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IN SEARCH OF VOCATIONAL AND TECHNICAL TEACHER EDUCATION

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Running Head: Vocational Teacher Education

Abstract

Aggregated program and enrollment data about specialized vocational and technical teacher education programs as they currently exist in our nation's colleges and universities are presented. Some analysis is provided about the future supply and demand of vocational and technical education teachers. It is concluded that our nation's colleges and universities have greatly diminished their capacity to prepare teachers for vocational and technical education programs. Even with the decreasing supply, it is doubtful that there will be a large demand for traditional vocational teachers. There may be a shortage of teachers well prepared to teach in new or modified work-based education programs, technology, and technological applications. Further, a clearly focused conceptual framework undergirding vocational and technical teacher education in our nation's colleges and universities has yet to be developed.

If change is unsettling, these are indeed agitated times. Change and the resultant agitation are especially apparent as our nation's leaders and scholars debate the content and processes that must be in place to insure that American youth and adults are adequately prepared for realities of the modern workplace, contemporary society, applications from technology, and the international arena--now and in the future.

Literally scores of policy-oriented documents have been published in the last 12 years demanding that schools educate better all children, youth, and adults. The Government (e.g., through the Carl D. Perkins Vocational and Applied Technology Education Act of 1990--Perkins II and the School-to-Work Opportunities Act--STWOA) has called for a different type of education and for redirected training programs to prepare our nation's students for the 21st Century workplace. Numerous reform initiatives have been postulated or conceptualized and a few have been implemented and (sometimes) evaluated in the public schools in the past ten years--often with mixed results (for further discussion see Lynch, Smith, & Rojewski, 1994).

Generally, researchers and policy groups conclude that long-term sustaining, substantive changes will occur in public education only if implemented at the grassroots level--in local communities and schools and by classroom teachers. But, too often, local personnel seem unable, unwilling, or insufficiently informed to make necessary changes. And thus, many recent education reform efforts have met with mixed results.

Recently, the Education Commission of the States placed "part of the blame" for the disappointing results of various education reform movements at the doors of colleges and universities that have failed to rehabilitate teacher training. And so did the Alliance for Curriculum Reform which reported that only seven out of 3,380 high schools studied had combined popular school reforms with new teacher training (See Vocational Training News, 1994, p.2).

These reports, as well as many others addressing education reform, cite particularly the inability of teachers, school administrators, and other educational leaders (e.g., school boards) to negotiate curricular, pedagogical, and technological changes needed to bring about meaningful reform in public education. Scholars and observers of education say higher education institutions are not adequately preparing teachers (and school leaders) for change and are not addressing essential elements in school reform. Teachers continue to teach the way they've always been taught, primarily in very subject-specific contexts.

Similar comments emanate from state and local administrators responsible for vocational and technical education as they wrestle with the necessary changes underlying Perkins II and STWOA. Commentary--often accusatory in nature--ranges from the nonresponsiveness of colleges and universities to reform initiatives in vocational and technical education, low production of vocational and technical education teachers, inappropriate preparation of the few vocational and technical teachers that colleges and universities are producing, out-of-date professors, and on and on and on.

Purposes

The information and data provided in this article are part of a larger research, data, and information agenda prepared for and about vocational and technical teacher education in American colleges and universities. The data and information are intended to overcome the serious lack of knowledge about where, when, what, how, to whom, and by whom vocational and technical teacher education is provided (Lynch, 1991).

Data have been collected about the responsiveness of vocational and technical teacher education to initiatives in Perkins II and to other reform movements related to work-based education. Information has been assembled about the preparation of vocational and technical education teachers, their occupational experiences, and their effectiveness--with a particular focus on those who are alternatively certified (Lynch, in press-a). Information has also being gathered on the professoriate, the financial status of vocational teacher education and the responsiveness of vocational and technical teacher education to major initiatives in Perkins II (Lynch, in press-b). These activities have been funded and supported in part by the National Assessment of Vocational Education, the National Center for Research in Vocational Education, and the University Council on Vocational Education.

This article provides aggregated program and enrollment data about specialized vocational and technical teacher education as it currently exists in our nation's colleges and universities. Available information is provided about subject-specific programs areas (i.e., college majors) traditionally identified with vocational and technical teacher education. Some analysis and commentary are then provided about the future supply

and demand of vocational and technical education teachers.

Assumptions and Limitations

Data and information provided herein about vocational and technical teacher education at our nation's colleges and universities are limited as follows:

1. Macro information is focused on vocational and technical teacher education as it exists in our nation's colleges and universities, primarily at the preservice level. Programs sponsored by state departments of education, professional associations, local school systems, and consultants and vendors under contract -- such as inservice and staff development to initially certify trade teachers, induct new teachers, or upgrade the knowledge and skills of teachers -- are not discussed.
2. State vocational education certification policies, related requirements and regulations, and their impact on vocational and technical teacher education at colleges and universities are not discussed.
3. Aggregated data and information as published in extant literature served as the framework for data reporting and analysis. These data were not collected nor reported in a systematic, consistent way among the various studies, by various authors, and in various subject areas. Thus, the reader is advised to interpret data cautiously.

Background

It is not easy to determine exactly how many U. S. colleges and universities actually offer baccalaureate degrees (or programs) to prepare teachers of vocational and technical education. A primary reason for this difficulty is that the words, vocational teacher education, are not always the descriptors used to identify such programs. Rather, programs are more apt to be called by their subject-specific names (e.g., agricultural education, business education, home economics education). The problem is compounded in that there is no nationally-published directory identifying vocational and technical teacher education programs.

A second reason is that programs that do exist are administered in very diverse units on our nation's college and university campuses. Lynch (1991) found vocational teacher education administered in eight different colleges or schools and six departmental administrative structures. For example, agricultural teacher education might be administered in the College of Agriculture, business education in the College of Business, and technology education in the College of Education--all on the same campus.

An even more serious problem is that there is no agreed-upon conceptual framework or knowledge-base related to education for the workplace and workforce development that professionals or professional associations have codified as important in the preparation of teachers for secondary, postsecondary, or adult vocational and technical education programs. Thus, there does not seem to be a strong sense of professional identity with a body of knowledge and a discipline related to vocational and technical teacher education.

Rather, vocational and technical teacher education programs still tend to be organized by programs identified specifically and historically in vocational education legislation; that is, by those in the Smith-Hughes Act of 1917 (agricultural education, home economics/family and consumer sciences education, and trade and industrial education) and subsequent federal legislation (distributive/marketing education, industrial arts/technology education, business education, health occupations education, and vocational special needs). The primary delivery system at most colleges and universities is to prepare vocational and technical education teachers through baccalaureate degrees in one of these vocational education program areas. There are some exceptions, primarily in trade and industrial education, health occupations, and technical education. In these vocational education program areas, the majority of teachers initially receive alternative certification by substituting years of occupational experience for college-level preparation. However, a large percentage of these alternatively-certified teachers eventually receive college degrees in an education subject area.

By creating a matrix from subject-specific directories of teacher education programs, Lynch (1991) reported vocational and technical teacher education existing in some form at 428 colleges and universities in the 50 states, Puerto Rico, Guam, and Washington, DC. This is approximately one-third of the more than 1,200

American colleges and universities which have the preparation of teachers as one aspect of their mission.

According to information published in 1988-89 program area directories, there were 90 teacher education programs in agricultural education, 236 in business education, 32 in health occupations education, 268 in home economics education, 89 in marketing education, 176 in industrial arts or technology education, 122 in trade and industrial education, and 98 in vocational special needs (Lynch, 1991, p. 191).

Upon closer review -- through mail surveys and telephone interviews -- Lynch (1991), however, found these numbers to be considerably inflated. Several colleges and universities--at least 10%--had closed their vocational and technical teacher education programs. Many other programs (at least another 10%) had not graduated vocational and technical education teachers in years. Some college officials responded that they didn't really have vocational and technical teacher education programs, and they didn't consider the preparation of such teachers to be part of their mission.

Further, although faculty at many institutions had at one time engaged actively in teacher education – and many continued active affiliation with their subject-specific fields -- their assignments over the years had shifted into other areas (e.g., teaching technical content courses, administration, service activities). Thus, former teacher educators were still at their universities, listed in the teacher education directories for their vocational and technical education subject area, and active in their vocational teacher education professional associations; however, their programs were in fact dormant or nonexistent.

Lynch (1991) found about 100 U. S. colleges and universities that offered four or more vocational teacher education programs on a single campus; thus, implying that vocational teacher education was integral to the mission of that college or university. Many of the remaining 300+ programs listed in directories are staffed by a single faculty member (often at less than 1.00 full-time equivalent in teacher education), in one program (e.g., family and consumer sciences), or a small cluster of faculty who work with prospective teachers in a technical program area (e.g., technology education teacher educator(s) working with prospective teachers -- among other majors -- in a school or department of technology).

Subsequent reviews indicate that these single-subject programs produce few teachers in any given year. Further, the small number of teacher educators in these programs and their isolation from other pedagogists preclude preparing students in a broadened conceptualization of workforce education (e.g., in integrating vocational and academic education, tech prep, workforce and workplace generic and specialized skill development) which might extend beyond that of their subject-specific area. In general, these subject-specific programs are far better known for their technical preparation than they are for teacher preparation. And, there is some evidence that as enrollments declined in teacher education, program faculty shifted their instructional assignments into non-teaching options (Volk, 1993).

The following is a brief review of recent studies that have reported and discussed contemporary program and enrollment status in vocational and technical teacher education programs.

Agricultural Teacher Education

Interestingly, only one program in agricultural teacher education has been eliminated by a college or university in recent years, although most programs have small enrollments and few graduates. Oliver and Camp (1992) reported 89 agricultural education programs in 1991 compared to 90 in 1988 (Lynch, 1991). However, the authors noted that 10 of the 89 programs (11%) had zero graduates for the 1991-92 academic year. The numbers of "newly qualified potential teachers of agriculture fell from 1,660 in 1975 to 625 in 1990," a 62% decline (p. 5). Oliver and Camp further reported that 266 agricultural teacher educators at the 89 colleges and universities graduated 312 teachers in 1991, for an average of 1.2 per agricultural education faculty member and 3.5 agriculture teacher graduates per institution.

Enrollments in public school agricultural education programs have declined by 25% since the late 1970s; however, the number of teachers of such programs declined by only 17%, although the number of teachers has declined steadily each year since 1979. In analyzing teacher demand with teacher supply, Oliver and

Camp (1992) noted that nationally ten positions for agriculture teachers were still unfilled on September 1, 1991 because qualified teachers were unavailable (p. 8). This information was based on survey data collected from all state supervisors of agricultural education in the country.

Oliver and Camp found that graduation from an agricultural education program no longer means certification to teach, rather agricultural education is regularly used as an umbrella degree for those choosing to enter such other occupations as agricultural extension or agricultural communications. Nearly 60% of agricultural education graduates do not teach in their first year after graduation.

Business Teacher Education

Business teacher education appears to be particularly hard hit with program closings and a national decline in teacher education enrollment. Further, the end may not be in sight for eliminating business teacher education programs. Luft and Noll (1993), in a survey of 235 colleges and universities affiliated with the National Association of Business Teacher Education (NABTE), found that 34% expect their programs to be " integrated with other teacher education programs, downsized, or eliminated" within five years (p. 10). The authors also reported that 11 business teacher education programs had been eliminated since 1986 and 16 were predicted to be eliminated within the next 5 years. In adding up the declines from NABTE surveys in a 10-year period (1980-1990), business teacher education lost 25% (N = 75) of its programs and may lose up to another one-third (Kaliski, 1987; Luft & Noll, 1993; Schmidt, 1985). This may be particularly troublesome since business education comprises a relatively large share of the vocational teaching force--33% of secondary vocational teachers and 24% of two-year college vocational faculty (Boesel, Hudson, Deich, Masten, 1994; Vocational Education Journal, 1991). Further, the high school business education teaching force is an aging one with 27% over age 50 and nearing retirement (Kaufman, 1992).

Anecdotal evidence and some data suggest that there may be a relationship between business teacher education decline and its administrative location on college campuses. Luft found that 50% of business teacher education programs were in collegiate schools of business--few of which have as their mission the preparation of teachers. An additional 18.5% were in colleges other than education or business. Contrary to reports of massive enrollment declines in business teacher education, Lynch (1991) found that the number of graduates from business teacher education programs had actually increased in the 3-year period from 1987-1989. However, the business teacher education programs studied by Lynch (i.e., those which were among four or more vocational and technical teacher education programs located at one university) tended to be in colleges of education and administered with other vocational and technical teacher education programs. In effect, some business teacher education programs may be increasing substa ially -- perhaps those in colleges of education; while others are being eliminated -- perhaps those in business schools. Further, Luft and Noll (1993) reported that enrollment declines at 38% of the business teacher education programs caused faculty to shift into teaching computer applications and other technical courses at the expense of further developing or reforming teacher education programs.

Family and Consumer Sciences (Home Economics) Teacher Education

The numbers of programs in home economics teacher education [note: nomenclature has recently been changed by several professional associations to family and consumer sciences] have also declined. The 5-year decline from 1984-1988 was from 281 to 266, a 5% decline (Hall & Miller, 1989). The authors reported data from another survey that indicate at least 22% of home economics teacher educators fear program closure or elimination in the future. It is interesting to note, however, that few programs of home economics teacher education have actually been eliminated relative to closings in business and technology teacher education, especially considering their steep enrollment declines (see, for example, Hall & Miller, 1989; Kellett & Beard, l991; Lynch, 1991).

Lynch (1991) reported a 15.4% decline in graduates of home economics teacher education programs from 1987-1989. Other more longitudinal program specific enrollment data show steeper declines than reported by Lynch. For example, Kellett and Beard (1991) reported that the mean number of graduates in home

economics preservice teacher education per institution in 1975 was nearly 27. Thirteen years later, the mean total enrollment in nearly all home economics teacher education programs was less than 20 students; at 41.5% of the university programs, enrollment was fewer than ten. The yearly average number of university-prepared teachers for home economics programs was less than five per institution.

Similar to faculty in agricultural education, business education, and other vocational subject areas, home economics teacher educators have tended to shift assignments into other areas. They prepared home economists, taught consumer and family relations courses, and became involved in international education (Hall & Miller, 1989).

Health Occupations Teacher Education

Little is known about the preparation of teachers for health occupations, probably because there are comparatively few health occupations teachers in secondary vocational education programs. They comprise 3% of the total secondary vocational teaching force (Boesel et al., 1994). Also, many health occupations teacher preparation programs are included with trade and industrial teacher education. Much like trade and industrial education, a considerable percentage of health occupations teachers come from industry (i.e., the medical professions) and are not prepared to teach through traditional teacher preparation programs. Pratzner and Ryan (1990) reported that 50% of beginning health occupations teachers had not completed a baccalaureate degree.

Lynch (1991) found only 32 colleges and universities nationally that purport to offer teacher education in health occupations and only 12 of these offer preservice programs. From 1987-1989, enrollment in these 12 programs was stable, averaging about 6 graduates per year.

Industrial Arts (Technology Education) Teacher Education, Industrial Teacher Education, and Technical Teacher Education

The teacher education components of "single-subject" trade, technical, industrial programs (whatever the nomenclature) and industrial arts or technology education programs have declined considerably. McAlister and Erekson (1988) reported that most university faculty hires in trade and industrial education and technology education are to teach in technical areas (CAD/CAM, manufacturing processes, technology) and not in teacher education. These authors indicated that the shift away from teacher education programs in technology and industrial education was a result of a desire "to continue enrollments, while serving a new diversified population with different career goals" (p. 47).

Oaks and Loepp (1989) reported that 30 technology-based teacher education programs (14%) were terminated at colleges and universities between 1979 and 1988. Volk (1993) commented that the terminated programs along with those that produce no teachers indicated a real decline of 24.1%. Oaks and Loepp indicated a fear that if the closing trend continues, a resulting teacher shortage will "surely prove to be a serious problem for the technology education profession" (p. 67). Volk went even further by speculating that if the enrollment decline continues at its present pace, "the demise of the profession will occur near the year 2005" (p. 57).

There is some evidence there may be a cause and effect between programs that shifted from teacher education into nonteaching options. The nonteaching option, in effect, took over. For example, Volk (1993) noted that the 20-year rate of decline for industrial arts/technology education majors was 69.7%; concomitantly, those enrolled in nonteaching degrees increased by a whopping 790.0%. "This latter increase was due in great part to the explosive growth and shift in emphasis to industrial technology program options" (p. 50). Further, Volk found teaching options at colleges and universities were much more apt to be eliminated when industrial (nonteaching) options were provided.

Marketing Education

Ruhland (1993) reported that only 56 institutions currently offer undergraduate degrees in marketing

education or provide marketing education certification courses. This represents a 37% decline (since 1989) in the number of colleges and universities which purport to offer specialized programs in marketing teacher education. Further, five of the 56 institutions offer only state-required marketing teacher certification courses in contrast to bona fide programs or majors in marketing education and five report no graduates. She indicated that three additional programs were being phased out in the next three years and an additional three would combine business and marketing teacher preparation programs. In reality, therefore, there are about 40 marketing teacher education programs which annually graduate at least one or more marketing teachers.

Enrollments, too, from all university marketing education teacher supply sources (baccalaureate, certification option, graduate) declined by 38% in the 10-year period, 1982-1992 (Lynch, 1984; Ruhland, 1993).

The effects of decline in marketing teacher education may be similar to that postulated for business education. That is, Lynch (1991) found a slight increase in teacher education enrollment in marketing education for the 3-year period, 1987-1989, and, similar to business education, those enrollment increases were reported from programs primarily administered in colleges of education and with other vocational and technical teacher education programs. Also, program closings in marketing teacher education were often those administered in collegiate schools of business.

Trade and Industrial Education

The preparation of trade and industrial education (T&I) teachers deviates considerably from that of other vocational education teachers. This is primarily because (a) the vast majority of T&I teachers lack baccalaureate degrees at the time they enter the classroom as teachers, and (b) "the teaching content and methodology of T&I programs vary markedly from other vocational education programs" (Duenk, 1989, p. 2).

Beginning with the federal 1917 Smith-Hughes Act and continuing to the present time, nearly all states substitute years of work experience for college preparation for certifying T&I teachers. In fact, only three states (Hawaii, Nebraska, and Wisconsin) require baccalaureate degrees for initial certification of T&I teachers. Seven states require baccalaureate degrees and five states require associate degrees for full certification. Beginning teachers in 43 states may teach in T&I programs without any college credits (Duenk, 1989; Lynch, in press-a). T&I teachers employed in public schools are required to have considerable occupational experience, ranging from 2 to 9 years, with an average requirement of 4 years (Lynch, in press-a). However, actual number of years of occupational experience earned by T&I teachers considerably exceeds the requirements. Boesel et al. (1994) reported that secondary T&I teachers average 17 years of occupational experience; comparable data are not avail le for postsecondary T&I tea chers. Pratzner and Ryan (1990) reported that 73% of beginning T&I teachers do not have baccalaureate degrees. Boesel et al. (1994) reported that 45% of secondary and 66% of postsecondary T&I inservice teachers have less than bachelors degrees. They also reported that 29% of vocational teachers in postsecondary engineering, science, and technology fields have less than bachelor's degrees.

Most states do require some (average required equals about 120 clock hours) of pedagogical preparation concurrent with the first year of teaching. This teacher preparation typically consists of short, intensive workshops offered in the summer or dispersed throughout the year, sometimes accompanied by one-on-one teacher training provided by an itinerant teacher educator (Biedel, 1993). This preparation to teach is known by T&I teachers as " survival skill training" (Duenk, 1989). Typically, survival skill training is "provided by the state department of education, a college or university, or the school system itself" (Lynch & Griggs, 1989, p. 9).

In effect, then, vast numbers of T&I teachers initially and continually teach in public schools and technical institutes without benefit of any formal teacher preparation from a college or university. Thus, data about and from T&I teacher education programs at colleges and universities could be misinterpreted, since a relatively small percentage of that program's teaching force enter into formal, university-based teacher education programs at the preservice level. Lynch (1991) identified 122 T&I teacher education programs nationwide

and a very slight enrollment increase (2.2%) over the 3-year period, 1987-1989.

Vocational Special Needs

There is insufficient evidence in the literature that describes preservice programs to prepare teachers to teach vocational and technical students with special needs. Lynch (1991) reported that 98 colleges and universities purport to offer programs in vocational special needs with a 3-year average enrollment increase of 14.3%. However, few institutions provided specific data about the curriculum and structure of preservice (e.g., undergraduate) programs. It is therefore assumed that (a) a major in vocational special needs education is typically not available at the undergraduate level; (b) instruction in teaching vocational students with special needs is included as part of the professional preservice preparation of all subject-specific vocational education majors; (c) the undergraduate major may be in a subject area such as psychology or in a nonvocational education subject area, such as special education; and (d) extensive professional preparation for vocational special needs teachers is provided primarily at the graduate level.

Comprehensive Vocational Education

Previous studies have been primarily concerned with subject-specific areas generally taught collectively as vocational and technical teacher education. Some attempts have also been made to collect enrollment and programmatic data for all vocational subject areas in colleges and universities known to have several vocational and technical teacher education programs, or in departments known to offer comprehensive vocational and technical teacher education.

In the spring of 1989, Lynch (1991) collected data from universities with four or more vocational and technical teacher education programs. Nearly 80 colleges and universities provided data on all of their vocational and technical teacher education programs. Lynch found enrollments in undergraduate programs in vocational and technical teacher education had declined overall from 1987 through the 1989 graduating class. Agricultural education and home economics showed especially steep enrollment declines, while technology education showed a slight decrease, and trade and industrial education, marketing education, and business education showed modest increases. The largest percentage increase in enrollment was in the preparation of vocational special needs teachers.

Since July of 1985, the University Council for Vocational Education (UCVE) has published three reports and has one in press on the status of vocational and technical teacher education in its member institutions. UCVE is currently comprised of 20 member institutions, all of whom provide research, service, teacher education, and advanced graduate study in vocational and technical education. All UCVE-member institutions offer a doctoral degree in vocational education and all but one are at land-grant universities.

Until the latest report, most UCVE institutions reported reduced demand for vocational and technical teacher education courses (including graduate courses) both on- and off-campus on a biennial basis since the mid-1980s. However, in the latest report, enrollments at all three levels of study were reported on the upswing (Anderson, in press).

Undergraduate enrollments increased to an average of 237 per institution (an average increase of 66 students per campus, 28%). Only three universities experienced a decrease in undergraduate enrollment during the two-year period, 1990-91 and 1991-92.

It should be noted that this latest report shows significant improvements over the three previous biennial reports. Throughout the 1980s, Anderson (1991) reported that the average number of enrollments, full-time and part-time faculty, support staff, and graduate assistants declined significantly at member institutions. However, it also needs to be noted that in his latest report (in press), Anderson provided no evidence that increased enrollments and numbers of faculty are in vocational and technical teacher education programs. In fact, the increases reported may well be a result of vocational education units expanding their courses and program offerings into nonteaching areas (e.g., training and development, cooperative extension, industrial technology).

Supply and Demand of Vocational and Technical Education Teachers

Aggregate data and information about the current status of vocational and technical teacher education in this country support the conclusion that American colleges and universities have significantly diminished their commitment and capacity to produce teachers for America's vocational and technical education systems. This conclusion, then, leads to the obvious question: Will there be an adequate supply to meet the demand for vocational and technical education teachers in the future? The answer to this question cannot be answered with a simple "yes" or "no"; the appropriate response is, "It depends."

Teacher demand and supply data are very difficult to validate and are fraught with great uncertainty, especially those related to supply. The demand for the total teaching force, including vocational education, may be easier to predict if we accept certain assumptions, for example: birth rates will remain relatively stable, the percentage of faculty who teach vocational subjects in high schools (currently about 17%) and postsecondary institutions (currently predicted at about 60%) will remain the same, students will continue to " demand" vocational and technical education at about the same percentage as they currently do, turnover of teachers can be predicted, etc. In sum, if these factors remain essentially as they are now, demographic changes can be predicted, and thus we can extrapolate numbers to predict the demand for the future.

Various authors and agencies have used some or all of these factors, sometimes supplemented with survey data, and have predicted great demand for vocational teachers in the years ahead. Data in the Vocational Education Journal (1991) for example, cited U. S. Department of Labor data as predicting better than average demand for adult, secondary, and college vocational teachers and charted predicted demand as especially high for secondary and adult instructors. Further, Kaufman (1992) reported that about 27% of all high school vocational teachers were aged 50 or over (compared, incidentally, to 18.5% of nonvocational teachers, aged 50 or over). Presumably the vast majority of these over-age-50 teachers will be retiring by the year 2000, thus creating a high demand for their replacements. Recent white papers, newsletter articles, and authors of articles in such specific subject areas of vocational education as agriculture, family and consumer sciences, and technology education hav e predicted great demand for teachers and expressed concern that there will be an inadequate supply.

The lead article in a recent Vocational Education Journal was entitled "Who will Teach the Teachers?" In that article, Dykman (1993) concluded, "There is little data to support a claim of a [current] vocational teacher shortage" (p. 27). However, of 37 states that responded to her questionnaire, 17 indicated a demand for teachers in certain [but not all] vocational areas. Dykman points out that anecdotal evidence and some survey data show that many states are concerned about the future as teachers retire and high school student populations begin to swell again. But the demand for vocational and technical education courses from high school students continues to decline. In the National Assessment of Vocational Education, Boesel et al. (1994) reported that enrollments in all types of vocational courses -- general and specific labor market, consumer and homemaking, and casual course taking -- had declined considerably since the early 1980s while high school students' overall and academic course taking had increased. The authors do note that there was a 17% declining cohort of high school aged students during the enrollment measurement periods. However, because the average student's credit load increased, the overall demands for secondary school courses decreased by only 8%. But, "reduced vocational course taking combined with the cohort decline led to a 33% decline in the demand for vocational courses" (p. 8).

Obviously, the reduced demand in vocational course taking affected the demand for vocational teachers. Based on national surveys, Boesel et al (1994) estimated a 9% decline in the number of vocational teachers; 160,000 in 1987-88 to 146,000 in 1990-91. Over the same period, the number of academic teachers increased 7%, from 667,000 to 714,000 (p. 61).

Supply is even more difficult to predict than demand. As discussed in previous sections of this article, colleges and universities simply are not producing a large quantity of vocational and technical education teachers. Unless there are significant changes made in our nation's colleges and universities relative to producing more vocational and technical teachers, states will not be able to depend on them as a major

supply source in the future.

The problem of supply may be deeper than finding adequate numbers to staff classrooms. There is also the quality issue. Especially since 1984, the literature on teacher education in general has been fraught with commentary on the need to upgrade significantly the quality of the teaching force. As discussed by Lynch (1988) and placed in context for vocational and technical education, the issue of quality seems to focus on two views of teacher education reform. One is grounded in the public perception of an " inadequately prepared, nurtured, evaluated, and compensated teaching (and related administrative and support) staff" (p. 115). The public and their state legislators simply have not felt our nation's schools were staffed with good teachers. Thus, over 1,000 pieces of legislation designed to reform teacher education were initiated by state legislative bodies in the mid-1980s (Darling-Hammond & Berry, 1988).

A second quality issue speaks to making teaching, once and for all, a respected profession. This means establishing requirements for training and entry into the field; defining the nature of the work, the structure of the job, and the authority that governs it; developing and monitoring accountability measures (i.e., through accreditation); enforcing a code of ethics, with special concern for clients; identifying a knowledge base that must be mastered by those who are to practice the profession; and preparing practitioners to exercise a high degree of autonomy -- all based on interpretive and applicative knowledge. In essence, each view speaks to standards.

Finally -- but closely related -- what does the vocational and technical education teacher of the future need to know and be able to do? Do current teachers being produced possess the knowledge and skills needed in today's vocational and technical education classrooms? How about tomorrow's classrooms? Dykman (1993) noted that states showed need for teachers in high tech areas and then strongest in health occupations, skilled trades, and technology. However, these are not areas for which colleges and universities seem to produce teachers.

Perkins II legislation, STWOA, additional anticipated legislation, and national and state reports addressing reform in work-based or school-to-work education imply that teachers must be prepared, for example, to (a) implement programs of tech prep, (b) integrate academic and vocational education, (c) operate apprenticeship and other school-work connected programs, (d) serve at-risk learners effectively, (e) use computers and technology throughout the instructional program, (f) design new and innovative curriculum and instruction for contemporary workplaces, (g) provide for leadership development among students, (h) inform students of multiple career options and career paths, etc. Are current vocational teacher education programs preparing their graduates to implement these programs and practices?

Conclusions

Data and information presented in this article are part of a larger data collection and dissemination effort to inform state and federal policy groups and colleges and universities about the status of vocational and technical teacher education in our nation's colleges and universities. The general conclusions from aggregated studies are that vocational and technical teacher education has been in steep decline for the past decade, some attempts are being made to revive or reposition it on some college campuses, and that its reformation is (probably) critical to bringing about reform in our nation's delivery of work-based education. More specifically, based on the extant literature and data reviewed for purposes of this article, the following conclusions are offered:

1. Our nation's colleges and universities have greatly diminished their capacity to prepare teachers for vocational and technical education programs. Enrollments in teacher education have declined (significantly in some subject areas), large numbers of programs have been eliminated or are de facto nonexistent, and teacher educators -- although still employed at the universities -- have found work other than in vocational teacher education. Even at universities that have retained vocational and technical teacher education, many have phased out some programs, eliminated faculty positions, consolidated courses, transferred some programs to other colleges, and refocused priorities.

2. Many programs historically were and still are today single-subject, single-teacher educator programs often attached to departments where the primary mission is not to train teachers. These programs today produce few teachers and are isolated from other pedagogists engaged in the professional preparation of teachers.
3. There is some evidence that vocational and technical teacher education programs administered in the same unit and in colleges of education receive greater support and have experienced considerably less turmoil in terms of program elimination and enrollment decline. Programs in administrative units other than education -- especially in collegiate schools of business -- seem to have been hit particularly hard with program elimination.
4. Teacher supply and demand data are fraught with uncertainty and questionable assumptions. Nevertheless, it is doubtful that there will be a critical shortage of traditionally-trained vocational education teachers. There may be a shortage of teachers well-prepared to teach in new or modified programs emanating from various education initiatives identified in Perkins II, STWOA, and with other work-based education reform movements. There is also certain to be a shortage of teachers trained in technology and technological applications.
5. There is not a clearly focused conceptual framework undergirding vocational and technical teacher education in our nation's colleges and universities. The theory base, knowledge, understandings, and skills needed to teach for and about the workplace and workforce have yet to be codified into a professional knowledge base for prospective and practicing vocational education teachers. In effect, an answer has not been provided to the question, "What is it teachers need to know and be able to do to teach all work-bound students as they prepare for employment in the 21st Century workplace?"

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