Why They Want to Teach: Factors Influencing Students to Become Technology Education Teachers

Michael D. Wright and Rodney L. Custer

Introduction

Identifying and recruiting prospective technology education teachers has been an ongoing concern for more than two decades. Considerable research was conducted during the late 1970s and early 1980s relative to teacher recruitment (Craft, 1979; Devier, 1982). These studies were prompted by declining enrollments in university programs and reported shortages of industrial arts teachers in forty-one states (Miller, 1980; Tomlinson, 1982; Wright, 1985). In some cases, this shortage of teachers led to high school programs being closed or cut back, the utilization of under-qualified personnel, and the abandonment of planned expansion. Simultaneously, university programs experienced significant drops in industrial arts teaching majors as students increasingly selected industrial technology or management options over teaching (Devier & Wright, 1988).

This trend of declining enrollments has continued and has now reached critical proportions (Volk, 1997). Current data suggest that a large number of university technology education programs have been, or are being, closed (Daugherty & Boser, 1993; Todd, Bame, Berry, Hacker, Hanson, Karsnitz, Radcliffe, Sanders, Ritz & White 1996; Householder, 1992; Volk, 1997; Weston, 1997; Wright, 1992). Many technology teacher education programs that remain are extremely vulnerable because of low enrollments and budget cutbacks.

Technology education professionals have spent a great deal of time and energy focused on defining the mission of technology education and redefining the curriculum. However, the technology education profession has made only limited efforts at recruiting students into technology education teacher preparation programs. While these efforts are to be commended, they have stopped short of the effort and results needed to address the teacher shortage. In a research presentation at the 1992 Mississippi Valley Industrial Teacher Education Conference, a warning was issued that, "As a profession, we are no closer to addressing the problem of declining enrollments than we were a decade ago. Nor have we made any significant progress toward identifying the

---

Michael D. Wright is Assistant Professor at the University Missouri-Columbia, Columbia, Missouri. Rodney Custer is Professor and Department Head at the Illinois State University, Normal, IL

factors that influence students' decisions to become technology education teachers" (Wright, 1992 p. 2). In an effort to address this concern and as part of its Strategic Plan, the International Technology Education Association created a task force specifically charged with examining this phenomena. The authors were part of that task force.

Literature Review

Education in the United States (specifically teachers and teacher education) has been the focus of considerable concern and scrutiny over the past decade. For example, the National Commission on Teaching and America's Future (1996) stated that teachers are at the core of the mission to improve schools. The report noted that (a) minorities compose only a small percentage of the teaching force, (b) 22% of teachers leave the profession within the first three years, and (c) teachers are often hired without proper qualifications and training. These factors are true of technology teachers as well.

According to Darling-Hammond and Rustique-Forrester (1997), two million teachers will be hired over the next decade. Because of the large teaching force that will be required, they assert that changes should be made within the profession in order to attract and retain teachers. They offer several strategies for recruiting teachers, including extending state-supported scholarships, recruiting minorities and those in other careers, offering better incentives, and improving licensing agreements. They also offer several strategies for retaining good teachers, including better professional development and rewarding teachers' knowledge and skill.

Despite these good intentions, Weston (1997) reported that technology teacher education programs are graduating fewer people when compared to previous years, while the demand for technology teachers is increasing. Two factors affecting this supply and demand problem include increasing student enrollments in public schools and an aging teaching force that is heading toward retirement. According to Weston (1997), the technology teacher shortage can be resolved only when administrators and the public at large become more aware of the need for teaching technology in our schools.

Todd et al. (1996) observed that not only is there a critical shortage of technology educators, but there is also a critical shortage of technology teacher education programs. However, rather than viewing this situation as a problem, these shortages may be seen as an opportunity to strengthen the profession by injecting new thinking and approaches. They cite teacher recruitment as the root cause of this shortage and suggest that secondary school programs may be a key place to begin to recruit potential teachers.

Johnson (1997) offered a multi-faceted way of "marketing" technology education as an option to students. According to Johnson, in order to combat the teacher shortage, teachers should not only *encourage* students to consider technology education as an occupation, but more importantly they also should *show* their students that they enjoy teaching technology education.

Daugherty and Boser (1993) proposed that the shortage of qualified technology education teachers results in part from an image problem. In order to

improve the image of the profession, they proposed that secondary and post-secondary technology education personnel should engage in public relations and recruiting activities on a regular basis. Some of their suggestions included: targeting Technology Student Association chapters, developing program awareness and respect in the community, as well as promoting technology education in local high schools. Most importantly, they emphasized the importance of teachers being enthusiastic about their work. They should tell students, parents, and the community why they like teaching technology.

Volk (1997) sounded a sharp warning to the field, predicting a bleak future if action is not taken to reverse this downward trend in preparing technology education teachers. He suggested some ways to combat this problem, including offering economic incentives, increasing public awareness, and requiring technology education courses in secondary schools.

Research Questions

Two factors must be understood if technology education teachers are to be effectively recruited: (a) what recruitment strategies are perceived as most effective by those who are currently electing to become technology education teachers, and (b) what factors influenced them to become teachers? Demographic data for technology education students on a national scale are very limited (Wright, 1992). Similarly, empirical data regarding the effectiveness of various recruitment practices, as well as the factors that influenced students to select teaching technology education as a major, are not widely known. The following research questions were formulated to address this problem:

1. What are the basic demographic characteristics of the university technology teacher education student population in the United States?
2. What factors influenced students to select technology teacher education as a major and what was the magnitude of these influences?
3. What university recruitment practices did these students experience, and what was the perceived extent of influence of these activities?

Method of Study

A survey instrument was utilized to collect data to answer the research questions. The instrument was adapted and modified from an instrument used in Ohio by Devier (1986) and nationally by Wright (1992). The revised instrument was reviewed by the ITEA task force charged with exploring recruitment. The instrument was then reviewed by a panel of experts comprised of six technology teacher educators. The combined suggestions were incorporated into the instrument to the fullest extent possible.

The sample for this study consisted of all technology education teaching majors enrolled in universities that graduated five or more technology education students per year as reported in the *1995-96 Industrial Teacher Education Directory* (Dennis, 1995). This criterion was selected because it increased the likelihood of identifying a program with a critical mass of students. In the event that no university in a given state reported five graduates, the program reporting the most technology education graduates was included in the sample to ensure that all fifty states were represented. A total of 101 programs were selected. It is

acknowledged that the selection process was only as valid as the accuracy of the reports submitted to the *Industrial Teacher Education Directory*.

Copies of the instrument, along with a cover letter, were mailed to either the individual known to be responsible for technology teacher education or to the department chair at each selected institution. These contact persons were asked to forward the survey to an individual who would administer the instrument to technology education teaching majors. Analysis was completed with SAS software (SAS Institute, Inc.) and consisted of descriptive statistics.

Findings

Fifty-two (51.5%) of the 101 universities selected responded for a total of five hundred thirty-seven usable surveys, representing 32 states. Several schools reported that they no longer had undergraduate technology teacher education programs. One university returned 43 (8%) surveys, while 35 schools (34.7%) returned less than 10 surveys each. Seven programs accounted for 35.9% of the sample.

Demographics

The mean age of the respondents was 26.6 years. Sixty-seven percent (67.5%) of the students were 25 years old or less, while 17.9% were over 35 years of age. The range was from 18 to 57 years.

The sample was 87.8% male and 12.2% female. Nearly one half of the students (42.5%) indicated that they had attended a community or technical college prior to entering the university program. A large number of students (33.8%) reported a time lapse between the time they graduated from high school and when they started college. Of these, the majority had either been working (60%) or had been in the military (30.2%).

A high percentage of students (65.4%) did not select technology education as a major when they first entered the university. Their backgrounds were extremely varied, with some preference for technology-related majors (e.g., engineering, engineering technology, industrial technology, etc.). The first majors for these students are shown in Figure 1.

For each grade (7-12), at least 47% of the students reported having been enrolled in an IA/TE course. Sixty-one percent reported taking these courses in grade 12. The highest percentage of students (36.5%) first became interested in teaching technology education *after* having enrolled at the university, although a substantial percentage (28.5%) also became interested during their years in high school (See Figure 2).

Most students indicated that their original intention was to become an industrial arts teacher (43.9%) while 21.6% believed that they would become a technology education teacher. About 20% indicated that they did not know the difference when they enrolled in the teacher education program.

Regarding family background, many technology education students indicated that their father's primary occupation was "Construction," while the highest percentage of mothers were "Homemakers." "Teacher" was the next

most common occupation for both father and mother. The data regarding parents' primary occupations are reported in rank order in Table 1.

Influential Factors

The list of possible factors that may have influenced students' decisions to become technology education teachers are listed in Table 2. The respondents were asked to indicate whether they felt an item was a factor in their decision to become a technology education teacher and if so, to rate its degree of influence. The students also were given the opportunity to list additional factors and rate their influence as well. A five-point Likert-type scale was used on all items, with "1" representing "Not Influential" and "5" representing "Highly Influential."

The students cited "Personal interests or hobbies" most frequently (75.3%) as an influential factor in their decision to become a technology education major. The survey instrument provided three blank spaces to provide the respondents the opportunity to indicate what activities they referred to when they rated this factor. Nine hundred fifty-eight responses were given. The "Personal interest or hobbies" listed most frequently were "sports" (listed by 13.5% of the respondents) and "Woodworking" (listed by 12.9%). "Cars/auto mechanics" and "Outdoor activities (hunting, fishing, camping)" were the third most popular choices (each listed by 7.9%). One plausible interpretation of the "sports" influence could be that many individuals are motivated to pursue teaching careers through participation and interest in sports. Teaching is one of the few careers that not only allows, but encourages, participation in sports through coaching. Indeed, it is common knowledge that an ability or interest in coaching is frequently a contributing factor when teachers are selected for employment at the junior or senior high school level. The authors believe that

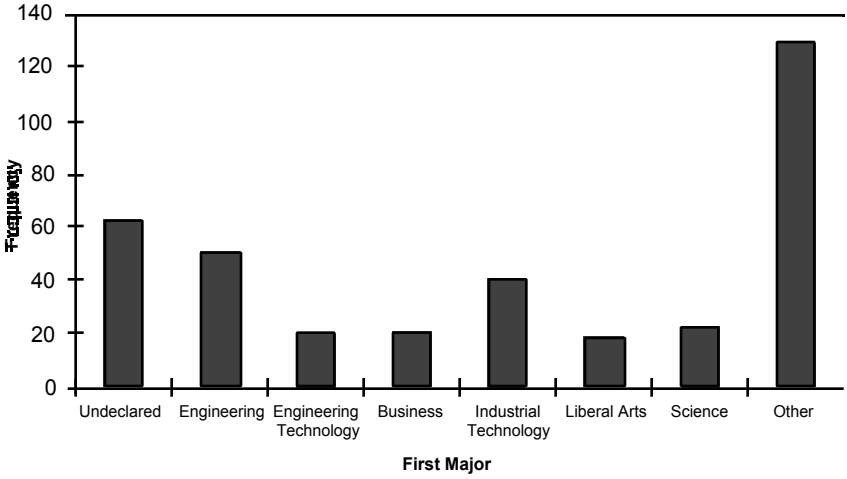

Figure 1. Majors of students who were not originally majoring in technology education.

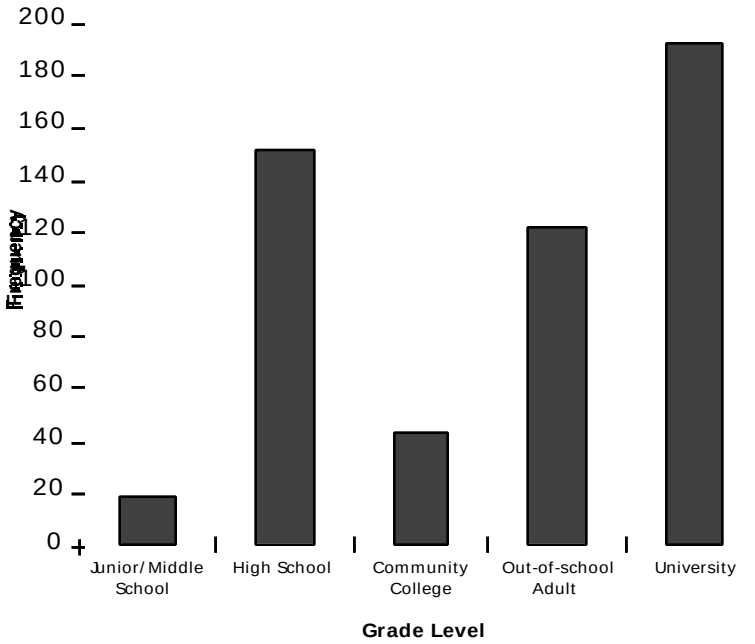

Figure 2. Grade level in which individuals first became interested in teaching technology.

this factor would tend to be true for secondary teachers in general, and is not necessarily specific to technology education.

After "Personal interests or hobbies" the next most frequently cited influential factors were "High school industrial arts/technology education course(s)" (48.1%) and "Admiration of a high school industrial arts/technology education teacher as a role model" (46.1%). These factors were followed by "Extra-curricular IA/TE activities" and "Encouragement by high school IA/TE teacher" as the next most frequently cited influential factors.

The most frequently cited factors are not necessarily the most influential, however. The mean rating of the perceived influence by those students who indicated the factor was influential is also presented in Table 3. There was a virtual three-way tie for the most influential factor. Both "Encouragement from high school industrial arts/technology education teacher" and "Encouragement from other community personnel" were rated as the most influential factor ($\bar{x}$ = 4.40), followed closely by "Encouragement from college/university professor" ($\bar{x}$ = 4.39). However, "Encouragement from other community personnel" is essentially a "non-factor" since it was cited by only two percent (2.6%) of the sample. The least influential factors were "Encouragement by university coach" ($\bar{x}$ = 2.89) and "Secondary school IA/TE extra-curricular activities" ($\bar{x}$ = 2.30).

Table 1
Primary Occupations for Parents of Technology Education Majors

Occupation	Frequency	Percent
Father	170	31.7
Construction	88	16.4
Teacher/Educator	87	16.2
Other	79	14.7
Management	78	14.5
Farmer/Rancher	56	10.4
Sales	50	9.3
Service Occupation	35	6.5
Professional	33	6.1
Military	29	5.4
Homemaker	6	1.1
Mother		
Homemaker	207	38.5
Teacher/Educator	106	19.7
Service Occupation	67	12.5
Management	41	7.6
Sales	39	7.3
Technical Occupation	32	6.0
Professional	26	4.8
Construction	20	3.7
Farmer/Rancher	16	3.0
Other	77	14.3
Military	0	0.0
Total	537	100.0

The data indicate that although other community personnel were not as commonly involved in the students' decisions, they were quite influential when they *were* a factor. Conversely, "extra-curricular activities" was frequently a factor, but was not as influential.

Recruitment Practices

The list of recruitment activities that students may have experienced is presented in Table 4. The respondents were asked to indicate whether they had been exposed to the recruitment activity, and if so, to rate its effectiveness on a five-point Likert-type scale. The students were also provided space to list any other recruitment activities they might have experienced.

Table 4 lists the students' frequency ratings for recruitment activities. "Personal interaction with university faculty" was cited most frequently (37.7%), followed by "Modern lab facilities" (30.2%). The least cited recruitment activity experienced was "Personal letter from someone in the university technology education program" (6.1%).

Table 2

Frequency Cited for Influential Factors

Influential Factors	Frequency	Percent
Personal interests or hobbies	403	75.3
I enjoyed secondary school IA/TE course(s)	258	48.1
I admired a high school IA/TE teacher as a role model	247	46.1
Secondary school IA/TE extra-curricular activities	190	35.4
I was encouraged by high school IA/TE teacher	160	29.9
I was encouraged by parents	146	27.2
Previous teaching experience (other field, military, teacher aide, etc.)	125	23.4
I was encouraged by college/university professor	120	22.3
Business or industry personnel encouraged me	116	21.6
I was encouraged by college/university advisor	116	21.6
I was encouraged by college classmates	86	16.1
I was encouraged by other adults (non-university)	84	15.7
I was encouraged by other relatives	82	15.3
I was encouraged by high school teacher-other	74	13.8
I was encouraged by college/university department chair	69	12.9
I was encouraged by siblings	61	11.4
I was encourage by high school classmates	55	10.2
I was encouraged by high school guidance counselor	46	8.6
I was encouraged by high school coach	43	8.0
I was encouraged by community professional	30	5.6
I was encouraged by church leader	27	5.0
I was encouraged by other college/university personnel	22	4.1
I was encouraged by high school principal	22	4.1
I was encouraged by college/university dean	20	3.7
I was encouraged by youth organization leader	17	3.2
I was encouraged by other community personnel	14	2.6
I was encouraged by college/university coach	12	2.2

Table 3

Comparison of Frequency Cited and Effectiveness Rating for Influential Factors

Influential Factors	Mean Rating	Percent
I was encouraged by high school IA/TE teacher	4.40	29.9
I was encouraged by other community personnel	4.40	2.6
I was encouraged by college/university professor	4.39	22.3
I was encouraged by college/university department chair	4.32	12.9
I enjoyed secondary school IA/TE course(s)	4.26	48.1
I was encouraged by siblings	4.23	11.4
Personal interests or hobbies	4.22	75.3
I admired a high school IA/TE teacher as a role model	4.20	46.1
I was encouraged by community professional	4.19	5.6
I was encouraged by parents	4.18	27.2
I was encouraged by high school coach	4.13	8.0
I was encouraged by other adults (non-university)	4.11	15.7
I was encouraged by other relatives	4.10	15.3
I was encouraged by high school teacher-other	4.06	13.8
I was encouraged by other college/university personnel	4.06	4.1
I was encouraged by college/university advisor	4.04	21.6
I was encouraged by college classmates	4.02	16.1
Previous teaching experience (other field, military, teacher aide, etc.)	3.93	23.4
I was encouraged by youth organization leader	3.93	3.2
I was encouraged by high school classmates	3.88	10.2
I was encouraged by church leader	3.75	5.0
I was encouraged by college/university dean	3.71	3.7
I was encouraged by high school principal	3.58	4.1
Business or industry personnel encouraged me	3.53	21.6
I was encouraged by high school guidance counselor	3.48	8.6
I was encouraged by college/university coach	2.89	2.2
Secondary school IA/TE extra-curricular activities	2.23	35.4

The perceived effectiveness of the various recruitment practices is presented in Table 5. Again, "Personal interaction with university faculty" and "Modern lab facilities" were the most effective recruitment strategies ($\bar{x}$ = 4.14, and $\bar{x}$ = 3.63 respectively). Those recruitment activities rated as least effective were "Video or audio-visual presentation about technology education" ($\bar{x}$ = 2.71), and "Brochures distributed at the high school or community college" ($\bar{x}$ = 2.61).

In general, the more frequently encountered recruitment activities experienced by the students were also the most effective, with the exception of "Audio-visual presentations" which were the third most frequent, but nearly last in perceived effectiveness. Apparently, videos are frequently employed, but do not appear to be effective for recruiting purposes.

Discussion

There may be little that can be done to capitalize on the most frequently cited influence (i.e., students' personal hobbies) when recruiting students, except perhaps to highlight the positive relationship between enjoyment of one's daily job when it coincides with personal hobbies. For example, recent research on job satisfaction of outstanding technology teachers found that the "enjoyment of working with technology" was a major satisfier for these teachers (Wright & Custer, 1998).

However, the most influential factor, "Encouragement from high school IA/TE teacher" ($\bar{x}$ = 4.40), which was cited by nearly one-third (29.9%) of the sample, can be specifically addressed. Given that high school technology teachers appear to be so influential, it is curious that less than one third of the students indicated that they experienced encouragement from this source. This suggests that technology teachers should become more actively involved in advocating technology teaching as a viable and rewarding career option. This is underscored by the fact that nearly one-half (46.1%) of the students reported that they admired their high school technology teacher as a role model, and that this perception had been quite influential in their decision to become a teacher ($\bar{x}$ = 4.20). Combined with the knowledge that nearly one-half indicated "Enjoyment of high school IA/TE courses" (48.1%) as an influential factor ($\bar{x}$ = 4.26), it is clear these two factors (i.e., technology education teachers and courses) are those over which the profession has considerable control.

"Personal interaction with university faculty" was also highly rated ($\bar{x}$ = 4.14), and was the most frequently cited (39.7%) recruitment practice. Clearly the time and energy that some university faculty have invested in recruitment, as well as time spent with students is perceived to have been highly effective. Specifically, it is the most frequently cited university recruiting activity experienced by these students. When combined with the item "I was encouraged by college/university professor," which was cited by 22%, and which tied for the highest rated factor ($\bar{x}$ = 4.39), one recruitment strategy should be quite clear: person to person interaction and encouragement is highly effective. If university faculty and high school teachers were to unite in their recruitment efforts, their combined effort would likely have a substantial impact.

Table 4
Frequency Cited for Recruitment Practices

Recruitment Practices	Frequency	Percent
Personal interaction with university faculty	201	37.7
I was impressed by modern lab facilities and programs at the high school or university	162	30.2
I was impressed by a video or audio-visual presentation about Technology Ed.	98	18.3
Feature articles or stories on technology	97	18.1
Career days, open house, or other university on-campus activities	77	14.4
Brochures distributed at high school or community college	76	14.2
I was impressed by a technology education display	54	10.1
General education course offerings at the university such as "Technology & You"	51	9.5
Personal letter from someone in the technology education program at the University	33	6.1

Table 5
Comparison of Frequency Cited and Effectiveness Rating for Recruitment Practices

Recruitment Practices	Mean Rating	Percent
Personal interaction with university faculty	4.14	37.7
I was impressed by modern lab facilities and programs at the high school or university	3.63	30.2
I was impressed by a technology education display	3.43	10.1
Feature articles or stories on technology	3.37	18.1
Career days, open house, or other university on-campus activities	3.23	14.4
Personal letter from someone in the technology education program at the University	3.14	6.1
General education course offerings at the university such as "Technology & You"	3.02	9.5
I was impressed by a video or audio-visual presentation about Technology Ed.	2.71	18.3
Brochures distributed at high school or community college	2.61	14.2

It is equally important to note what is *not* happening. Based on the findings of this study, it seems that students are not being counseled into technology teaching by high school coaches, principals, guidance counselors, or college coaches, all of whom were cited by less than 10% of the sample. Similarly, recruiting strategies that typically have been (and continue to be) used widely, such as brochures and video presentations, were the two lowest-rated recruitment activities. Perhaps more surprising was the low rating given to "Secondary IA/TE extra-curricular activities (TSA, VICA, etc.)" ($\bar{x}$ = 2.30), which received the lowest rating in terms of influence, yet was cited by 35% of the students (the fourth most frequently cited factor). Equally disappointing was the number of students who had received a personal letter from someone in the technology education department at the university (6.1%).

Several comments returned from faculty who were mailed the surveys indicated that their university no longer had an undergraduate teacher preparation program in technology education. One cannot help but wonder how many more programs have been eliminated and thus the faculty did not bother to respond. In addition, several individuals reported that their student numbers were so low that they were concerned about their survival for another year.

Several unsolicited institutional responses indicated that the demand for technology teachers has generally surpassed the supply. Letters returned with the surveys indicate widespread shortages nationally. Conversely, only a few institutions volunteered information to indicate that their programs had experienced growth.

Perhaps the most important result of this study is the indication of the need to meet personally, face-to-face, with prospective students in order to have maximum impact. Secondly, we must work closely with secondary teachers in recruitment efforts as they were one of the most influential factors in students' decision processes. We *must* use these findings to influence and attract into the teaching profession the hundreds of students who participate in technology classes of dynamic technology education teachers.

References

Craft, C. O. (1979). *Industrial teacher student recruitment.* Paper presented at the meeting of the 66th Mississippi Valley Industrial Teacher Education Conference, Chicago, IL.

Darling-Hammond, L., & Rustique-Forrester, E. (1997). *Investing in quality teaching: State-level strategies*. Denver, CO: Education Commission of the States.

Daugherty, M., & Boser, R. (1993). The recruitment imperative: Replacement or displacement! *The Technology Teacher*, *52*(7), 31-32.

Dennis, E. A., Editor. (1995). *Industrial Teacher Education Directory*. Department of Industrial Technology, University of Northern Iowa, Cedar Falls, IA: CTTE and NAITTE.

Devier, D. H. (1982). The recruitment of industrial arts teacher education students in Ohio. *Journal of Industrial Teacher Education*, *19*(3), 27-38.

Devier, D. H. (1986). The best and the brightest to teach technology. *Journal of Epsilon Pi Tau*, *13*(2), 28-31.

Devier, D. H., & Wright, M. D. (1988). *The supply and demand of industrial technology teachers in Ohio - 1988-1992*. Columbus, OH: Ohio Department of Education.

Householder, D. L. (1992). *Assessing teacher education programs*. Paper presented at the meeting of the 79th Mississippi Valley Industrial Teacher Education Conference, Chicago, IL.

Johnson, R. J. (1997). What sells technology education? *Tech Directions*, *56*(8) 32-34.

Miller, R. (1980). Industrial arts teachers: Supply and demand. *Industrial Education*, *69*(1), 22-24.

National Commission on Teaching and America's Future. (1996). *What matters most: Teaching and America's future*. Woodbridge, VA: Author.

Tomlinson, R. M. (1982). *Industrial education programs and personnel in Illinois secondary schools (Report no. 5)*. Springfield, IL: Illinois State Board of Education, Department of Adult, Vocational and Technical Education.

Todd, R., Bame, A., Berry, C., Hacker, M., Hanson, R., Karsnitz, J., Radcliffe, D., Sanders, M., Ritz, J., & White, R. (1996). Teacher shortage and recruitment, a problem and an opportunity. *Ties*, *9*(3), 14-16.

Volk, K. (1997). Going, going, gone? Recent trends in technology teacher education programs. *Journal of Technology Education*, *8*(2), 67-71.

Weston, S. (1997). Teacher shortage - supply and demand. *The Technology Teacher*, *57*(1), 6-9.

Wright, M. D. (1985). Relationships among esteem, autonomy, job satisfaction and the intention to quit teaching of downstate Illinois industrial education teachers. (Doctoral dissertation, University of Illinois, 1985). *Dissertation Abstracts International*, *46*, 3273A.

Wright, M. D. (1992). Factors associated with students' selection of technology teacher education as a major. Paper presented at the meeting of the 79th Mississippi Valley Industrial Teacher Education Conference, Chicago, IL.

Wright, M. D., & Custer, R. L. (1998). Why they enjoy teaching: The motivation of outstanding technology teachers. *Journal of Technology Education*, *9*(2), 60-77.