of employment.
- In-class assignments that direct learning outcomes.
- A final grade, calculated on in-class assignments as well as employer evaluation.

Community Service Program (Service Learning)

According to Malone, Jones, and Stallings (2002), community service or service learning programs are an approach to teaching and learning that actively engages students in community service which is directly connected to academic course content. Service learning differs from pure volunteerism because it involves a mixture of learning objectives and service. In addition, service learning provides structured time for students and other participants to reflect on the experience, and it gives them an opportunity to apply their acquired knowledge immediately. (Barnes, Gail 2002). Research has illustrated that service learning does in fact enhance the development of cognitive skills among participants (Vogelgesang & Astin, 2000)

Eyler and Giles (1999) interviewed over 2,000 service-learning college students and concluded that service-learning experiences had a significant effect on the impact of the experience, including personal development, interpersonal development, citizenship, problem solving, learning and application, closeness to faculty, tolerance. Astin, Vogelgesang, Ikeda, and Yee (2000), in their national study

of 22,236 undergraduates students, found significant positive effects for students, including academic performance, values, self efficacy, leadership, choice of a service career, and plans to participate in service after college. Astin et al. concluded that students benefited from an increased sense of personal efficacy, an increased awareness of the world, an increased awareness of one's personal values, and an increased engagement in classroom academic experience.

Malone et al. (2002) looked at the impact of service-learning tutoring experiences on undergraduates enrolled in teacher education programs. Their findings showed that students in these programs reported changes in perspectives on identity and personal development (62.2 percent), clarification of career and life goals (43.9 percent), personal growth (25.5 percent), and increased confidence (12.2 percent). The study found that some students were surprised that they learned so much from being a tutor to elementary students: "I had originally thought that tutoring would be a one-way street, with me providing all the information while my tutee soaked it all in like a sponge. However, I was surprised at how much I learned about myself through tutoring." Another student remarked: "I could make a difference between failure and success for this student" (Malone et al., 2002, p. 6).

Findings from a study of student outcomes of a 20 hour per semester service-learning requirement in an introductory child development course revealed that 166 students in service-learning out-performed 309 students who took the course prior to the introduction of the service-learning requirement (Strage, 2000).

Cooperative Education Experience

As described previously, co-operative education experiences are school-supervised, structured, paid work experience arranged by a school and employer to lead to an occupational goal. About 900 U.S. colleges offer co-operative education programs in the U.S. (Mariani, 1997), integrating a quarter of a million college students with colleges and and co-op employers, who hire students for between 2 and 6 months. According to Perry (1999), 50,000 companies, nonprofits, and government agencies sponsored co-op programs in the early 1990s. Now almost 120,000 sponsor these activities, including 85 of the Fortune 100 companies (Mariani, 1997).

Benefits noted by co-op students include improved people skills, increased understanding of lessons and concepts learned in class, the opportunity to apply theory in trouble-shooting and problem solving, and maturity and independence. Students also save time and money from co-ops because they can decide if they like their intended careers or wish to change. Co-ops also enable employers to make more informed hiring decisions, often to the benefit of someone who has had a co-op experience with their company or another (Mariani, 1997).

Co-op students enjoy other tangible benefits, including the ability to understand and retain material longer through co-operative programs (MacKenzie and

White, 1982; Kern and Carpenter, 1984), and a greater understand of the importance of school and learning (Perry, 1999). Mariani (1997) interviewed a co-op coordinator at Mississippi State University who mentioned, "One of the greatest benefits of co-op is not the work experience but the fact that the student finally has that feeling, 'This is what I really want to do" (Mariani, 1997, p. 5).

Co-op students also report a stronger connection between their current jobs and expected careers, more opportunity for learning on current jobs, and express more interest in current jobs, and see a closer connection between school and work (Stern, Stone, Hopkins, and Cagampang, 1992). And students who complete a co-op experience usually return to class with a new attitude and interest in reading and other assignments (Mariani, 1997).

Four-year students often have to add a 5th year to their program in order to participate in co-ops. As well, they typically forego respite from their studies during the summer. However, they do get paid, averaging between $2,500 and $14,000 a year. The big payoff is in their newfound experience and the opportunity to work with a possible future employer (Perry, 1997).

The Dupont Corporation actively pursues graduates with co-op experience for their heightened communication and problem-solving skills and their practice working in teams (Perry, 1999). And co-ops allow companies to work with people who are dependable to do pre-professional work, and then have a base of individuals who can hit the ground running (Mariani, 1997). According to a 1998 survey by the National Association of Colleges and Employers, professional work experience ranks second among qualities employers seek in recent graduates—communications is second and grade-point average ranks sixth (Perry, 1999).

Tech Prep Programs

Beginning with an educational reform initiative proposed by Parnell (Parnell, 1985), the 2+2 educational initiative to advance academic and technical skills continued with a number of legislative acts including the Carl D. Perkins Act Amendments of 1990 and 1998 and the School-to-Work Opportunities Act of 1994. Donna Dare's ample review of literature regarding tech prep from 1990-2000 noted that "over 1,000 local consortia indicated they had implemented tech prep, including almost 70% of all U.S. school districts serving 88% of all American high school students," by 1995. Implementation has been diverse, and by its history, built "from the bottom up, from the secondary to the postsecondary level" (Dare, 2000), plagued by both negative perceptions and barriers between traditional academics and lack of acceptance by four-year institutions (Dare, 2000, p.5). Her literature review is comprehensive at the same time that it reflects a shift in literature to considering tech prep as applied academics in broader areas in the mid-1990s.

Other research builds on longitudinal studies begun in the mid-1990s regarding student performance, academic and vocational integration within the high schools and moving on to tech prep participation with many drawing on statewide examples such as Texas, Georgia and Illinois (Brown, 2000; Brown, 2001; Bragg & Reger, 2000). Bragg's recent article on community college access, mission and outcomes demonstrates the compelling role the nation's more than 1,100 community colleges—1/4 of all postsecondary institutions in the country—play in providing access and benefits to a diverse student population. She concludes that the value of community colleges' increasing focus on integrating vocational and transfer foci will continue, even as some will argue that it both limits and expands options for all students (Bragg, 2001). Again, as educational research begins to yield information on tech ed since the mid-1990's, reality presumes that these studies will continue to focus on high school to 2-year institutions, with further study spurred by growing, and recent, legislative interest in articulation within the larger framework of 4-year institutions.

Part II: The Research Results

Introduction

The *Higher Education – Students Speak II* survey was developed by the New England Association of Schools & Colleges (NEASC), in association with the Educational Policy Institute, Inc., with support from the National Center for Student Aspirations in fall 2001 and administered in spring 2002 to eight institutions across the United States. This survey was a refined version of the previous "Higher Education Students Speak: Integrating Work & Learning" developed and administered in 2000 as part of a pilot project. The instrument used for the academic year 2001-02 was 4 pages, or twice as long, developed for first-year students only, and focused on greater complexity regarding student work and learning experiences. Both were designed to serve as a lever for educational research by providing an initial broadly geographic and diverse profile of undergraduates at more than a dozen institutions nationwide (Research I/II, public and private) that identify the progress of those who indicate one or more of nine work-based learning experiences at the high school level. A component of the survey is based on student aspirations research conducted by the National Center for Student Aspirations, and provides information about how students feel about their learning experiences in postsecondary education.

This 2001-02 survey queried first-year students at four-year institutions about their work-based learning experiences during high school and about their learning preferences. Through a subsequent transcript analysis conducted with the aid of each participating university, we were able to collect outcomes data, including cumulative Grade Point Average (GPA), credits earned, and persistence. Information from the survey has been provided to participating institutions in the form of institutional reports. Feedback from participating institutions suggests that they are now able to use these results to guide admissions staff, academic officers, and enrollment planners in predicting how high school work and learning experiences may influence their undergraduates' academic performance. This represents documentation that assists efforts to consider a broader array of admissions tools than have traditionally been relied upon. These institutions' response and rapid integration of our data's finding into existing processes, albeit in a localized scale, was a desirable but unpredictable product of our study.

As educators and the nation turn to expanding opportunities for all learners, we find that traditional four-year institutions will gain a win-win admissions/enrollment and retention strategy/success as they become aware of the small-but-increasing number of studies that examine the cohort of students engaged in applied learning before matriculation. Thus the survey instruments were designed to provide results in the year of the instrument undertaking, however attractive longitudinal studies might otherwise be. The presumption is that traditional postsecondary institutions, especially those that are rated with "moderately difficult" and even "very difficult" entrance levels, would reflect on this attractive cohort without reservations based on limited, or faulty information regarding work and learning in high school prior to college application.

Data Collection

This research project was based on a purposeful sample of eight selected four-year, public and private colleges and universities, most of which participated in the original pilot study. The institutions were carefully chosen for participation based on a number of factors, including diversity of student population, mission, and sector, as well as their interest in participating in this study and learning more about their student population. The institutions were located in both urban and rural site campuses in Arizona, California, Massachusetts, New Mexico, North Dakota, Texas, and Washington. Particular attention was given to assuring representation from a diverse student population. Six of the institutions are publicly controlled (state supported) and seven are considered moderately selective institutions, with the exception of one cited as very difficult[3].

First-year students at the eight participating institutions were given a four-page questionnaire, *Higher Education Students Speak II*. For their effort, each institution was provided with a completed report and analysis of how their students' responses compared with the national-aggregated total (*Report Summary*), as well as a modest stipend.

The survey was administered in spring and summer 2002 to 2,000 freshman students, yielding useable data from 1,613 surveys at the eight participating institutions. Although some institutions utilized a random selection of their freshman class, a majority of the institutions were not able to do so and thus administered the survey on a purposeful platform. Administrators of the survey were provided with explicit instructions on the administration procedures. Once completed, the surveys were returned to NEASC's partners, including National Center for Student Aspirations (NCSA) at the University of Maine for scanning and computer analysis.

Data Analysis

Once the surveys were scanned into a database by NCSA staff, institutional reports were produced and sent to NEASC for each participating college. The aggregated data file of all colleges was sent to the Educational Policy Institute in Washington, DC, for analysis using SPSS. Those findings are reported in this brief.

Limitations of the Data

Although we were able to collect data from 1,613 students at the 8 participating institutions, the size, scope, and intent of the contract did not allow for a stratified-random sample. Institutions were either unwilling or did not have enough time, in most cases, to conduct a random sample. The research team felt that the project would have run into considerable administration problems if a random

[3] The Peterson Guide was used for selectivity.

sample were required. Thus, it is not a nationally-representative sample and generalization must be cautioned. As well, we also recognize that students' interpretation of specific survey questions may vary, as in all surveys, so that various students may have defined "community service" or other work-based learning activities differently. While we cannot express any standard error due to this issue, we must resist an over expression of the data. And finally, we must also take into consideration that the campuses bring a broad range of realities to the study. The sample is not stratified by institution size, type, and sector. Nor can we assume that grade-point averages are consistent across campuses, just as differences are found among the more than 3,000 institutions of higher education nationwide.

Describing the Sample

The full sample of 1,613 freshman students closely mirrored the national breakdown of college enrollment by gender, with women comprising 57.2 percent of the sample (Table 1). Approximately 87 percent of the sample was 20 years of age or under, and only 3.7 percent were 24 years or older. The majority of students sampled for this study were white (70.6 percent). Again, this figure is representative of the national undergraduate population. However, Hispanic and Black students were somewhat underrepresented in this study, although on some campuses surveyed, representation was far above the national average. Complicating this data element is the use of "multiracial" and "other" selections on the survey, consistent with Census standards. In our estimation, the Hispanic and Black numbers are negatively skewed due to the seven percent of the sample choosing to select either of these additional choices.

Only 93.2 percent of the students participating in this study were enrolled in a four-year program, even though this study was administered at institutions with four-year baccalaureate programs. With respect to degree aspirations, over two-thirds of the survey population (76.2 percent) expected or planned to complete a post-graduate program. Only 23.8 percent planned on a baccalaureate (BA) as a terminal degree.

Patterns of Engagement

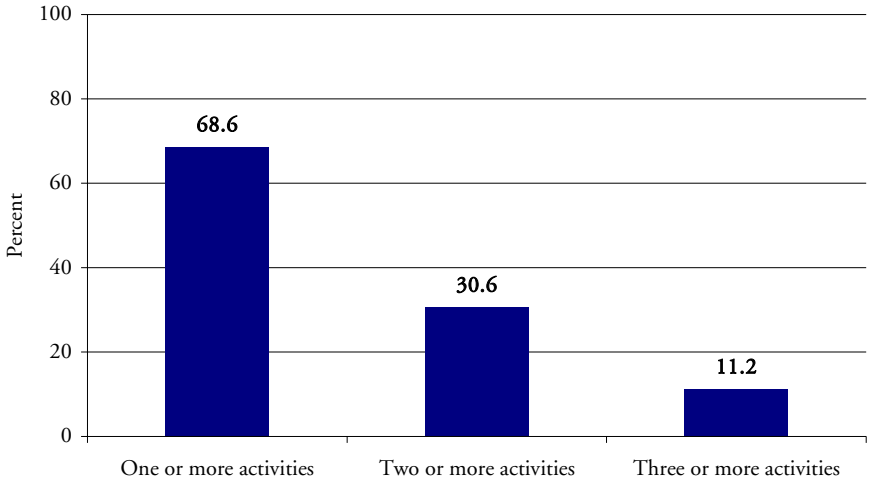
Students were asked about their participation in nine separate work-based learning activities during high school, as identified and defined in the literature portion of this Technical Assistance Project and in the appendix of this report. These activities included:

- Job Shadowing
- School-Approved Short-Term Internship
- School-Approved Long-Term Internship
- School-Sponsored Community Service

- School-Approved Cooperative Education Experience
- Youth Apprenticeship
- Career Academy
- School-sponsored Enterprise
- Tech Prep

Of the 1,613 freshman students analyzed for this portion of the study, approximately two-thirds, or 68.6 percent, indicated having experienced at least one of these activities (Table 2; Exhibit 1). Approximately one-third of the sample (30.6 percent) experienced two or more activities, and 11.2 percent engaged in three or more activities during their high school experience.

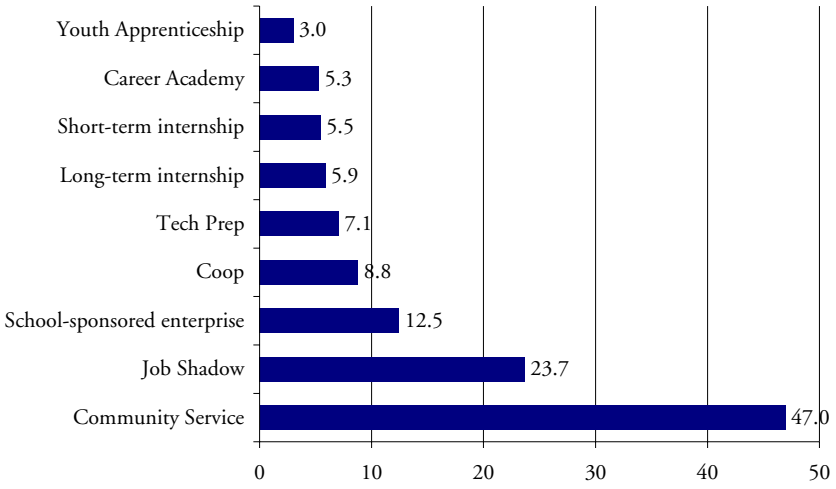
Figure 1. Percent of respondents with specific high school work-based learning experiences and the number of experiences



SOURCE: 2002 National Work-Based Learning Study, NEASC/EPI; Table 2.

Forty-seven percent of all students participated in a school-sponsored, community service program during high school, by far the most selected activity of the nine (Table 2; Figure 2). Approximately one-of-four students (23.7 percent) participated in a job shadowing program, and 12.5 percent in a school-sponsored enterprise. The remaining activities fell into single-digit response levels. Analysis shows that one-quarter of the entire sample engaged in community service PLUS at least one other work-based learning activity. Half of those who participated in a community-service activity participated in at least one additional activity.

Figure 2. Distribution of work-based learning activities



SOURCE: 2002 National Work-Based Learning Study, NEASC/EPI; Table 2

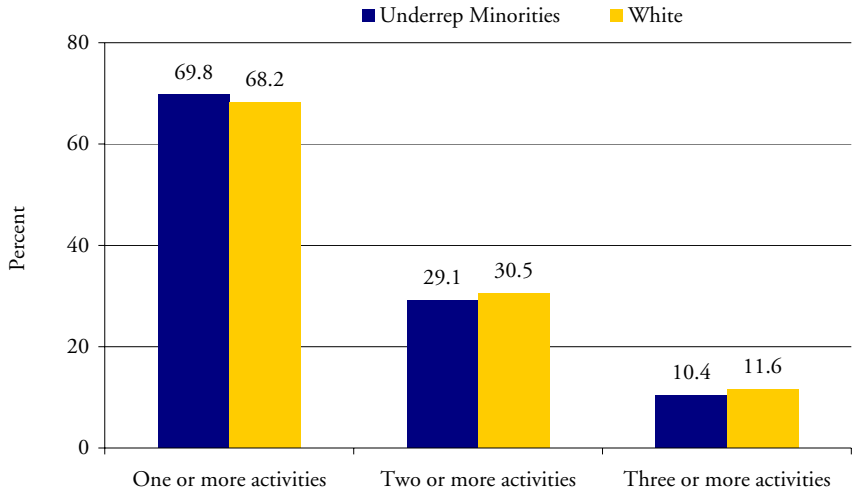
Table 3 illustrates a more complex picture of activity patterns among student participants. Students who participated in more than one work-based learning activity were more likely to participate in career/technical activities. For instance, the top three activities for students who participated in only one activity were community service (49.9 percent), job shadowing (28.3 percent), and career academy (24.4 percent). For students participating in two activities, the top three activities included tech prep (41.4 percent), job shadowing (37.7 percent), and youth apprenticeships (31.9 percent). And students who participated in three or more activities were most likely to participate in short-term internships (64.4 percent), long-term internships (62.4 percent), and youth apprenticeships (57.4 percent). Thus, students who seem to be more likely found in career and technical education were also more likely to participate in more work-based learning activities.

Race/Ethnicity

There was no statistically significant difference in the participation in work-based learning activities by race/ethnic groups (Table 4; Figure 3). This finding held regardless of number of activities participated in or the type of activity. Approximately 69 percent of underrepresented minorities[4] and White students participated in at least one activity. Almost one third (30 percent) of both groups participated in two or more activities, and approximately 11 percent participated in three or more activities.

[4] Includes Native Americans, Hispanics, African American or Black, Multiracial, and other.

Figure 3. Percent of underrepresented minority students and white students who participated in work-based learning activities, by number of activities

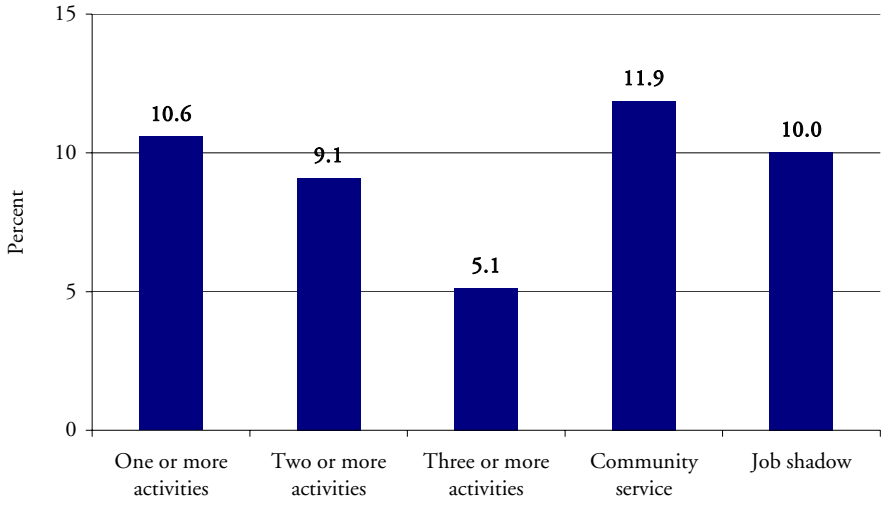


SOURCE: 2002 National Work-Based Learning Study, NEASC/EPI; Table 4

Gender

Females were more likely than males to participate in at least one work-based learning activity (73.3 vs. 62.7 percent, respectively; Table 5; Figure 4). However, as the number of activities increased, the gender gap dissipated to 5.1 percent for three or more activities. The greatest gaps by specific activity were in community service (11.9 percent) and job shadowing (10.0 percent). Females only lagged behind males in two categories: career academy (-1.1 percent) and tech prep (-4.1 percent).

Figure 4. Percentage difference in work-based learning activity participation rates

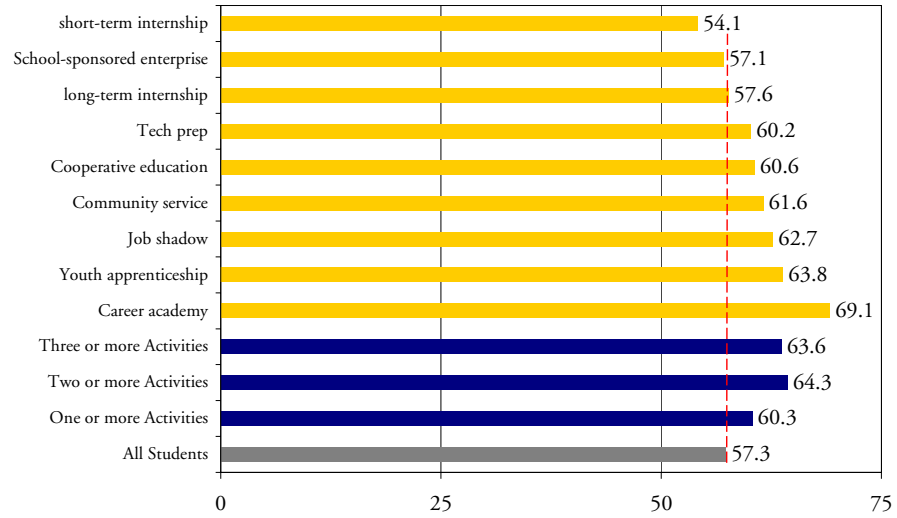


SOURCE: 2002 National Work-Based Learning Study, NEASC/EPI; Table 5.

Degree Aspirations

Of the entire cohort, 57.3 percent expected to pursue academic studies beyond the four-year bachelor's degree (Table 6; Figure 5). For students who participated in one or more activities, this expectation rose to 60.3 percent. When students participated in two or more activities, the expectation rose to 64.3 percent.

Figure 5. Percent of cohort with educational plans past four-years, by activity



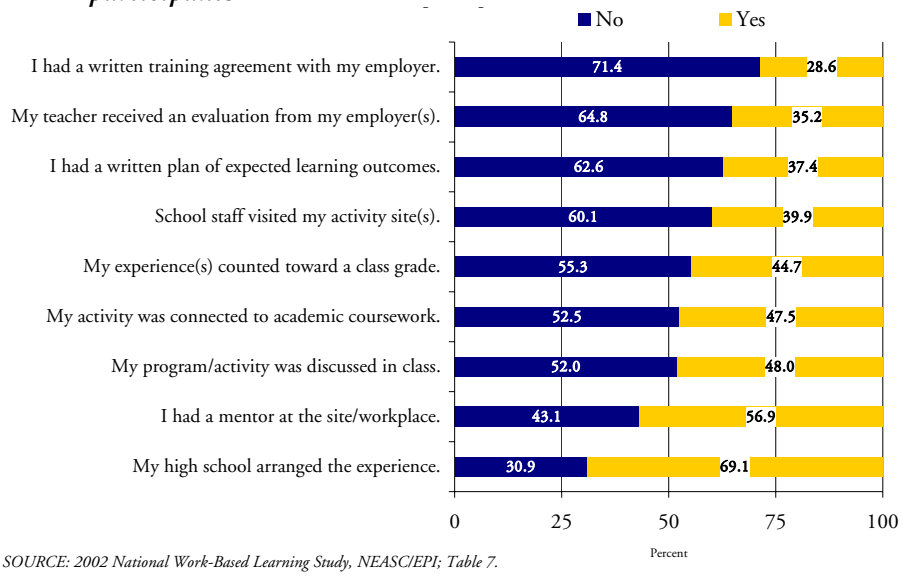
SOURCE: 2002 National Work-Based Learning Study, NEASC/EPI; Table 6.

With respect to individual activities, participation in almost all activities was associated with higher educational expectations. With the expectation of internships and school-sponsored enterprises, students' expectations rose by three percent or more by participating in work-based activities. For instance, 69.1 of those who participated in a career academy had post-BA aspirations—almost 12 percent higher than the cohort average. Table 6 illustrates the differences by levels of education.

Characteristics of Work-Based Learning Activities

Participants were asked a number of questions regarding their high school work-based learning activities. The first set of questions regarded specifics about the operation of these activities. For instance, 69 percent of participants who participated in a work-based learning activity reported that their high school arranged the experience and 56.9 percent had a mentor at the work site (Table 7; Figure 6). Half of the responses indicated that activities were discussed in class (48.0 percent) or were connected to classroom work (47.5 percent). Of the remaining comments, 44.7 percent reported that their activity counted toward a class grade. Table 7 provides specifics related to the individual types of activities not characterized in the exhibit.

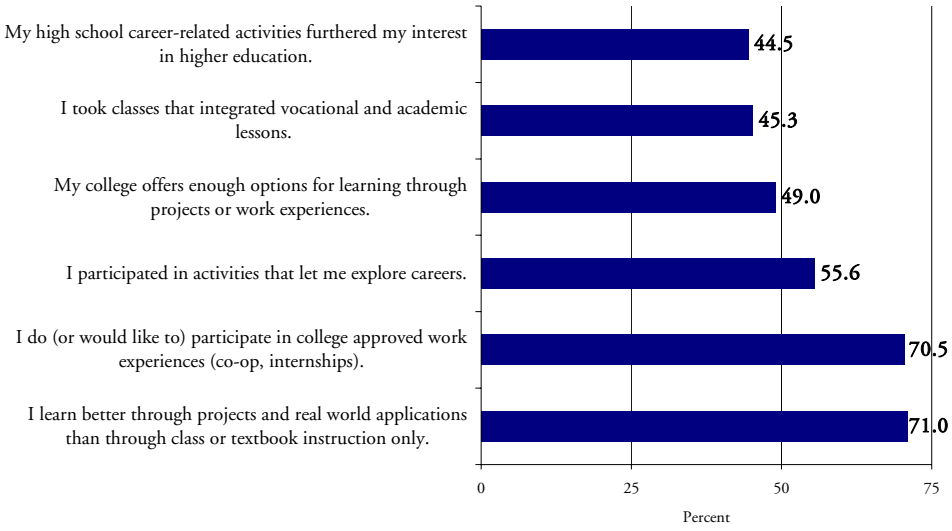
Figure 6. Responses to queries regarding work-based learning activities by participants



SOURCE: 2002 National Work-Based Learning Study, NEASC/EPI; Table 7.

A second set of questions characterized the impact of the activities on learning (Table 8; Figure 7). The table provides specifics related to the individual types of activities not characterized in the exhibit below. A significant finding was that 71 percent of respondents indicated that they learn better through hands-on projects and real-world application than through classroom or textbook instruction. A similar percentage of students planned to participate in work-based learning activities in college if they had the opportunity, but only 49 percent said that their college or university provides enough of those types of activities. Almost half (44.5 percent) of the participants said that high school work-based learning activities furthered their interest in higher education.

Figure 7. Responses to various work-based learning questions



SOURCE: 2002 National Work-Based Learning Study, NEASC/EPI; Table 8.

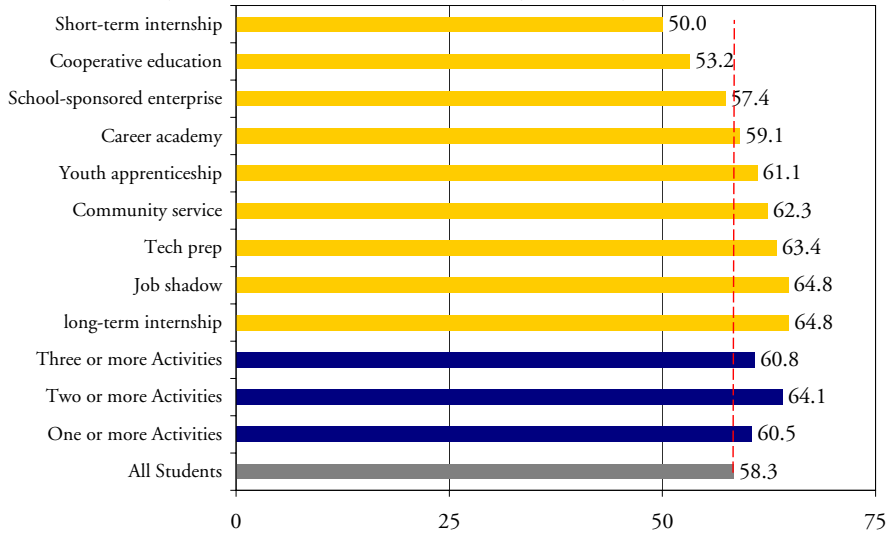
Work-Based Learning & Academic Outcomes

Through the transcript analysis that accompanied this study, we were able to collect college grade-point average (GPA) of freshman students as well as several other academic indicators. This allows us to compare participation of students with different levels of high school work-based activities to academic outcomes.

The average cumulative GPA across all participants in this study was 3.06 on a 4.0 scale. Students who did not participate in a work-based learning activity during high school earned a 2.99 GPA, while students who did participate in one activity earned a 3.08 (Table 9). Students who participated in community service scored almost 1/10th of a GPA point higher than students who did not (3.11 vs. 3.02).

We also analyzed the percent of students by GPA bands (Table 11; Figure 8). Our analysis shows that 58.3 percent of the entire cohort earned a GPA of above 3.0, and 34.4 percent earned between 2.01 and 3.0. Comparatively, 60.5 percent of students who participated in at least one work-based learning activity and 64.1 percent of those who participated in two or more activities earned a GPA above 3.0. In fact, as with educational expectations, participation in 6 of the 9 individual activities identified in this study also resulted in a greater percentage of students receiving 3.0s and above.

Figure 8. Percent of cohort with GPA over 3.0, by activity



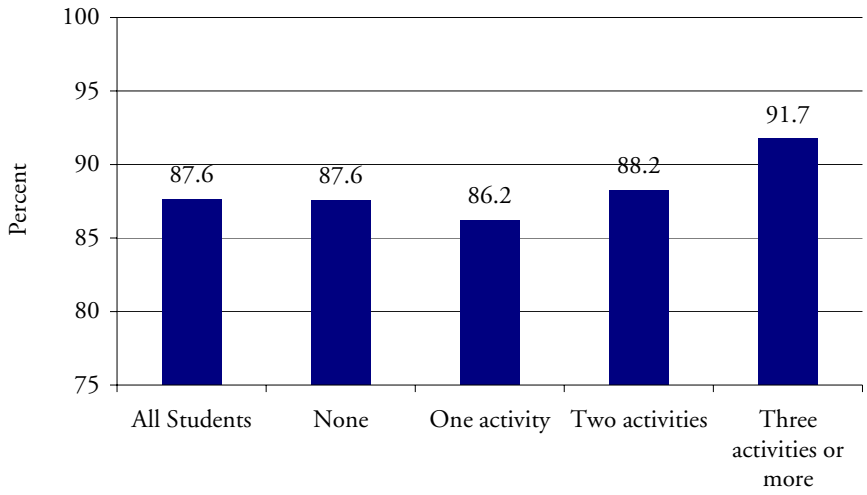
SOURCE: 2002 National Work-Based Learning Study, NEASC/EPI; Table 11.

Retention

Participating in a work-based learning activity did not appear to have any significant effect on the percent of students who were registered to return for the following academic year in these 4-year postsecondary institutions (Table 12; Figure 9). In all, 87.6 of students participating in this study were registered for the following semester. Students who participated in only one activity were retained at a rate of 86.2 percent, and 88.2 percent of students who participated in

two activities were registered. Interestingly enough, 91.7 percent of students who participated in three or more activities were registered for the fall semester. Comparatively, the published freshman retention rates of the institutions in our study ranged from 71 to 97 percent but averaged about 82 percent.

Figure 9. Students registered for the following semester by number of activities



SOURCE: 2002 National Work-Based Learning Study, NEASC/EPI; Table 11.

Number of Credits Earned

We were also able to calculate the number of credits that students earned during the previous semester. The findings did not differ significantly by number of activities or whether students participated at all in a work-based learning activity. On average, students earned 13.0 credits (Table 13).

Conclusions

In the end, this study mostly supported our null hypothesis that students who engaged in work-based learning activities during high school would not differ significantly from students who did not participate in these activities. For the most part, this held true, even by background characteristics of the participants (e.g., gender, race/ethnicity).

Spun a different way, the most conclusive finding from this survey is that students who participate in high school work-based learning activities achieve at the four-year postsecondary level as well or better than students who do not participate in these activities. And this finding continues to hold for students who participate in more than one activity—students we consider more vocationally-oriented than most.

Given that vocationally-oriented students are less likely to enroll in a four-year institution of higher education, our findings that this group, as defined by those who participate in two or more activities, do enroll at the postsecondary level AND do as well as other students has implications for admissions and recruitment practices.

Another interesting finding of this study is that almost three-quarters of all postsecondary students believed they learn better through hands-on projects — the type of learning that occurs in work-based learning activities — than traditional, lecture-style practice.

Overall, we believe that these findings encourage enrollment planners, researchers, and public policy leaders to support and promote increased attention to this cohort of students. In particular, these data suggest that new attention should be given by selective admissions colleges to identify students with work-based learning backgrounds and use that information in their admissions processes. The results, we believe, will illuminate current enrollment, admissions, and recruitment strategies to both expand opportunities and gain a desirable cohort of dedicated, focused, and serious students who are likely to persist to degree.

Appendix A: Tables

Table 1. Distribution of survey participants by various demographic characteristics

Characteristic	n	%
All Students	1613	100.0
Gender		
Male	684	42.8
Female	914	57.2
Age of Participants		
17-18	402	24.9
19-20	997	61.8
21-23	125	7.7
24 and older	59	3.7
Race/Ethnicity		
American Indian or Alaska Native	18	1.1
Hispanic/ Latino	118	7.5
Black or African American	33	2.1
Asian, Asian American, Pacific Islander	180	11.4
White	1114	70.6
Multiracial	52	3.3
Other	62	3.9
Degree Program		
Specialized/Certificate	14	0.9
2 year (AA, AS)	3	0.2
4 year (BA, BS)	1472	93.2
Other	91	5.8
Desired Degree		
4 year	378	23.82
5 year/other	145	9.14
Master's (M.A.)	505	31.82
Doctoral	260	16.38
Undecided	299	18.84

SOURCE: 2002 National Work-Based Learning Study, NEASC/EPI

Table 2. Percent of respondents with specific high school work-based learning experiences and the number of experiences

Activity	N	n	%
One or more activities	1613	1106	68.6
Two or more activities	1613	493	30.6
Three or more activities	1613	180	11.2
Community Service	1577	741	47.0
Job Shadow	1613	382	23.7
School-sponsored enterprise	1558	194	12.5
Coop	1578	139	8.8
Tech Prep	1562	111	7.1
Long-term internship	1583	93	5.9
Short-term internship	1589	87	5.5
Career Academy	1566	83	5.3
Youth Apprenticeship	1562	47	3.0

SOURCE: 2002 National Work-Based Learning Study, NEASC/EPI

Table 3. Number and percent of work-based learning experiences during high school

	Number			
Activity	One	Two	Three or more	Any
All students	613	313	180	1106
Community Service	370	235	136	741
Job Shadow	108	144	130	382
School-sponsored enterprise	46	81	67	194
Cooperative education	33	35	71	139
Tech prep	10	46	55	111
Long-term internship	7	28	58	93
Short-Term Internship	14	17	56	87
Career Academy	20	25	38	83
Apprenticeship	5	15	27	47

	Percent			
Activity	One	Two	Three or more	Any
All students	55.4	28.3	16.3	100.0
Community Service	49.9	31.7	18.4	100.0
Job Shadow	28.3	37.7	34.0	100.0
Career Academy	24.1	30.1	45.8	100.0
Cooperative education	23.7	25.2	51.1	100.0
School-sponsored enterprise	23.7	41.8	34.5	100.0
Short-Term Internship	16.1	19.5	64.4	100.0
Apprenticeship	10.6	31.9	57.4	100.0
Tech prep	9.0	41.4	49.5	100.0
Long-term internship	7.5	30.1	62.4	100.0

SOURCE: 2002 National Work-Based Learning Study, NEASC/EPI

Table 4. Distribution of work-based learning experiences and the number of experiences, by race/ethnicity

		Race/ethnicity					
		Number			Percent		
Activity	N	Underrep Minorities	White	Total	Underrep Minorities	White	Total
All Students	1613	278	1098	1549	17.9	70.9	100.0
One or more activities	1613	194	749	1085	17.9	69.0	100.0
Two or more activities	1613	81	335	488	16.6	68.6	100.0
Three or more activities	1613	29	127	179	16.2	70.9	100.0
Community service	1543	135	483	729	18.5	66.3	100.0
Job shadow	1577	54	282	376	14.4	75.0	100.0
School-sponsored enterprise	1523	33	130	194	17.0	67.0	100.0
Cooperative education	1543	35	86	137	25.5	62.8	100.0
Tech prep	1528	12	80	109	11.0	73.4	100.0
Long-term internship	1549	13	65	93	14.0	69.9	100.0
short-term internship	1555	17	59	86	19.8	68.6	100.0
Career academy	1531	19	47	80	23.8	58.8	100.0
Youth apprenticeship	1528	5	34	46	10.9	73.9	100.0

SOURCE: 2002 National Work-Based Learning Study, NEASC/EPI

Table 5. Distribution of work-based experience and number of experiences, by gender

		Number			Percent		
Activity	N	Male	Female	Total	Male	Female	Total
All Students	1598	684	914	1598	42.8	57.2	100.0
One or more activities	1613	429	670	1099	39.0	61.0	100.0
Two or more activities	1613	175	317	492	35.6	64.4	100.0
Three or more activities	1613	57	123	180	31.7	68.3	100.0
Community service	1562	269	468	737	36.5	63.5	100.0
Job shadow	1598	123	256	379	32.5	67.5	100.0
Long-term internship	1568	28	65	93	30.1	69.9	100.0
Cooperative education	1563	49	90	139	35.3	64.7	100.0
short-term internship	1574	28	59	87	32.2	67.8	100.0
School-sponsored enterprise	1543	78	116	194	40.2	59.8	100.0
Youth apprenticeship	1548	17	30	47	36.2	63.8	100.0
Career academy	1551	40	43	83	48.2	51.8	100.0
Tech prep	1547	63	47	110	57.3	42.7	100.0

SOURCE: 2002 National Work-Based Learning Study, NEASC/EPI

Table 6. Educational plans and work-based experience during high school

Number

Activity	N	4 year	5 year/other	Master's	Doctoral	> 4 year	Undecided	Total
All Students	1587	378	145	505	260	910	299	1587
One or more Activities	1587	236	104	360	193	657	196	1089
Two or more Activities	1587	99	47	174	91	312	74	485
Three or more Activities	1587	39	18	57	37	112	25	176
Community service	1551	146	62	242	146	450	135	731
Job shadow	1587	80	38	129	68	235	60	375
School-sponsored enterprise	1532	42	20	67	22	109	40	191
Cooperative education	1552	34	15	38	30	83	20	137
Tech prep	1536	25	15	37	13	65	18	108
long-term internship	1557	23	7	26	20	53	16	92
short-term internship	1563	25	6	23	17	46	14	85
Career academy	1540	17	8	34	14	56	8	81
Youth apprenticeship	1537	9	4	16	10	30	8	47

Activity	N	4 year	5 year/other	Master's	Doctoral	> 4 year	Undecided	Total
All Students	1587	23.8	9.1	31.8	16.4	57.3	18.8	100.0
One or more Activities	1587	21.7	9.6	33.1	17.7	60.3	18.0	100.0
Two or more Activities	1587	20.4	9.7	35.9	18.8	64.3	15.3	100.0
Three or more Activities	1587	22.2	10.2	32.4	21.0	63.6	14.2	100.0
Career academy	1587	21.0	9.9	42.0	17.3	69.1	9.9	100.0
Youth apprenticeship	1557	19.1	8.5	34.0	21.3	63.8	17.0	100.0
Job shadow	1536	21.3	10.1	34.4	18.1	62.7	16.0	100.0
Community service	1532	20.0	8.5	33.1	20.0	61.6	18.5	100.0
Cooperative education	1551	24.8	10.9	27.7	21.9	60.6	14.6	100.0
Tech prep	1563	23.1	13.9	34.3	12.0	60.2	16.7	100.0
long-term internship	1540	25.0	7.6	28.3	21.7	57.6	17.4	100.0
School-sponsored enterprise	1537	22.0	10.5	35.1	11.5	57.1	20.9	100.0
short-term internship	1552	29.4	7.1	27.1	20.0	54.1	16.5	100.0

SOURCE: 2002 National Work-Based Learning Study, NEASC/EPI

Table 7. Characteristics of work-based learning activities

	Number			Percent		
	No	**Yes**	**Total**	**No**	**Yes**	**Total**
My high school arranged the experience.	655	1462	2117	30.9	69.1	100.0
I had a mentor at the site/workplace.	706	933	1639	43.1	56.9	100.0
My program/activity was discussed in class.	1084	1002	2086	52.0	48.0	100.0
My activity was connected to academic coursework.	1099	994	2093	52.5	47.5	100.0
My experience(s) counted toward a class grade.	1083	875	1958	55.3	44.7	100.0
School staff visited my activity site(s).	986	654	1640	60.1	39.9	100.0
I had a written plan of expected learning outcomes.	1308	780	2088	62.6	37.4	100.0
My teacher received an evaluation from my employer(s).	1059	576	1635	64.8	35.2	100.0
I had a written training agreement with my employer.	1169	468	1637	71.4	28.6	100.0

SOURCE: 2002 National Work-Based Learning Study, NEASC/EPI

	Number			Percent		
My high school arranged the experience.	**No**	**Yes**	**Total**	**No**	**Yes**	**Total**
School-sponsored enterprise	34	182	216	15.7	84.3	100.0
Tech prep	27	102	129	20.9	79.1	100.0
Cooperative education	40	119	159	25.2	74.8	100.0
Career academy	28	75	103	27.2	72.8	100.0
Community service	212	543	755	28.1	71.9	100.0
Job shadow	180	262	442	40.7	59.3	100.0
Long-term internship	49	70	119	41.2	58.8	100.0
Short-term internship	54	70	124	43.5	56.5	100.0
Youth apprenticeship program	31	39	70	44.3	55.7	100.0
TOTAL/Percent	655	1462	2117	30.9	69.1	100.0
	Number			Percent		
I had a mentor at the site/workplace.	**No**	**Yes**	**Total**	**No**	**Yes**	**Total**
Cooperative education	62	94	156	39.7	60.3	100.0
Long-term internship	47	70	117	40.2	59.8	100.0
Job shadow	175	255	430	40.7	59.3	100.0
Short-term internship	50	67	117	42.7	57.3	100.0
Community service	339	414	753	45.0	55.0	100.0
Youth apprenticeship	33	33	66	50.0	50.0	100.0
TOTAL/Percent	706	933	1639	43.1	56.9	100.0

	Number			Percent		
My activity was connected to academic coursework.	**No**	**Yes**	**Total**	**No**	**Yes**	**Total**
Tech prep	35	93	128	27.3	72.7	100.0
Cooperative education	45	113	158	28.5	71.5	100.0
Career academy	40	64	104	38.5	61.5	100.0
Long-term internship	52	65	117	44.4	55.6	100.0
Job shadow	206	228	434	47.5	52.5	100.0
Short-term internship	59	58	117	50.4	49.6	100.0
School-sponsored enterprise	108	106	214	50.5	49.5	100.0
Youth apprenticeship	39	27	66	59.1	40.9	100.0
Community service	515	240	755	68.2	31.8	100.0
TOTAL/Percent	1099	994	2093	52.5	47.5	100.0

	Number			Percent		
My program/activity was discussed in class.	**No**	**Yes**	**Total**	**No**	**Yes**	**Total**
Tech prep	38	91	129	29.5	70.5	100.0
School-sponsored enterprise	72	145	217	33.2	66.8	100.0
Cooperative education	61	98	159	38.4	61.6	100.0
Career academy	45	56	101	44.6	55.4	100.0
Youth apprenticeship	35	30	65	53.8	46.2	100.0
Long-term internship	65	48	113	57.5	42.5	100.0
Job shadow	248	179	427	58.1	41.9	100.0
Community service	449	308	757	59.3	40.7	100.0
Short-term internship	71	47	118	60.2	39.8	100.0
TOTAL/Percent	1084	1002	2086	52.0	48.0	100.0

	Number			Percent		
I had a written plan of expected learning outcomes.	**No**	**Yes**	**Total**	**No**	**Yes**	**Total**
Tech prep	53	75	128	41.4	58.6	100.0
Cooperative education	73	84	157	46.5	53.5	100.0
Short-term internship	60	58	118	50.8	49.2	100.0
Career academy	59	45	104	56.7	43.3	100.0
Long-term internship	66	49	115	57.4	42.6	100.0
Youth apprenticeship	38	28	66	57.6	42.4	100.0
Job shadow	275	157	432	63.7	36.3	100.0
School-sponsored enterprise	145	71	216	67.1	32.9	100.0
Community service	539	213	752	71.7	28.3	100.0
TOTAL/Percent	1308	780	2088	62.6	37.4	100.0

	Number			Percent		
I had a written training agreement with my employer.	**No**	**Yes**	**Total**	**No**	**Yes**	**Total**
Cooperative education	90	66	156	57.7	42.3	100.0
Long-term internship	67	48	115	58.3	41.7	100.0
Youth apprenticeship	42	25	67	62.7	37.3	100.0
Short-term internship	78	41	119	65.5	34.5	100.0
Job shadow	312	117	429	72.7	27.3	100.0
Community service	580	171	751	77.2	22.8	100.0
TOTAL/Percent	1169	468	1637	71.4	28.6	100.0

	Number			Percent		
School staff visited my activity site(s).	**No**	**Yes**	**Total**	**No**	**Yes**	**Total**
Cooperative education	63	94	157	40.1	59.9	100.0
Community service	401	355	756	53.0	47.0	100.0
Short-term internship	65	52	117	55.6	44.4	100.0
Youth apprenticeship	41	26	67	61.2	38.8	100.0
Long-term internship	75	42	117	64.1	35.9	100.0
Job shadow	341	85	426	80.0	20.0	100.0
TOTAL/Percent	986	654	1640	60.1	39.9	100.0

	Number			Percent		
My teacher received an evaluation from my employer(s).	**No**	**Yes**	**Total**	**No**	**Yes**	**Total**
Long-term internship	50	68	118	42.4	57.6	100.0
Short-term internship	52	67	119	43.7	56.3	100.0
Cooperative education	69	88	157	43.9	56.1	100.0
Youth apprenticeship	40	26	66	60.6	39.4	100.0
Job shadow	279	145	424	65.8	34.2	100.0
Community service	569	182	751	75.8	24.2	100.0
TOTAL/Percent	1059	576	1635	64.8	35.2	100.0

	Number			Percent		
My experience(s) counted toward a class grade.	**No**	**Yes**	**Total**	**No**	**Yes**	**Total**
Cooperative education	54	104	158	34.2	65.8	100.0
Long-term internship	47	69	116	40.5	59.5	100.0
Short-term internship	54	64	118	45.8	54.2	100.0
Career academy	50	51	101	49.5	50.5	100.0
Youth apprenticeship	33	32	65	50.8	49.2	100.0
Job shadow	221	206	427	51.8	48.2	100.0
School-sponsored enterprise	129	88	217	59.4	40.6	100.0
Community service	495	261	756	65.5	34.5	100.0
TOTAL/Percent	1083	875	1958	55.3	44.7	100.0

SOURCE: 2002 National Work-Based Learning Study, NEASC/EPI

Table 8. Various questions related to work-based learning

	N	No	Don't Know	Yes	Total
I learn better through projects and real world applications than through class or textbook instruction only.	1563	13.2	15.9	71.0	100.0
I do (or would like to) participate in college approved work experiences (co-op, internships).	1557	12.8	16.8	70.5	100.0
I participated in activities that let me explore careers.	1366	37.3	7.2	55.6	100.0
My college offers enough options for learning through projects or work experiences.	1570	13.8	37.2	49.0	100.0
I took classes that integrated vocational and academic lessons.	1370	38.7	16.1	45.3	100.0
My high school career-related activities furthered my interest in higher education.	1558	40.9	14.6	44.5	100.0
Being able to build on my career interest developed in high school was a factor in selecting this college.	1572	53.5	12.7	33.8	100.0
I expect my college major to be related to my career-related activities in high school.	1559	50.3	19.1	30.7	100.0

SOURCE: 2002 National Work-Based Learning Study, NEASC/EPI

Table 9. Average Cumulative Grade Point Average by Activity and Number of Activities

Activity		Mean	+/-	n	SD	Sig
All Students		3.06		1080		
Job shadow	No	3.04	0.09	819	0.65	0.063
	Yes	3.12		261	0.67	
Short-term internship	No	3.06	-0.11	1025	0.66	0.28
	Yes	2.96		46	0.71	
Long-term internship	No	3.06	0.02	1009	0.66	0.841
	Yes	3.08		54	0.67	
Community service	No	3.02	0.09	555	0.69	0.024
	Yes	3.11		504	0.62	
Cooperative education	No	3.07	-0.08	968	0.66	0.272
	Yes	2.99		94	0.60	
Youth apprenticeship	No	3.06	0.05	1019	0.66	0.635
	Yes	3.11		36	0.57	
Career academy	No	3.06	0.05	1012	0.66	0.634
	Yes	3.11		44	0.59	
School-sponsored enterprise	No	3.06	-0.01	915	0.66	0.856
	Yes	3.05		136	0.65	
Tech prep	No	3.06	0.02	985	0.66	0.792
	Yes	3.08		71	0.64	

SOURCE: 2002 National Work-Based Learning Study, NEASC/EPI

Table 10. Average Cumulative Grade Point Average by Activity and Number of Activities

Number of Activities	Mean	N	SD
0	2.99	344	0.7
1	3.08	402	0.6
2	3.12	214	0.7
3	3.06	120	0.6
Total	3.06	1080	0.7

SOURCE: 2002 National Work-Based Learning Study, NEASC/EPI

Table 11. Cumulative Grade Point Average Distribution by Activity and Number of Activities

	Number			
Activities	**<= 2.0**	**2.01 to 3.0**	**3.01 to 4.0**	**Total**
All Students	79	371	630	1080
One or more Activities	47	244	445	736
Two or more Activities	19	101	214	334
Three or more Activities	6	41	73	120
Job shadow	15	77	169	261
short-term internship	2	21	23	46
long-term internship	2	17	35	54
Community service	28	162	314	504
Cooperative education	6	38	50	94
Youth apprenticeship	2	12	22	36
Career academy	3	15	26	44
School-sponsored enterprise	10	48	78	136
Tech prep	4	22	45	71
	Percent			
Activities	**<= 2.0**	**2.01 to 3.0**	**3.01 to 4.0**	**Total**
All Students	7.3	34.4	58.3	100.0
One or more Activities	6.4	33.2	60.5	100.0
Two or more Activities	5.7	30.2	64.1	100.0
Three or more Activities	5.0	34.2	60.8	100.0
long-term internship	3.7	31.5	64.8	100.0
Job shadow	5.7	29.5	64.8	100.0
Tech prep	5.6	31.0	63.4	100.0
Community service	5.6	32.1	62.3	100.0
Youth apprenticeship	5.6	33.3	61.1	100.0
Career academy	6.8	34.1	59.1	100.0
School-sponsored enterprise	7.4	35.3	57.4	100.0
Cooperative education	6.4	40.4	53.2	100.0
short-term internship	4.3	45.7	50.0	100.0

SOURCE: 2002 National Work-Based Learning Study, NEASC/EPI
p< .05

Table 12. Students registered for the following semester by number of activities

	Number			Percent		
	No	**Yes**	**Total**	**No**	**Yes**	**Total**
All Students	137	971	1108	12.4	87.6	100.0
None	44	310	354	12.4	87.6	100.0
One activity	57	355	412	13.8	86.2	100.0
Two activities	26	195	221	11.8	88.2	100.0
Three activities or more	10	111	121	8.3	91.7	100.0

SOURCE: 2002 National Work-Based Learning Study, NEASC/EPI

Table 13. Number of credits during last semester, by number of activities

Number of Activities	N	Mean	SD
All Students	1082	13.0	3.9
None	345	12.7	3.8
One activity	404	13.3	3.7
Two activities	214	12.9	4.5
Three or more activities	119	13.0	4.1
Total	1082	13.0	3.9

SOURCE: 2002 National Work-Based Learning Study, NEASC/EPI

Number of credits during last semester, by number of activities

Number of activities	N	Mean	SD
All Students	1082	13.0	3.9
0	345	12.7	3.8
1	404	13.3	3.7
2	214	12.9	4.5
3	81	12.9	4.0
4	24	14.2	2.6
5	11	11.6	4.9
6	2	9.0	12.7
7	1	12.0	.
Total	1082	13.0	3.9

SOURCE: 2002 National Work-Based Learning Study, NEASC/EPI

Appendix B: Definitions

Job-shadowing programs allow students to observe a person during a typical workday I a chosen field. They usually take place in a few hours of one day or can be set up for a longer period of time.

Short- and long term internships allow students to gain a structured hands-on experience in a given occupation for a specified period of time.

Community service programs are school-sponsored, credit-bearing, educational experiences where students participate in organized service activities that meet identified community needs. Student participation, whether school-sponsored or self-initiated, have enjoyed increasing participation in the past decade.

Co-operative education experiences are school-supervised, structured, paid work experiences arranged by a school and employer to lead to an occupational goal.

Youth apprenticeship programs are formal training programs designed to help youths 16 and older learn skills related to a specific occupation.

Career academies (school within a school) generally place learners in a cluster with the same teachers for a two- to four-year period to form a learning community; create partnerships with business to provide career awareness and work-based learning and integrate academic and occupational curriculum (Kerka, 2000). Active for more than 30 years, they are found in at least 1,500 high schools nationwide.

Tech prep programs provide high-level academic and technical preparatory education, linking high school and post-high school learning experiences. As part of these programs, partnerships among students, faculty, employers, and community agencies are formed and share responsibility for authentic and performance-based assessment, achievement of learning expectations and program evaluation (Wolff & Copa, 2002).

Appendix C: Effective Program Practice

The study of effective practices in work-based learning programs at the postsecondary level is also limited, but our review was able to find relevant information as follows.

A study conducted by the National Center for Research in Vocational Education (NCRVE) and the National Council for Occupational Education (NCOE) identified exemplary practices at eight programs around the country (Bragg and Hamm, 1996). The research concluded:

- Strong program leadership
- Exclusive connections between the program and its environment
- Frequent and effective communication with local employers
- Beliefs about program excellence
- An effective school-based learning component
- Adequate and diverse financial support
- Innovative program and pedagogical features.

Gujarathi & McQuade (2002): Five factors for successful service-learning programs include:

- Institutional and individual conviction of the value of community service
- Developing alliances with the community agencies
- Establishing intellectual and pedagogical legitimacy
- Motivating faculty and students
- Selection of appropriate assignments

Jacoby (1999): Strong service-learning programs exhibit the following characteristics:

- Service learning is prominently featured in the institutional mission and other key documents including strategic plans.
- Policies explicitly support service learning.
- Institution leadership is strongly committed to the program.
- Student and faculty involvement is recognized and rewarded.
- The program has strong relationships.

Jacoby (1999): Weak service-learning programs exhibit the following characteristics:

- Programs are on the periphery of institutional mission, planning, policies, and practices.
- Funding is inadequate and in constant question.
- Those involved in the program feel marginalized, isolated.
- The program and its benefits are not widely understood on campus.
- External relationships are inconsistent and tenuous.

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