

Work-Based Learning Opportunities for High School Students

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Executive Summary

This report describes the Year 5 work of the National Research Center for Career and Technical Education's (NRCCTE) Technical Assistance (TA) Academy. In 2011-2012, the TA plan carried out by FHI 360 on behalf of the NRCCTE focused on developing a conceptual base for work-based learning (WBL), a strategy that helps students apply academic and technical skills and develop employability skills. To gather information on best practices in WBL for high-school aged students in the United States, FHI 360 used a multi-pronged approach, including a literature review, web searches, telephone interviews, and site visits to examine three WBL models: internships/co-operative (co-op) education, apprenticeships, and school-based enterprises. Findings are categorized and summarized, and recommendations for WBL are presented.

Recommendations based on the findings from this project are for state leaders to:

- Provide a clear, substantive purpose for and stated value of WBL, emphasizing the learning component in the work experience.
- Offer resources and information about components of high-quality WBL programs.
- Provide professional development for teachers and WBL coordinators to develop instructional strategies, including for cognitive transfer of problem-solving skills.
- Convene meetings with employer associations and labor unions to achieve buy-in for the creation of more meaningful WBL programs connected to school curriculum.
- Provide resources and guidelines for employer mentor selection, training, and continued engagement.
- Support teachers to work closely with WBL coordinators and employer mentors to construct detailed student training plans.
- Require the broadening of selection criteria and provisions for access so more students can participate in WBL.
- Demonstrate strategies for involving academic and CTE teachers in the WBL process so that WBL is connected to classroom learning.
- Provide better guidelines for accountability for student learning in WBL programs.
- Fund WBL coordinators for each project with adequate support and resources.

In addition to specific things that state leaders can provide, there are other considerations, such as marketing WBL programs, legal issues, and alignment of resources. States should try to be as consistent as possible in their definitions and terminology regarding WBL and, in order to align resources and policies to support the creation and improvement of high-quality WBL programs, states should examine ways to leverage various relevant funding sources, including WIA and Perkins, corporations, foundations, and district, state, and federal agencies.

Work-Based Learning Opportunities for High School Students

*Tell me and I'll forget. Show me and I may remember.
Involve me and I'll understand.*—Chinese Proverb

This report describes the Year 5 work of the National Research Center for Career and Technical Education's (NRCCTE) Technical Assistance (TA) Academy. TA is the vehicle for connecting the NRCCTE's research with practice—the system for gathering data from and delivering research findings to state career and technical education (CTE) personnel and ultimately to administrators and faculty at the CTE program level. The purpose of NRCCTE's TA is to respond to the accountability and program needs of states related to improvement of CTE for secondary and postsecondary students. In 2011-2012, the TA plan carried out by FHI 360 on behalf of the NRCCTE focused on developing a conceptual base about work-based learning (WBL), a strategy that helps students apply academic and technical skills and develop employability skills. WBL has been identified as an important issue for state and local program reform and implementation, but there is a need to better understand WBL as part of secondary CTE programs. To gather information on best practices in WBL for high-school aged students in the United States, FHI 360 used a multi-pronged approach, including a literature review, web searches, telephone interviews, and site visits. Sites were selected based on recommendations from the field. Findings are categorized and summarized, and recommendations for WBL are presented.¹

Purpose and Need

Various attempts have been made in the last several decades to bring WBL into mainstream American education reform, but two recent reports have once again brought to the forefront issues related to the value of WBL as an instructional strategy to better prepare students for college and the workforce. *Pathways to Prosperity: Meeting the Challenge of Preparing Young Americans for the 21st Century* argues that an “academic classroom-based approach” does not work for the majority of youth, and the authors propose a network of multiple pathways that connect both work and learning (Symonds, Schwartz, & Ferguson, 2011, p. 8). The authors of *Learning for Jobs* (OECD, 2010) assert that maintaining economic competitiveness requires a good vocational education and training (VET) system, and that a high-quality WBL component is the best way to prepare young people for careers. Other countries' systems do a much better job than the United States of educating *all* students for careers, regardless of the educational level they achieve (Hoffman, 2011). The research literature suggests that integration of high-quality WBL more systematically into CTE programs in the United States may be a promising way to increase students' educational engagement and their career readiness and attainment.

Developing a conceptual base for WBL technical assistance via a scan of the literature and case studies of current WBL can help educators and policymakers understand viable WBL models for the United States. Under the NRCCTE TA Academy vehicle, staff in FHI 360's National Institute for Work and Learning collected information on three major WBL models – internships/co-operative education (co-op), youth apprenticeships, and school-based enterprises (SBE); see sidebar for definitions of these and other forms of WBL. Vignettes (based on phone interviews)

¹ When initially conceived, this project was to provide the research base for a TA Academy on WBL.

and case studies (based on site visits) provide a description of a selection of WBL sites (see Appendices C and D). Analysis of the information collected leads to a set of recommendations that may be useful to states interested in expanding or improving WBL opportunities for secondary students.

Background

The concept of WBL—learning technical, academic, and employability skills by working in a real work environment—has been in practice for centuries and is an integral part of the education system in many industrialized countries. Often coordinated with school-based learning, WBL offers project- and problem-focused teaching and learning rather than the more abstract and theoretical teaching and learning that often takes place in classrooms. In the literature, the stated purposes of WBL fall into three categories: cognitive development (learning through engagement with ideas and things), social/emotional development (learning through engagement with self and other people), and career development (learning through engagement with work processes and places) (Darche, Nayar, & Bracco, 2009a). Types of WBL range from job shadowing with limited workplace involvement to cooperative education and apprenticeships that have more extensive workplace exposure. About 72% of public high schools reported offering WBL opportunities for students in 2007-08 (NCES, 2011). There are no national statistics on how many students participate in WBL.

WBL has recently become a focus of discussion as part of national efforts to prepare “career and college ready” graduates, primarily based on lessons learned from other countries, such as those presented in the *Pathways to Prosperity* and *Learning for Jobs* reports.² In *Schooling in the Workplace*, Hoffman (2011) examines VET systems in other countries and finds a very different approach than that of the United States. Specifically, strong VET systems include public-private partnerships between states, schools, employers, and labor unions; allow a major role for employers in setting curriculum; and have a national agency responsible for quality control. Governments provide funding to incentivize companies and build the infrastructure of VET, including research and development, intermediary organizations, and training of VET teachers. In addition, Europe has a standardized set of qualifications needed for certification in various occupations which is recognized across borders.

Compared to 12 other countries, students in the United States spend the least amount of time learning in a work setting (Hoffman, 2011). Furthermore, WBL opportunities for American students are not available to all who want them, and they vary widely in quality. “Schools [in the United States] do not have systematized connections with employers, nor do employers see it in their self-interest to provide work-based learning” (p. 131). The result of the relative lack of investment in high-quality workplace learning for students is that U.S. youth have very few of the applied skills or credentials that employers are seeking (Casner-Lotto & Barrington, 2006). According to Hoffman’s (2011) review of international evidence, the American “scattershot” approach to educational training is more expensive in the long run than a model in which

² *Pathways to Prosperity* has spawned a network of six states that will work to implement the recommendations from that report, and on July 24, 2012, there was a briefing by the Congressional CTE caucus on the implications of *Pathways to Prosperity* for federal policy. See also recent media coverage: <http://www.npr.org/2012/04/04/149927290/the-secret-to-germanys-low-youth-unemployment>.

companies partner with educators to create curriculum pathways attuned to labor market needs.

In the 1990s, the *School to Work Opportunities Act* aimed to infuse a work context into traditional school-based learning to better engage students to learn more effectively. However, this effort “fell far short of its goal of extending work-based learning opportunities to a significant fraction of high school students” (Symonds et al., 2011, p. 31). The federal investment in school to work fizzled during the era of *No Child Left Behind*, but interest in better aligning education and employment has resurfaced in light of a stubbornly high unemployment rate from 2008-2012. U.S. policymakers are now re-considering the merits of WBL in their search for ways to prepare students for college and careers.

Pathways to Prosperity and *Learning for Jobs* offer policy recommendations that require major re-thinking and restructuring of the American education system with the involvement of multiple stakeholders. A critical community is that of business leaders, which must change their approach if they are to obtain the skilled workers they need. However, only 20% of U.S. employers feel it is their responsibility to help train the workforce (Casner-Lotto & Barrington, 2006). U.S. employers seem unwilling to invest in training, to “share a collective pool of workers” in a particular industry, or to become involved in “a program that further entangles them with government regulators” (Stern et al., 1998, p. 497). Even if there were enough collective self-interest among U.S. employers to invest heavily in training, high school students are viewed “less productive and less predictable” than adult apprentices (p. 493). Other explanations [for the unwillingness of U.S. employers to invest in apprenticeship programs] have included the long periods of indenture required by apprenticeships, the difficulties of enforcing contracts, higher wages for factory work than those for paid apprentices, and the reluctance of employers to train young people who have not made a firm commitment to an occupation or who may take their skills to another employer” (Lewis & Stone, 2011, p. 18). In contrast to the United States, the *Pathways to Prosperity* (2011) report found that employer organizations in Europe play a major role: “they take the lead in defining occupational qualifications, providing paid apprenticeships or other work-based learning opportunities and (in collaboration with educators and trade union partners) assessing student performance and awarding certificates” (Symonds et al., 2011, p. 16).

Although there are some aspects of the European apprenticeship system that may be distasteful for Americans (i.e., a separate vocational track and the early age at which students are required to decide on a career path), there are also many attractive features (Hoffman, 2011), including:

- Structured pathways with clear requirements, timelines, and outcomes leading from high school through postsecondary credential completion;
- Employer and business leader engagement in design and support of effective pathways to careers;
- Structured pathways with clear requirements, timelines, and outcomes leading from high school through postsecondary credential completion;
- Opportunities to engage young people in workplace learning;
- Effective career counseling and guidance, including scaffolded exposure to employers and career pathways beginning in the middle grades; and
- New institutional structures at the regional labor market level to provide coordination, quality assurance, and sustainability (p. 176).

To encourage the development of more apprenticeships in the United States, Lerman (2009), suggests that policies be created to:

- Fund measures to scale-up apprenticeship programs by expanding the budget for marketing the programs and providing subsidies to employers supporting the programs.
- Encourage states to subsidize tuition paid for apprenticeships.
- Draw on existing standards and develop new standards to award college credit for experience gained and mastered on the job.

In the current atmosphere of increased interest in business involvement in education and training and “career and college readiness,” it is quite possible that some of these recommendations may play out within the next decade. There is already some evidence of increased federal attention to promising practices: South Carolina’s Apprenticeship Carolina program and North Carolina’s Apprenticeship 2000 were both recently recognized by the Obama administration,³ suggesting there may be more investment in the near future in this kind of training model, perhaps supported through public-private partnerships. In any case, renewed efforts to create meaningful WBL experiences for high school students should be informed by prior successes and challenges.

Research Base

WBL is thought to be useful to students because it demonstrates the applications of classroom learning in the real world, engages them by using authentic tasks and tools, and teaches them employability skills. Furthermore, WBL provides opportunities outside traditional academic instruction to be successful:

Engagement in their own learning through personal involvement in the real-life activities at the worksite, resilience developed by learning to work independently and with others to solve problems that have a number of viable solutions, and success in applying academic and technical knowledge in the workplace serve to increase student self-confidence and motivate them to pursue learning. (Brown, 2003, p. 2)

However, the research on WBL as it has been implemented in the United States (many conducted during the 1990s) offers mixed findings.⁴ On the one hand, WBL has been found to help students apply and extend classroom learning, increase motivation and understanding, explore careers, and develop critical understanding of the work environment (Brown, 2003; Kenny, Walsh-Blair, Blustein, Bempechat, & Seltzer, 2010; Stern, Rahn, & Chung, 1998). WBL can facilitate work readiness (Halpern, 2006; Phillips, Blustein, Jobin-Davis, and White, 2002), increase job-related skills and knowledge (Halpern, 2006; Hughes, Moore, & Bailey, 1999), increase school attendance and reduce dropout (Hughes, Bailey, & Mechur, 2001). Placing students in a business for part of their training is a cost effective method of preparing students for careers because it teaches current practices with up to date technology and the culture of the

³ <http://www.apprenticeshipcarolina.com/>

⁴ It should be kept in mind that “objective measures of learning, and comparisons with non-participants, are generally lacking. Even when comparison groups are used, they are not always matched on important characteristics that can affect outcomes....As a result of weaknesses in research design, it is impossible to establish whether the WBL experience or other factors are responsible for many of the outcomes reported” (Stasz, 1998, p. 7).

workplace (Stern, Rahn, & Chung, 1998).

On the other hand, research also points to some important parameters regarding high-quality WBL: Stone and colleagues (1990) discovered that students use academic skills and interact with adults more often when their work experiences are supervised through school. Linnehan (2001) found that WBL had a positive impact on GPA and attendance for students enrolled in WBL for more than a half an academic year compared to students enrolled in WBL for a shorter period of time. Participation in cooperative education has a positive effect on at-risk students' postsecondary education plans right after high school, but research thus far has not shown a benefit beyond high school (Gemici & Rojewski, 2010). Furthermore, unless they keep working for their co-op employer, there are no future earnings benefits of co-op participation, perhaps because the training is specific to the individual firm rather than the industry (Stern, Finkelstein, Stone, Latting, & Dornsife, 1995).

Stasz and Kagonoff (1997) examined three WBL programs that varied across multiple dimensions and found that across the programs, "students were generally satisfied with their work experience, although, on average, felt work was not very challenging" (p. 73), and although they had supervisors and were given frequent feedback, they sometimes did not know what was expected of them. Halpern (2006) asserts that "years of being told, dictated to, and scolded by teachers (and other adults) have turned youth into passive and self-doubtful learners" (p. 233). Well-structured WBL can help students take control of their own learning. Stasz and Kagonoff (1997) did find that the students in the WBL programs they studied "learned a lot about what it means to work. They learned to take responsibility, to work hard, to meet deadlines, and to be persistent" (p. 71). The authors concluded that "longer-term, fairly intensive WBL experiences... provided opportunities for students to learn many work-related skills and attitudes" (p. 73).

Researchers have tried to parse elements of high-quality WBL experiences. According to Stasz (1998), "A crucial element of WBL programs, whether long or short, paid or unpaid, is the link to the school curriculum. It is this connection that can help motivate students or see how the skills they learn in class are needed in the workplace... integration [of school and work activities] can lead to a more complex or sound grasp of key information, core principles, or critical thinking skills" (p. 5). Hughes, Moore, and Bailey (1999) conducted interviews with faculty, staff, students, and employers along with observations of students at their WBL placements and in their academic courses to determine if the knowledge and skills acquired in the workplace translated to the classroom. It appeared that the internships were not structured to reinforce academic content, rather simply to provide work experience outside of classroom. Overall, the research suggests that prior claims made regarding the efficacy of WBL are often overstated. Although there are benefits, this study suggests that the school-work connection does not happen automatically. Intentional planning and pedagogical decision-making needs to occur for the connections to be strengthened. The authors do suggest that having students use examples from internships while in the classroom can reinforce the learning in both arenas (Hughes, Moore & Bailey, 1999). However, Stasz and Kagonoff argue that explicit connections "may not necessarily be a desirable goal. In particular, worksite supervisors and mentors do not tend to act as teachers towards students, and it would be difficult to design internships to follow or connect with a specific classroom-based curriculum" (as cited in Hughes et al., 1999, p. 34).

The issue of the role of employer mentors has not been well-studied. Halpern (2006) argues that WBL worksite mentors may be torn between their commitment to high quality and professionalism and their desire to scaffold a novice student. Unfortunately, Taylor and Watt-Malcolm (2007) found that some employers took advantage of the cheap labor and were more focused on productivity rather than a safe learning environment for young trainees. In addition, because WBL is usually goal-directed and task-focused, there may be less concern about the development of the student (Halpern, 2006). Employers participate in WBL programs for high school students to train future employees and to practice social responsibility by investing in education, whereas costs to employers include wages (if the student is paid) and time for mentors to work with students (Symonds et al., 2011). On the school's side,

Some costs that may be unique to WBL compared to other programs include student wage subsidies, administration (salaries of program coordinators, planning, travel), curriculum development (release time for teachers), staff development (release time for teachers, teacher attendance at conferences), equipment and special supplies, and facilities. After initial planning, programs incur costs for linkages between school and work activities, in-school instruction, and workplace activities; coordination costs can be significant as well. (Stasz, 1998, p. 23)

In addition, the research also clearly demonstrates that the links between school and work in WBL are “infrequent and tenuous” (Stasz, 1998, p. 5; see also Taylor & Walt-Malcolm, 2007). Stasz and Brewer (1998), in addition to finding weak connections between work and school in the WBL programs, also found a negative relationship between number of hours worked and some aspects of school performance (i.e., time for homework, desire to stay in school). Hughes and her colleagues (1999) speculated, “It appears that for some students, school-related employment is substituting for higher-level courses, with the result of lower academic achievement” (p. 16). On the other hand, countries with higher percentages of youth engaging in intensive WBL, like apprenticeships, have higher rates of school completion and participation in post-secondary education than the United States (Bishop & Mane, 2004). This may be because employers in other countries have a vested interest in covering the costs of continuing education for their trainees, and/or that WBL is valued and implemented as well as high-quality academic programs.

Dimensions and Types of WBL

Stasz and Stern (1998) highlighted key structural dimensions on which WBL programs can differ: location (on-campus or off); supervision (teachers or employees); time (during or after school hours); compensation (pay or school credit); and participation (individual or in groups). Further, Stasz and Kagonoff (1997) identified the following variables across the WBL programs they examined: primary program focus, purpose of work experience, wages, length of work experience, type of worksites, method of student selection, presence of written training plan agreements, provision of mentor training, extent of supervision occurs at worksite, provision of written evaluation by worksite, work performance linked to grade, and whether the program identifies job placements. These are helpful in understanding the array of possible features of WBL programs.

In classifying WBL programs, Darche, Nayar, and Bracco (2009a) focus on the *purpose* of WBL, which serves to separate out career exploration activities (guest speakers, tours, job-shadowing) from more substantive ones (internship, apprenticeship, school-based enterprise). According to these researchers, the latter are true WBL, as they are connected with curriculum content (to a greater or lesser extent) and are “high depth experiences with significant and direct employer/client input on student work” (p. 22), whether they occur in a workplace or in school (in the case of SBE). Although many United States schools offer “career awareness” activities, such as guest speakers, job fairs, and job shadowing, we are interested in examining “true” WBL models such as internships/co-op education, apprenticeships, and school-based enterprises.

Internship/Co-Op Education. “Internships are sustained work-based learning experiences designed to enrich and expand classroom learning, showing students how their learning is applied in the world outside of school, and offering access to tools, equipment, facilities and expertise that generally are not available at school” (Darche et al., 2009b, p. 11). They can run anywhere from a few weeks to a full academic year, and often occur during the summer months. Internships can be connected to a particular class or not, be paid or unpaid, and offer credit or not. Darche et al. classify internships as a less intense form of WBL than apprenticeships, as the primary goal of internships is ongoing learning rather than employment per se. Co-operative education (“co-op”) is similar to internships but more structured in that students are placed in companies during the school year (either paid or unpaid) as part of a course for credit, and the student’s learning experience is monitored by a coordinator and/or the teacher of the course (Stern et al., 1995). Unfortunately, co-op seems to have been marginalized due to its association with “vocational” education, whereas internships can occur in any area of the curriculum. Because they are so similar in terms of placements of students in businesses to gain work experience, we have combined internships and co-ops in this report.

Apprenticeships. Ideally, the advantage of apprenticeship over other WBL models is that student is already regarded as an employee (Stern, Rahn, & Chung, 1998). “Apprenticeship is a method of training that emphasizes learning by doing. Apprentices are taught by experienced workers and supervisors at the job site and practice their skills in real work assignments” (Lerman, Eyster, & Chambers, 2009, p. 1). According to Lewis and Stone (2011):

Apprenticeships have all the features needed to prepare workers for occupations that require extended study to attain competence... The procedures learned and equipment used are in the workplace, so there is no need to transfer what is learned in the classroom to what is done on the job. The work itself provides multiple opportunities to practice the skills being learned. (p. 17)

There has been more research on apprenticeship programs than on any other WBL model, perhaps because it has been around the longest. Research as focused on the employer perspective (e.g., Lerman, Eyster, & Chambers, 2009), benefits and drawbacks to students during the learning process (e.g., Taylor & Watt-Malcolm, 2007) and employment and earnings benefits for successful apprentices (e.g., Hollenbeck, 2011).⁵ However, much of the literature on apprenticeship may not be applicable to high school students.⁶ The average age of starting

⁵ See <http://www.wtb.wa.gov/WorkforceTrainingResults.asp>.

⁶ See Lerman (2009) for reviews of and recommendations for best WBL practices for adult students.

apprentices in the United States is 27-29 (Lewis & Stone, 2011). Youth Apprenticeship (YA) programs, on the other hand, are tailored to the high school level, and depending on state laws can start at age 15 or 16.⁷

The Cornell Youth Apprenticeship Program was developed and studied by Hamilton and Hamilton (1997) in the 1990s. The 100 participating youth gained job-related skills and knowledge, but there were no effects on their academic achievement. Also begun in the early 90s, the Wisconsin youth apprenticeship program is now the largest apprenticeship opportunity for high school students in the United States. It is a two-year program in which high school juniors and seniors participate in work-based learning and related courses, often earning college credits. According to the University of Wisconsin's Center on Education and Work, over 75% of participating students enroll in postsecondary education, with more than a 60% completion rate. Furthermore, almost all participating employers say they would recommend it to others (Symonds et al, 2011).

Halpern (2006) studied apprenticeship experiences among inner city high school students and found a variety of benefits, including cultural capital the youth may not have gotten elsewhere. Halpern speculates that the positive findings for the students may “derive from the demands and opportunities that come with learning to get good at something, the substance and style of communication between adult and adolescent, and the actual achievements resulting from the work” (p. 231). Despite the benefits, many youth apprenticeship programs have not been sustainable due to lack of participation and lack of resources (Lewis & Stone, 2011).

School-Based Enterprise. School-based enterprise (SBE) is different from internships/co-operative education, and apprenticeships because students are learning to work in a business inside the school (e.g., school store, restaurant) rather than at an external workplace, and the adult mentor is a teacher rather than an employee.

A school-based enterprise is a simulated or actual business/industry conducted by a school. It replicates a specific business or industry, and is a learning experience that provides direct links between students, their curriculum and the world of work.... The school-based enterprise must be oriented and run by students. Teachers serve as advisors, but not chief executive officers. Some school-based enterprises operate like regular small businesses, letting students apply the academic and vocational content they have learned in school. A School-based enterprise can also give students real practice in entrepreneurship, accounting, budgeting, cash-flow management, marketing, inventory control, and business/industry/technical skills. Students in school-based enterprises experience generic work skills in problem solving, communication, interpersonal relations, and learning how to learn in the context of work.⁸

About 20% of employment preparation offerings in high schools combine both classroom-and work-based learning, as in the case of SBEs (Guy, Sitlington, Larsen, & Frank, 2008). SBE requires curriculum development, teacher preparation, and start-up capital (Stern et al., 1994).

⁷ In contrast, adult (18+) apprenticeships are regulated by the Office of Apprenticeship (OA) in the Employment and Training Administration (ETA) of the U.S. Department of Labor and may be administered through labor unions.

⁸ Description from the state of North Carolina: <http://www.ncpublicschools.org/cte/support/work-based/enterprise/>

Started in 1919, Junior Achievement (JA) is the oldest form of SBE. The model promotes mini enterprises by students, supported by chambers of commerce. DECA, the marketing student organization, is the largest supporter of SBEs and has developed a guide for establishing SBEs, often linked to the curriculum in marketing courses.⁹ DECA has also put together a booklet on best practices in SBE, derived from surveys and case studies around the country.

WBL that takes place in school, as opposed to that which takes place out of school, is more likely to teach students problem solving and teamwork, according to Stasz and colleagues (1992). Compared to workplace settings, SBEs offer students more latitude to work on a variety of tasks and offers more opportunity for teamwork, but it is a more relaxed environment and therefore may not teach desirable work habits such as how to dress and arrive on time (Stasz & Kagonoff, 1997). Supervisors in SBEs are more likely to be experienced teachers who pay “attention to students' personal needs in designing different learning activities” (p. 74). Stern, Rahn, and Chung (1998) assert that the stakes are not as high in SBEs, as they take place within the safety of the school; however, SBEs offer more opportunities for students to work in teams, rotate among jobs, confront managerial decisions, and make mistakes that can enhance learning. Stern and his colleagues (1994) found that students who have jobs and participate in SBE have the opportunity to apply what they learn across both experiences.

Researcher Recommendations

Unfortunately, all of the research literature on WBL must be viewed with caution. Rigorous, longitudinal research on WBL has been limited because it is challenging, slow, and expensive to identify key variables across multiple locations over time to make generalizations about how to implement successful WBL programs (Hoffman, 2011). According to Stasz (1998),

The methodological shortcomings of existing research are quite serious. Most studies rely on reports of student learning, rather than direct assessment.... Also, few measure effects longitudinally, to examine the impact of WBL participation as students move from school to work. Equally few compare participating and non-participating students or control for program selection effects. Few compare effects of school-supervised work experiences with regular youth jobs. Thus, even when studies report positive outcomes, it is impossible to determine the extent to which WBL contributed to them. (p. 18)

Regardless of the rigor of the research, many of the studies have provided useful information at least about the structure and delivery of WBL programs: what they do, how they work, whom they serve, what seems to work, and what does not. These at least lay the groundwork for understanding WBL in the United States, and researchers seem to agree on several key factors that determine quality programs. WBL programs are effective if they are “well structured and well integrated with the school curriculum and culminate in products or services that demonstrate learning” (Brown, 2003). “High-quality work-based learning requires that students have the opportunity to engage meaningfully with the experiences offered and to reflect thoughtfully on their learning” (Darche et al., 2009b). Participating employers must share the learning goals of instructors and students (Hughes & Moore, 1999), and WBL programs must have strong links to the labor market to meet employer needs (OECD, 2010).

⁹ See http://www.deca.org/docs/page-attachments/DECA_SBE_Guide_for_Managing.pdf.

Stern and his colleagues (1998) concluded from their research that high-quality WBL requires explicit learning objectives with structured student activities to achieve them, coordination between school staff and workplace supervisors, monitoring of progress, and certification of achievement. In terms of ensuring better connection between school and workplace, several structural strategies can help, including written training agreements, seminars to explicitly discuss school and work connections, close adult supervision, and workforce performance assessments linked to grades (see Stasz, 1998).

Stasz and Kagonoff (1997) recommended that: (1) school staff ensure that students are work ready—which does not necessarily mean that they have technical knowledge and skills but rather a mature and curious disposition – before going out on the job; (2) students are carefully matched with worksites based on their knowledge and interests (employers who have good experiences stay involved);¹⁰ and (3) teaching students to take responsibility for their own learning in school so that they will be successful at the workplace (asking questions, taking initiative, solving problems).¹¹ Drawing from an extensive literature review and from their own research, Darche and her colleagues (2009a) offered a list of pedagogical strategies for high-quality WBL (see Text Box: Pedagogy of WBL).

No single WBL program in their study conducted incorporated all of these strategies. It is challenging and requires extensive resources to implement a high-quality WBL program for high school students, but it can be done. The authors conclude with the following: “High-quality work-based learning requires that students have the opportunity to engage meaningfully with the experiences offered and to reflect thoughtfully on their learning. It requires educators to link experiences to the classroom and to work closely with employers and communities to ensure that students understand the standards to which they will be held as adults in the working world. Organizational structures and resources, teacher preparation, and employer engagement strategies must all be aligned to facilitate this kind of high-quality pedagogy” (Darche et al., 2009a, p. 110).

¹⁰ Hughes et al. (1999) echo this: “Poor placements can lead to dismal, miseducative experiences” (p. 37).

¹¹ In a later article, Stasz (1998) asserts that more attention should also be paid to the quality of the mentor as a teacher.

Pedagogy of WBL

Darche and her colleagues (2009a, p. 97) conducted case studies of 13 WBL sites in California and identified eight high-quality pedagogical strategies for WBL, based on a literature review and expert interviews:

1. Experiences offer in-depth engagement that reinforces academic and technical content and promotes higher-order thinking skills.
2. Opportunities are provided for exposure to communities of practice and social networks that support cognitive, social, personal, and career development.
3. Opportunities are provided for rotation among positions and functions with exposure to multiple supervisors for career development purposes as well as enhanced learning.
4. Opportunities are provided for reflection about the experiences and their connection to classroom learning and students' personal interests.
5. Learning opportunities in the workplace or community are identified and aligned with standards.
6. Learning objectives are specified through learning plans and monitored through close communication between teachers and employers.
7. Students receive close supervision from teachers or coordinators.
8. Student performance is assessed and documented, with active input from the employer, client or community.

Summary of Research

The above summary of research literature on WBL in the United States provides a context for the current project. All WBL programs should follow state and federal labor laws and leverage funding streams. In addition, common themes for implementing high-quality, effective WBL are as follows.

WBL must be intentionally designed as a learning experience that:

- Shows students the connection between the WBL and specific coursework;
- Requires reflection by students on their learning;
- Culminates with an activity, project, or means of demonstrating learning;
- Allows time in the school schedule for students to leave school;
- Provides transportation so that all students can participate;
- Is coordinated by a dedicated staff member who establishes and sustains relationships with employers; matches students with employers and prepares both students and mentors for the experience; helps develop a student training plan with explicit, measurable learning outcomes; and visits students at the workplace to ensure that they are being supervised and provided with feedback.

The literature indicates that providing all of these features requires a substantial amount of resources, which may or may not be available in every school or community. Research on WBL clearly indicates that quality is critical (OECD, 2010), and some researchers (e.g., Hughes et al.,

1999; Stasz, 1998) even suggests that if WBL cannot be implemented with high quality then it may not be worth it for the student or the employer.

Method

FHI 360 examined three WBL models – internships/co-op education, apprenticeships, and school-based enterprises – to better understand the elements of recommended WBL programs operating in U.S. high schools in 2012 to provide models and suggestions for state and local CTE administrators wishing to establish WBL opportunities for high school students. The guiding questions were:

- Who is involved and what are their roles?
- What are the structural and procedural features of the program?
- What is required to be successful?
- What are some challenges and best practices?
- Do they reflect best practices identified in the research literature?

To identify sites for the case analyses, FHI 360 staff solicited recommendations from various stakeholders¹² for WBL sites located around the country that offer students opportunities for meaningful work that is integrated with the lessons they are learning in school and represent one of the three WBL models selected for this project due to their more sustained exposure to the world of work: internship/co-op education, apprenticeship, and school-based enterprise. We acknowledge that our search was not exhaustive and our sites may not be representative of the models, but we spoke with or visited at least four of each type (we received more recommendations for internship and co-op sites than any of the other models, which is why they are overrepresented in our sample).

Telephone interviews were conducted with 19 sites (11 internships/co-op education; 4 apprenticeships; 4 SBEs) to learn about similarities and differences across various models in practice across the country. Four of these sites were then selected for visits to better understand the details of how the different elements of the WBL program models operate. Questions asked in the phone interviews and site visits focused on the relationship between the school, the employer, and any other relevant partners in the delivery of WBL programs; training for employers; selection criteria for student participation; schedule and compensation; learning plans; and assessments (see Appendix A for interview questions). In addition, interviewees were asked to provide program materials and documents which we reviewed. An example student handbook, mentor handbook, and workplace skills evaluation are included in Appendix D.

We interviewed program operators, teachers, administrators, WBL coordinators, and employers at the case study sites. Prior to the site visits, our procedure and protocol was approved by the FHI 360 Institutional Review Board.

We considered the recommended elements in relation to what we learned from our WBL sites and organized the information from each of the sites as follows:

¹² For example, the NRCCTE, Office of Vocational and Adult Education, National Association of State Directors of Career-Technical Education Consortium, ACTE, National Youth Employment Coalition, and NOCTI (developer of occupational and career assessments).

- Program Description (e.g., type of program, length, wages)
- Student Selection/ Preparation for WBL (who can participate? are they prepared?)
- Employer Selection/ Preparation (employer/mentor training)
- Program Administration (coordination, structure, guidelines)
- Curriculum Connection to WBL (direct linkage of concepts/skills or loose relation?)
- Student Learning Plan and Progress Reporting (e.g., training plan, journaling, reporting)
- Measurement of Student Learning (e.g., capstone project, evaluation, grade)

Findings

What follows is a summary matrix of findings across all of the WBL sites we examined, categorized by the features listed above. More detailed information on each site is provided in Appendices B and C.

Appendix B offers 15 “vignettes” of sites that were interviewed by phone, and Appendix C provides case studies developed from the 4 sites we visited. Whereas the phone interviews touched the surface of the important features of the WBL models such as how they are run and what some of the challenges are, the sites visits delved more deeply into the operations of the most promising of each WBL model. The site descriptions in Appendices B and C provide all of the details about what we learned from both the telephone and the in-person interviews. What follows is a summary for each model, and then an overall summary, of the information gleaned across the WBL sites.

Internship/Co-op Education

Of the three WBL models that were examined, internships were the least consistently defined across sites and states. In fact, without knowing what the school called their WBL program, we would not have known the difference between internships, co-ops and apprenticeships based on interviews and observations. We recognize that there are similarities and differences but because apprenticeships have a federal definition, we discuss them in a separate section. However, we discuss internships and co-ops together because they are so similar (in fact, there is a national “cooperative education and internship association” – CEIA that supports coordinators of both).¹³

Many states have well-established co-op programs and published guidelines for local co-op administrators. We visited one co-op site and spoke with two others in Pennsylvania, a state which sets formal guidelines and requires WBL coordinators to be certified.¹⁴ At this end of the spectrum, the WBL experience for students is fairly structured and regulated. Schools follow state guidelines for WBL regarding the age of the student, hours they are allowed to work, type of work, pay, and credits. There are also specific safety requirements, and these laws apparently change often, keeping WBL coordinators on their toes. WBL coordinators also attend state meetings to learn about the regulations and to share information and resources.

¹³ <http://www.ceiainc.org/home.asp>

¹⁴ See <http://www.iup.edu/page.aspx?id=4679> for Pennsylvania’s certified WBL coordinator requirements

Table 1

Summary of Findings at Each Site, By Feature

Program Description	Student Selection/ Preparation	Employer Selection/ Preparation	Program Administration	Curriculum connection with learning on the job	Student learning plan and progress reporting	Measurement of student learning
INTERNSHIPS AND CO-OPS						
Middle Bucks Institute of Technology (MBIT), PA Paid, credit	Selection process for co-op; some preparation via career scope and WBL class	Yes, but informally	WBL coordinator with state certification makes placements or student can find their own	Some competencies from state checklist can be learned on the job	Training plan based on state competency checklist for CTE area. Weekly journals required	Quarterly employer evaluation, some areas have final projects
High Line Big Picture High School, WA Unpaid, credit	All students must do an internship and are prepared in advance for what to expect	No formal preparation	School staff coach students to find internships	No explicit connection	Training plan developed by teacher, student, employer. Teachers observe at work sites	Quarterly employer assessment, plus final presentation
High Tech High, CA Unpaid, credit	Most students participate in internship, have a manual and help with resumes, etc.	Yes, training and guidebook for employer mentors	No coordinator but teachers/advisors help students find placements	No explicit connection but related to career interest area	Student learning plan, weekly assignments, teacher visits to workplace	Employer evaluation and student final project and presentation
Our Piece of the Pie (OPP), CT Paid and credit	All students do an internship	Yes, employers are trained	Placements coordinated by a third party	All internships are in area of focus of career academy (media and journalism)	Individual employment plan with portfolio; weekly check-in meetings	Monthly evaluation by employer; final project
Berks Career Technology Center – PA Paid, credit	Need teacher recommendation and drivers license to participate in	No formal training	WBL coordinator with state certification makes placements	Training based on industry standards for career area	Student training plan and monthly meetings of student, WBL coordinator, and	Coordinator assesses students soft skills

Table 1

Summary of Findings at Each Site, By Feature

Program Description	Student Selection/ Preparation	Employer Selection/ Preparation	Program Administration	Curriculum connection with learning on the job	Student learning plan and progress reporting	Measurement of student learning
	co-op				employer	
Bucks County Technical High School – PA Paid, credit	Selection process	No formal training	WBL coordinator with state certification makes placements	Some competencies from state checklist can be learned on the job	Training plan based on state competency checklist for CTE area. Weekly journals required	Quarterly employer evaluation
Apex (AOIT) – NC Credit, some are paid	All students required to do internships in information technology	No formal training	School works with employers to line up internships	No explicit connection	Students must keep a journal or blog, teachers visit work sites	Employer, teacher, and student complete evaluation; student makes presentation
Palmdale High School – CA Unpaid, credit	Selection process	No formal training	Clinical coordinator makes placements	Jobs are in health fields and overlap with course content; list of competencies to obtain medical assistant certificate	Individual training plan; goals assessed quarterly	Frequent employer evaluations based on job requirements and soft skills
LIFE Academy of Health and Bioscience - CA Unpaid, credit	All students do internships	There is an orientation for employer supervisors each year	Internship coordinators (used to be separate position, now done by teachers)	Internships are in health fields but WBL focused on “habits” Students design a research project that can be investigated on job	No training plan but students keep a blog to reflect on experiences; coordinators visit once per semester	Mid-year and final assessment by employer
Dozier-Libby Medical High School – CA	Selection process	No formal training	Workforce education coordinator sets up placements	Main goal to learn what it is like to work in a health care setting	Students must keep a journal	Students must submit a report at the end of the internship

Table 1

Summary of Findings at Each Site, By Feature

Program Description	Student Selection/ Preparation	Employer Selection/ Preparation	Program Administration	Curriculum connection with learning on the job	Student learning plan and progress reporting	Measurement of student learning
Unpaid, credit and certificate						
Digital Safari Academy, CA Unpaid, credit	All students participate in WBL experiences	No information	Teachers work together in interdisciplinary, project based curriculum	Students must participate in a real enterprise at school (using fake money) then an internship in a digital media company	Students work with teachers and other students on projects	Fair where public “invests” in best ideas; final presentations to real employers
APPRENTICESHIPS						
North Central CC, WI Paid, credit and certificate	Selection process and preparation by HS school counselor	College selects and trains employers	College coordinates apprenticeships for students from 26 high schools in 10 counties	Students must be taking related coursework at their high school	Education training agreement with competencies; apprenticeship coordinator visits a few times per year; student keeps log	Competency checklist is basis for evaluation; employer feedback
Winder Barrow High School, GA Paid or unpaid, credit	Selection process and WBL seminar	Mentor handbook	Youth apprenticeship coordinator finds placements in high-skill, high-wage, high-demand jobs (must meet 2/3)	Youth apprenticeship coordinator finds placements for students based on their career interests	Youth apprenticeship coordinator develops individual plan with student and employer	Employer assessment based on learning plan; also evaluated on professionalism
Olympic High School, NC Paid, dual credit, journeyman’s license	Rigorous selection process by company	Company sets up detailed apprentice training plan following German model	WBL coordinator works with company to help them recruit students	Curriculum set by company and college. 2 year HS + 2 year college training program, half training on job, paid full time and tuition paid	No individual learning plan but student must complete all coursework and competencies	Course grades and employer feedback. Presentation about Siemens at end of 1 st summer

Table 1

Summary of Findings at Each Site, By Feature

Program Description	Student Selection/ Preparation	Employer Selection/ Preparation	Program Administration	Curriculum connection with learning on the job	Student learning plan and progress reporting	Measurement of student learning
SCHOOL-BASED ENTERPRISE						
DuPont High School, DE Unpaid, credit	Course prerequisites, students interviewed	N/A	Marketing teacher	Part of marketing class; students manage all aspects of the store	N/A	Assessments like corporate reviews
Apex High School, NC Unpaid, credit	Course prerequisites, students interviewed	N/A	Marketing teacher	Part of marketing class; students manage all aspects of the cafe	N/A	Assessments at end of each day café is open
Blacksburg High School, VA Unpaid, credit	No prerequisites; marketing class encouraged	N/A	Marketing teacher	School store is part of marketing class and DECA	N/A	360-degree evaluations
Dominion High School, VA Unpaid, credit	All seniors in marketing class manage store	N/A	Marketing teacher	School store is part of marketing class and DECA competitions; senior marketing class is run like a staff meeting	N/A	Papers, presentations, peer, and teacher assessments

At the career-themed sites, internships were almost always a required part of the curriculum, whereas at the other high schools, the internships and co-ops were electives that required some kind of selection process, including a certain grade point average and good attendance record. Most sites provided at least some kind of preparation for students going out on WBL; these ranged from a career interest inventory to help from school staff on resume writing, interview skills, and professionalism to a concurrent class in which students discussed their WBL experiences. At several of the career-themed schools, the work experience was so central that students began preparing for it in ninth grade and worked up to the formal internship in their senior year. All of the internship/co-op education experiences were credit bearing for students and in almost half students were paid.

Most internship and co-op sites had a WBL coordinator or a designated teacher who developed and maintained relationships with many of the same employers over time and helped students find placements. Placements were made on an individual basis, determined by the students' career interests, level of technical skill, level of maturity, and availability of a job opening. Interestingly, apart from administering career interest inventories, we did not hear about the role of the counselor in any of the WBL programs. Most site coordinators or representatives told us that they met with employers and ensured that work sites were safe for students, one provided an orientation, and two provided training for employer mentors. However, the trainings did not cover how to help students make connections between concepts and skills learned at the workplace and what students were learning in school.

With the exception of the career academy models where the internship placements were connected to the career focus of the school (e.g., health, media, information technology), and the co-ops in Pennsylvania that had competency checklists, there did not seem to be a strong connection of the WBL to the curriculum. However, eight of the internship and co-op sites created individual training plans for internship/co-op students, and most required students to keep some kind of log of their experiences and reflections.

Visits by school staff to employer sites were more feasible in sites that had dedicated WBL coordinators (teachers rarely get release time for this purpose); however, even these individuals did not have time to visit every student at their work site more than 1-2 times per semester. Two site representatives mentioned monthly check-in meetings with the student, employer, and WBL coordinator.

In addition to student reflections in journals, documenting their WBL experiences, almost all of the internship and co-op sites required the employers to evaluate students, monthly, quarterly, or mid- and end-of-year. Some internship programs also required a final project or presentation by the student. The co-op sites in Pennsylvania required students to complete a state competency checklist for their CTE area, which they could do both in their CTE class and on the job, as long as they were able to pass an end-of-course test developed by a third-party vendor (NOCTI) for the state in their particular occupational area. All of the internship/co-op sites provided credit for the students' experiences, but only about half were paid.

Apprenticeship

Of the three WBL models we studied, apprenticeship has the most formal definition and clearest set of guidelines, established by the U.S. Department of Labor.¹⁵ States also have their own apprenticeship policies, and we heard from school-based coordinators that they follow the more stringent of the two policies (state or national). Because apprenticeships are employer-run and state-regulated, we discovered there is little role for the high school other than to find placements for students and make sure the laws are being followed.

We spoke with individuals running apprenticeship programs in four states: North Carolina, Wisconsin, Georgia, and New York.¹⁶ All of them had a coordinator and provided mentor training or guidebooks. In addition to pay and credit, some of the apprenticeships also offered the opportunity to earn an industry-recognized certificate or credential. Students wishing to participate had to meet eligibility requirements and sign a training agreement with the school and employer, and employer feedback was important. In addition, all three had connections with the curriculum and used different measures of student learning. Other than these commonalities, the sites were very different.

Wisconsin's program, although the largest, seemed the most hands-off due to the fact that the coordinator resided at a technical college and oversaw over 200 apprenticeship placements from 26 high schools in 10 counties. The state of Wisconsin has a guide for youth apprenticeship (YA) for local administrators, whose contents were largely echoed by the North Central Technical College YA coordinator. There are also two staff at the college who are each responsible for communications with roughly half of the high schools. Although the coordinator follows the state guidelines, recruits and orients participating employers across the region, and finds placements for interested high school students who are recommended by their counselors, the placements did not seem to be as personalized as those in the internships and co-ops.

The YA site in Georgia was more personalized, as it was located in one high school and run by a single coordinator who found placements for individual students based on their career interests, as long as it met two out of three "high-wage, high-skill, high-demand" occupations in the state. Georgia has a set of well-defined guidelines and an online method of collecting all students' training plans and evaluations statewide. At least in the case of the Wisconsin and Georgia sites, there was not much discernible difference between what students actually experienced on the job and what students in the internship and co-op sites experienced.

In contrast, the apprentices at the North Carolina site were part of a German-style program dictated primarily by the employer (Siemens Energy). The classroom and WBL aspects of the apprenticeship program were primarily run by the company and the local community college.

¹⁵ See: <https://21stcenturyapprenticeship.workforce3one.org/page/home>. Note: In Spring 2012, the Department of Labor's Employment & Training Administration released the Training and Employment Notice (TEN), *Encouraging Enhanced Partnerships and Collaboration between the Workforce Investment System and Registered Apprenticeship Programs* to encourage leaders to develop and enhance partnerships and resource-leveraging efforts in order to increase job seekers' access to career pathways. Registered apprenticeship leaders are encouraged to partner with Workforce Investment Boards (WIBs), One Stops, and state workforce systems.

¹⁶ We do not include the information from New York in our vignettes or matrix because it was very general. The information instead appears at the end of the vignette section as "additional information."

The high school was involved to the extent of recruiting students for the program and making provisions for them to participate (e.g., courses scheduling, more lenient requirements for WBL reporting due to students' busy schedules). Accountability for student learning seemed to be more important to Siemens Energy than to the high school, most likely because it was the company making the largest investment (\$170K per student for 4 years, including a full time salary, college tuition, and journeyman's licensure).

School-Based Enterprise

Three of the four SBE sites we contacted had been recommended by the national DECA (marketing student association) office, and one was a "gold certified" SBE, meaning that they have reached the highest standards for school store operation.¹⁷ All of the SBE teachers we spoke with were marketing teachers as well as advisors for their school's DECA chapter and therefore followed the DECA SBE guidelines closely. Two of these teachers had their students create the application for gold certification as part of class (different groups of students were responsible for different parts of the lengthy document). Students learned about various aspects of business and marketing in the prerequisite marketing classes and then were allowed to participate in the SBE as part of an upper-level course (mostly in senior year). In one high school, the SBE students were also heavily involved in DECA, including competing in local, regional, and national competitions and an international conference. All of the SBEs were part of marketing classes and offered students credit but not pay. However, each had a different type of student assessment.

Two of the teacher advisors referenced their connections to the local chamber of commerce or employers as having influence on the SBE program. One marketing teacher used a training video and HR review process borrowed from a local business, and another coordinated sales by DECA students of merchandise donated from local businesses for fundraising activities. However, all of the SBEs functioned fairly independently of local business input.

The SBEs varied in their policies, depending on state law. For instance, in one school, students were not allowed to handle cash except at the registers; the teacher took the proceeds to the school bookkeeper at the end of each day. In another school, students could not handle any money; they had to take pre-orders of the goods sold by the café over the phone ahead of time. The marketing students who ran the café were not allowed to make the food they sold; rather, the culinary students did this because they had ServSafe certification for handling food.

Thus, in some ways students' WBL experiences in the SBEs was fairly limited and might not be seen as "real world." On the other hand, students rotated among tasks and got to experience multiple roles as part of the WBL program design. Because SBE students experienced multiple aspects of running a business (e.g., creating a business plan, advertising, managing employees), SBEs are more closely connected to curriculum than are many internships and co-ops taking place outside the school. The critical elements for WBL in SBEs seem to be engagement in real enterprises, such as the selling of goods and services, rather than the location of the WBL.

¹⁷ See <http://www.deca.org/sbe/certification/>.

General Summary of Findings

Of the three models we examined, SBE has the most involvement by CTE teachers and not surprisingly, the least involvement by employers. In contrast, apprenticeship programs have the least direct involvement by high school personnel, the most formal involvement by employers, and the most formal federal and state regulations. Whereas internships and co-ops involve planning and coordination by both school personnel and employers (therefore falling somewhere in between SBEs and apprenticeships), internships have the least consistent rules and guidelines.

We found that, in practice, internships, co-ops, and apprenticeships for high school students look very similar. They all have an adult coordinator or supervisor at the high school,¹⁸ an agreement or plan signed by the student, an evaluation by the employer, and credit and a grade awarded for participation (in some sites, the final employer evaluation constituted a large part of the course grade). Whereas school personnel may understand the nuances between the different types of WBL based on the policies or guidelines (or lack thereof), many employers do not. From the point of view of employers we interviewed, the company has a high school student working part time for little to no pay, to whom they are supposed to teach “the ropes” but in whose education and training they do not necessarily have a lasting investment. Often the experience of having interns or co-op students is rewarding for the employer who views this involvement as a way to “give back” to the community. The exception is the apprenticeship program at Siemens, which as much more heavily involved.

In contrast to SBEs, the particular focus of the students’ work in internships/co-op education and apprenticeships is most often determined by the company. Even if the teacher has some involvement in the content focus of the student’s WBL experience (as in the PA co-ops), teachers often cannot get leave time to visit multiple employers where their students may be placed. This responsibility usually falls on a WBL coordinator (1) who may not have a content background in the business focus area and (2) who cannot visit each and every student in his/her placement regularly due to the large numbers of WBL placements. Further, because the WBL coordination is done centrally rather than through individual classrooms teachers, student training plans cannot be tailored to each students’ learning needs, nor can training plans be standardized across placements, due to the variety of industries and employers. For these reasons, many of the student training plans and employer evaluations cover general employability skills rather than specific occupational skills.

We noted across the non-SBE sites the key role that the WBL coordinator plays in ensuring a positive experience for the students and the employers. In addition, although a rare practice mentioned by only a couple of coordinators, student participation in creating the learning/training agreement is important to the students’ understanding of the connection between school and work and to the quality of their experiences, as is support (training, guidebook) for the employer mentors. However, even dedicated WBL coordinators are stretched in their responsibilities and may not have time to devote to these important practices.

One of the biggest challenges that WBL coordinators mentioned is the limited time for visiting

¹⁸ Some schools have a dedicated, licensed WBL coordinator, whereas in others (usually those with fewer resources) the responsibility for arranging students’ WBL opportunities fell on the shoulders of a teacher.

workplaces (many said they go to each place of business at least once per semester, often unannounced) to see students on the job, talk with employers and students about their experience, and make sure that the workplaces are safe for students (which means anything from being smoke- and profanity-free to following strict OSHA guidelines). Other challenges included recruiting and maintaining good relationships with employers who hire their students.

Although there were selection criteria for student participation, including grades and attendance, for all of the WBL models, many of the WBL coordinators we spoke with discussed the lack of maturity of high school students as a frequent challenge. The WBL coordinators we spoke with take their responsibility for students' behaviors seriously and spend time coaching students on expectations prior and during their WBL placements. The coordinators emphasize the importance of keeping the lines of communication with employers and students open to learn of potential issues and have the opportunity to coach both sides. For example in a one student log entry that was shared with us, the student had written about an experience where she was uncomfortable being asked to perform a task on the job for which she was not prepared; the WBL coordinator saw this as a red flag to speak with the employer. Sometimes, the placement is not a good "fit," in which case the student is removed from the internship site and placed elsewhere.

Other challenges to implementing WBL programs include state labor laws or other requirements that hold up the process of placing students (such as a one month TB test to work in a health facility); lack of parent and community support, often based in a lack of information about the program; and the bad economy. When unemployment is high, companies don't tend to hire high school students. However, several coordinators told us there are some years when there are more internships than students to fill them, particularly at sites that do a very careful job at matching the students' personality, skills, and interests with the needs and environment of the particular employer: there are times they cannot fill a position because they feel that they don't have a student who is qualified. They do not want to just send anyone, because they want it to be a good experience for both the student and the employer.

Finally, there are issues of quality, equity, and availability of resources. Students are often disqualified from participating in WBL if they do not have a certain grade point average or do not have access to a car or public transportation (as in rural areas). This underscores the question of whether all students can and should be allowed to participate in WBL. It could be argued that all students should have the opportunity to experience WBL, particularly those who are very interested in exploring a particular career area. In our study, only the apprenticeship model at Siemens followed the more intensive European model of training students for a profession, but the drawback to that model is that it is highly selective, taking fewer than 10 students per year. Those interested in implementing WBL will need to take these issues into consideration.

Match of WBL Site Features with Recommended Practices

In addition to the findings presented above, we found the following in terms of the research-recommended features of high-quality WBL in the sites we examined:

Shows students the connection between the WBL and specific coursework. It was unclear how much students understood the connection between their coursework and their WBL experiences. Most of the WBL sites seemed to be geared towards giving students some real world experiences in a career interest area rather than training them for a particular career. Where used, student training plans established goals and responsibilities of the student, employer, and school, although most of these seemed to be structured around general employability skills rather than specific academic, occupational or technical skills. The example training plans that were shared with us did not seem very specific about what exactly students would be learning, how, and when. Exceptions might include the SBEs (that are connected to a marketing curriculum); Digital Safari Academy (which had WBL built into the curriculum prior to students going on internships); and the formal Siemens apprenticeship for students at Olympic High School (although in this case, students' learning was designed and directed by the community college and the company, not by the high school). Finally, in the co-ops at Middle Bucks Institute of Technology, the employer might be responsible for some of the tasks students were required to master in their CTE program, though this was not always the case.

Requires reflection by students on their learning. The sites ranged in whether and to what extent students were expected to document their WBL experience. We were unable to assess whether students reflected on their work. At most sites, students were required to describe their activities and progress via journaling and/or meetings with the WBL coordinator to ensure that the students were continuing to have positive experiences. At one site, the WBL coordinator told us that a student had described a negative experience (being asked to do something the student had not been taught); the coordinator immediately discussed the situation with the employer.

Culminates with an activity, project, or means of demonstrating learning. In addition to requiring an employer evaluation, most sites required students to do a final presentation, project, or report. In the Siemens apprenticeship program, students were required at the end of their first summer to make a formal presentation about the Siemens company. At High Tech High, students must complete a project that is of service to the company. At Digital Safari Academy, students presented business models at a fair to which the public was invited to "invest" in their favorite. At the co-op sites in Pennsylvania, where the NOCTI exam at the end of senior year covered skills students had learned both in their CTE classes and in their co-op placements.

Allows time in the school schedule for students to participate in WBL. Some of the sites had special scheduling that allowed students to work in the morning or afternoon (e.g., at the co-op sites), or otherwise structured the school schedule to accommodate WBL as an integral part of the curriculum. For example, at Our Piece of the Pie, all students are in class for three months, followed by six to eight weeks at the worksite. At Bucks County Technical High school, students are in class for six days, then at their WBL placement for six days. In several of the career academies, all seniors are expected to be participating in WBL. In the SBEs, in addition to the classroom time, the school stores are open before and/or after school each day.

Provides transportation so that all students can participate. None of the sites we spoke with provided transportation for students to the workplace. Students were most often expected to drive themselves, get a ride, or use public transport. One WBL coordinator told us that the district used to provide buses but that this policy had ended the year before due to budget cutbacks. As

mentioned earlier, this raises questions about equity and access to WBL experiences for students and communities with fewer resources.

Is coordinated by a dedicated staff member who establishes and sustains relationships with employers; prepares both students and employers for the experience; helps develop a student training plan; and visits students at the workplace to ensure that they are being supervised and provided with feedback. Most of the internship and apprenticeship sites had a WBL coordinator who maintained relationships with employers. All the coordinators we spoke with tried to prepare students on the expectations of the workplace in order to ensure that employers had a good experience, to avoid jeopardizing future student placements. WBL coordinators helped place students with employers based on their interests and personality. For instance, one WBL coordinator warned of the dangers of placing a shy student in a bustling work environment, whereas another told us that she sought out a special WBL placement for a student interested in geology. Only a few sites conducted formal employer training. In addition to the formal agreement outlining the expectations of each party, two sites provided handbooks specifically written for mentors. Most sites required students to have a training plan, but from the examples we were shown, the skills students were expected to demonstrate were primarily employability skills rather than specific occupational skills.

Overall, the WBL sites included in this project met some of the criteria for high-quality WBL recommended in the research literature, but fell short in others. We believe that it is unlikely that very many WBL programs in the United States meet all of the criteria for high-quality WBL. Nevertheless, these sites were recommended to us as good examples of WBL and they are certainly to be recognized for their efforts to introduce real world work to high school students. Additional WBL sites should be sought out and studied systematically so that best practices can be identified and replicated in other communities (see Darche et al., 2009b for an example of this kind of study in California). In addition, a greater federal, state, and local investment in building and sustaining high-quality WBL programs for high school students is needed if we expect our young people to learn about the world of work, gain maturity and employability skills in non-school environments, make informed career choices, and succeed in their path toward further training and careers.

Discussion

In addition to helping young people integrate knowledge and experience, researchers and practitioners believe that WBL offers a vehicle for conveying academic concepts as well as a broad perspective of the skills required for successful transitions from school to further education and careers. Proponents argue that not only can such an approach meet the needs of U.S. employers for a highly skilled workforce, a focused investment in WBL can also provide “employability” or “21st Century” skills and serve as a foundation for lifelong learning in a time of rapid technological change (NRC, 2012).

This report describes several kinds of WBL programs (internships/co-ops, apprenticeships, and school-based enterprises) that are currently being offered in different states, how they are structured, and what some of the strengths and challenges are in providing high-quality experiences for students. We found that even in highly recommended WBL sites, not all of the

recommended practices from the literature on WBL were being implemented. Although there is no guarantee of positive student learning outcomes if these features are implemented in WBL, the research suggests that such outcomes are more likely when these features are in place. However, implementing even just some of the features takes many resources, including staff and planning time.¹⁹ If WBL is to be more widely offered as a way to improve the education and training of high school students in the United States, the recommended features may need to be prioritized.

In our interviews and site visits, we found that internships, co-ops, and apprenticeships look very similar in terms of what they offer students in practice. Clearly, SBEs are different from the other models as they take place in school and are more clearly related to curriculum (e.g., a business or marketing course). If the out-of-school WBL placements (internships/co-ops, and apprenticeships) are to be distinguished from each other, better definitions and clearer guidelines are needed across states. If the differences are not pedagogically or programmatically important, we must ask whether it is worth continuing to separate them.

The primary finding of this project is that the out-of-school WBL experiences (internships/co-ops, apprenticeships) for high school students in the United States are much less tightly connected to the curriculum than we had expected, based on our reading about high-quality WBL. American high schools appear to have very little control over what happens in out-of-school WBL settings, even if there is a dedicated WBL coordinator making personalized matches and a student learning plan has been established and signed by the teacher, student, and employer. Work site visits by a school representative occur infrequently due to time limitations on the WBL coordinators; thus there is little opportunity for anyone at the school to understand what students are learning at work.

Our impression from the 19 sites we examined is that educators seem to trust that employers are concerned about and know best what the student should be learning, and the primary goal of WBL coordinators is to keep employers satisfied with the WBL experience rather than to ensure that students are getting from employers the training that they need to complement their classroom-based education. As a result, most employer mentors are not screened or trained in advance of hosting a student in WBL. Unlike in other countries where employers are heavily invested in learning outcomes because they understand that students are future employees, U.S. companies do not seem to see training high school students as a major responsibility. In the United States, then, it seems neither educators nor employers are driving students' WBL experiences. No one is in the WBL driver's seat.

Consequently, the onus is placed on the student for ensuring that they understand what the employer expects and play their role accordingly. This was also the case in the 1990s, as described by Stasz (1998): "Some [employers] want their employees to take initiative; others want them to take orders.... if students get any preparation, it usually covers issues like comportment (wear a tie, don't wear headphones) or operations (how to fill out your timesheet, whom to call if you are going to be late for work). Some programs prepare students with

¹⁹ Although we did not ask about this, the literature suggests that even more resources are required in order for students with disabilities to participate in WBL. Workplaces are not familiar with IEPs so that requires a lot of time and energy from the coordinator and special educator to work with the work-based supervisor (Yecke et al., 2003).

mandatory drug testing... (p. 20). “In order for students to learn on the job, they must interact within the social setting to learn their tasks with the goal of eventually carrying them out on their own. Students must know when to ask questions or take initiative, have the confidence to solve problems, and understand how to work with others. Students must take responsibility for their own learning (p. 20-21). Whereas the student’s responsibility is certainly necessary for learning to take place, it seems that the school and employer mentor must also take responsibility for structuring the WBL learning experience and ensuring that it is beneficial *for the student*.

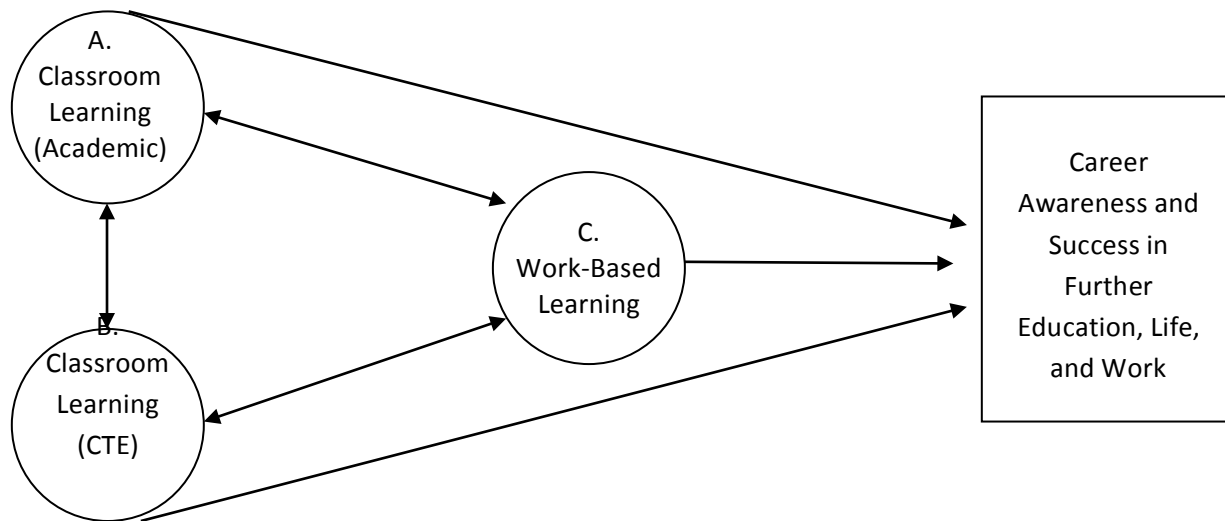
The Pedagogy of Work-Based Learning

Of course, the purpose of the WBL will dictate what the outcomes should be. Stern, Rahn, and Chung (1998) distinguished between a “learn-and-stay” or “learn-and-go” approach to WBL program design. Learn-and-stay assumes that the student is being prepared to continue working in the same industry as their WBL placement. The learn-and-go approach assumes that the student will not stay in that particular industry and therefore, a greater focus is placed on acquiring generic work skills. In the United States, there seems to be no assumption that students will be staying in particular career. Should the “learn and stay” model be adopted more widely in the United States, WBL programs will need to pay more attention to the pedagogy practiced by teachers and employer mentors to more meaningfully connect school curriculum to workplace learning. We assume that such a connection is desirable to most WBL program coordinators because it should lead to deeper learning for the student.

However, the connection between school- and work-based learning may have multiple meanings: applying academic and/or technical skills learned in school to tasks encountered on the job; showing the relevance of school to the real world; or demonstrating mastery of skills to earn a certification. There are few examples in the literature to understand what the connection might look like in practice. In addition, it is unclear how students are supposed to be learning on the job in a way that will complement their school learning. Over a decade ago, a WBL researcher noted that “an important gap in our knowledge concerns the quality of the learning experience that students encounter at work. Although it is important to evaluate what students learn in WBL, the picture remains incomplete unless we also characterize how students learn” (Stasz, 1998, p. 11). Most research on WBL in the last twenty years has examined structure and outcomes of the programs, but unfortunately there still has been “little observational or research literature on *how* teaching actually takes place in workplaces – what pedagogies are most effectively employed” (Hoffman, 2011, p. 108, italics added).

Figure 1 shows a general conceptual model of how WBL *should* work: CTE and academic classroom learning should be connected to each other; both should be connected to work-based learning, which should in turn enhance both academic and CTE classroom learning. Academic learning, CTE learning, and work-based learning should affect career awareness and success in further education, work, and life. The components of the model and the affect of each factor on subsequent factors is dependent on: who is responsible for making the links between the different kinds of learning; how these links are made; and who is the driver.

Figure 1: Theoretical Model of Work-Based Learning



This project revealed that there was little if any connection between A and B or either of these and C.²⁰ The two exceptions were the Siemens apprenticeship for Olympic High School students in Charlotte, NC (where the curriculum was designed by the company and the local community college, which students attended for dual credit) and Middle Bucks Institute of Technology in Bucks County, Pennsylvania (where the required state CTE task lists could be mastered by students through either classroom-based or work-based learning).

One of the challenges to improving WBL for high school students is that educators do not seem to be basing their programs on research findings and recommendations about how students learn. In her 1998 review of the WBL literature, Stasz noted that WBL should be influenced by research showing that people learn best when in a context that provides meaning and motivation. We should be asking: “What kinds of learning opportunities does a workplace provide? Do students apply school learning at work? Does work experience enhance students’ cognitive capabilities—are they better problem solvers or do they approach problem solving in a more flexible way? Can they participate in different types of teams?” (Stasz, 1998, p. 24). Almost 15 years after Stasz’s (1998) work, her conclusion still holds: “Few studies address the process of learning at work or the quality of workplaces as learning environments for young people.” (p. 2).

Hoffman (2011) asserts that WBL must be problem-based and that employer mentors must therefore know how to explain problems to students (which is different from training a new employee). Students should learn how to transfer concepts and skills between contexts by solving workplace problems using the academic and technical skills learned at school, and applying workplace skills to solve problems in class. Cognitive transfer is arguably the most important one that students can learn in WBL that will serve them in future education and work settings. In their 2012 report, *Education for Life and Work*, the National Research Council recommends that schools teach transferable “competencies” in the cognitive, intrapersonal, and interpersonal domains to prepare students for success in work and life. The report encourages instructional practices—including modeling of problem-solving, critical thinking, and

²⁰ The field of special education may provide a model of a learning coordinator for individual student learning plans.

metacognitive competencies—that facilitate transfer. Such instruction should be applied in both school and work learning contexts in order to better “educate students for life and work” (NRC, 2012). This means more deliberate training of teachers, employer mentors, and WBL coordinators to maximize WBL opportunities for students.

Improving pedagogy for WBL needs to occur at the local level, but WBL also needs to be a priority and placed in the larger national context of how we structure young people’s educational experiences in preparation for work. In studying adolescent work, Stone, Stern, Hopkins, & McMillion (1990) found that student jobs are not related to school or desired careers. Twenty years after this observation, most student jobs are still unconnected to school. Both Hoffman (2011) and Deil-Amen and Deluca (2010) note that many students are both learning and earning, but these are for the most part not connected. “The establishment of a linking component is crucial to WBL because without it, it is unclear why school-supervised WBL has any advantages over regular work experience” (Stasz, 1998, p. 5). There is an opportunity in the current economic environment, in which education and workforce training are under scrutiny, to design a system where students’ learning is more connected with their work experience. This requires coordination at multiple policy levels.

Conclusion and Recommendations for States

The purpose of this project was to establish a knowledge base about WBL to help state-level educators assist local WBL programs. Our examination of selected WBL models, as well as prior research, leads us to conclude that in order for WBL to be meaningful and worthy of investment, there must be a much stronger connection between the classroom and the workplace than currently exists in many WBL programs. The connection must go beyond the WBL coordinator (acknowledging that many districts do not currently have funding for such a position) placing students with employers in a career interest area; the program must deliberately demonstrate to students the link between skills learned in the classroom curriculum and skills learned and used on the job. Such an explicit link will increase students’ ability to problem-solve in multiple contexts and help them understand the purpose of WBL in the “big picture” of their education. To achieve this close link requires deliberate changes in policy and practice at the federal, state, and local level. More information, resources and training will be needed around “teaching for transfer.”

Assuming that federal policy will support states in improving WBL programs, recommendations based on the findings from this project are for state leaders to:

- Provide a clear, substantive purpose for and stated value of WBL, emphasizing the learning component in the work experience.
- Offer resources and information about components of high-quality WBL programs.
- Provide professional development for teachers and WBL coordinators to develop instructional strategies, including for cognitive transfer of problem-solving skills.
- Convene meetings with employer associations and labor unions to achieve buy-in for the creation of more meaningful WBL programs connected to school curriculum.
- Provide resources and guidelines for employer mentor selection, training, and continued engagement.
- Support teachers (with release time and professional development) to work closely with

WBL coordinators and employer mentors to construct detailed student training plans (into which students can have input).

- Require the broadening of selection criteria and provisions for access so more students can participate in WBL.
- Demonstrate strategies for involving academic and CTE teachers in the WBL process so that WBL is connected to classroom learning.
- Provide better guidelines for accountability for student learning in WBL programs
- Fund WBL coordinators for each project with adequate support and resources.

In addition to specific things that state leaders can provide, there are other considerations, such as marketing WBL programs, legal issues, and alignment of resources. Achieving buy-in for high-quality WBL from the public is important, as it can facilitate the involvement of employers, educators, and parents. Traditionally, it has been easier to garner support for WBL that occurs through career academies or CTE programs due to their clear orientation toward career preparation, so if WBL will be expanded, different marketing or messaging is needed. Employer buy-in seems to help sway the public. States will need to coordinate their laws with federal laws concerning the employment of minors; currently, these are not consistent across states or industries. The publication *Minor Laws of Major Importance* (Fraser et al., 1994)²¹ may need to be updated to help states understand the parameters for their WBL programs. There are also variations in regulations on issues of safety and liability to take into consideration. States should try to be as consistent as possible in their definitions and terminology regarding WBL (e.g., apprenticeship, youth apprenticeship, internships, co-operative education). Finally, in order to align resources and policies to support the creation and improvement of high-quality WBL programs, states should examine ways to leverage various relevant funding sources, including WIA and Perkins, corporations, foundations, and district, state, and federal agencies.

We have based a set of recommendations on an extensive review of the literature and interviews and case study findings of examples of WBL models. This report has covered most of the issues currently in play regarding WBL programs for high school students in the United States and has offered helpful information for states. National and state policies supporting better integration of classroom- and work-based learning would encourage more partnerships between educators and businesses.

²¹ Although at least one-third of U.S. high school students are employed, many parents, employers, and workers are confused or uninformed regarding the mix of federal and state laws that apply to young people in the workplace. This guide is a sourcebook on federal and state legislation that affects workers under the age of 18. It describes exactly what laws apply to specific work situations for employed youth. The guide covers employer responsibilities, employment age certification, age restrictions, occupation restrictions, hour restrictions, and hazardous occupation restrictions covered by federal laws. The guide also summarizes state regulations on wage, occupation, and hour laws for minors and provides a list of telephone numbers of the offices in each state that regulate youth employment.

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Appendix A

Phone Interview Questions²²

Introduction: We are conducting telephone interviews to learn about best practices in work-based learning for a project funded by the National Research Center for Career and Technical Education. Your school/site was nominated as having a well-developed work-based learning program for students. I conducted some preliminary online research and found {Give a brief overview of what we learned about their program already through our research}. We appreciate you taking about 15-20 minutes to answer some questions to provide us with a little more detail about the program. We'll be asking you about how the program is structured, who is involved, and what the outcomes are.

1. Please provide a brief description of the work-based learning program? (Can you provide any written descriptions?)
2. [If not already described or not otherwise obvious] We are especially interested in three types of WBL – internships, apprenticeships, and school-based enterprise. How would you define your program?
3. What partners are involved and in what capacity?
4. Who are the school based staff and work based staff? Define their roles and responsibilities. Please send any job descriptions, organization charts, etc.
5. Are there any state or local regulations, laws, policies that affect program planning and delivery?
6. How are employers prepared to work with students? Please send any training materials you use.
7. How is work site selection made and how are students matched with WBL opportunities?
8. How many students participate? What is the length of participation for most students? (explain) Do students receive a stipend or wage for any part of their experience?
9. How are students selected? Is this experience available to all students? Are there grade or age requirements? Is WBL part of a class or course?
10. What are the essential elements of your program that lead to student learning?
11. Do the students have a structured work based learning plan? How is it developed/ who has input into it? Please send template.
12. How is student progress evaluated? Please send process if available.
13. Where does WBL fit into the school curriculum? (probe: is it part of students' coursework? Do they receive credit for their participation?) How is workplace learning integrated with classroom based learning?
14. Are there any formal agreements or MOU's in place with partners?
15. Are there limitations on what students can do at the work site?
16. How is the program funded?
17. What are some of the challenges or barriers to implementing this program?
18. If another school were to use this model, what are the most critical elements they need to consider?
19. Are there other programs like yours that you recommend we contact?

²² These questions were expanded with probes for site visit interviews.

Closing: Thank you for your time and great information about your program.

If we find it is needed, would we be able to contact you again for follow up?

We will be undertaking short site visits to three of the programs we are studying. If your program was selected would you be willing to host a visit and assist in scheduling interviews, focus groups, and meetings?

Appendix B

Phone Interview Vignettes

Internships/Co-operative Education (9)

Apex High School, Academy of Information Technology

Program Description. The Academy of Information Technology (AOIT), at Apex High School located near the Research Triangle Park in NC, is a four-year program that students must apply to enter. Preference is given to siblings of past or current students, and other entrants are selected by lottery. As a member of the National Academy Foundation network, the academy: (1) creates small learning communities, (2) encourages active participation by local business and civic leaders, (3) connects students to the world of work through paid internships and industry-relevant coursework, and (4) motivates teachers by engaging them in school improvement efforts. The high school serves a relatively affluent, predominantly white population.

All academy students must complete a one-semester paid internship, with a minimum of 135 hours, before the spring of their senior year. Students are exposed to potential placements through guest speakers, mini-job fairs, and visits to employers. There is a pre-internship meeting with parents and students, when businesses decide who to interview and hire. Students are provided with an “Internship guide.”

Program Administration. The Academy Coordinator relies on parents, the advisory board and the community to suggest or offer placements. With large companies, she can work with the Human Resources departments. Employers must provide a supervisor for the student and have suitable work for students. The Academy prefers students to be paid but other compensation, such as a stipend or a laptop, has been arranged. An internship agreement is signed by the parent, student, and supervisor. The needs of the business drive the internship, but the student can state their objectives for what they want to get out of the job.

Student Learning and Measurement. Students must track their hours and keep a journal/blog of what they are doing and learning. The Academy Coordinator also makes a visit to the employers to learn about what students are doing. At the end of the year, both the supervisor and the student complete an evaluation, and the student must make a PowerPoint presentation about their internship experience to other students, parents, and teachers. Twelve students present per night in a panel format with questions. Juniors are invited to inform them of what to expect in their senior year.

High Tech High School

Program Description. High Tech High School is a charter school with 11 locations in southern California. The school is founded on three main principles—personalization, adult world connection, and common intellectual mission. Drawing on the belief that some students do their best learning outside of the school, High Tech aims to provide students with numerous opportunities for projects in the community. During students’ junior year at High Tech, they

receive credit for taking part in a full-time unpaid internship for 3 – 4 weeks during the school day. Internships are established based on students' career interests, and locations may include non-profits, restaurants, police departments and engineering firms. Approximately 150 juniors take part in an internship each year.

Program Administration. At High Tech, all school staff members serve as advisors for the students. Teachers help the students find a placement and then work with them on resumes, interviewing skills, and career interests. They also visit the students at their workplace.

Prior to the students entering the work setting, the company representatives come to a one-hour luncheon at the school. They are given training on the expectations of the relationships and a guide book. Students are provided with a mentor at the company—this person must have a college degree.

Student Learning and Measurement. Students must complete a project in their career interest that is of service to the company. They are expected to work on their project onsite and afterwards, make a presentation on what they have learned. Additional assignments include mentor interviews, weekly journal entries, and creating an updated resume.

Palmdale Health Academy

Program Description. At Palmdale Health Academy, a school of approximately 460 students, 70 seniors participated in the 2011-12 Capstone Medical Assistant internship course. The criteria for selection into the course includes passing all competencies, completing a preceptor class with a grade of C or above, maintaining an 80% attendance rate, and having no disciplinary actions. Students interested in the internship course apply and are matched with employers based on the students' area of medical interest.

Program Administration. Employers are recruited into the program through personal contact, former students, and word-of-mouth suggestions. The program has existed for 22 years and is visible in the community—as a result, many employers are familiar with it. The parameters of the internship course are outlined in the Community Classroom Business/Industry Training Agreement. This contract indicates what is expected of the site and the student. The contract is the responsibility of the training site and goals are set once the student is on the job. The instructor and clinical coordinator visit each site to conduct evaluations of the internship experience (not the individual student's experience) to see if it is beneficial.

The clinical coordinator works with students during their junior year clinical rotations for the preceptor class, and therefore knows the students' personalities, interests and skills. Drawing on that information she attempts to match students with employers and meets with students before placing them. Industry representatives also come to the school to interview students if possible.

Student Learning and Measurement. Students complete an individual training plan (ITP) that outlines the goals for the internship. The form is general, but is personalized in collaboration with the employer who indicates the necessary skill requirements for employment. Students are assigned 120 hours/year at site, and can work mornings or afternoons during school day three

days per week. These are unpaid internships, but students earn 10 elective credits per semester for two days (4 hours total) in class. In the course there are competencies students have to master to complete the California medical assistant certificate. Once per semester, each student must do a demonstration speech where they teach their classmates a skill/competency. For example, a student at a surgery site demonstrated to her peers the process of sterilizing and wrapping instruments.

For every six hours that students work at a site, Palmdale conducts at least one site visit. The office manager or preceptor at the site will evaluate the student based on the requirements for the job, and on characteristics such as attitude, adaptability and dependability. Goals are reassessed each quarter with the clinical instructor based on areas that need improvement, and also to prevent students from going outside the scope of practice.

Palmdale has faced a few barriers to the internship course, including employer staff turnover and competition for internships with other high schools. Another challenge concerns changes in industry standards and HPPA. Keeping up with students' health requirements costs time and money (e.g., students under 18 are required to take a drug test, take a two-step TB screening that takes at least a month).

When asked how well the students' job tasks are linked to what they do in class, the clinical coordinator replied that they are "closely linked." Approximately 80% of what students learn in the medical assistant curriculum will be used on work sites. Palmdale relies on the site to provide any additional specialized training (e.g., optometry, veterinary).

The school and district work together to facilitate the internships—such as matching class times to prevent conflicts with the internships.

LIFE Academy of Health and Bioscience

Program Description. A small public school in Oakland, California, Life Academy was established in 2001 to support students interested in the fields of medicine, biotechnology, mental health, and other health-related career paths. The 250 students make up a diverse population; 91% of which qualifies for free lunch. All students participate in an internship, designed to prepare them for their health careers.

The majority of internships begin in eleventh grade. Approximately 20 students take part in a 2.5-year internship that begins in tenth grade and have to miss two classes per week in order to complete it. The schedules for juniors and seniors are adapted to allow time for the internships. The internships occur partially during the school day and partially after school. Students take physiology or biology classes to support their employment experiences. The internships are unpaid but students receive credit. However, students may be hired during the summer for pay. The internship selection process begins with an Internship Options Fair each fall, when students talk with employer representatives and pick their top three choices for internships. The coordinators then make the matches.

Program Administration. Life Academy works with employers who have programs that cater to

high school students. Some employers ask for a certain number of students each year, but about half of the students work with employers that do not have an established internship program. Building strong relationships with employers is important. There is an orientation breakfast with all employer supervisors each year. In the past, the full time coordinator would recruit and train new employer supervisors, but now the coordinators visit work sites once per semester. Fortunately, Life Academy maintains a number of internship partnerships—most sites have been retained and are familiar with the program. The school used to have a full-time coordinator that support the partnerships and help make internship placements; however, now two teachers share the position due to budget cutbacks.

With 25 internship sites, Life Academy determined it was impossible to have a standard training plan. Life Academy focuses on internship “habits,” which include communication skills and other job-related skills (21st Century skills). The internships are designed to help these students feel confident and self-sufficient after they leave the “protection” of high school. Life Academy aims to impart social capital to students. Students are required to keep a blog of their experience, and design a senior research project which can be investigated on the job.

Student Learning and Measurement. The employer supervisor does a mid-year assessment and a final assessment. Students are graded on the “habits”—and their content skills are assessed in classes. There is a reflection process that students conduct with their advisories. Through these mixed-grade advisories, younger students have the benefit of hearing about internship experiences.

Berks Career Technology Center

Program Description. The Berks Career Technology Center, which operates two campuses in Berks County, Pennsylvania, offers career and technical training to students in 39 program areas. All training is based on industry standards that include internships and enterprise. Students have the opportunity to take part in an elective co-op—a year-long training during their senior year.

If students are interested in the co-op, they find a job and work together with school staff to create a training plan (a Training Agreement). School staff members meet monthly with the employers and review the evaluation and training program. Most co-ops are paid internships. Approximately 53-60 students participate each year, and the majority has two years of prior training in their program area. The school has outlined “Essential Elements for Student Learning” which include that students: (1) must recognize the importance of showing up to work; (2) must have a strong work ethic; (3) must recognize that entry-level work must be done; 4) must obtain a strong foundation in the field.

Program Administration. There is an Advisory Committee that meets twice a year. This group includes industry partners, such as East Penn Manufacturing, Tri-County Toyota, and Pensky Racing Shop. The school recognizes that the expectations of employers must be realistic and that the employer’s role is not to supervise students but to mentor them. There is no formal training for the employers but many have been doing this for a while. Occasionally, the WBL coordinator arranges in-house training for employers. The WBL coordinator is also responsible for organizing every phase of the co-op, including working with the instructor/ trade representatives,

networking with business and industries, and facilitating the process with students.

Student Learning and Measurement. There are no entrance exams or skills assessments prior to selection for the co-op. Students need only to have a recommendation from the instructor and to have a driver's license. However, there are a number of students who may not be able to be matched. The WBL coordinator assesses all of the interns based on observations of students' acquisition of workforce skills, such as strong work ethic, collaboration, and communication.

Dozier-Libbey Medical High School

Program Description. Dozier-Libbey Medical High School, a career pathways school in California founded in 2008, serves approximately 650 students in grades 9-12. Work-based learning and work-ready skills have been embedded in the Health Science curriculum and permeate all aspects of the school. The administration researched many work-based learning models and determined that it was critical to have teachers, rather than outside staff, employ work-based learning. In a district where 23% of students attend four-year colleges, Dozier-Libbey sees half of their graduates attend four-year schools.

Work-based learning opportunities are offered in all four years at the high school, however internships are offered only to seniors. This year the school had its first class of seniors—there were eight interns this year. Next year, they hope to have many more. Obtaining approval of paperwork from the district was time consuming. The Workforce Education Coordinator noted that work-based learning activities for health care have many more restrictions than other professions due to federal and state laws.

Program Administration. To recruit employers, the Workforce Education Coordinator reaches out to the community and through the advisory committee. For new sites, she talks with individual departments at the health facilities about expectations. Employers and the school sign an agreement for the internships. Requirements for the students include being HPPA trained each year in school, having current immunizations (TB negative in last 12 months), having a good attendance record, maintaining a GPA of 3.0 or higher, and having no behavioral problem reports. These requirements are dictated by the advisory committee, which meets at least quarterly. Students and parents sign a form. Students are placed in internships based on their interests once all of the requirements are met.

Student Learning and Measurement. Internships are offered in hospitals, clinics, and other health care facilities (e.g., a mobile health care unit). They are eight weeks long for three hours per week and are unpaid. Interns must keep a journal or a log documenting what they learned, write reflections on their work, and submit a report at the end. Students do not receive course credit but those who successfully complete the internship receive a certificate at graduation. The main goals of the internships are for students to experience what it is like to work in a health care setting, to enhance their resumes, and to offer networking opportunities. Teachers link the work-based learning activities to the curriculum. For example, the hospital field trips are linked with medical terminology.

Our Piece of the Pie - Journalism and Media Academy

Program Description. The Journalism and Media Academy Public School, located in Hartford, Connecticut, serves a primarily low-income population. The worked-based learning experience is run by a non-profit called Our Piece of the Pie. Forty students in the tenth and eleventh grades take part in the internship program, which is concentrated on journalism and media. The program is funded through Capital Workforce Partners, and local, state, and federal funds.

Internships begin with three months of classroom work followed by six to eight weeks at the worksite. Worksites include TV stations and newspapers, where students take part in tasks such as writing, videotaping, and editing. The work week is fifteen hours. Participating students have a work based learning plan, based on the funding stream needs and requirements. Students, employers, and representatives at Our Piece of the Pie have input into the plan.

Program Administration. Employers who participate in the program must participate in a youth development principles training. Afterward, they are matched with students. Matching takes place in several ways. Each student has an individual employment plan which consists of a portfolio including a cover letter, resume, and recommendation letters. Our Piece of the Pie hosts a job fair where students and potential employers may meet. Some placement is based upon these connections. Students must demonstrate proficiency before they start an internship.

Student Learning and Measurement. Students meet weekly or bi-weekly with a point person at the employer and a representative at Our Piece of the Pie to discuss progress, successes, issues, and concerns. At this time, employers give the students an evaluation of their work, using a rating scale of 1-5.

Students complete a final project related to their internship. An example of a final project that some students completed was the creation of a public service announcement (PSA). Students receive high school credit for the class and a half-credit for the internship experience. They are also paid for their time at the worksite.

Bucks County Technical High School (BCTHS)

Program Description. BCTHS, located in lower Bucks County, Pennsylvania outside of Philadelphia, serves a primarily blue collar population. Students in sending districts must apply to go to BCTHS; last year there were 750 applications and only 400 spots. Each district has an allotment of spaces based on size, and a lottery is held to determine the order of application review. Following an exploration period, ninth graders choose one of 32 “shops” (technical areas) to in which to concentrate; they also take all of their academic courses at the school.

Juniors and seniors (at least age 16) are eligible for internships (short term, unpaid, covered under school’s insurance) and co-op (longer term, paid, covered under employer’s insurance). This year there were 70 students on co-op and 35 participated in internships. In order to participate in WBL, juniors have to have completed certain course requirements and have good grades and attendance. The tech instructor, parent, disciplinarian, nurse, supervisor of the shop, and co-principal have to sign off on the application to participate in work experiences. Students

provide their own transportation (which is a challenge in a lower income district). Co-op students are in class for 6 days and then on the job for 6 days (because the state mandates that students not work more than 6 consecutive days), which makes for a complicated schedule that employers must be willing to accommodate. Co-op students make at least minimum wage \$7.25/hour; the average is \$9.10/hour.

Program Administration. BCTHS follows the Pennsylvania child labor laws and the state's guidelines for co-operative education, including employing a full-time certified work-based learning (WBL) coordinator. If a student is interested in working, the WBL coordinator pulls from a database he maintains with employers seeking students; if there is no job available, he will call around to find a placement, or the student will find his/her own job. Businesses that are part of the occupational advisory groups (OACs) for the technical shops hire a lot of students. For new employers interested in hiring students, the WBL coordinator checks the site for safety, workmen's comp, and proof of insurance, and he reviews the pay and schedule with them. He makes sure he understands the skill set that the employer is looking for and maintains frequent communication with them. He works with the tech instructor to understand what skills the students have already mastered, not only to make a match with employer needs but also to develop the student's training plan.

Student Learning and Measurement. For each technical program area, the state of Pennsylvania has defined a task list, which the OAC uses as the basis of developing the curriculum for the BCTHS program. Students can master the skills on the task list in the classroom or on the job (employers can sign off on tasks the student learns with them). The employer, the students, and a parent or guardian sign a training plan, which lists the tasks and how much time student will be spending on each. Some employers are responsible for teaching skills not learned in class. Teachers can go visit the employers during in-service days to check on students, otherwise the WBL coordinator goes. Employers must complete quarterly evaluations of the students. Pennsylvania uses an outside vendor, NOCTI (<http://www.nocti.org/index.cfm>) to develop skills tests for each technical program area, which students must pass to earn credit for the course and a NOCTI certification. If a student is out on co-op but the teacher feels he/she has not yet mastered skills to be tested on NOCTI, the WBL coordinator pulls the student off the job to study prior to the test (most employers understand of this).

Digital Safari Academy

Program Description. The Digital Safari Academy (DSA) at Mt. Diablo High School in Concord, CA, established in 2001, is a public school in an academically challenged area that serves students from both a suburban community and a historically depressed community. Ninety percent of students are at-risk (economically, English as a second language). There is a multi-media career academy within the high school that serves a 60-student cohort from Grades 10-12. Over their three years in the Academy, students work on a series of academic and multimedia projects completed using industry standard multimedia tools.

During the spring of their junior year, DSA students get ready for internships by getting experience with project management, interaction with clients. The project is called Digital Safari design – 60 kids become a digital marketing/advertising agency. As a company, they take on

clients who are managed by an internal production team of 5 students (graphics, production for summer camp for example). They work in class on their project supported and supervised by their instructors. They have client meetings on a weekly basis/production meeting, they produce a set of deliverables – print, video, web, and photos. This provides job readiness – teamwork, communication, understanding of basic business. In the summer between junior and senior year, there is a pilot internship program (6 weeks, unpaid) in multi-media at non-profit company.

Program Administration. During their senior year, DSA students participate in Greenbiz, which is a project-based learning program that uses course material from English, economics, multi-media courses. The project counts for 60% of students' grade in all 3 classes. Teachers work together coordinate curriculum which is aligned to state standards. Fall semester of senior year, students are tasked with forming a high tech company – inventing a clean tech product. They have to create a corporate identity, conduct an opportunity assessment, develop a business plan, and make a video of product (technology doesn't have to be real). Students apply to be CEO, then the CEO works with instructors to select other team members, craft product ideas, pass a family and friends financing, present an idea for seed money (fake), \$250K virtual venture capital or they are sent back to marketing and redesign again. Students did marketing research at a farmers market and interacted with the public to get feedback about their product—pricing, viability—to create an assessment. Students must do 5 year projections – demonstrate sales, revenues at \$50 – 100 million/year level. This shows students the “Silicon Valley ways of work” – they are innovators, CEO's, marketing directors, CFO's. They must be able to give elevator speeches in a professional manner. There is a core group of business representatives (CEOs of high tech companies, retirees) who serve as mentors.

The DSA has been selected as one of two academies in the nation to participate in the Career Academies Research Project - a pilot program funded by the U.S. Department of Education (DOE) to develop models for increasing student exposure to careers and career paths through enhanced interaction with businesses and employers.

Student Learning and Measurement. In January, they rent a ball room and have a tech fair – they set up their trade show style booths – invite public, friends/family, businesses – each guest gets \$50,000 virtual dollars to invest in the business of their choice. Students must do formal PowerPoint presentations that are graded by business mentors, with the amount of money raised by people at the fair as a portion of the grade.

Through the completion of these projects, students work towards mastery of skills in graphic design, desktop publishing, animation, interactive authoring, photography, sound and video production, 3D design and presentation software. Additionally, the nature of the project-based-learning environment gives students a variety of experiences in planning, management of people and resources, working with clients and meeting deadlines while they learn to be confident, self-sufficient, and creative problem solvers.

Apprenticeship (3)

North Central Technical College

Program Description. North Central Technical College (NCTC) leads the largest apprenticeship partnership in Wisconsin. This well established program is grant funded and provides approximately 230 apprenticeships offered through NCTC for 26 high schools in 10 counties. The Youth Apprenticeship (YA) program serves eligible high school juniors and seniors from participating North Central Wisconsin School-to-Career Partnership high schools in a one or two year program that combines academic and technical classroom instruction with a paid work experience. Students work a minimum of 450 hours (including summers) at their YA worksite each year of their program while taking related high school or college classes to enhance their worksite experience.

Program Administration. Businesses return each year to seek apprentices and to interview applicants through NCTC. Interviews are held in the spring for positions in health (nursing homes), transportation (dealers, repair shops), finance (bank tellers), agriculture (family farm or agribusiness), manufacturing, engineering, hospitality, and the Wausau City Department of Public Works. There are advisory committee meetings each year to talk about the changes from the state office in curriculum, successes/challenges; NCTC employer mentor training; and a “pipeline lunch” designed to help businesses learn about YA and how it benefits them in recruiting, training, and creating an employee pipeline. Although a challenge has been to get non-participating businesses to see the benefit of the program, the approach of the Partnership is to reach out to those who already have (non-YA) high school students working there and underscore that if they were part of YA program they would be more committed to the job, have an employment contract outlining responsibilities, have parent and school support, be able to offer students credit for the experience, and offer experience on which students might build career in that industry.

Students meet with the business, CTE teacher, and YA coordinator who explains the program and shares the competencies checklist which is posted on the college’s website (See <http://www.ntc.edu/high-school-educators/youth-apprenticeship>). The competencies checklist is the basis for student evaluation although each school has a slightly different process. Worksite feedback is included in student grades which reflect soft skills, based on the competencies stated for the YA program. During the YA, students must take related coursework. An education training agreement is signed by the student, parent, YA coordinator, principal, and employer. Meetings are held with parents and employers on an individual basis and the high school YA coordinator conducts visits with the apprentices several times per year. Benefits to the students beyond the experience include knowledge of the list of competencies on which they will be graded, and receipt of a YA certificate of occupational proficiency from the state that can put on their resume and is recognized by technical colleges.

The grant pays each school district \$190/student which pays for various activities (e.g., awards, kickoff lunch) that must meet state guidelines. The grant covers salaries for three staff. Success for this program (at least 60% of students participating in a 2 year apprenticeship must be hired; last year they had 85% of the students hired) can be attributed to the high dedication of

the teachers, the continuity of staff , the commitment from the school districts, and participating businesses' belief in the benefit of program. The program is strategically located at the college providing a connection to both education and business.

Student Learning and Measurement. Students are recruited through the high schools where the counselors work individually with students to develop a resume and employment portfolio (cover letter, application) and to identify potential employment opportunities. Students' attendance, grade point average, and recommendations are considered. This is the start of significant program documentation by students that includes a student log, participation in their evaluation, and feedback and communication with the program.

Winder-Barrow High School

Program Description. The Georgia Youth Apprenticeship (YA) offers students school-based and work-based learning opportunities that are related to the student's career interest area. The program is designed to allow students to earn wages while learning from skilled professionals, increase career options and future employability, strengthen academic skills, earn post-secondary credit while in high school, and experience potential careers in the workplace. Apprenticeship opportunities are focused on career fields that are “high-skill, high-wage, and high-demand” and must meet at least two of these criteria. The work based learning (WBL) program in this county includes paid and un-paid internships with about one third of the apprenticeships paid. The local programs must adhere to all Department of Labor laws and students must have a work permit if they are 17 years of age or under. The program at Winder-Barrow High School serves between 60-90 students each year.

In order to be eligible, students must be 16, participate in an interview process, complete an application, have teacher recommendations and good attendance, be on a track to graduation, not have any discipline issues, and must maintain a B average (the academic requirement is flexible). Students whose average drops to 70 (C) are placed on probation within the program. Recommendations, attendance, and discipline are weighed heavily. During the interview students answer questions about career interests to determine if the student is at a point with the interest, skill level, and background to seek a position with an employer.

Once accepted into the program, students meet with the program coordinator and participate in a seminar on how to write a resume and sharpen their interview skills. Students may start the program in the summer or the following fall. An attempt is made to place students in appropriate apprenticeships that meet their interests although it is a challenge as students interests may range from archeology to radiology. There is a good deal of variety of student interests, skill set, obstacles, and attributes. The coordinator must take all of this into account with the employer or job site. For example, one coordinator found an internship in archeology with a professor at the University of Georgia for a student with this interest.

Program Administration. The Georgia model for YA has one full time WBL coordinator per high school. Coordinators or instructors maintain close communication with the students and visit students' job sites at least twice per semester. Most follow-up is conducted by coordinators. Instructors guide students to WBL but then are only involved on an as-needed basis. Students

receive WBL course credit and a grade for participation. Program coordinators develop an individual plan with a student that becomes the student's training plan. The Training Agreement is signed by the student, a parent/guardian, the employer, and the Work-Based Learning coordinator so that all parties are aware of each person's responsibilities. This document must be on file at the school for students to participate. The employer and the student participate in the creation of the training plan so that the tasks the students will be involved in and responsible for while on the work site, are clear and agreed upon.

The Georgia Youth Apprentice program has several tools for partners including an extensive Mentor Handbook for mentors and employers that includes mentoring strategies, program criteria, and traits of an effective mentor. The program maintains an ongoing relationship with employers through a variety of ways (e.g., through chamber of commerce, personal contacts, and dissemination of the Mentor training handbook for new potential employers). An important resource for the Georgia Youth Apprenticeship program is the CTAE Resource Network,²³ which is maintained by the statewide organization supporting Career, Technical, and Agricultural Education initiatives in Georgia's public school systems. The Network is a non-profit consortium that provides effective, economical services and support to CTAE educators in the areas of professional learning, instructional resources (supporting career pathways), and technical skill assessment. The CTAE Resource Network is committed to the development and establishment of a quality, equitable, and cost effective electronic communications system.

Student Learning and Measurement. Students' learning and performance are assessed using the individual plan that they developed with the coordinator at the beginning of the program. Students' grades for the WBL experience are largely based on the employer's assessment of their work. The employer's assessment is based on this plan and is part of the students' grade for this experience. The employer assessment/evaluation is on the state website (CNET) and all of the student's information—including the training plan—is entered into it. Students are also assessed by the program coordinator based on attendance and other measures of professionalism.

School-Based Enterprise (3)

Blacksburg High School

Program Description. Blacksburg High School is located in Blacksburg, Virginia. This school-based enterprise program is a store that is run as a business through an advanced sports marketing course. The course is actually a two-course sequence, with the first part being fundamentals (taken sophomore or junior year) and the second part applying into practice (junior or senior year). Courses meet for 45 minutes each day.

The curriculum for the program is divided into areas. Students run the program as a live sports business operative in the high school. Some of the tasks include inventory, event management, sponsor recruitment and management, and marketing.

Student Administration. In the first course, students complete learning modules for the different program areas. In the second course, students interview for different positions in departments,

²³ See <https://www.ctaern.org/default.aspx>.

including management positions. They then put what they have learned in the first course into practice.

The courses meet once per day for 45 minutes. In addition to the courses, students attend DECA meetings once per month. Students are not monetarily compensated for their work but earn high school course credit and one college credit upon successful completion of the program.

Student Learning and Measurement. Students are evaluated in a variety of ways – through self-assessments, peer evaluation, manager assessments, and grading by the course instructor. The grades are based on work performance, not tests. Students also have the opportunity to compete in the national DECA conference outside of the classroom.

Students do not earn monetary compensation for their work, but earn class credit. They also have the opportunity to earn one college credit for completing the two-course sequence. Students must be sixteen years old in order to earn the dual credit.

Apex High School

Program Description. Apex High School is located in Apex, North Carolina, a suburb of Raleigh, and serves a relatively affluent population. The school-based enterprise, Cougar Café, is a part of the culinary arts curriculum. The program is funded by the county CTE and by income from the Café. Students in the program decide how money is spent. The program has alliances with outside businesses, including chefs in the area.

Participating students are enrolled in Culinary Arts II, a year-long, 2 credit course. Introduction to Culinary Arts and Culinary Arts I are taken before enrollment in Culinary Arts II. Sixteen students are enrolled in Culinary Arts II and participate in the school-based enterprise. The Café is led by a student manager. This position rotates each month and is chosen by a student vote.

Program Administration. The program consists of several different departments, including marketing, human resources, health and nutrition, and finance. Students rotate departments every other month. Tasks include creating menus with nutrition information, maintaining the website, and taking and filling orders. The Café is open to school staff for lunch once or twice a month and also provides catering services. Students are not allowed to serve other students, and are not paid or allowed to handle money.

Student Learning and Measurement. Students add their work to a large portfolio binder, which is used for assessment. The student manager works with the Culinary Arts II teacher to grade individuals and teams for their work. Students are assessed at the end of each day in which the Café is open.

A benefit to this program is that even though students are not paid and are not allowed to handle the money, they still get course credit as well as real life, hands on experience in culinary arts. Over half of the students involved are interested in going into the culinary arts field as a career.

Alexis I. DuPont High School

Program Description. DuPont High School is located in Greenville, a suburb of Wilmington in Delaware. It is part of the Red Clay Consolidated School District and enrolls about 1,400 students. The school-based enterprise is a school store. The school store is 3.5 years old. Startup costs were expensive and teachers and the principal contributed. The store also received donations from a local university and local businesses.

The store is run by seniors in their fourth year of business class. Different job positions are chosen by a panel of teachers, the assistant principal, and managers. Incoming managers are chosen the year before, as juniors, and are trained by the current managers. The store is based after real retail businesses. In the past, employers have been involved with student training and assessment. Due to the economy, this has stopped, but students still go to a local employer (Toys R Us) to watch training videos.

Program Administration. Students running the store are treated as small business owners or store managers. Tasks include placing orders for and picking up items from vendors, security, stocking, and cashiering. The store sells spirit gear, school supplies, drinks, some foods, and gift cards.

The school-based enterprise is affiliated with the school's business department. In the intro course, students learn principles of administration, marketing, accounting, management, and finance. Advanced students choose one of three pathways: Marketing management, accounting principles, and administration. Teachers match course content to what students are doing in the store.

Although the store is run by the fourth year business students, other groups are allowed to "take over" in order to raise money. The business students oversee the sales, but the honor society keeps the money. Students running the store also collaborate with other departments. For example, foods students have to bake and handle cookies because they have ServSafe certification.

Student Learning and Measurement. Student assessments are based on corporate reviews and include components such as efficiency and on-time. Students are not compensated monetarily for their work, but can get course credit and volunteer hours. The program is also affiliated with DECA, and student managers write submissions for DECA certification.

Additional Information on a State and District

New York State

According to the WBL coordinator of New York BOCES (who is also the current president of the Work Experience Coordinators Association and helped write the work experience manual for the whole state), New York offers a variety of paid and un-paid apprenticeship programs. The General Education Work Experience Program (GEWEP) is open to students 16-21 years of age. A similar program, the Work Experience and Career Exploration Program (WECEP) is open to students 14-15 years of age and is a federally sponsored program.

The fundamental differences between GEWEP and WECEP are the age of the students involved, and the program focus. GEWEP is a program option for any student age 16 and older, whereas WECEP is only for 14 and 15 year old students identified as "at-risk" youth. The GEWEP and WECEP programs provide the types of applied educational experiences, related classroom instruction, and motivation (both intrinsic and extrinsic) that often meet the needs of all students, including those with disabilities. GEWEP and WECEP provide students with disabilities opportunities that fit the definition and spirit of "least restrictive environment," and are a form of mainstreaming that includes a community based component. These programs are an excellent means by which students with disabilities on the secondary level can achieve a concrete measure of success.

Career awareness and exploration focuses on activities that help students develop a general awareness of themselves, the world of work, and its connection to education. These activities provide an opportunity for individual examination of career options that match a student's interests and aptitudes. They also provide an opportunity for students to observe and interact with individuals in the workplace to learn more about the demands of a career they are interested in. Activities range from career fairs and guest speakers, to field trips, job shadowing, and career research papers to service learning and internships.

Career development and application contains two critical components, school site classroom instruction and work site career applications. The school site activities integrate academic and occupational skills learned in the classroom with skills learned to prepare students for transitioning from school to career. Emphasis is on academic and technical skill building, understanding the concept of transferable skills, learning to work as a team member, establishing relationships, ethics and honesty, and relating personal interests and abilities to real world career opportunities.

The work site career applications are competency-based educational experiences that occur at the workplace but are tied to the classroom by curriculum that coordinates and integrates school site instruction with work site experiences. These structured work experiences provide students with an opportunity to apply the skills learned in the classroom in actual work environments and prepare students to transition to a two-year or four-year college, registered apprenticeship program or directly into a career. Activities may include community-based work programs, entrepreneurship projects, career pathway programs, CTSO projects/competition, CO-OP paid and unpaid, mentorship programs, work study (part time), and health occupations clinical

experiences

An additional program, the Career Exploration Internship Program (CEIP), assists students with understanding the linkages among school, work, and postsecondary education. CEIP allows students to explore and learn about a variety of career options, through a non-paid worksite experience in a career area of interest to the student. This program can be extremely beneficial to students by helping them clarify career interests, and decide upon a program major in postsecondary education.

CEIP is a partnership between educational institutions and business and industry to provide students, as early as age 14, the opportunity to learn firsthand about the skills and educational requirements necessary for career areas in which they have an interest. This allows students to play an integral part in designing their own high school program and in choosing courses that will help them to reach their college and career objectives. Through this partnership, educators and employers engage in providing students with meaningful learning experiences and share the critical task of helping students develop self-direction and decision-making skills.

All Career and Technical Education Cooperative Work Experience Programs have the same common objective of providing opportunities for students to enhance occupational skills through a worksite experience. These programs help students develop and demonstrate job skills at a supervised worksite supported by training plans developed cooperatively by the employers, the certified WBL coordinator, the instructor and the students. There is ongoing communication between the job mentors and the WBL coordinator concerning the students' performance and needs.

A component district or a Board of Cooperative Educational Services (BOCES) may organize its co-op program around one specific career and technical education content area or combine several career and technical education cluster areas into one "diversified" program. Each co-op program needs to be coordinated by a certified WBL coordinator who holds the 8982 - Coordinator of Work-Based Learning Programs for Career Development extension. The WBL coordinator works collaboratively with the corresponding CTE teacher, to deliver the curricular components of the co-op program.

There are 37 BOCES in NY State. The Northeastern Regional Information Center supports 25 programs that serve 3.5 counties. Regional vocational high schools provide credit only for work experience that has related instruction. Work-based learning is embedded into all CTE instruction. Courses emphasize soft skills, employability skills, and safety skills. Programs can only be approved if they contain work experience and students are limited to participation in approved programs. The majority of work experiences are unpaid.

Students attend classes Mondays and Fridays and have work experiences from Tuesday through Thursday. There are several types of experiences available to students that offer real-world opportunities. For example, culinary students rotate through local Marriott for 20 hours per year.

One of the biggest issues associated with the work experience is transportation—students need to have their own transportation as the school district will not accommodate scheduling an extra

stop on the school bus. Other issues include finding viable opportunities in the trades. Employers must be willing to have a 16 or 17 year old on the job site. Student safety is a concern and insurance companies are reluctant to insure student workers. The BOCES provides a certificate of insurance for liability. Unpaid students must be covered by Workman's Compensation in NY State and many small businesses don't ordinarily have this benefit.

New York State has a work experience manual used by all programs in the state and follows NYS education regulations, state and federal labor laws, workmen's compensation regulations and, and hazardous locations regulations. The different programs have a variety of regulations and requirements for credit bearing programs.

The NYS apprenticeship programs must include an MOU which is approved by the Board of Education. The program coordinator creates a learning agreement/training plan, visits sites and meets with mentors. The learning objectives for each student depend on the work placement. Every student creates an employability profile that may include additional learning objectives (for example, TA at culinary site may say certain student needs to work on knife skills). The WBL coordinator focuses on employability skills; technical skills are secondary but valued. For credit-bearing programs, instructors lay out specific skills as student goals. Work sites are flexible and fluid, and focus on the appropriate use of tools and a range of work-related skills rather than specific skills.

Student motivation in the program is a challenge. Students who get paid experiences are those that tend to excel, not just in school but in work ethic.

Oswego, NY BOCES

The Oswego BOCES supports 22 Career and Technical Education (CTE) programs within nine participating schools. Students come to a shared time center; programs are in either the morning or the afternoon for two and half hours. Every site produces learning objectives and training plans for each student. All students participate in a WBL program. For example, students 14 and older take a work site tour. Other experiences include job shadowing, internships, a paid capstone program for students 16 and older, unpaid supervised clinical experiences, New Vision exploration programs in government, or health programs for gifted students. The experiences may include 3 days at work and 2 days in school or in traditional areas like auto technology, students work for 4 days per week for 3 weeks in May. The partnership with CISCO supports students working and being paid all year 4 days per week. The program is considering the way Massachusetts schedules these types of programs (1 week academic instruction and 1 week CTE experiences). The program is a tuition-based program (\$8,500/student/year) and although schools pay, BOCES provides about 85% of the cost. The BOCES gets \$190K in Perkins but the program costs \$34 million.

The program gives students authentic work experiences. Cosmetology students work in a salon all summer, including nights and weekend. Ambulance crews ride with state troopers. Students can earn hours towards CNA licensing by through clinical nursing experience nursing under direction of a registered nurse. Additional experiences are available in the following broad areas: Auto, Computers, Construction, Culinary, Early Childhood, Floral/Greenhouse, Health, Nursing,

Industrial Maintenance, and Welding.

Program Administration. This program focuses on communication with all of the partners. The objective is to build good relationships and contacts, and to communicate with employers. The program includes content teachers (math, science, social studies, and English) on site so that they can determine the academics that fit best in the CTE program (e.g., math and machining, math/science and welding, English and public justice, early childhood and English). There is an Advisory Committee for all CTE programs. Some programs are housed on community college campuses so students see the transition to higher education. The program recommends that academics and CTE be kept in one place for better understanding and communication.

Student Learning and Measurement. Students applying to these programs make an application, provide references, and secure a teacher recommendation. Each student participates in creating a training plan, agrees to find transportation, and adheres to a strict attendance requirement. Transportation is an issue as this is a rural area and students may need to be bussed or driven by parents. As part of the evaluation for the program students must demonstrate competency in the career area.

Appendix C

Case Studies from Site Visits

Internship/Co-Operative (Co-Op): Big Picture Learning (BPL)

Big Picture Learning is a student-directed educational model that has at its core interest and career exploration. Starting with their students own passions, Big Picture Learning engages students and motivates them to acquire academic competencies of immediate relevance, building around them a strong social and academic support network of faculty, mentors, family, and peers. There are currently 60 BPL schools in 15 states and schools have opened in Australia, Canada and the Netherlands.²⁴ In the US, most of the participating schools are high schools (public or charter) and currently, the model has been adapted and expanded in middle schools. All BPL schools follow a similar model and guiding principles, however each BPL school applies the model and principles in a different way based on the community needs and the direction set forth by local leadership

Big Picture Learning is based on three principles: 1) Learning must be based on each student's interests and needs; 2) Curriculum must be relevant to the student and allow them to do real work in the real world. 3) Students' growth and abilities must be measured by the quality of their work and how it changes them.²⁵

Real world exposure to work related to each student's unique interests includes informational interviewing, job shadowing, community projects, and internships.. Some Big Picture students take college courses while enrolled in high school Participation in BPL can be a pathway to certificates recognized by local industry (e.g., in welding, auto body) as well as state certificates (e.g., health professions). Students bring their experiences and projects back to the classroom where their teachers (called advisors) wrap academics around their projects in ways that are relevant to their current interests and aspirations and learning plans. Sharing their work experiences with other students in the school setting encourages reflection and problem solving and widens the exposure of other students to different work options.

Advisors, who replace teachers and counselors in the traditional school setting, guide students in grades 9-10 with curriculum that employs a scaffolding approach using learning and workplace standards. By grade 11, students assume more responsibility for their education and internships and are generally career-focused. Advisors support the student rather than direct the learning. Advisors seek to help students build 21st Century skills and social/emotional competencies. Advisors assess students in a variety of ways, for example, using workplace readiness assessment rubrics, conversations with employer-based mentors, and assessment of student presentations. Students earn class credit based on their experiences. Each BPL school approaches the grading system differently, with written assessments and oral feedback valued over a traditional letter or number grade.

²⁴ <http://www.bigpicture.org/wp-content/uploads/2011/10/Big-Picture-Brochure.pdf>

²⁵ <http://www.bigpicture.org/wp-content/uploads/2011/10/Big-Picture-Brochure.pdf>

The model relies heavily on employer-based mentors from a variety of work settings who volunteer to work with students, in internship settings, job shadowing, and other elements of career exploration. In addition to helping students build technical and employability skills that will help them succeed in the workplace, mentors are role models with whom the student feels connected.

Big Picture High School Site Visit

Approximately 11 miles south of Seattle, Highline Big Picture High School opened in the 2005-06 school year with a cohort of thirty-four ninth-grade students and two advisors. New ninth-grade cohorts were added each year. In 2012, there were 125 students in grades equivalent to 9-12. A middle school was added in 2012, beginning with a cohort of 34 seventh grade students. BPHS has adopted almost all aspects of the Big Picture Learning model.

The mission of Highline Big Picture High School is to use internships and rigorous, interest-based projects to immerse students in work they are passionate about in order to develop the skills, habits, and knowledge to succeed in higher education, overcome obstacles to their well-being, and contribute positively to their communities.²⁶

BPHS receives the same per pupil allocation as other public schools; however, the funds are used differently (see page 6). The school also receives additional federal funding because the school population has a high percentage of low-income and special education students.

High School-Based Staff and Mentors. Principals administer the BPHS and the middle school. Advisors, guide an assigned group of 17 students from ninth grade through graduation. Advisors' multiple roles include teaching, counseling, mentoring, advocating, and other roles. In addition to working with students in school, advisors travel to internship sites to work with students and meet with their mentors. The internship coordinator helps students write cover letters and resumes, works with mentors, and collects paperwork for CTE requirements. Additional staff who are not advisors include special education teachers, grant-funded positions to integrate STEM into the program, and a college and career specialist.

Mentors are employer-based volunteers who supervise and guide students in one or more of the following activities: visiting classrooms to describe their career paths or teach a lesson; providing a group with a tour of their work place; participating in informational interviews with students; having students shadow them for a day so students can gain a deeper understanding of the mentor's work; and guiding students through a project-based internship at their worksite. During interviews with FHI 360 researchers, mentors reported that they are not recruited in advance by the school, rather, internships may result from interactions initiated by the students. The internship begins with a meeting of the student, mentor and advisor during which the student's learning plan is reviewed in addition to various safety and other issues as related to the work site placement

The Program. The Highline BPL middle school focuses on career/interest development. Its academic year is divided into one-month units that each focus on different career/interest areas

²⁶ <http://www.bigpicture.org/2008/09/highline-bp-high-school/>

based on areas designated by the Washington Workforce Development Council (e.g., civics, engineering, social science, and technology). Math, science and humanities are integrated into each unit. Each unit is designed to build competencies and achieve BPL’s learning goals—social reasoning, empirical reasoning, quantitative reasoning, personal qualities, and communication (description attached). Units also are designed to address four to six essential questions and include a “choice-based authentic project.” Every Wednesday, students have a field experience, usually a trip to a work place where they meet employees, learn about what they do and how they came to be working there, and often participate in a project. For example, in a recent visit to an architecture firm, students participated in a project applying academic skills to an architecture project. Students also have “career days” where professionals meet individually with students. The middle school opened in 2011 with only 7th graders. It is anticipated that students in 8th grade will begin to develop mentor relationships by means of informational interviews and group shadow days.

At the high school level, the school year is divided into three “learning cycles” roughly equivalent to a trimester. On Mondays, Wednesdays and Fridays, students are on campus from 9:00 am to 3:30 pm. On these days, students participate in group and independent work based on their individual learning plan. Instruction time varies; there are no set class periods and bells. Students may work on their internship projects (described below), work on their required autobiographies, learn about and prepare for post high school opportunities, and develop academic skills. These activities tend to bring them into contact with different staff and students.

Tuesdays and Thursdays, from 9:00 am to 2:30 pm, students participate in internships. Beginning in Grade 9, during each cycle, all students participate in an unpaid internship of at least 10-week’s duration.²⁷ Students in higher levels participate in a maximum of four internships. Internships are projects designed by students, mentors and advisors that serve a real need at the work place and challenges the student to learn new skills. Examples of internships include assisting at veterinary hospitals; preparing 3-D renderings for architecture firms; developing websites for a website design company; assisting in database development for invoice auditing at Starbucks corporate headquarters; rebuilding carburetors at a motorcycle shop; working with low-income or at-risk populations in human services settings; and assisting researchers in biology and astronomy at the University of Washington.²⁸

The beginning of ninth grade is devoted to “unlearning school” and relationship-building with staff and other students in their group. During this time, students and their advisors design an individualized learning plan. Advisors utilize various strategies to connect personally with students to help them think about the things they are passionate about and how these passions might be connected to a career. There is usually more group learning in ninth grade and project activities than in higher grades, but there is no set curriculum and no number or letter assessment grades. Learning plans, often guided by a matrix tool, identify competencies and skills the students are working to master and assessment focuses on progress each student has made. As students move to higher grade levels, they become increasing self-directed, but still remain focused on five learning goals.

²⁷ Students may receive pay for summer jobs and employment after graduation.

²⁸ Big Picture High School (no date), *Frequently Asked Questions*, p.2.

In grades 11 and 12, students engage in post high school planning in addition to their other activities. Juniors and seniors are encouraged to take college classes through the Running Start Program which allows students to simultaneously earn high school and college credits, tuition-free, at community colleges, technical schools, and selected colleges and universities.²⁹ Some students take courses at the nearby Career and Technical Education Center. BPHS staff help students identify higher education options aligned with their interests. BPHS staff have also met with admission counselors at the majority of colleges in the state to help ensure they understand the unique mission and approach taken by BPL. Staff coordinate college visits and help students establish relationships with admissions staff. Graduation requirements include an autobiography, a senior thesis project, and a post high school plan. Over the course of their high school years, students also develop a portfolio of their best work.

According to school leadership, there is no special mentor training/preparation in advance of the internship other than the initial meeting where safety forms are discussed and signed and liability releases signed. Advisors or the internship coordinator meet with mentors on site at some point during the internship and they can be in contact by phone. One of the staff interviewed recommended more mentor meetings to increase the quality of the internships. All staff interviewed commented that this is an area in which they will strengthen now that they have a full time internship coordinator with a years experience with BPL.

Internship Recruitment and Mentor Training. Internships are central to the BPL approach. As explained in the school's *Frequently Asked Questions* document:

We believe some of the most powerful learning takes place in one on one relationships and when people are doing something that interests them. We also believe that when students work among adults and develop projects of real value in those workplaces, they see the relevance of their learning and aspire to higher quality work.

The FAQ document describes a number of steps to developing internships. Students begin by identifying their interests and, with the help of advisors, contacting adults who share these interests. Students request appointments for short informational interviews conducted at the worksite so they can talk to the people about what they do and their path to the job. Students are encouraged to conduct multiple interviews in order to learn about different work settings, discover new interests, and gain skills in presenting themselves professionally, arriving promptly, and getting to new places. Students write thank you notes after each informational interview. If students are interested in learning more about the jobs in places they have interviewed, they request a shadow day with the person they have interviewed—a half or full workday with that person to learn more about the work they do. Again, students are encouraged to shadow many different professionals.

If the shadow day is a success for the student and host, school staff follow up to explore a possible internship. Approximately one third of internships are generated by students through their own contacts, and by means of cold calls and e-mails. Another third of internships are generated by school staff through their own personal and professional networks. Returning mentors account for the final third of internships. According to BPL, people who would not

²⁹ <http://www.k12.wa.us/SecondaryEducation/CareerCollegeReadiness/RunningStart.aspx> (accessed 7/10/12)

consider themselves to be coaches for high school students, become engaged in the program. Mentors do not receive training in advance and there is limited contact between mentor and advisor unless there is a problem. In the future, advisors and the internship coordinator hope to increase the number of meetings in order to improve the quality of the internships.

After exploring different interests and jobs, students often change their ideas about what they want to pursue. Their experiences help them gain clarity on what they don't want to do as well what they do want to do. Also, gender and racial stereotypes influencing their initial selections often are overcome as students learn about a wider range of options.

Student Recruitment and Admission to BPHS. BPHS recruitment activities include presentations by student teams and staff to all of the middle schools in the district. BPHS students are heavily involved in the design and implementation of the admissions process. Prospective students complete a written application. A student-led team interviews all applicants who are scored on three criteria—how much they want to be here; how well they understand the design; and the kind of contribution they potentially are going to make to the school community. A team also interviews the family and all incoming students receive home visits.

A few transfer students are accepted each year but the admissions process differs and these students' participation may also be individualized. For example, a 20-year-old student with three credits and a family may participate in an Alternative Learning Environment involving personal contact with the school only once a week.

Evaluation of Student Progress. Student progress is measured in a variety of ways during the year. Advisors send progress reports to families periodically, inviting feedback. Twice a year, advisors complete narrative progress reports. At the end of each cycle, students present an "exhibition" to advisors, parents, mentors, and fellow students. The audience provides immediate oral feedback about the exhibition then summarized in writing by the advisor.

At the end of the year, students are required to demonstrate that they are ready to go to the next grade level. Those that don't pass may need to attend summer school, work on activities specified in a summer contract or repeat the grade level.

Mentors assess students using a quarterly evaluation form (attached) on which they describe intern strengths and areas for growth and rate interns on workplace professionalism, relationships, dependability, work habits, and quality of work.

Relationship with the School District and Institutions of Higher Education. BPHS has a positive and cooperative relationship with the school district as evidenced by the support of the deputy superintendent and the director of curriculum instruction for expansion of the BPL model to a district middle school. Those interviewed suggested that the district has been flexible in part because the school outperforms other schools in the district on test scores in reading and writing, retention rate, high school graduation, college acceptance, and student and parent surveys. BPHS and the district have negotiated a process for developing transcripts for transfer students that are similar to the ones used by the district. The school has also received a waiver of the requirement that students earn 21 credits for high school graduation.

Staffing plans at BPHS are different from other public schools that may have for example, registrars, librarians. BPHS has more teachers per pupil so adjustments in staffing plans were negotiated with the district. Because BPHS does not participate in district staff development, use textbooks or other shared resources, funding has been reallocated to hire more advisors. BPHS has a student to advisor ratio of 17:1, far less than the traditional student to teacher ratio in the district, though keeping in mind they forgo the other positions as referenced above

BPHS staff have met with admissions officers from institutions of higher education both on campus and at BPHS presentations to explain how the Big Picture program develops the attributes that lead to student success in college and the workplace, such as resourcefulness, and ability to overcome challenges. Transcripts sent out by BPHS are unlike transcripts sent by other schools because BPHS assesses students in each of the five goal areas. Colleges have requested that BPL schools create a method of comparing students applying from different BPL campuses.

Work-based learning at BPHS is integrated in all elements of learning and is not broken down by CTE or more traditional academic learning. However, CTE funding does support some elements of the work-based learning, thus setting standards and requirements for reports. For example, background checks for mentors are required but finger printing is not because mentors are not considered volunteers. CTE funds cover liability insurance for student at the worksite. Instructors/mentors are credentialed in specific CTE areas and the school gets 0.1 FTE based on intern hours. Staff reported that in order to comply with Perkins legislation (the source of CTE funds), there is extensive paperwork that does not align with the learning plan. Staff reported the additional reporting requirements are completed because the extra funding generated through CTE helps cover the expenses that advisors have driving to different worksites.

Challenges and Successes. BPHS reported that one challenge they face is gaining the recognition from other schools about the value of Big Picture Learning. Until that is accomplished, schools do not want to send students to BPHS. Similarly, buy-in from the community is essential for internships and not always forthcoming because BPL is a radical departure from traditional schooling models. Public relations and outreach may be important particularly when a school is starting up. Outreach has certainly been successful in regard to helping students gain access to higher education. Another challenge has been transportation for students going to job sites for interviews and internships.

With regard to success, staff report BPHS academic and social/emotional outcomes are impressive. Students assume a great deal of responsibility for school matters such as developing a process for interviewing applicants to the school. In addition, they take a great deal of responsibility for their own learning. Mentors have been very positive about the program with at least a third offering second internships to the same or different students. The school is enormously proud of its students' accomplishments. During the interviews staff described students who discovered accounting errors at Starbucks corporate headquarters saving the company \$30,000. Staff at BPL were equally proud of students and their learning process. One student whose initial interest was being a rapper, then became interested in being a producer and finally an entrepreneur. Another student who at first wanted to be a web designer found he did not like sitting at a computer all day. After interning at a dentist's office and then assisting with a

dental project for low-income children, he and another student developed a project to teach schoolchildren how to take care of their teeth. Staff described the different work based learning experiences assisted young people with making informed choices about post secondary and career options.

Co-Operative Education: Middle Bucks Institute of Technology

Program Description. The mission of Middle Bucks Institute of Technology (MBIT), a regional career development and technology center located in Bucks County, Pennsylvania, is “to develop in youth and adults, through a rigorous and integrated educational experience, the competencies required for higher education and work.”³⁰ MBIT, operating under Pennsylvania’s cooperative education guidelines, is funded by the school system.

MBIT draws students (general and special education), in grades 10-12, from seven high schools in four school districts. One of the interviewees estimated that 12% of the students in the feeder districts attend MBIT. The institute offers ten career clusters and 21 state-approved career and technical programs.³¹ MBIT serves adults in day programs if slots are available or in evening adult education programs.³² Also available to adults are on-line courses and custom industry training for employers.

High school students generally take academic courses in their home schools for half the day and they are transported by school bus to MBIT for a half day of courses that are considered electives. The institute expects that after graduation, students will go on to some form higher education. In fact, some students earn college credit in courses taken at MBIT thereby giving them a head start in their college careers.

During the school year, the majority of students participate in co-ops. Co-ops are opportunities for students to apply their classroom learning in the workplace where they are supervised by mentors and MBIT staff who visit the students in the field. An interviewee estimated there were approximately 40-80 students participating in co-ops at any one time. Students use co-ops as part of their Capstone projects. Teachers also coach co-op students on topics related to work such as business ethics and customer relations.

Co-op placements operate under federal and state child labor laws as well as laws governing co-ops. Interviewees reported that it is important to remain updated about constantly changing guidelines. Annual conferences help keep them informed of changes. MBIT also is approved by the International Organization for Standardization (ISO), and it applies ISO quality standards. MBIT staff also ensure that work sites are covered by workers’ compensation insurance and they are required to show their certificates to verify coverage prior to student involvement. In addition to co-ops, students can participate in summer internships that might be paid or unpaid. Internships vary in terms of hours (ranging from 15-40 hours) and pay, and they must adhere to child labor laws. Unlike co-ops, internships have no associated classroom learning because school is closed during the summer.

³⁰ http://www.mbit.org/cms/lib04/PA03000116/Centricity/Domain/65/Student_Handbook_and_Parent_Guide.pdf

³¹ www.centerforamerica.org

³² <http://www.mbit.org/domain/15>

Program Administration. MBIT staff include teachers and two work-based learning (WBL) coordinators, all paid through the regular education budget. WBL coordinators are the liaisons between the employers offering co-ops and internships; the teachers and the students. Coordinators consider communication about student progress and performance to be essential so that a team approach can be taken to address problems. WBL coordinators also oversee participation in Skills USA, serve on occupational advisory committees, and work with students on graduation projects. Recruiting business participation and developing workplace opportunities for students are important parts of their jobs. Relationship-building with employers was reported to be mutually beneficial. Coordinators do this by attending meetings of Chambers of Commerce, visit businesses and talking up the program whenever the opportunity presents itself. Coordinators even have been known to send holiday cards and bring pastries to businesses. Teachers interviewed were extremely appreciative of the contribution that coordinators make. They reported that a key job function was visiting the students at the job site to observe what students are doing and to ensure that they are working in their assigned area in their field, doing meaningful work.

According to the coordinators, finding placements for students is challenging due to the economic downturn and resulting layoffs by major employers such as Merck and other pharmaceuticals. In the past, employers called the program frequently with placement opportunities. Now coordinators receive very few calls so placements need to be developed in a very individualized way which involves communication with teachers when a job arises that requires specific skills and interests. Coordinators reported that they need to be creative in matching students with placements, for example by considering how a student's skills can be useful in an area that they may not have considered. Students also participate in finding placements through contacts and cold calls. This helps students develop their job-seeking skills.

Workers' compensation insurance is an issue of great importance in co-op placements. Coordinators ask employers for a copy of their certificate before placements can be contemplated. MBIT becomes the certificate holder in order to prevent a situation where insurance is dropped without their knowledge. If insurance is dropped, the student is removed.

Each week co-op students attend a 45-minute class focusing on employability skills such as getting and keeping a job, building resumes, and taxes. Students earn credit for co-ops and grades are a combination of work performance assessed by the mentor/employer and class work.

The program of study offered by MBIT is competency-based and builds on minimum state standards augmented by additional tasks and activities. Students leave the program with resumes, portfolios, and some earn professional certificates.

Employer Preparation. MBIT has been building a data base of employers over the years. It now contains an estimated 2300 names. Some employers have been working with students for many years. Some employers who have changed companies go on to create co-op placements at their new job. New employers are also recruited by word of mouth. Staff suggested that schools building their own data base of employers start with business groups such as the Occupational Advisory Committee (OAC) which makes recommendations about updating equipment and

curriculum. The biannual OAC meetings usually draw between 200-250 members. Other sources of employers are NOCTI or SkillsUSA judges.

If an employer has never worked with students, a meeting is arranged between the coordinator and employer. The purpose of the meeting is to ensure that the employer is willing to train students in meaningful work. Coordinators make an unscheduled visit to a new business to determine the facility is safe and an appropriate environment for students. Visits are made to all new employers including those that are recruited by students, for example, friends of the family. One-on-one training for new employer mentors who will be working with the students includes topics such as how to work with teens, the qualities of a good mentor, and expectations for the student and the employer. The coordinators also review the paperwork requirements and signatures necessary for the program; they also discuss the employers' input into student grading. One of the MBIT staff reported that a new employer recently brought senior managers to MBIT to meet with teachers and learn about the engineering program. The coordinators stressed that flexibility is important in building and maintaining relationships with the employers. Employers who have worked with MBIT students in the past are encouraged to stay in touch with the school during co-ops. The coordinators noted that it is beneficial to visit employers once or twice a year even if there are no students working there so they will remember to consider MBIT when a position opens. Some programs have more intensive mentor training with managers brought to MBIT for one or two days (e.g., Automotive Educational systems).

Student Preparation And Training Plan. Career testing, through the use of CareerScope, occurs for all students prior to beginning their co-op experience. The comprehensive reports generated from this assessment provide career recommendations that align with the student's interests and aptitudes and are shared with teachers and parents. Co-op placements are sought by the coordinators based on these results and then potential worksite mentors have the opportunity to interview the potential participant.

Every student is eligible to go on co-op once their teacher has determined they have reached an appropriate level of learning in their program (measured by technical savvy, grades, critical thinking and soft skills), maintaining at least a C average in their home school, and keeping good school attendance.

If students are not maintaining their attendance and participation in the classroom, they will be removed from the job site until their academics improve.

Each training plan is individualized and crafted with the involvement of the work based learning coordinator and the employer, therefore every learning plan looks different. The plan outlines tasks, time for each task, and identifies roles and responsibilities of the student, the school, and the employer for the duration of the placement. The employer and the WBL coordinator do the training plan together. The teacher and the student then review it together, agree to it as is or add or take away items, then sign off.

During the co-op assignment, the students complete a weekly journal signed by their employer which documents their activities and learning, time at the worksite; and includes a reflection section. It gives a synopsis of new duties and tasks learned, improvements made upon previous

work, or identifies areas needing improvement. The coordinator reviews the document to see what the students are working on, what new duties and tasks they're learning, determine if it aligns with the training plan, and identify if further discussions need to occur at the worksite and what areas teachers need to be apprised of. One student noted in their journal that he received a \$5,000 post secondary education scholarship from the worksite due to the great job the student was doing and the potential for growing in industry that he showed the mentor.

Measuring Student Progress. A quarterly report card for each individual student is completed by each employer. This provides honest feedback to a student. It captures an employer's evaluation on attendance, initiative, skills developed, areas needing attention or improvement, and general employability skills of the co-op participant. The results of this process are incorporated into the student's final class grade. When asked about this quarterly rating system, a convenience store mentor says "I think it's also good too because we partner with the school and its part of their grading system too where we have input with their grades so there's a vested interest".

As one automotive employer said, "Tech school gives students the basics; co-op is a great thing for students to see how the real process works and allows them trial and error". Another employer commented that they "need logical thinkers". Being given the opportunity to provide feedback about the students to them directly and to their school support personnel has been beneficial and "we would do it no other way, more companies should get involved".

As most co-op experiences, other than engineering cohort, occur 4 days a week for a minimum of 15 hours, student grades are weighted more heavily on their documented work experience than the one day per week they have in the classroom. This classroom day consists of employability skill and technical skills reinforcement. The class serves as a perfect venue for each participant to reflect on their weekly job experience and share with the teacher and classmates. Teachers encourage students to share all aspects of their week's experience on the job to include anything from interactions with colleagues on the job to technical aspects and learning of a skill or specific task that occurred that week.

The coordinator observes students on job at least once per month and meets with the mentor during the visit. The coordinator reviews each student's weekly log prior to the visits to be prepared for the visit and to use this tool to its capacity.

Assessment. Students create portfolios to capture their capstone project and learning throughout their co-op and classroom based experiences. These portfolios include resumes, reflection papers, and photos of themselves performing their technical skills.

The teachers and WBL coordinators review the weekly journal entries completed by the students, signed by the employer. This gives a narrative of their progress and allows teachers to delve into any problem areas. One teacher added carpentry instruction into his engineering classroom to be flexible to an employer's needs and to show students how this industry relates to the concepts he is teaching in engineering. He also quotes "there's nothing like real world experience; while they're in that facility working, they're perfecting what they've already learned." Each student in a CTE class needs to pass a national competency exam (NOCTI). They spend classroom time preparing for this exam and practice key concepts at their work placement. Each student is also expected to complete a graduation project as part of their senior year

graduation requirement.

Challenges. Time, or lack thereof, was suggested as a challenge for the co-op program. WBL coordinators need time to do cold calls to enlarge the potential employer pool and create new placements while balancing visits and providing support to students and employers presently involved in the co-op experience. Finding time to get out and go to all the existing worksites each month, when graduation projects are due or while preparing for SkillsUSA challenges is often difficult.

Teachers and coordinators agree that it is best to not have a student on a job if it is not a good match. They do not want to burn bridges with employers so they will not send a student if they do not have one ready for a particular job. Saying no is tricky as they do not want to lose the employer, but they realize no is better because it may turn to a yes at a later time. Sometimes it is challenging as the economy has slowed down some and there are not as many ready jobs waiting for the students to be placed in.

Successes. Teachers comment that co-op provides good experiences for their students. Many can work while they are in school to support themselves with the skills they learned. It also allows them to decide prior to paying for college if this is the field that they want to pursue as they have experienced the industry in a real way. One employer describes this scenario as “a win-win because a student is learning if this is what they want to do with their future, and an employer is training a potential employee.”

When asked about student achievements, an employer said “I think they learned teamwork which I think is really important especially in today’s environment. You can’t work in almost any job without being able to understand what your contribution is anywhere along the pipeline and what happens if your part is broken. They are also applying what they’re learning in school to what it’s like to do it in the working world.”

In addition to listing student successes, employers deem another component of the success “I think the commitment between Middle Bucks and WBL coordinator and the worksite managers that have these students.” Having dedicated coordinator positions occupied by people who know businesses in the area, have the ability to create and maintain strong relationships with employers, is an essential component of this program.

The coordinators are dedicated to this function and the teachers can stay in their teaching role. Coordinators are liaisons between business, the teachers, and the students and parents. They know the corporate climate and then educate the teachers as to what that climate is to then provide the best match and experience for the students. The coordinators respect that the teachers know best who is ready and know exactly which student would fit the described job. The common link is that all staff work together to do what is in the student’s best interest. Employers speak highly of the students they have in their employ. A deli employer states “Sometimes we get those students that are better than maybe some of our external hires would be, they have that self-motivation.” A child care provider says “I can honestly say that lots of our best employees come out of Middle Bucks. I really think that the best thing that we have is just the quality that comes out of there. There really is a big difference in the students that are coming

from there, having that hands-on experience there as well as getting what they are getting here. They are just ready to come in and start working. They are just more prepared. It's just beneficial. I love having them because of the staff that we get, that comes out of their system."

Apprenticeship: Olympic High School/Siemens Energy Corporation

Olympic High School in Charlotte, NC (in the 20th largest school district in the country) is a Bill & Melinda Gates school with 5 small high schools on campus (finance, health science, hospitality, engineering with energy focus). The whole building houses 1,500 or 1,800 kids, but there are only about 450 in each academy. Over half of the population's below the poverty line. Test scores have gone up 65% since dividing into small schools. In addition to the grant, there has been a synergy in the community between schools and businesses to make education more authentic, real, and experiential. The school emphasizes the relevancy of learning, collaborations with community. The school has 200 business partners who donated 1.5 million dollars through cash and in-kind contributions. Through an advisory committee, these companies designate which courses students should take. In response, Olympic created mechatronics and public speaking classes. Local businesses also serve as sites for work-based learning. Internships show students that it does matter what they doing every day in class. The school tells the advisory board, we will do the curriculum the way you want it, but you have to offer internships to students who pass. According to the WBL coordinator, "Many of the parents would like to help but many of them don't have the background or experiences to help kids to help navigate the workplace and so we try to preach to our teachers and everybody else that we need to fill that role or try to help with that."

Charlotte is emerging as the energy capital of the United States. The city already has a few hundred energy firms here and they employ 25,000 people. There is a new program at University of North Carolina, Charlotte called the Energy Production and Infrastructure Center at UNC.³³ These companies are seeking highly skilled technicians for their workforce and were having a difficult time finding them. According to the career development coordinator at Olympic High School, "Manufacturing is not dead, it is in high demand, the jobs are not going to China. We need highly trained highly skilled technician's right here. They use computers, lasers, robotics – expensive machines that need incredible precision... They got to have people who can operate the machines and keeping them in compliance, keep them in conformance, program them. Everything they make has to be within the tolerance of the width of your hair... They are going to be the most highly trained, highly skilled technicians in the world and they will always be in high demand. They're always going to be trained superbly by the companies they're working for."

A coalition of 10 European companies with a manufacturing basis in Charlotte partnered to form "Apprenticeship 2000" to recruit and train students from the region. They invest approximately \$170K per student and guarantee them a job (min. salary \$34K, average \$75K). The philosophy is that they all need trained workers, and there is an unspoken rule that they will not steal each other's apprentices. It is a large investment, but they have a long term view. As one leader put it: "Train them and hope they don't leave, or don't train them and hope they will stay." Everyone wins with a highly skilled workforce.

³³ See <http://epic.uncc.edu/>.

When Siemens Energy arrived, they had difficulty finding the kind of quality people they were looking for and joined Apprenticeship 2000 for \$5K. Siemens had moved their operation from Canada to Charlotte due to a state incentive involving training and taxes. The state is providing \$5million over four years for customized training through Central Piedmont Community College (CPCC). CPCC had a lot of the necessary equipment that Siemens requires for mechatronics certification, so Siemens and CPCC designed a formal registered apprenticeship program in the state. It is aimed at training highly skilled technicians to work in a new facility and to fill positions that will open up due to impending retirements (40-60% of the company will retire in the next 5 years). Siemens hired 750 people in the last 18 months and exhausted the supply they are looking for new ways to train more high-quality people. The Siemens HR rep says “you can’t look at it as \$170K but look how expensive it would be not to have a labor force. The government should be helping us!” When she looked at the books, she could not believe the amount of money Siemens was budgeting for error, rather than doing better training of their employees. Senior management (Americans) had to be convinced of the merits of the German apprenticeship model as an investment that pays off in the long term.

Olympic High School is now partnering with Siemens to select and send students through the apprenticeship program (“fertilize and cultivate the pipeline”). The career development coordinator at Olympic High School, which is 3 miles down the road (“right around the corner”) from Siemens, said “Really, they needed our kids. It made sense. We wanted to connect with them. We want to become part of that pipeline. We know we have to become part of that pipeline.” The Dean of Continuing Education at CPCC believes that building a high-quality workforce can attract more companies to the region.

The Career Development Coordinator, a position funded by the district, is responsible for making connections with the business community. He is widely credited – both within the school and among the community partners—with setting up the partnership between Olympic High School and Siemens. He sees his job as “helping educators become aware of the industries and the opportunities and where the jobs of the future are and really what is the education and training these kids need.” A community non-profit leader who is an advocate for the secondary-postsecondary-employer partnership model thinks the career development coordinator position is critical and needs to be a dedicated position funded externally (so they aren’t assigned other duties or tasks at the school): “The person really needs to really focus in doing nothing but recruiting, informing, educating....To me, it’s connecting, making that connection, helping kids, helping families to understand that you don’t necessarily have to have a four year liberal arts degree to be a successful, independent, tax-paying citizen when we have companies like Siemens that are starting folks off at close to \$50,000 a year right out off the chute without any college. Now, they have to be qualified, but there’s a disconnect.” The HR representative at Siemens agreed that she also needed to market the opportunity to parents (see challenges section).

Student Recruitment. Siemens now holds “Science Days” at middle and elementary schools to introduce students to engineering and robotics. Students are actively recruited in their junior year of high school, as they become eligible to apprentice in senior year. Teachers, parents, and students are told about the opportunity, that Siemens is looking for good people. “The last week of November of junior year, students are invited go into a plant or see what manufacturing is like. They actually invite the child's parents as well. We want you to understand, here’s the

program. This is what it's all about. We want you to come see a real advanced manufacturing plant because it's probably not what your uncle or grandma and everybody else is working in. They get to go see all the robotics, all the advanced technology that's in those plants and be able to tell them, 'Here are the kinds of jobs that we're looking for and we want to train you to become.' The kids have an option. 'If you want to move on to the first try-out, here, sign up.'"

The Siemens HR rep makes a presentation at Olympic High School (50-75 students attended the last one). To be selected initially, students need to provide transcripts showing overall GPA, math scores, high performance in math and science courses, a good attendance and behavior record, and a teacher recommendations for behavior. Students need to demonstrate As and Bs in higher-level math (calculus preferred), and AP classes. In addition, they need to be responsible, mature, and good at using their hands. With those students who make the first cut, Siemens conducts panel interviews (a group process with operations managers and HR talking about each student and whether they would be a good fit; a high school teacher told us that ideally, teachers would also have some input). Over the course of a week, a group of students (last year it was 12) took part in a battery of testing that included technical math, problem-solving, 3-D drawing, PSI standardized test, Work Keys applied tech, and a CPCC placement test; they worked at the company for two days to make a product; and then took a national test for mechatronics aptitude. While at the plant, they are observed "Are they able to manipulate numbers, are they good with their hands? They also look at maturity to see whether the student is really ready for this." Following the tryout last year, nine students were selected for a 6-week, 40 hour/week paid summer internship in which they were at CPCC for two days per week in the Siemens program (for both high school and college credit) and three days at Siemens.³⁴ The internship involves an extensive safety orientation, projects, time in lab, and a capstone project (a power point presentation about "who's Siemens, what does Siemens do, what is this facility all about?")

At the end of the internship in August, Siemens offered a full apprenticeship to 6 of the 9 students. There was a formal signing agreement to offer the students a placement in the 4-year program and the students had to decide to commit. These students will work and go to school full time for four years with tuition and stipend paid by Siemens. "Even when you're sitting in class eight hours a day, you're going to get paid \$9.00 an hour. They're going to pay for you to get your A." Seniors spend the morning at the high school and the afternoon at either the college (dual enrollment mechatronics course) or company. According to the associate dean of continuing education at CPCC, the full curriculum doesn't make them experts but gives them "a real solid base." At the end of the apprenticeship program, they receive an AA in mechatronics, a machining journeyman's license, and a guaranteed job at Siemens (though there is no obligation to stay). Siemens will also pay for them to continue their schooling. This type of investment helps the company by customizing training and increasing employee commitment (Siemens has less than 2% turnover).

Even with the program in place, Siemens is in great need. According to the Olympic High School career development coordinator, [the Siemens HR rep told him]: "I need 140 machinists

³⁴ Normally the district requires online journaling (through Moodle), a work calendar, and final project to award internship credit, but for the apprentices working 40 hours/week, this is not as strictly enforced. "We leave it to the company with regards to what's going on [with student journaling and projects] because they get their CPCC credits and other things with regards to working with their mentors, things of that nature."

tomorrow,' but we don't have them. They're already trying to pluck off our apprentices but I told them, 'No, you have to leave them alone. They've got to go through their process before you can pluck them.'" After the last orientation, she said "I need more kids. I want more kids. Can you find me more?" and they had to do another round of recruitment. Siemens has an \$885,000 budget for training and recruitment.

Apprenticeship Program. CPCC does a lot of the training for students the summer between junior and senior year because Siemens didn't have the machine hands-on training available for that level. The interns need to do a capstone project in which they have to investigate the Siemens company, divisions, energy, product, and do a PowerPoint for the executive team at the end of the first summer.

Students are assigned a senior machinist operator as a mentor. The HR rep picked "the cream of crop" – meaning the mentor is unique in their skill sets and a positive leader who will take the student under their wing). Mentors at Siemens do not receive formal training, but they have regular meetings with the HR rep to discuss issues and problems they are having. The mentors are on the steering committee for the apprenticeship program and make suggestions such as annual rotation of apprentices. Other companies have a full time person for all apprentices, but Siemens things that supervisors and mentors should all be responsible.

When the student is "on the floor" at Siemens, they are with a machinist. Both Olympic High School and Siemens have insurance for students who are working. OSHA has a 10 hour course requirement for students on safety that is required. The machinists make sure students don't do menial work, but they do the "5S" process, improving calibrated instruments, not adding to product but learning the behind the scenes stuff, process and "traceability" (paper trails). Blueprint reading, tolerances. CPCC created manual machining course. "A lot of stuff you don't learn in high school." Power generation is very specialized, metric measuring with precision measurement tool. Students learn "5Y" problem-solving tool when there is an error. It is a continuous improvement process. What impresses one of the mentors most is that when students are finished they look for another task and make suggestions.

The mentor and apprentice go over the state's DOL competency checklist for a machinist in a mechatronics program with emphasis on machining. The apprentice has to sign for each activity and the mentor checks it; accountability is important. In addition, the HR rep asks the students for their grades: "I'm paying you 40 hours a week, you need to share your report card with me."

Because company policy is that they can't hire anyone till they are 18, due to liability, students under 18 are hired and paid through a temp agency. Students have to be 18 to work on the shop floor; there are OSHA and DOL regulations.

Role of the High School. The career development coordinator tells freshmen that the companies will start to look at their transcripts after sophomore year and will want to see math and science up through trigonometry and physics. "They're going to look at how many days you missed. For many of our kids, that can be a big awakening....Most of them are just out there floating around and we want to help them start seeing, 'Here's the path that you can go and doors are going to open up to you, depend upon how you're doing and how serious you want to take it.' I can drive

more relevancy by being able to connect them to these work based programs and we have these very prestigious companies working with us to help kids see where they may want to be someday. Here's the pathway to do that. Pathway starts with us your freshmen year, but by your junior year, really we want to be sending you to the community college to start taking courses.”

The high school Introduction to Electronics teacher starts introducing his students early on to the connection between the classroom and their future careers. After teaching them about the equipment, he shows them a map of all the companies in the area that use it. “What is interesting is to say, okay this is where you live and a relationship to where you are, here are these worldwide companies, they are interested in your education, interested in you. You talk a little bit of the apprenticeship program as far as getting parents involved, saying listen the four-year degree, while it’s great for some people, and we need that. Here’s an option. How about not having a student loans? You are working, while are getting paid, they are paying for your own school, they are paying your education you are getting on-the-job training. If you really like it and you want to go on more, these companies are more than willing to cough up the cash for you to go to get your four year degree. On top of that, let’s just say ten years down the road, you want to go someplace else. Look at your experience. That’s a huge selling point. Once you kind of present it to parents, parents that talk to you, put it like that in that little package, they go ‘Yes.’”

“CPCC is a great program. I wish they had that program. I tell [the students] that. I wish I had this in high school. I'm like, ‘You don't know what they're putting at your feet. You have no idea." Let me tell you, in a hundred years, this is a good deal.”

Although high school teachers have connections with many of the local businesses who advise them on curriculum and equipment, and with whom interns are placed, they are not very involved with the apprenticeship program: “once they're out there, they've left the nest.” Teachers don’t have a lot of time to be involved in the planning: “As far as the policies on what they follow I think it's left out of our hands. I don't know the logistics outside my little classroom.” The career development coordinator is much more involved with the apprenticeship partnership with CPCC and Siemens, but even he does not visit the company very often. There is more interaction between CPCC and Siemens about the apprentices “because they’re really getting into that workplace, workforce development components where they’re being taught things specifically there.” For students doing internships in other companies, the career development coordinator goes to see the final presentations and products. Otherwise, they have his cell phone number if they have an issue or a problem that is not technical.

All students in WBL have to do one day on demands and expectations of internships: “We try to help the kids understand what’s those rigors and demands there and also, too, our expectations. What they should expect and why, and probably some why’s of why these things are going on; why that's important. Here are some of the key skills and competencies that are important as you're out on your internship and how you want to perceive and look at things.” There is also an ongoing Intro to Employability Skills class that includes completion of a career assessment tool (Career Cruise). There is no formal training at the high school of what to expect in apprenticeship program.

Speaking about the quality of the students, a high school teacher said, “Everybody wants it

spoon-fed to them. Tell me exactly what to do. It's so hard to get them to think for themselves or take responsibility. Those two things are key things that you can't miss they're [Siemens] looking for." He thinks that right now, Siemens is "hungry" and will take just about anybody, but at some point they are going to start being more selective. "You know what, there's nothing wrong with that. There's nothing wrong with being the best of the best and walking the walk and talking the talk because unlike what they'll tell you in school, you get out in the real world, again, there are winners and losers.... Now, you got to try a little bit harder, don't you? It's just not going to be handed to you... A clarification on the best of the best, that does not mean you're an A student. That means, let me be a good test taker. Somebody that's got the desire. I would much rather and even some of the companies I've talked to take a good C+ or B student that has the desire and the attitude for it and not the A. It's hard to judge." His colleague agreed: "It's a little bit tangible. You need to have a candidate pool and say, 'Okay, let's talk about this one. He may not be great in this or great in that but, gosh, when I had him in electronics, he was on it all the time.' Gosh, when I was interviewing people, [I would look for] a mechanical sense.... I don't know how you even identify it but when I'd look for people for setup machines and set up guys and prepare them. I can tell by watching somebody work too. You can just see that." The first teacher added, "you can tell just by watching somebody work a little bit... It's hard to quantify it but you can pretty well read it. I think that's where our business back or industry background plays such a big role."

Challenges. Challenges include the fact that the students aren't as mature as they could be and that they still need to learn to work as a team. The HR rep brought in trainers in communication and teamwork from CPCC, and this has improved. She also hired a high school chemistry teacher to "herd" the students.

Another barrier, voiced by many of the partners, is parents who are biased against anything less than a 4-year college. Companies don't have as much participation as they should. It is hard to convince parents and students that this is a viable option. For some kids there is a "too good to be true" mistrust. For parents, until they actually see the plant and learn about the paid tuition and the salaries, they are hesitant or even against their children doing the apprenticeship program. They also have misconceptions about manufacturing. The HR rep held a big presentation for students and parents and took them to factory floor to show them the technology (robots, lasers). It's not dirty, dark and dangerous. It is a beautiful facility, very clean and organized. This is high-tech stuff. The HR rep tells them that in their first year working (following the apprenticeship), the students will be making more than their teachers, and they can continue education at a 4-year university through tuition reimbursement. "Kids are not taught what jobs are out there; they need to see all possibilities." Parents and students (entering freshmen) are invited to meetings to talk about the landscape of the education and job market. Parents understand Fortune 100 and benefits package.

Another challenge that has now been surmounted is the long reluctance of the district to support the apprenticeship program because it was not oriented toward students going to 4-year colleges. For the first fifteen years of Apprenticeship 2000, member companies had to go outside the large district and select apprentices from other high schools. Due to recent increased visibility, due to the mention of the program in the President's State of the Union address and reports such as *Pathways to Prosperity* that the media and educators embraced, the district is now on board.

Successes. In addition to the many students who are enrolled in the apprenticeship program, successes include mention of the partnership in President Obama's State of the Union address in early 2012, several articles in the Charlotte Business Journal about the program, and a talk by the Siemens HR rep at the recent Ted Charlotte Education conference attended by over 300 professionals. They have just discovered as well that the Discovery Channel will film it.

School-Based Enterprise: Dominion High School

Dominion High School (DHS), located in Sterling, VA, serves the wealthiest district in the United States in a suburb of Washington, DC. With 1380 students, DHS is one of the smallest high schools in Loudon County. The school was nominated by the national DECA organization as a model school-based enterprise (SBE). The teacher of the DHS marketing program (who is also the DECA advisor) was active in DECA and was asked to help the organization write its manual on requirements for "gold certification" based on best practices from the field. Designed around these requirements, the DHS marketing course has achieved gold status for the past four years and was just awarded first place for top presenter at the international conference (out of 180 schools). The trophy case at the front of the school proudly displays several DECA trophies among sports and other trophies.

In Virginia and one other state, a student is required to be in a marketing class to be in DECA (they can't be in a business or technology class). VA has the highest membership in DECA (15,000 members). The average DECA program is 50-100 students, but DHS has 300 members (225 students, rest are adults and alumni). They are motivated to recruit new members to earn rewards from DECA. Last year, 90 students competed in DECA at the district level, 78 at the state level, and 27 in the international conference. At the conferences, the competing presenters have to have "selling skills to sell their concept." There are also a lot of leadership projects and her students are state DECA officers on a regular basis.

In the county, there are only 4 levels of marketing but DHS also has courses for economics, marketing/business, entrepreneurship/finance, sports management. Other counties have other types of marketing tracks, such as fashion and hospitality that DHS does not offer. All of the high schools are required to run a school store and given the resources to do so; therefore, they are "cookie cutter" down to the layout of the room. The district CTE director provides funds for each school store, which the teacher believes comes through Perkins, and the principal is very supportive of it. All high schools in the county use the same rubric for scoring the marketing students in the SBE.

Other SBEs around the country have restaurants (students are involved in food preparation), convenience stores, school stores, spirit items, gift shops. Some states do a whole marketing course under hospitality. At the DHS school store, they sell food, clothes, drinks, cookies (Otis Spunkmeyer is a big supporter of DECA, as is Tropicana). The school store generates a profit (\$3,000) last year which they give back to the school and to charity. They also use these funds for scholarships and travel for students to go to DECA conferences. Students are not allowed to make daily deposits, chase shoplifters, or do the shopping (at Costco) but other than that there are no limitations to working in the school store.

The students started an HDTV ad program where they are selling ads that will show on screens in the school. For one month, it costs a company \$50; for students, they pay \$5 to put up announcements or messages for one day. The advanced class has ad teams. The store uses real retail concepts, e.g., don't let the supplies run low. At football games, they sell spirit items; freshmen and sophomores can volunteer to pack carts and boxes. Companies will come to them to donate marketing materials and they will sell products (e.g., mattresses). They made \$3,800 this way.

The requirements for gold DECA certification are woven into the school store, which serves as the "lab" for the upper-level marketing courses. Once a school has gold certification for SBE, they can submit a more limited application for the next 4 years for renewal (only 114 schools have gold status). Each year the students are responsible for putting together the application as part of their marketing class. There are teams for each section of the document, which needs to be submitted each January to DECA. Getting the certification validates the time spent by teachers and students on the application. DECA "has done a great thing for high schools across the country" with the SBE program, teaching kids how to run a business and be entrepreneurs.

There are 15 students in the marketing class that manages the store and 46 students in the class that works in the store. The teacher does a train-the-trainer program for managing the store. The advanced class is more like a staff meeting – they are collaborative, working in groups, talking with each other, getting input. In the lower-level classes, there are 90+ students in intro to marketing, 125 in sports marketing. Each year before school starts, there is one day when they open the store. They do an entrepreneurship workshop for freshmen who volunteer to help open the store. It is a whole workday. Seniors are more motivated because they are teaching freshmen the ropes; freshmen get interested in going into the marketing program and joining DECA.

There is a blend of students in the marketing courses: 99% are college-bound. They have increasingly high academics (2/3 taking AP courses and getting advanced studies diplomas); they are "upper-level independent learners". There are a few students in special education. All students have to write papers and do presentations. The class hones students' presentation skills, research skills, projects, teamwork. Students can get a National Retail Federation certification (customer service test) if they are in the junior or senior-level class (92% pass rate). Of those in her upper-level marketing class, the majority go in the business direction but some change in college (and some start in something else and change back). The school is piloting a program this year with another high school where they have ELL students 17-20 years old who are getting a GED (part of Gateway program). Because these students are not college bound, they teach marketing for career skills, financial literacy, resume-writing.

In the state of Virginia, students can get co-op credit for working in the school store (practical work experience). If marketing students don't have another job, they can work in the school store for co-op credit. Students get state credit for being in each class (they have to do co-op paperwork to get it). For marketing students who have other jobs, the teacher (who is the coop coordinator) visits their jobs and does evaluations; students have to report monthly hours (they need 396 hours of continuous employment by the end of the year). Students also do journaling about their jobs, and for the non- school store class they discuss their job experiences in the

classroom (split sections depending on students' co-op jobs – in school store vs. outside). The teacher uses the county's form for evaluating co-op. Employers are not involved in the evaluations. Employers like co-op students because they are more valuable because they are learning in class at the same time (some employers contact the school to get co-op students. Because jobs are an after-school commitment, there are fewer students enrolling in co-op (due to other activities).

The state of Virginia is moving to career clusters and requiring all students to take a financial literacy course, which will further compete with marketing in students' schedules. The state is moving toward all students getting industry certifications. There is also a workplace readiness test that they can take. The state reimburses the county for the cost of certifications. Challenges include enrollment (there is a minimum of 10-11 students to run the course, but many upper-level students have their schedules full with AP classes); time (they have 90 min blocks every other day; wish they could meet every day); funding for teacher positions (they could offer more sections with more teachers).

It is important for the students to be part of the local business community, and the DHS program is a member of the chamber of commerce. Unfortunately, they cannot attend meetings because of time. The chamber helps them get the word out when they need judges for district competitions. There is also an office for economic development locally that focuses on small businesses that provides entrepreneurs as guest speakers.

In terms of advice for other schools hoping to set up an SBE, the first thing the teacher would recommend is getting the gold certification document from DECA and use it as a resource for guidelines. There is an outline for a business plan. It gives the big picture of what is needed to run a program, then the teacher can interpret/adapt locally.

Appendix D

Examples of Documents Collected from WBL Sites

Example of Student Preparation and Guidelines for WBL Participation (Apex High School Academy of Information Technology, North Carolina)

WHAT DO EMPLOYERS EXPECT OF ME AS AN INTERN?

Employers expect me to:

Come to work every day and on time.

Make smart decisions.

Follow directions.

Concentrate on my work and care about the quality of my work.

Read, write, and calculate well.

Recognize problems and find solutions.

Finish a job when I'm supposed to without sacrificing quality.

Be honest and dependable.

Take the lead and work hard.

Communicate well and get along with other people, especially customers.

Dress properly and practice good grooming.

Be cooperative.

Have a positive attitude.

Skills for Success in the 21st Century: *What skills are employers looking for?*

1. THE ABILITY TO LEARN

With technology changing so rapidly, more than ever, employers are searching for employees who can acquire, process, and apply new information.

2. THE BASICS: STRONG READING, WRITING, AND MATH SKILLS

Companies are increasingly demanding that their new employees have these basic skills.

3. GOOD COMMUNICATION SKILLS – ESPECIALLY LISTENING AND SPEAKING SKILLS

Good communication skills are the single most important factor in workplace success after having an understanding of one's job.

4. GOOD INTERPERSONAL COMMUNICATION SKILLS – ESPECIALLY GOOD ATTITUDE

A good attitude about one's job and motivation to take initiative on important issues and ideas are key to being successful in any job.

5. CREATIVE THINKING AND PROBLEM-SOLVING SKILLS

People who can recognize and define problems, come up with new approaches and solutions and put them into action help a company stay competitive. This is a very important skill employers are looking for in this tight economy.

Example of Student Training Plan (Palmdale Health Academy, California)

**REGIONAL OCCUPATIONAL PROGRAM (ROP)
INDIVIDUALIZED TRAINING PLAN**

- | | |
|--|--|
| <input type="checkbox"/> COMMUNITY CLASSROOM | <input type="checkbox"/> FALL |
| <input type="checkbox"/> COOPERATIVE VOCATIONAL EDUCATION | <input type="checkbox"/> SPRING |

Student Name _____ Emergency Phone No. _____
 Student ID No. _____ Program Title _____
 Teacher _____ Phone _____

Name	LOCATION	MANAGER/EMPLOYER	PHONE

Training Schedule: Days _____ Date _____

Student's Signature/Date

Teacher's Signature/Date

Occupational Competencies	EXPECTED DURATION OF TRAINING	LOCATION OF TRAINING		TEACHER'S VERIFICATION	
		Classroom	OJT	Init.	Date

(Attach Additional Competencies)

This is to verify that _____ has acquired the competencies initialed above demonstrating a proficiency equivalent to entry-level employment.

Final Grade _____ Total Hours _____ Teacher's Signature/Date _____

Comments _____
 (Use back of page for additional comments)

Example of Employer Mentor Guidelines (Winder-Barrow High School, Georgia)

INSTRUCTIONAL BEHAVIORS OF A MENTOR

Demonstrate task performance by doing the task while the WBL student observes. While performing the task, the mentor points out important features and checks the student understanding by asking questions and encouraging the student to ask questions.

Explain how to perform a task correctly. Explanation may accompany demonstration or be provided separately. It sets performance criteria, points out what problems are likely to occur, and identifies possible problem-solving strategies.

Explain why a task is performed a certain way. A mentor must explain why the task is performed according to certain specifications, provide information about the business management or scientific principles underlying the procedures, and explain how the task relates to other tasks.

Monitor and critique the WBL student's attempts to do the task. While monitoring the YAP student's performance, the mentor gives clear and immediate feedback. Although monitoring and feedback are continual, the interval between instances increases as the student gains competence, and the mentor encourages the student to monitor his/her own performance and to seek help when difficulties arise.

Modeling problem solving by thinking aloud and demonstrating problem-solving strategies. Modeling includes explaining what questions the WBL student can ask him/herself when problems arise, identifying the kinds and sources of information the student might need to find a solution, and pointing out important information or cues that the mentor is relying on to guide problem solving.

In addition, the mentor must also orient the WBL student to the social and personal aspects of work. Mentor training should also include instruction on how to:

Initiate the WBL student to the workplace culture. The Work-Based Learning Program brings adolescences into an adult social system, a new culture with its own rules.

Advise the WBL student on career directions and opportunities. Career advice may be information about education and training requirements for a particular field, introducing students to others who can share their experiences, or expanding the student's conceptions of career domains.

Help resolve problems. A good mentor helps the WBL student resolve problems.

EFFECTIVE MENTORING STRATEGIES

1. **POSITIVE ATTITUDE:** Encourage a person to examine beliefs and ideals in an effort to establish personal values and goals.
2. **OPEN-MINDEDNESS:** Encourage a person to keep an open mind to ideas.
3. **INTERRELATIONS:** The interactions between mentor and protégé should be situations of sharing, caring, and empathizing.
4. **CREATIVE PROBLEM SOLVING:** Encourage the protégé to use creative problem-solving processes.
5. **EFFECTIVE COMMUNICATIONS:** Encourage a person to be an attentive listener and an assertive inquirer.
6. **DISCOVERY:** Encourage the protégé to be an independent thinker.
7. **STRENGTHS AND UNIQUENESS:** Encourage a person to recognize individual strengths and uniqueness and to build upon them.
8. **CONFIDENCE:** Assist a person in developing self-confidence.

9. **AWARENESS:** Stress that an individual must be aware of the environment, be intuitive, be problem-sensitive, and be ready to make the most of opportunities.
10. **RISK-TAKING:** Encourage a person to be a risk-taker and to be an active participant, not a spectator.
11. **FLEXIBILITY:** Share with a protégé the importance of being flexible and adaptable in attitudes and actions, looking for alternatives, and seeing situations/persons from different perspectives.

Tips for Mentors

- Have the goals of the program firmly in mind when you engage with your mentee.
- Remember that you are not taking the place of the parent. Keep personal discussions to a minimum.
- Express a sincere interest in the program as a whole so that the mentee will understand that he or she is part of a bigger effort and that there are other partnerships that exist.
- Assist the student in setting realistic, obtainable goals for the year.
- Understand that the process of the relationship is just as important as guiding the student through a job task
- Remember to be an active mentor. That is, when you are with your mentee, try to actively engage with him or her.
- Never underestimate the power of continuity in a young person’s life. Stick with a regular meeting schedule that works for both of you.
- If your mentee has taken an avoidance approach in the work situation, try to get as much information as you can that might explain this behavior, and KEEP TRYING!
- As the relationship progresses, try to refrain from selling your mentee on doing something and concentrate more on encouraging them to want to do it on their own
- Become a great listener. The best way to establish a good relationship with your mentee is to encourage them to talk, to draw them out, to ask questions in way that does not require a “yes” or “no” response.

Listening Recipe

- **AVOID BEING JUDGMENTAL:** Concentrate on the message and not the person.
- **DO NOT BE INSINCERE IN YOUR LISTENING:** If you fake attention, it will be evident.
- **LISTEN FOR IDEAS AND NOT JUST FACTS:** Look for the big meaning in what is said.
- **AVOID COMMUNICATION KILLERS:** Analyze your responses and be sure to avoid action words that will cut off communication.
- **PUT WHAT YOU ARE HEARING INTO WORDS:** After you have listened closely, try to put what the other person is saying and feeling into words and see how they react.
- **GET AGREEMENT:** Communication involves knowing when and how to listen as well as how to use words.

Praising Recipe

- **BE IMMEDIATE:** Catch them doing something right, right now!!
- **BE SINCERE:** If you cannot be sincere, say nothing.
- **BE SPECIFIC:** Concentrate specifically on what was done, not on generalities.
- **SHOW THE BENEFIT:** Ask yourself, “How does this effort help the student?”
- **STATE YOUR OWN REACTION:** People want to know how you really feel.
- **ASK IF YOU CAN HELP:** Offer your assistance. Do not order it!

- PRAISE IN PUBLIC: Correct in private.

A Few Final Thoughts

- KEEP A WATCHFUL EYE: Watch for signs of boredom or indifference. Try to create opportunities and experiences that foster discovery of new ideas and development of new skills.
- ASK OPEN-ENDED QUESTIONS: Check periodically to see how well and how much the student is learning. Ask open-ended questions such as, “What has been most challenging to you these past few weeks?”
- PROVIDE SUPPORT WITHOUT RESCUING: Too often mentors say “Let me show you how to do that,” when they should be asking, “What do you think you should do next?” It takes patience and courage to stand back and let a student risk failure. However, the most significant growth happens through the discomfort of grappling with a new situation.
- AVOID MESSAGES OF PERFECTION: The greatest gift a mentor can give students is to be authentic. When you make a mistake, you can show how you learn from that mistake and are more competent as a result. Make sure that the student understands that you are still a learner yourself.

Example of Weekly WBL Log Sheet (Middle Bucks Institute of Technology, Pennsylvania)



Week Beginning: _____
Name: _____
Program: _____
Employer: _____

Date	Day	Start Time	End Time	Total Hrs.	Activities
	Monday				
	Tuesday				
	Wednesday				
	Thursday				
	Friday				
	Saturday				
	Sunday				
Total Hours					

Please write neatly – use the back of page for addition space

What new duties / task did you learn or improve upon at work this week?	
Share any compliments, constructive criticism, or comments about your progress this week. Write specific words that your employer used.	
Did any problems come up with which you would like help?	

We Certify That This Record Is Accurate

Hourly Wage	Weekly Gross	Weekly Net

_____ **Student Signature**

_____ **Employer Signature**

Example of Employer Evaluation (Merrill High School, Wisconsin)

Merrill High School Wisconsin Work-Based Learning Skill Standards Youth Apprenticeship

Workplace Skills Evaluation

Student	School	School Year
Workplace Mentor	Workplace	
Date	Evaluation Period <input type="checkbox"/> Quarter 1 <input type="checkbox"/> Quarter 2 <input type="checkbox"/> Quarter 3 <input type="checkbox"/> Quarter 4	

Evaluation Scale – Please use the following scale when evaluating each workplace skill.

!	Creative, inventive, detailed, mature presence of skill
+	Detailed and consistent evidence of the skill
✓	Beginning of or some evidence of the skill
–	Little observation or no opportunity to observe skill

Work Ethic		!	+	✓	–
1.	Exhibits responsible behavior relative to workplace environment				
2.	Demonstrates punctuality				
3.	Displays dependability				
4.	Demonstrates ability to work with others				
5.	Displays flexible behavior				
6.	Dresses appropriately for workplace				
7.	Illustrates pride in work/Dedication to job/company				
8.	Applies workplace standards and guidelines to produce and ensure quality work				
9.	Shows initiative				
10.	Works to maximize personal productivity				
Comments:					

Workplace Communication		!	+	✓	–
1.	Demonstrates effective oral communication skills				
2.	Demonstrates ability to receive and give constructive criticism				
3.	Uses correct grammar and spelling for workplace communications				
4.	Demonstrates appropriate nonverbal communications skills (customers and co-workers)				
5.	Provides quality customer service				
6.	Demonstrates appropriate telephone techniques				
7.	Demonstrates appropriate e-mail etiquette				
Comments:					

Workplace Technologies		!	+	✓	–
1.	Selects and applies appropriate technology for a task				

2.	Utilizes technology tools to access and create information				
Comments:					

Workplace Relationships		!	+	✓	-
1.	Demonstrates appropriate social skills for the workplace				
2.	Displays appropriate listening skills				
3.	Projects a positive attitude				
4.	Demonstrates appropriate employer and employee interactions				
5.	Demonstrates appropriate employee and customer interactions				
6.	Functions as a productive member of team				
Comments:					

Workplace Diversity		!	+	✓	-
1.	Works effectively with a diverse workforce (age group, cultures, genders, etc.)				
2.	Demonstrate the skills necessary to function as a member of a diverse workforce (e.g., diplomacy, patience, willingness to compromise, and ability to listen)				
Comments:					

Workplace Safety & Regulations		!	+	✓	-
1.	Performs work in accordance with employee rights and responsibilities				
2.	Identifies types and sources of workplace hazards				
3.	Complies with workplace safety regulations				
Comments:					

Lifelong Learning		!	+	✓	-
1.	Demonstrates willingness to learn new skills				
2.	Demonstrates the ability to learn new skills				
3.	Analyzes own performance for improvement				
4.	Asks questions as necessary				
Comments:					

Goals for Improvement:

Workplace Mentor Signature	Date
Student Signature	School Year Date