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TECH PREP IMPLEMENTATION IN THE UNITED STATES:

PROMISING TRENDS & LINGERING CHALLENGES

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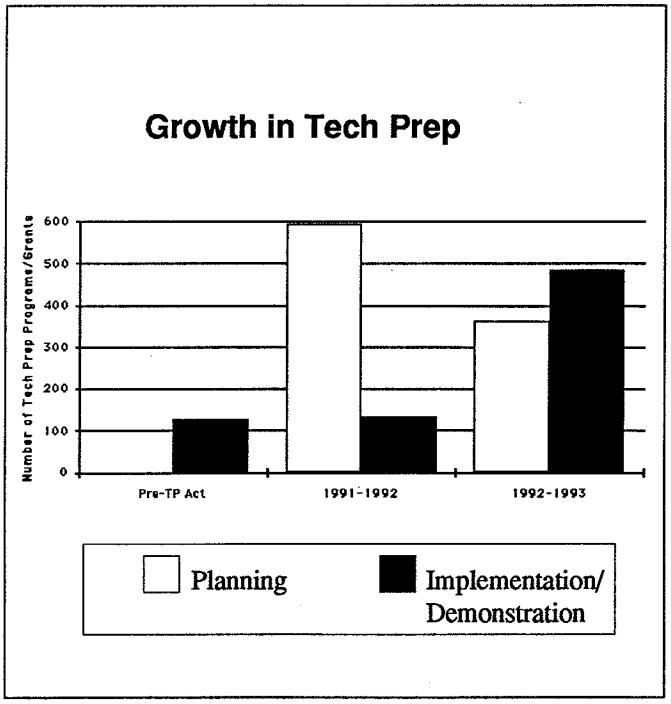
Introduction to the Study

Tech Prep represents a relatively new investment of federal resources in reform of the American educational system. The concept has spread rapidly since federal support became available in July of 1991. In the year prior to the start of federal funding, only 18 percent of the nation's secondary schools and 11 percent of vocational-technical education programs professed to have Tech Prep (U.S. General Accounting Office, 1993). By the fall of 1992, over 850 local consortia with multiple secondary and postsecondary schools were taking part in federally-funded activities (Layton & Bragg, 1992).



Tech Prep is also being identified as one of several promising programs in the new School to Work Opportunities Act (STWO). This legislation is intended to provide the basis for a new national school-to-work transition system linking education and work. One important goal of this law, along with its companion bill the Goals 2000: Educate America Act, is to promote systemic educational reform to improve the quality of teaching and learning in classrooms and workplaces throughout the nation.

Tech Prep is at a critical point where information needs to be collected and disseminated for several reasons: 1) to understand how local practitioners conceptualize Tech Prep; 2) to determine how specific components of Tech Prep and the overall initiatives are perceived to be progressing; 3) to identify potential barriers to local implementation; and 4) to understand the strengths and weaknesses of various strategies and approaches. This information is essential to understanding the extent to which local implementation efforts are consistent with the intent of the Tech Prep Education Act. Further, information from a national study of local implementation can assist federal, state, and local policy makers to develop new options and directions for Tech Prep. Findings from this study can also inform researchers, practitioners, and other concerned parties about current efforts to implement Tech Prep.

This study examined Tech Prep implementation in the United States. The primary purpose of the study was to describe the goals and actions undertaken by local consortia to implement Tech Prep. Five research questions guided the study:

1. **What are the characteristics of Tech Prep local consortia and their coordinators?**
2. **What are the goals, elements, and outcomes of local Tech Prep initiatives?**
3. **At what stage of implementation are local Tech Prep initiatives and the selected Tech Prep components operating within these initiatives?**
4. **What barriers are perceived to impact local Tech Prep implementation?**
5. **What do local coordinators perceive to be needed changes in federal & state policy?**

These five questions provided the basis for the development of a 16-page questionnaire mailed to a nationally-representative sample of local consortium coordinators. Of all 473 in the sample, 397 coordinators ultimately responded, yielding a response rate of 84 percent. Based on the information provided in the questionnaires, data were tabulated, analyzed, and reported to create a comprehensive picture of local Tech Prep implementation. These findings help to explain what has happened with Tech Prep on a nationwide basis through the first two years of federal support.

Our intention in conducting this research was to move beyond the rhetoric of Tech Prep and address important yet unanswered questions: Is Tech Prep a reform of vocational education? Is it educational reform for *all*? Can Tech Prep help students transition from school to work? Is Tech Prep delivering on its promises? These are not easy questions and certainly there are no simple answers. This study has helped to paint a picture of what Tech Prep is about from the perspective of those closest to it: local Tech Prep coordinators. In many ways the study has confirmed earlier hunches. On occasion, it produced unanticipated results. In all, evident in these results are many promising trends and lingering challenges—the very trends and challenges that will determine the role Tech Prep will play in the changing landscape of American education.

Characteristics of Consortia

Nationwide, as many as 50 percent of secondary schools have engaged in local Tech Prep consortium activities and an even greater percentage of U.S. community, junior, and technical colleges have taken part. In the majority of local consortia, two-year colleges have acted as the fiscal agent for Tech Prep grants and provided a centralized location for the local coordinator. A typical local consortium has involved many organizations. On average, local consortia involved 12 secondary and two postsecondary schools in 1992-93. The majority also involved an average of 10 private-sector business and industry firms. Other types of organizations inside or outside of education such as community-based organizations or student leadership groups were not typically identified as part of a consortium. Also absent from most consortia were four-year colleges and universities, which may help to explain a widespread perception of a lack of support for Tech Prep by four-year colleges and universities, a finding that surfaced repeatedly in this study.

The organizational structure of most local consortia included various committees or teams associated with particular program components as well as participating consortium schools. For example, the majority of coordinators reported having curriculum, planning, business and industry collaboration, staff development, guidance and counseling, and promotion and marketing committees or teams operating during the 1992-93 year. In addition, most coordinators also reported having either site-based committees or teams in some or all of their schools. Consortium-level executive committees, governing boards, and/or advisory committees were used widely as well.

Findings also showed that education personnel who contributed to local Tech Prep implementation activities represented several key groups. Of course, some groups were more highly represented than others. Personnel at the secondary level outnumbered those from the postsecondary level in in-service and implementation activities. At both levels, vocational faculty, counselors, and administrators were represented more fully than academic faculty. Secondary and postsecondary administrators and vocational faculty were perceived to be more supportive of Tech Prep than either counselors or academic faculty.

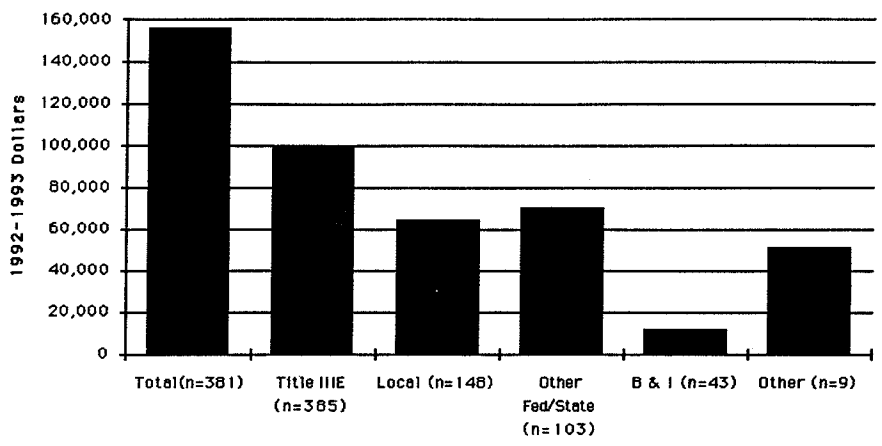
Other groups perceived to have a "good" level of support were students, parents, business and industry representatives, state agency personnel, and secondary school boards. Rated at the bottom of the list of supporters were four-year college and university personnel, reinforcing an earlier point about a perceived lack of support for Tech Prep by four-year higher education institutions.

Funding of Tech Prep

There can be no doubt that federal funding has played a critical role in facilitating local Tech Prep implementation efforts. Approximately two-thirds of all funds used for Tech Prep at the local level have been Perkins Title IIIE funds. Nearly all consortia have obtained some federal funding; 42 percent have had *only* federal funding. Yet, when funds other than Title IIIE were obtained from other federal, state, or local sources, as they were for 58 percent of those surveyed, they were substantial. For example, funds obtained from other federal or state sources averaged $70,000 and funds from other local sources averaged $64,000, showing that other sources have contributed significant dollars to Tech Prep efforts.

Although the total grant sum may sound sizable, averaging over $150,000 per consortium, a commonly reported issue for local coordinators was the adequacy of

Funding of Tech Prep by Source



funds to make changes for Tech Prep. When considering the size of a typical Tech Prep consortium and the magnitude of activities local practitioners were attempting to carry out, it is not surprising that a lack of funding arose as a top-ranked barrier to local implementation. Contributing to that issue was the finding that relatively few private-sector business and industry funds were reported for Tech Prep and, of the 11 percent reported, the average was only $11,000, accounting for only about seven percent of the average Tech Prep grant. A challenge for the future is in shifting funding from the "seed money" available from the federal level to the state and local levels as well as other alternative sources that can help to ensure that Tech Prep is firmly woven into the fabric of education at the local level.

When provided with a list of seven categories of activities upon which the total amount of Tech Prep funds could be spent, respondents indicated the vast majority of funds were being spent in five areas: program administration, staff development, equipment purchases, curriculum development, and curriculum and instructional materials purchases. Of these five, program administration and staff development were the categories receiving the largest percentage of funds. Spending in these areas is likely to represent the emphasis of local consortia on organizing and managing consortium efforts as well as carrying out federally-mandated professional development activities. Funding for promotions and marketing, evaluation and "other" activities were much less extensive.

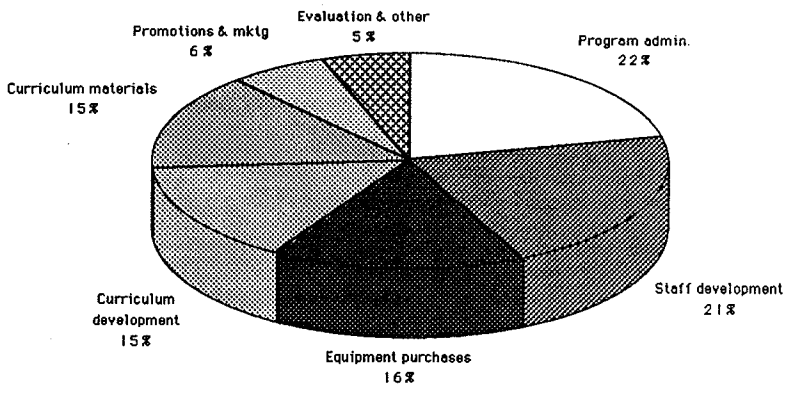
Characteristics of Coordinators

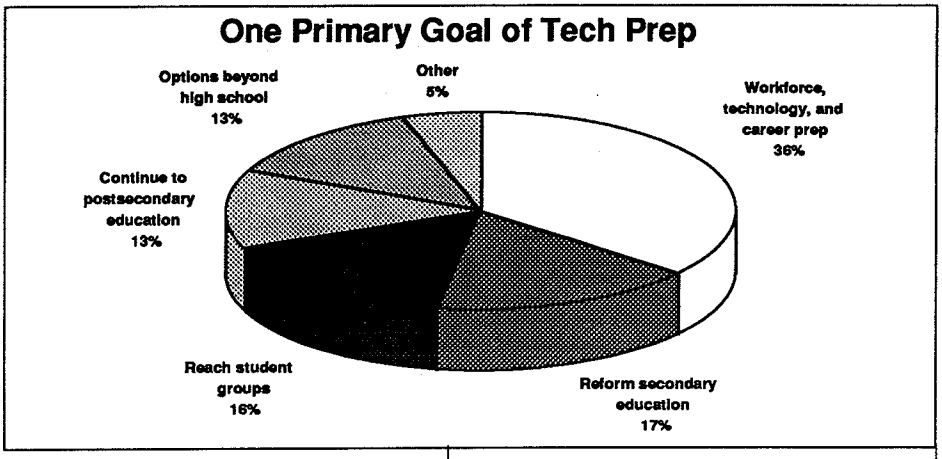
Findings from this study indicate that the tenure of local Tech Prep coordinators was similar to the funding pattern for Tech Prep grants. (Recall that one-third of the consortia were first funded in 1992 with Title IIIE monies; two-thirds were first funded in 1991 with these federal dollars.) Twenty-six percent of the respondents had been working as a local Tech Prep coordinator for 12 months or less; another 41 percent had been in the coordinator role for between 13 and 24 months. Finally, another 33 percent had been working as a local coordinator for longer than 24 months, which may be indicative of the relatively small number of consortia operating Tech Prep-type programs prior to having federal Tech Prep funds in 1991 or 1992.

Two-year postsecondary schools were the largest employer of Tech Prep coordinators with just over 50 percent of the respondents reporting their immediate supervisor to be at that level. Secondary schools employed another 33 percent of the coordinators. Slightly over one-third of the coordinators were full-time. Most coordinators were working on Tech Prep part-time or as a part of another regular job, while 21 percent of the coordinators had the duties of Tech Prep added to their existing full-time responsibilities. The average number of hours per week spent on Tech Prep activities was about 28; 44 of those responding spent 20 hours or less per week on Tech Prep, and 23 percent spent more than 40 hours.

Respondents were also asked to indicate any previous professional work experience. Approximately one-half had been educational administrators or

Local Allocation of Total Tech Prep Funds





vocational teachers; about one-third had been academic teachers. Twenty-nine percent had worked in business and industry. On average, local coordinators were highly experienced and educated. About 55 percent had been employed in an educational setting for 21 years or more. Over 80 percent had obtained a master's or doctoral degree. Although respondents were not asked to indicate their gender, a rough estimate was made based on a classification of the names provided. Forty-eight percent could be identified as male, forty-seven percent as female, and five percent could not be determined.

Goals, Elements, and Outcomes

What is it that local coordinators say their consortia were attempting to accomplish when implementing Tech Prep? Our research looked at this question from several different perspectives. First, we asked what one primary goal was to be addressed by a Tech Prep initiative. The responses clustered around six themes and one theme was somewhat dominant. Thirty-six percent of the coordinators identified the goal of enhancing workforce, technology, and career preparation for students. Seventeen percent of coordinators described Tech Prep as primarily about reforming secondary education and another 16 percent indicated the primary goal to be about reaching various student groups, primarily while in high school.

These latter two themes focused heavily on reform of secondary education, often making little or no reference to Tech Prep beyond that level. On the other hand, another 26 percent of the coordinators described goals for Tech Prep that primarily focused on postsecondary education and ensuring students had options beyond high school. Together, these six themes displayed a very diverse mission for Tech Prep. Inherent in that mission were contradictions and contending views about what local consortia thought Tech Prep should be about.

This conclusion is reinforced by the responses of coordinators to a question about the primary target group for Tech Prep. In selecting the primary student population for Tech Prep, local coordinators were asked to indicate the class rank percentiles of students they viewed to be their primary target of Tech Prep initiatives. Again, similarly to the variation observed with goals, coordinators' responses varied widely. Almost one-half of the coordinators selected the 25th-75th percentile, the so-called "neglected majority." Nearly another one-quarter selected the 50th-75th percentile, i.e., those students whose academic performance ranked them just below the top quartile of college-bound students. Another 11 percent selected all students. Finally, another 14 percent selected other groups of students, often those in the bottom two class rank quartiles.

The variation in these responses was reflective of the differences in primary goals for Tech Prep, particularly in goals that were seen as targeting particular aspects of Tech Prep to certain student populations, focusing Tech Prep at the secondary or postsecondary level, and giving Tech Prep a broader or narrower focus on workforce, technology, and career preparation. These findings support earlier research that noted, with concern, the broad and conflicting goals for Tech Prep (Layton & Bragg, 1992). To the extent that Tech Prep is viewed as another educational track, we fear that it will *not* play a role in restructuring education as many have hoped. Clarifying the general intent of federal Tech Prep policy to assist in meeting the needs of *all* students would go a long way to assist practitioners with local implementation efforts and ensure Tech Prep a viable place in America's educational reform agenda.

Interestingly, although variation was apparent in both the goals and intended audience for Tech Prep, it was not apparent in student outcomes. Coordinator ratings of outcomes showed a high level of consensus. Fifteen of the seventeen student outcomes in the questionnaire were given a "high" or "very high" mean rating. These fifteen highly rated outcomes presented a broad array of expectations for Tech Prep participants and graduates. They ranged from the top ranked outcome of improved knowledge and skills in math to increased interpersonal skills to employability in high-wage jobs to increased self esteem.

Together, these student outcomes point to a core curriculum for Tech Prep that is highly focused on academics, career preparation, interpersonal and employability skills development, matriculation to postsecondary education, and eventual high-skills employment. These outcomes indicate the importance of greater focus on increased standards for students, increased expectations for academic and vocational attainment, and higher rates of matriculation from high school to college.

Curriculum Reform

Given our general understanding of what Tech Prep curriculum could look like, the findings from this study point out how curriculum reform associated with Tech Prep actually occurred. These findings

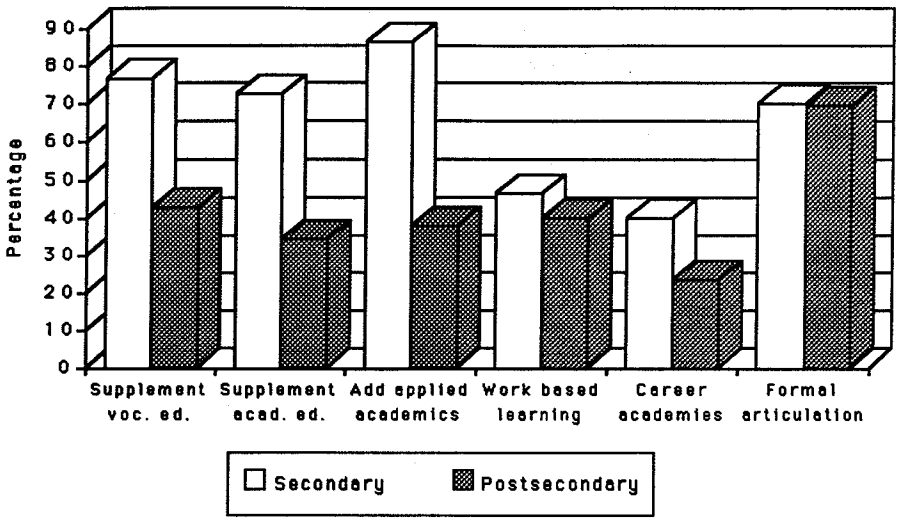
indicate that curriculum reform focused extensively on the secondary level, except in the creation of formal articulation agreements for vocational and academic programs-an action that required participation by both the secondary and postsecondary levels. (The vocational areas most frequently identified as the focus of Tech Prep were business and office, trade and industrial, industrial technology education, and health occupations.)

Beyond articulation efforts, the predominant curriculum reform strategy used by local consortia was to add applied academics (commercially- or locally-developed) to existing curricula or replace existing courses with applied academics, primarily at the secondary level. Consortia also reported supplementing existing academic courses with vocational material and vice versa. Action taken to organize curriculum around occupational/career clusters was also reported by the majority of the coordinators. Only in the case of using occupational/career clusters were any of these reform efforts carried out by more than one-half of local consortia at the postsecondary level, raising a concern about the focus of Tech Prep curriculum reform at this level.

Overall, these findings indicate that the vast majority of consortia throughout the country have adopted aspects of the Tech Prep Associate Degree (TPAD) model, which is particularly evident in the large percentage reporting using applied academics. Implementation of other models such as integrated or work-based Tech Prep models is much less evident. However, a minority of consortia did report providing work-based learning, career academies, and/or interdisciplinary courses, indicating that some consortia may be experimenting with these newer approaches.

In fact, the study showed that there was a relationship between stage of implementation of Tech Prep overall and conducting newer reforms, offering the potential for increased use of various reform strategies as local consortia progress further along with implementation.

Frequency of Selected Curriculum Strategies as Focus of Tech Prep Reform



Beyond curriculum reforms, other components were identified as important to local consortium efforts. The findings showed a high level of consensus among local coordinators concerning the elements or components they intend to include in Tech Prep. Over 90 percent of the coordinators indicated that their consortium documents formally stated as foci of Tech Prep the following: formal articulation agreements, integrated academic and vocational curriculum, career guidance including career awareness and exploration, collaboration between educators and employers, equal access to the full range of Tech Prep for special populations, and common core curriculum in math, science, communications, and technologies.

Over two-thirds of the coordinators also reported the foci of Tech Prep to include joint in-service for teachers, marketing, training of joint in-service for teachers, marketing, training of counselors, preparatory services, new teaching methods, and work-based learning. (Note that among those identified are the "essential elements" that appear in the Tech Prep education Act.)

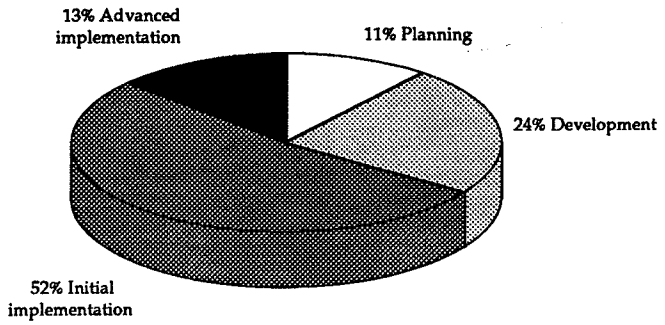
Although coordinators concurred on the importance of these components, additional findings indicate the extent to which consortia had actually implemented these and other components time they had received Title IIIE funds and the stage of implementation of Tech Prep overall. The stage of implementation of a few of the components was also related to whether the consortium was situated in a rural, suburban, or urban location.

Stage of Implementation

Based on a self-assessment of the overall stage of implementation of Tech Prep, 66 percent of the local coordinators rated their consortia at the initial or advanced implementation stage and 33 percent rated them at the planning or development stage. Respondents were also asked to rate 30 components on a similar stage of implementation scale of 1 for "not begun" to 5 for "advanced implementation." Of the 30 components, only the two of consortium building and formal articulation received a mean rating above 4.0, indicating the two components considered farthest along were at the initial implementation stage. The vast majority of components, including those described previously as the formally stated foci of Tech Prep were given mean ratings of between 3.0 and 3.8 (development stage); eleven were rated below 3.0 (planning stage.)

Several of the "essential elements" still considered at the "development" stage were 2+2 core curriculum, joint in-service of faculty, training of counselors,

Overall Stage of Tech Prep Implementation



other components received a mean rating that placed them at the planning stage. Included in this group were joint planning time, evaluation-related components such as program evaluation and alternative assessment, and STW-related components such as work-based learning and apprenticeships.

Seeing these components at such an early stage may raise concern. However, it is important to remember that one-third of the respondents' consortia were involved in first year planning grants; the remaining had implementation grants for only two years. It is also important to know that as consortia advanced to higher levels of implementation several of these components advanced as well.

Advancement in the overall stage of implementation of Tech Prep was related to twelve variables, including secondary academic and vocational integration, development of 2+2 core curriculum, team building, evaluation, development of advanced skills curriculum, equal access for all students, and apprenticeships. These findings point to the importance of facilitating local efforts over a fairly long time period and setting clearly established milestones. Even in consortia that viewed their activities to be the most advanced, there was a range of progress made on implementation of individual components. Providing information about how this progression of implementation can logically occur can help new consortia implement Tech Prep more fully.

Barriers Impacting Implementation

A study of local implementation of Tech Prep would be incomplete without focusing at least partly on barriers. In the questionnaire, a list of 50 barriers was presented and respondents indicated their perceptions of the impact of each barrier from none to major. Of the 50 barriers, 10 were rated over 3.7 indicating they were considered to be at or near the major impact level.

The group mean, the top barrier was that of little joint planning time for academic and vocational or secondary and postsecondary faculty. The next three barriers were failure of four-year colleges to award credit for applied academics or Tech Prep courses, lack of general awareness of Tech Prep, and lack of staff, time, and money. Of the six remaining barriers at the major impact level, three focused on problems with existing educational bureaucracies, implementing change with personnel who lack the knowledge and skills to do so, and resistance from academic educators.

These top ranked barriers were examined by grouping respondents in several ways: 1) setting, 2) the year first funded with Title IIIE monies, and 3) level of implementation of Tech Prep overall. Looking first at setting, the data revealed that the location of the consortium had little relationship to barriers except in one very important case. Rural consortia reported a lack of jobs in the region for Tech Prep graduates, raising concern about the feasibility of work-based learning in business and industry in these settings.

When examining the barriers according to first year funded and level of implementation of Tech Prep overall, all barriers were seen as having less impact when consortia were rated at higher stages of implementation. For nine of the top-ranked barriers, the difference between the groups was statistically significant, indicating a relationship between having more time and experience with Tech Prep and

Barriers Impacting Tech Prep Implementation

Top 5

Barrier	*Mean*
1. Little time for joint planning	4.21
2. Failure of 4-year schools to grant credit for TP courses	4.08
3. Lack of general awareness of TP	4.06
4. Lack of staff, time, and money	4.04
5. Belief that TP is a passing fad	3.84

(Scale 1 to 6; 1=none to 6=very major)

Bottom 5

Barrier	*Mean*
1. Lack of cooperation from teachers' unions	2.05
2. Pressure from special interest groups	2.07
3. Too much flexibility in local implementation	2.31
4. Lack of support from labor organizations	2.32
5. Failure of 2-year postsecondary schools to accommodate TP students	2.35

(Scale 1 to 6; 1=none to 6=very major)

perceiving the barriers to decline in importance.

It is important to note, however, that for six of the top-ranked barriers, this pattern was not evident. These six barriers were lack of staff, time, and money; failure of four-year colleges to award credit for Tech Prep; lack of funds for curriculum reform; negative attitude toward vocational education; lack of counselor involvement with Tech Prep; and limited use of Tech Prep for equipment, instructional materials. These six barriers did not diminish with time and experience but remained obstacles to local implementation throughout.

Coordinators' Policy Recommendations

The last set of findings focus on ten groups of recommendations for federal or state policy changes made by the local coordinators responding to the survey. Their responses were open-ended and categorized into ten groups of recommendations, many of which parallel the barriers identified in the previous section of the study. These recommendations focus on the following:

Local Coordinator Policy Recommendations

1) Extend Tech Prep into lower grades than eleven
2) Provide more money
3) Provide more flexibility in fund usage
4) Promote Tech Prep at federal, state and local levels
5) Mandate Tech Prep at the state level
6) Authorize support for Tech Prep for more than 3 years
7) Ensure federal policy provides clear definitions and consistent goals for Tech Prep
8) Coordinate Tech Prep with other reform initiatives, including Goals 2000 and School-to-Work Opportunities (STWO)
9) Facilitate college credit for Tech Prep and increase four-year college involvement
10) Ensure evaluation, accountability and high standards for Tech Prep programs

Conclusion

This study has helped describe the efforts of local consortia throughout the nation attempting to implement Tech Prep. Findings obtained from this national research study have revealed useful information and addressed important questions.

First, is Tech Prep a reform of vocational education? Findings from this study suggest that it is an active and potentially important reform of vocational education as evidenced by the involvement and support of vocational faculty, the focus of goals and outcomes on higher levels of academic and vocational competencies, and reform strategies involving vocational curriculum.

Is Tech Prep educational reform for *all*? Here the findings are less clear. They suggest that only a small minority of local consortia see their target population as *all* students or offer goals that focus on meeting the needs of all, even though equal access for all students appeared to be a priority for most consortia.

Rather, the overall findings lead us to conclude that Tech Prep is seen as an effort targeted primarily at those students often described as "neglected" by other educational reforms—as early leaders envisioned it. This is an important goal; however, it may prevent other students, either those more or less academically capable, from participating in Tech Prep. It may also yield another track in high school curriculum. To change this orientation will require clear and focused policy directives from the federal level to reinforce the idea that Tech Prep is a reform for *all*.

Can Tech Prep be a vehicle to help students transition from school to work? These findings indicate that, at least to date, components linked to new STWO legislation such as work-based learning and youth apprenticeships have not been widely implemented with Tech Prep. However, the study has showed that as consortia gain more experience and perceive themselves to advance to higher stages of implementation, they are more likely to engage in STWO efforts. Again, with clear policy established at all levels, it appears there is little to prohibit Tech Prep from becoming a viable STWO option.

Finally, is Tech Prep delivering on its promises? This study indicates that local consortia are engaging in a multitude of efforts to implement Tech Prep. Change is beginning to take place, but to achieve full-scale Tech Prep programs will take time. Steps forward are not without difficulty, and many challenges linger. Most serious among these are barriers arising from coordinating Tech Prep reform with the many groups that can be influential in its ultimate success, i.e., academic and vocational educators, secondary and postsecondary schools, and educators and employers.

Yet, although these struggles are real, many are seen as lessening in importance when consortia devote time to Tech Prep and gain experience with implementing it. In settings where implementation is viewed as more advanced, the promise of Tech Prep as an educational reform seems more evident. The continuing challenge for the nation is to support the many local initiatives that show commitment to Tech Prep in ways that ensure reform will be significant and lasting.

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Who we are

The Office of Community College Research and Leadership was established in 1989 at the University of Illinois at Urbana-Champaign (UIUC). *Our mission is to provide research, leadership, and service to community college leaders and assist in improving the quality of vocational-technical education in the Illinois community college system.* The Office is supported by the Illinois State Board of Education, Department of Adult, Vocational and Technical Education with funding from the Carl. D. Perkins Vocational and Applied Technology Education Act of 1990. For more information about the office, phone: 217/333-0807 or FAX: 217/244-5632.

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For more info

The study was conducted during 1993 by the University of Illinois site of NCRVE under the direction of Debra D. Bragg. NCRVE is established under authorization of the Carl D. Perkins Vocational Education Act to conduct applied research and development in vocational education and is located at the University of California at Berkeley. This study was prepared pursuant to a grant with NCRVE and the Office of Vocational and Adult Education. Grantees undertaking such projects under government sponsorship are encouraged to express freely their judgement in professional and technical matters. Points of view or opinions do not necessarily represent official U.S. Department of Education or NCRVE position or policy.

For further information about this study, the technical report entitled *Tech Prep Implementation in the United States: Promising Trends and Lingering Challenges* will be available from the NCRVE Materials Distribution Center later this spring. A second report based on these survey findings and related research will be available from NCRVE later in 1994. It is tentatively entitled *Building Futures: Restructuring Education with Tech Prep*. To order these or other NCRVE products, call 1-800-537-7652.