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ABSTRACT

The experiences of stakeholders in Wisconsin's youth apprenticeship programs are used to provide insights for other policy-makers and educators contemplating or currently implementing youth apprenticeship programs. In-depth interviews, focus group interviews, and surveys with more than 100 students, parents, employers, and instructors were used to examine the extent to which Wisconsin's youth apprenticeship program integrated school- and work-based experiences, how those experiences enhanced students' learning experiences and career opportunities, and what incentives or obstacles affected stakeholder recruitment and participation. Apprentices engaged in well-conceived school- and work-based learning experiences, acquired state-of-the-art technical skills and knowledge, developed critical thinking and interpersonal skills, and enhanced their future career opportunities beyond secondary and postsecondary education. Problems were also identified: negative biases toward work-based learning persist that constrain the potential for full-scale integration of youth apprenticeship programs across the state; the quality of workplace mentoring is uneven; and equity concerns continue as few minorities and women enroll in traditionally white and male-dominated career tracks. (Contains 12 references.) (KC)

Youth apprenticeship experiences in Wisconsin: A stakeholder-based evaluation

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Abstract

The experiences of stakeholders in Wisconsin's youth apprenticeship program are used to provide insights for other policy-makers and educators contemplating, or currently implementing, youth apprenticeship programs. Relying primarily on in-depth interviews, focus group interviews, and surveys with over 100 students, parents, employers, and instructors we examined the extent to which Wisconsin's youth apprenticeship program integrated school- and work-based experiences, how those experiences enhanced students' learning experiences and career opportunities, and what incentives or obstacles affected stakeholder recruitment and participation. In general, we found that apprentices engaged in well conceived school- and work-based learning experiences, acquired state of the art technical skills and knowledge, developed critical-thinking and interpersonal skills, and enhanced their future career opportunities beyond secondary and postsecondary education. However, caveats were also identified. Negative biases toward work-based learning persist that constrain the potential for full-scale integration of youth apprenticeship programs across the state; the quality of workplace mentoring is uneven; and equity concerns continue as few minorities and women enroll in traditionally white and male-dominated career tracks.

Introduction

State and federal policy makers, as well as the general public, are undeniably clear about the need to improve the transition from high school to postsecondary learning and to a world of meaningful work. Three-fourths of American youth do not receive four-year college degrees (Parnell, 1991). Yet they are expected to possess the critical thinking, problem-solving, technical and team skills required of adults at work in today's economy. Less clear, however, is the means to achieve one of public education's primary goals—helping all students transition into productive and career oriented work lives.

The School-to-Work Opportunities Act of 1994 provided seed money to states and their local partnerships of business, labor, government, education, and community organizations to develop school-to-work systems. These systems, which integrate school- and work-based learning experiences, are seen as a crucial component of an educational system geared toward preparing America's youth for high wage, high-skill careers. In addition, Goals 2000 legislation connects School-to-Work with systemic reform by stating that every adult American will be literate and able to compete in a global economy.

Youth Apprenticeship, one piece of this larger system-building effort, attempts to bolster this transition between secondary education and careers. Apprentices "learn by doing" in paid employment and train closely with an experienced mentor, while classroom experiences connect with and enhance workplace skill development. Students who complete the two-year program receive a state certificate of occupational proficiency. However, education policymakers are challenged to develop youth apprenticeship programs with few existing domestic models. To date, apprenticeship in the US has been the domain of the professional crafts and trades. Prior to

the mid-1990s, apprentice-like programs for secondary students included a patchwork of diverse programs (e.g., Job Corps, career education, and cooperative education) that reflected the decentralized nature of US public education (Hamilton, 1990). However, the future success of youth apprenticeship programs may also lie in the strength of this decentralized system. As Hamilton (1990) noted, the United States' decentralized economic and education systems result in a variety of local approaches and designs to school-to-work programs, including youth apprenticeship. This diversity and experimentation strengthens the viability of youth apprenticeship programs in a society that values, and indeed desires, academic education, economic opportunity, and the connection between the two.

Based on the strength of its Tech Prep and newly developed Youth Apprenticeship programs, Wisconsin was one of eight states to receive the first round of School-to-Work implementation grants in 1994. Beginning in their junior year of high school, Wisconsin youth apprentices are paid for 10-15 hours per week of work, take four semesters of apprenticeship related classes, and complete their academic high school program. Wisconsin's first apprenticeship began in printing in September 1992, has since produced 125 graduates, and has grown to serve over 900 students in 11 different program (industry) areas.

This study presents findings from our evaluation of the quality of Wisconsin's Youth Apprenticeship Program from the perspectives of key stakeholders: students, parents, instructors, and employers. The evaluation offers a unique opportunity for those states and localities designing and implementing youth apprenticeship programs to learn from Wisconsin's experience. In this study of stakeholder experiences, we address three key questions:

1. To what extent does the Youth Apprenticeship Program provide rigorous and integrated school- and work-based educational experiences?
2. In what ways does the Youth Apprenticeship Program enhance the learning experiences and career opportunities of apprentices?
3. What are the incentives and/or obstacles that affect stakeholder recruitment and participation in the program?

Background

Policy-makers and researchers have lauded youth apprenticeship programs for their promise in turning workplaces into learning environments, developing new adult mentors and role models beyond the school, and creating alternative learning models in our existing system (Bailey, 1993; Hamilton, 1990). However, Bailey (1993) pinpoints three problems in developing youth apprenticeships in the United States: assuring the quality of on-the-job learning, addressing equity issues, and securing employer involvement. While other school-to-work programs such as career academies have increased employer participation through the use of wage subsidies (Pauly, Kopp, and Haimson, 1994), critics warn that apprenticeships could possibly narrow opportunities for students by channeling them into job-specific training and denying them "the kinds of general intellectual skills they need most, both at work and in social life" (Kantor, 1993, p. 26; see also Grubb, 1996b). In addition, there exists no strong evidence to date which guarantees that (1) youth apprenticeship experiences can ensure that minority and female students will participate in occupations traditionally dominated by white males, and (2) that participation in youth apprenticeship programs broadens, not narrows, future career opportunities (Hamilton, 1993).

Historically, the only previous attempt to transplant the German apprenticeship model in the US occurred in Wisconsin in 1911. Challenges that prompted legislators to enact an independent vocational education system echo contemporary concerns—a changing global economy, new technologies, and diminishing economic opportunity for the middle class (Parker, 1993). Parker noted several challenges to early apprenticeship programs that foreshadowed obstacles to contemporary programs. For instance, the gap between apprentice wages and minimum wage was not sufficient to convince enough employers to forego the drawbacks of hiring younger, less experienced workers. Also, with the exception of a few licensed service occupations, initial attempts on the part of government to extend apprenticeship beyond organized labor's core industries failed miserably. Thus, confined largely to the building and metal trades, apprenticeships became available to only a small fraction of each student cohort.

Today, concerns have focused on issues of equity, especially the negative effects of tracking and the perpetuation of barriers to entry into non-traditional careers for women and minorities. Contemporary international studies of apprenticeship programs shed light on these issues. In his study of Germany's Youth Apprenticeship experience, Faist (1992) found that Turks and other recent immigrants were not only underrepresented in the German apprenticeship system, they also tended to be channeled into lower skilled craft apprenticeships rather than industrial and commercial apprenticeships. In another study of European apprenticeship programs in Sweden, Denmark, and Germany, researchers observed that women rarely entered traditionally male apprenticeships (McKay, 1993). However, Kantor does suggest that youth apprenticeships may create opportunity. For instance, a formal apprenticeship system may help

compensate for the lack of informal job networks for at-risk youth in the US and assist them in finding better paying, more secure employment (Kantor, 1993).

Grubb (1996a) warns that current school-to-work efforts need to evolve beyond past vocational education approaches based on models "dating from the turn of the century, generally focusing on specific skill-training for entry-level jobs" (p. 538). He articulates a vision of a "new vocationalism" that thoroughly integrates academic and vocational content in a way that changes the pedagogy of an entire high school. This vision is currently being achieved in piecemeal fashion. First, the SCANS report (Secretary's Commission on Achieving Necessary Skills, 1990) called for a change in pedagogy which emphasized experiential learning, but left traditional divisions between academic and vocational education intact. The 1990 Amendment to the Perkins Act sought changes in curricular content and pedagogy by integrating academic with vocational education. Unlike a more thorough form of the new vocationalism, these practices "typically focus on self-selected vocational students and continue the separation of vocational and academic tracks. By grafting academic content onto existing vocational programs, they continue the emphasis on preparation for relatively unskilled entry level jobs right after high school" (Grubb, 1996, p. 538). Youth apprenticeships emphasize this integration of academic and vocational education while providing a work-based component and activities, which connect school and work. Grubb writes, "It's too early to tell what these school to work programs comprising the new vocationalism will become" (p. 538). Our evaluation represents a first look at how Wisconsin is progressing toward this vision of a new vocationalism.

Methods

We used multiple data sources including focus group interviews, in-depth one-on-one interviews, telephone surveys, and document analyses. Key stakeholders--parents, students, employers, and educators--were chosen based on several criteria. First, eleven Youth Apprenticeship programs were stratified by length of operation and six were randomly selected. Three of those programs--biotechnology, finance, and printing--were established in 1992 and 1993 and three--drafting design and engineering, manufacturing/machining, and manufacturing/production technician--were established in 1995. Next, we assembled 12 focus groups of students and graduates within each of these programs, as well as their parents, employers and educators at three sites across the state. Focus group participants were chosen in a manner that ensured that each program was represented. Each group spent one and half to two hours discussing reasons for participating in youth apprenticeship, perspectives on specific aspects of program quality, and suggestions for program improvements. Following focus group sessions, participants individually completed a brief questionnaire designed to obtain specific demographic and program information.

To reach a wider band of stakeholders, we complemented the focus group sessions with phone interviews of randomly selected participants in which we asked the same broad questions as were asked of the focus group participants. The phone interviews were expanded to include responses from students who had dropped out of their youth apprenticeship before receiving their skill certificate. Phone interviews lasted between 20 minutes and one hour. Transcripts of focus groups and telephone interviews were coded and content analyzed to develop themes and findings pertinent to our research questions. In addition, quantitative data from focus group questionnaires and closed-ended telephone interview questions were analyzed and incorporated

into our findings. Finally, upon completion of data collection and analysis and in order to strengthen the validity of our findings, we gathered focus group interviewees to participate in a statewide video conference where we presented our interpretations of findings and conclusions. Video conference participants clarified, confirmed, and added to our initial recommendations. In total, 37 students, 15 parents, 40 employers, and 10 instructors were randomly selected and interviewed.

Extent of Rigorous and Integrated School & Work Experiences

As we mentioned in the conceptual framework, part of what makes an ideal school to work program is the degree to which the program successfully and substantively integrates (1) academic and vocational curricula and (2) work-based and school-based learning. In large part, the effectiveness of Wisconsin's Youth Apprenticeship Program relies on the integration of apprentices' work experiences with supporting youth apprenticeship courses and academic courses. Our data are mixed. They suggest that students and parents were satisfied with the content of learning at the workplace--that is, students obtained crucial skills via work-based experiences that were transferable to a number of careers. However, our data did not suggest a clear connection between learning experiences at work and those at school. In general, students believed the connection between Youth Apprenticeship classes, related academic classes, and their work experiences was unclear.

Most students we interviewed saw their Youth Apprenticeship experiences as an effective way to gain many of the skills needed to become competitive in a rapidly changing and technological workplace. Students generally found their work-based experiences to be rich in opportunities to practice and acquire problem-solving, critical thinking and teamwork skills, as

well as softer skills such as working in teams with professionals. Our survey results suggest that 92 percent of apprentices and recent graduates rate worksite learning experiences as excellent.

Students said that their workplace experiences often provided opportunities to strengthen their math skills and introduced them to the latest technologies not available in school. However, as the chart below suggests, opportunities for apprentices to apply writing and reading skills at the worksite is relatively low according to the students.

****INSERT TABLE HERE****

Much of the students' enthusiasm about apprenticeship stems from opportunities to perform tasks on the job and in their youth apprenticeship classes that they never could experience at school. A Machining apprentice recounted an important experience that connected his related classes and needs in the workplace:

> I've never felt that anything I've done is useless. In my class, we worked with grinders and other machines we never use at school. I was in the tool room for a couple of weeks and got to surface grind because someone needed it done right away. There wasn't time to send the work out. I'm glad I know how to do that.

Students in the Drafting/Design, Manufacturing, and Printing apprenticeships said they enjoyed their work because it offered them opportunities to learn on the latest technology and equipment at the worksite. With a clear set of skills behind them, apprentices expressed the confidence needed to help them obtain permanent employment if they wanted it. For example, one Drafting/Design-Engineering student said, "My school just doesn't have this up-to-date software. I couldn't learn [these skills] anywhere else."

Our data on stakeholder perspectives and experiences does suggest that the degree of curriculum integration is inconsistent and varied across programs. While skills and knowledge

acquired through workplace experiences are obvious and for the most part positive, students were much less likely to see a connection between school-based learning experiences and those at work. For example, one student stated that her Youth Apprenticeship class was not challenging and she doubted that it enhanced her experience in anyway. Furthermore, parents, in spite of their many positive comments, continued to be concerned that the apprenticeship program would be regarded as another vocational program thus limiting their graduate's chances of attending a strong, academically oriented college or university.

Some students offered their criticisms of both the pedagogy and content they received on the worksite. Particular apprenticeship fields occasionally have trouble providing the full spectrum of experiences that the curriculum requires. For instance, several students felt that after mastering certain skills, they spent too much time in one area rather than experiencing the workplace in broad terms. In Drafting/Design, for example, students described spending a lot of time working on CAD blueprints. Other students felt that they were being asked to perform mundane tasks that were not really helping them to learn. Finance students told of spending too much time in bank teller positions filling in for critical labor shortages. One student's description of her experience as a teller in a bank exemplifies the predicament caused by trying to balance student and employer needs:

> You start off as a teller because the tellers are in the most demand....Banks are always short of tellers. No matter how many you have, you could still use some more. And they want to keep them there. No one wants to move you into the next competency because you are doing so well in that one....I had a personal banker who said, 'Okay, she's done, she knows how to be a teller. She knows everything she can. We've got to get her another competency or she's going to be behind'."

Another student said:

> You have to stand up for yourself and keep reminding them, "I'm here, but I'm here to train." Just because I know a lot about everything doesn't mean that they can tell me 'you're here today' [i.e., filling a temporary business need] when I am supposed to train that day. My training comes first.

Some of these work-based problems are rooted in national trends in particular industries. Consolidation of operations over the last decade has led to the specialization of functions within the workplace. Bank mergers, for instance, have led to downsizing and branches taking on more specialty roles increasing the difficulty of having students meet competencies at one workplace. A mentor at a bank in Sheboygan indicated, "The operations portion (of the Finance curriculum) is difficult to fulfill here because that work is done in Oshkosh."

One of the critical elements contributing to high quality learning experiences in a youth apprenticeship program is the role of the workplace mentor. The varied quality of mentoring prompted considerable conversation among the stakeholders. Most students spoke highly of their mentors and the relationship they had developed with them. In fact, 80 percent of student respondents rated mentoring and supervision at the worksite as "excellent." However, some students believed that their mentors were unavailable or uninvolved during their apprenticeships. Student and parent comments suggest that the quality of work-based learning experiences is uneven and, in some cases, negative. Their concerns focused on inconsistent or limited rotation between skill areas, minimal interaction with mentors, and sexist attitudes. An example of such concerns was voiced by a student who had just completed the first year of the program:

> You'll have conflicts in any school or workplace, but I felt that the people overseeing me at the worksite were not prepared as teachers and so they weren't as able to teach...My supervisor was not there very much. He was too busy to oversee what I was doing most of the time.

Some students never developed significant relationships with their mentors and, instead, sought assistance from other co-workers who were more approachable and helpful. Some students cautioned that mentors should be trained in such a manner as to ensure that the program remained an educational rather than simply work or a production experience. Other students and employers/mentors felt that mentors needed more training to assist them in taking on the responsibilities of mentorship and in becoming more aware of what this role entails on a daily basis. In at least a few cases , students questioned the ability of their mentors to teach the skills and processes of their occupation or to evaluate students accurately and appropriately.

Employers and mentors, however, defined their own set of workplace challenges in trying to create learning environments while also maintaining an efficient business. Some employers and mentors, particularly in the biotechnology program, counter that if they had longer, uninterrupted blocks of time to work with students these problems would not occur. Several employers admitted that their enthusiasm and capacity to help students decreases as their workload increases. Another employer acknowledged that mentors require specific training at the outset to familiarize them with the curriculum, competency checklists and the other important aspects of effective program operation.

Of even greater concern than mentors' pedagogical abilities were comments by some students (both female and male) that they had either experienced or witnessed attitudes that reflected traditional gender and occupational biases among some mentors. The number of students indicating concerns regarding sexism encountered in the workplace was small; however, their comments suggested that the decisions by some women to leave the program were a result of offensive remarks and actions on the part of male supervisors or employees. One apprentice

who witnessed the daily tension between a female apprentice and her male mentor in a traditionally male-dominated occupation explained her decision to drop out this way:

> I don't know a nice way to put it--I think [the female apprentice's mentor] was kind of sexist in a way because he would always be on her case about something. She was there to learn, but he was on her case....This [male supervisor] and she just didn't get along. So she just said 'to heck with it.'

One of the primary goals of the program is to facilitate the integration of women and minorities into occupations traditionally dominated by white males. As a result, the implications of discrimination of any kind occurring in the Youth Apprenticeship Program severely mitigate against one of the program's fundamental objectives--i.e., breaking down barriers to entry for occupations traditionally segregated according to gender and race. The issue of sexism in the workplace and the experiences described in this study are worth noting, especially when considering that 48 percent of WI youth apprentices are women and 80 percent of these women are enrolled in the Finance and Health programs-- traditionally female-dominated occupations.

Enhancement of Learning Experiences and Career Opportunities

Opportunities for professional and personal growth and development in Youth Apprenticeship were reported by students and parents. The opportunity to work one-on-one with adults in a work setting was a powerful experience for youth involved in the program. More than just learning about work and gaining professional work experience, data suggest that students also acquired a variety of personal skills that would benefit them in the future, regardless of their career decisions. According to stakeholders, apprentices showed the willingness and ability to accept responsibility, practice effective time management techniques, improve social and interpersonal skills, and develop independent decision-making skills. As a result of these

learning opportunities, students also demonstrated an enhanced sense of self-confidence, self-esteem, and personal pride. Students reported that their workplace experiences provided them opportunities to learn from adults other than their high school teachers, to work as peers with their adult co-workers, and to be part of work teams charged with performing important tasks for the business. One student's comment regarding the types of professional growth opportunities captures what many students told us, "...you have a chance to meet and work with adults...and you learn to take criticism, get along with others, [and] get used to a more professional atmosphere."

Most students felt that co-workers were supportive, understanding and helpful, and noted that working with adults in professional jobs also prompted others to have more respect for them. Students described their work experiences as helping them "learn...to act professionally, make speeches and give demonstrations, and communicate effectively." Many apprentices felt fortunate to gain work experience in a professional or technical workplace beyond what a student received in the typical service job. Parents also noted that students' self concepts and their motivation to perform well increased as a result of being regarded by mentors and workplace staff as adult co-workers and, in some cases, as vital assets to the organization. One student's parents put it this way:

> ...our son has [gained] a sense of real pride...he had a desk, a business card, a phone, and a computer. They treated him just like other employees...they had him working on a project right away...others in the office would stop and talk to him. He had a sense of pride when he came home.

Some students also suggested that the youth apprenticeship experience has also changed their views of adult life in general, and as a result has helped them to improve their relationships with other adults including their parents. For example, one senior noted:

> I matured a lot through this program. Now I have responsibility and have changed my attitude. I get along better with my parents and understand certain things better. This experience and working with adults helped with this.

With this respect in hand, students reported that the Youth Apprenticeship experience has introduced them to networks of other employers and companies who may prove beneficial in the future. Confirming Kantor's (1993) speculation, these youth apprentices may have gained the necessary skills and opportunities to effectively network for future employment and experience that they may not have had otherwise. For example, some of the recent graduates reported that even if there was not a full-time position available at their worksite, they were confident that their new connections with other employers will lead to a job somewhere in the area. Recent graduates who plan to attend college full-time believe they have an economic advantage in getting a part-time job in a field related to their apprenticeship. One student described why she believes the network she developed through her apprenticeship is advantageous:

> Another benefit would be networking because you really get to know a lot of people in high places. Especially in the banking and finance apprenticeships...the President of the [banking] group...knows your name and talks to you. You really get to know a lot of people, including people from other banks. Now with my experience, I didn't get [retained in my position], but I know so many people from other banks. I know someone from just about every bank and the major corporations.

Another finance youth apprentice was able to continue working for the same bank but in the city where she planned to go to college:

> As a result of my apprenticeship at the bank I was offered a part-time position at the bank's corporate headquarters in Minneapolis, which is where I will be attending college.

One of the criticisms of school-to-work programs such as youth apprenticeships has been the potential to narrow students' future educational and career options. However, our analysis of stakeholder perspectives in Wisconsin has not supported such concern. Stakeholders believed that the Youth Apprenticeship Program either creates career opportunities after high school or serves as a first step toward identifying a field of study that requires a postsecondary degree. For example, stakeholders associated with the finance, biotechnology, and drafting and design apprenticeships agreed that most students pursuing those careers required a bachelors degree to enter their fields. Conversely, apprentices in other areas such as printing and manufacturing/machining tended to favor pursuing technical degrees after graduation to attain their career goals. Specifically, 81 percent of apprentices we interviewed indicated they are working in a career field they intend to pursue. And 96 percent of apprentices and recent graduates we surveyed indicated they intend to pursue their career in a 2 or 4 year institution.

In spite of positive stakeholder perspectives concerning graduates' future opportunities, parents and students are concerned about the articulation of the program with institutions of higher education in Wisconsin. Currently, graduates can receive between 3 and 12 credits in advanced standing in related occupational programs in Wisconsin's technical colleges. However, the program is not aligned with academic admissions requirements for Wisconsin's four year state institutions. Parents and students believe that the lack of an articulation agreement with the

four year institutions reflects a persistent perception on the part of postsecondary academic institutions that youth apprenticeship is traditional vocational education.

Incentives and Obstacles for Employer Recruitment

Many participating employers believe that the program benefits both students and their businesses in ways that are difficult to measure. Many feel that involvement in the program provides visibility for their industry. One employer in a focus group said:

> There are some industries, and printing is one of them, that when you watch little kids playing, they want to be a fireman, they want to be a policeman, they want to be a farmer. I have yet to see anybody playing who wanted to be a printer. I think people view our industry as being very blue collar—aprons, caps, ink under the nails. That's part of it. But even that part is very technologically advanced. Most of the presses now are computerized. Computers are used for virtually every aspect of our industry. So the best way to market our industry is to expose people to it firsthand. For us, that has been a real benefit.

Employers are acutely aware of the costs of being involved with Youth Apprenticeship, and some estimate the cost to be as high as $15,000 per apprentice. Many stakeholders believe that additional funding to support this program would allow more employers to become involved and in turn, provide more opportunities for students. However, getting schools to support these higher costs is not a simple matter. One employer told us:

> My general feeling is that you either pay now or you pay later. It is going to cost a whole lot more later [to provide a high quality education]. But I also understand the reality of working in the school system. It is terribly difficult to justify the cost for one student for one year. Plus, by removing that student from the classroom, you haven't decreased the cost in the classroom either. I really feel that the bottom line is that if there were more funding available, participation would increase.

Some employers did indicate however, that having more funding may not allow them to take on significantly greater numbers of apprentices. At present, the state compiled data indicate that the typical participating business employs 1.6 apprentices. Due to the amount of time and

commitment necessary on the part of mentors and supervisors, there may still be a shortage of staff to conduct training and provide on-the-job support.

A number of participants in the educator and employer focus groups were concerned about the future status of Employer Training Grants, which have been offered to employers in the past to help subsidize the student's wages and other costs associated with the program. Some employers indicated that they return this money to the local consortium or reinvest it in the Youth Apprenticeship Program. Others believed this funding was crucial to maintaining the involvement of smaller employers who are less able to invest in the program financially. Several focus group participants indicated that some participating businesses back out of the youth apprenticeship program because of the program's financial uncertainties.

Discussion

We stated at the outset that, together, the School to Work Opportunities Act of 1994 and Goals 2000 were passed with the intent of creating a network of educational systems appropriate to local contexts and integrating school- and work-based learning in ways that prepare students for the modern workplace. Achieving this vision of a new vocationalism not only requires fundamental changes in the organization of content and approaches to pedagogy, but perhaps as important, depends on widespread sharing of local experiences to reach the nationwide "principled heterogeneity" of school-to-work programs that Grubb (1996) described. In conclusion, we consider how Wisconsin's Youth Apprenticeship Program (1) provides rigorous and integrated school- and work-based educational experiences; (2) enhances the learning experiences and career opportunities of apprentices; and (3) recruits and retains employers and students.

First, the youth apprenticeship program areas studied here reflect an evolution from past secondary work-based experiences that operated, for the most part, outside the purview of professional educators, to workplace opportunities that engage students in well conceived learning experiences that are then reflected upon and built on in the classroom. The introduction of state of the art technology, a broad perspective of industry operations, and theory-based classes directly linked to work experience all add to the strength of the program. However, despite these strengths we believe that traditional pressures to resist fully integrating academic and vocationally oriented curricula continue to persist. If the youth apprenticeship program is to truly integrate school- and work-based learning, then the core academic subjects must be more substantively integrated in ways that reflect apprentices' work-based learning experiences.

Furthermore, high-quality workplace mentoring is a requisite ingredient of youth apprenticeship programs to ensure the quality and rigor of work-based education components. To provide consistent high-quality mentoring across programs more emphasis must be placed on training work-based mentors. Training should focus on providing a wide range of industry experiences and skills, as well as encouraging and promoting the participation of minorities and women in what are often traditionally male dominated occupations. Finally, complicating the issue, is the unpredictable nature of local economies. Small businesses often cannot offer a wide range of workplace experiences or exposure to the full range of technologies in a particular industry, nor can small businesses always afford the time for mentors to offer adequate supervision of apprentices to enable them to gain a thorough understanding of an entire process.

Second, another positive outcome for Wisconsin's Youth Apprenticeship Program participants is the acquisition and development of myriad skills. Unlike traditional vocational

education programs, Wisconsin's experience provides students the opportunity to obtain state of the art industry skills and knowledge. Youth apprentices were able to develop many of the skills cited in state and federal legislation, and many of the current educational reforms--i.e., critical-thinking and problem-solving skills, as well as the interpersonal skills needed to work effectively as part of a team.

Third, dual track secondary education systems, often cited as the Achilles heel of traditional vocational education, were thought to funnel vocational students into non-college career tracks. Equity concerns coupled with an increasingly high-tech and rapidly changing workplace render such systems untenable today. In contrast, Wisconsin's youth apprentices have seen their future options expanded due to their exposure to quality workplace experiences, which served an exploratory function helping students, define their career paths.

In spite of student and parent perceptions that youth apprenticeships create future options, questions concerning such issues as the transferability of youth apprenticeship advanced standing credit to postsecondary institutions persist. Along traditional lines, academically oriented colleges and universities have been reluctant to develop articulation agreements that would allow apprentices to earn advanced standing credit for their experiences. If the program is going to become fully integrated into high school programs, articulating such agreements is crucial.

Finally, while predominantly successful in the minds of stakeholders, Wisconsin's Youth Apprenticeship Program serves a small fraction of the state's public high school students. To date 976 students are enrolled or have graduated from the program. However, bringing the program up to scale is made difficult by the limited number of businesses involved. In addition, the fact that even large businesses tend to hire few apprentices at one time makes envisioning the

rapid growth of the program difficult. This challenge is further complicated by unpredictable economies at the state and regional levels that exacerbate the tenuous nature of a program sensitive to changing economic cycles.

Overall, Wisconsin's Youth Apprenticeship Program serves as a powerful example of the educational potential inherent in well integrated programs that connect education and future careers. As seen here, these programs can act as the conduit between secondary and postsecondary education and, eventually, high skilled careers. To achieve this, however, more businesses must be brought into the fold in order to provide enough apprenticeship opportunities to make a significant difference. Future issues that need to be addressed could include cost-benefit analyses of business participation, the long-term impact on graduates, and improving the way youth apprenticeship programs are integrated with core academic subjects.

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Table 1: Percent of students indicating apprenticeship experiences enabled them to "apply" skills effectively relating to:	
Problem-solving	86%
Teamwork	84%
Technology use	84%
Math	78%
Reading	54%
Writing	40%

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