Why Should I Stay? Factors Influencing Technology Education Teachers to Stay in Teaching Positions

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Introduction

Technology education is facing no more critical issue than that of its current teacher shortage (Wicklein, 2005). Research conducted by Meade and Dugger (2004), Ndahi and Ritz (2003), Newberry (2001), Ritz (1999), and Weston (1997) have all indicated that technology education has been and will continue experiencing a significant teacher shortage unless action is taken to reverse this problem. Wicklein (2005) indicated that in order to address the issue of the teacher shortage, efforts need to be aimed at recruiting, preparing, and retaining technology education teachers at all levels. This study sought to identify effective retention techniques by determining the factors that influence technology education teachers to stay in teaching positions. The study utilized the survey technique to gather perceptions from technology education teachers and administrators who were elected officials in state technology education associations.

Background to the Study

The National Center for Education Statistics (NCES, 1998) stated that the demand for new teachers comes about primarily because teachers choose to move from or leave the teaching profession at a much higher rate than do those people in other occupations. Studies have indicated that as many as 14 percent of teachers decide to leave the teaching profession after one year and almost half (46%) are gone by the end of their fifth year of teaching (Darling-Hammond, 1999; Fulton, 2003; Ingersoll, 2001; NCES, 1998; National Commission on Teaching and America's Future (NCTAF), 1996; Whiterner, Gruber, Rohr, & Fondelier, 1998).

Teachers leave the teaching profession for many different reasons. Researchers have found that among other reasons, low salaries, lack of career

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advancement, lack of professional development, lack of administrative support, student and peer issues, and other school-environment related factors have been identified to influence teachers to leave the profession (Darling-Hammond, 2003; Marlow, Inman, & Betancourt-Smith, 1996; McCreight, 2000; Marso & Pigge, 1997; Ladwig, 1994). In studies of technology education teacher attrition, Wright (1991) and Wright and Custer (1998) found similar results. In the 1991 study by Wright, the top four factors that affected technology education teacher attrition related mostly to administrative and economic factors and included: lack of support by the administration, low salary or lack of benefits, budget restrictions, and lack of academic freedom or lack of a choice in teaching. The study also identified personal and professional reasons for technology education teacher attrition such as a low status among colleagues outside technology education and lack of understanding of technology education as a subject.

A 1998 study by Wright and Custer also identified the most frustrating aspects of teaching for technology education teachers. The findings of their study also indicated administrative factors as the most frustrating aspect of teaching technology education, which was a lack of funding for equipment, supplies, and facilities. A lack of understanding and support for technology education by administrators and counselors, as well as a decline in the personal characteristics and attitudes of students in technology education were the other factors most highly rated by technology education teachers.

While all areas of education feel the effects of teacher attrition, mathematics, natural sciences, and technology education are especially vulnerable to teacher attrition because they offer professionals the opportunity to make much higher wages working in non-teaching careers (National Association of State Boards of Education, 1998). Since these areas of education are already at a disadvantage when it comes to teacher attrition, a focus must be placed on effectively retaining the teachers who are currently employed in these areas. Many researchers have found that a focus on retaining teachers may actually be more effective in addressing a teacher shortage than a recruitment focus (Merrow, 1999; Ingersoll, 2001).

Several different programs have been developed in order to retain teachers and other educational staff. Two programs developed for retention are staff orientation, and induction and mentoring programs. The purpose of a staff orientation program is to provide new teachers with an overview of the school and curricular activities (Stansbury & Zimmerman, 2000) and such efforts have been found to increase retention rates by nearly 35 percent (Lemke, 1995). Additionally, induction and mentoring programs which provide first year teachers with the opportunity to share experiences and collaborate have been found to double the chances that the teacher will stay in his or her profession (Brown, 2003).

Other suggested strategies for retaining teachers include: effective school leadership, signing and retention bonuses, effective staff selection and

development, effective relationships with the community, higher teacher salaries, flexible teacher schedules, shared decision making, career ladders, merit pay, performance pay, and loan reduction or forgiveness (Ingersoll, 2001; Kuenzi, 2004; Minarik, Thornton, & Perreault, 2003; NCES, 2003; Odden & Kelley, 2002).

While many areas of education are experiencing teacher shortages, several studies have focused on reasons teachers leave the teaching profession. Few studies however have identified factors that influence teachers to stay in teaching positions. Studies conducted by Puget Sound Educational School District (PSESD) (2003) and Hare and Heap (2001) have examined factors influencing teacher retention within Washington State and Midwestern states respectively. Marquez (2002) conducted a study that examined the factors that influenced the retention of bilingual education teachers. Additionally, Barrows and Wesson (2003), Lee, Clery, and Presley (2001), and Weiss (1999) identified job satisfaction factors that may impact teacher retention. However, if the teacher shortage in technology education is to be addressed, specific studies addressing the factors that influence the technology education teacher human resource supply are needed.

Hanushek, Kain, and Rivikin (2001) stated that without a full understanding of the factors influencing the teacher supply, effective policies and strategies to address the teacher shortage will not be developed. This study sought to expand the knowledge regarding the technology education teacher supply by focusing on the factors that influence the retention of technology education teachers. The purpose of the study was to determine the factors most influential in whether a technology education teacher stays in a teaching position. Based on the findings of this study, effective retention policies can be developed for technology education.

Methodology

The design of this study examined factors that influence technology education teachers to stay in teaching positions. The study specifically utilized the survey method to answer the research questions of the study. The general purpose of survey research was to generalize from a sample population so that inferences can be made about the perceptions of the total population (Babbie, 2001). The study sought the perceptions of technology education teachers and administrators who served as elected officials in their respective state technology education associations. This population was defined as described for several reasons. First, a population was needed that involved both technology education teachers and administrators. These individuals were chosen because of their specific knowledge of technology education, and the factors that influence technology education teachers to stay in teaching positions. Second, by the nature of their involvement in a technology education association as an elected officer, they may have a higher commitment to technology education resulting in a higher, more accurate response. Third, state technology education officers are elected to represent all of the technology education teachers and

administrators in the state. Therefore the perceptions of those technology education teachers and administrators should be representative of other technology education teachers and administrators in the state. Finally, the identification and contact information for state technology education association officers were available to the researchers on the state association Websites or by contacting each association directly.

After extensive research of the International Technology Education Association Website and state technology education association Websites, 32 states were determined to have technology education associations with a total of 489 elected officers. The 489 elected officers consisted of approximately 401 technology education teachers and 88 technology education administrators. Elected positions in state technology education associations are voluntary positions consisting of presidents, vice presidents, past presidents, president elects, secretaries, treasurers, and other state board positions such as regional/district representatives. This study only surveyed technology education teachers and administrators. Board members who represented universities and community colleges were excluded.

The researchers developed a survey to determine the factors that influence technology education teachers to stay in teaching positions. The initial survey development was guided by three instruments: The Job Satisfaction Survey (Spector, 1985), Recruitment and Retention Issues Survey (PSESD, 2003), and Retaining and Attracting High Quality Teachers Survey (Hare & Heap, 2001). These surveys served as a guide in the development of the broad categories and general factors influencing teacher retention. Factors specific to technology education were determined by the researchers through a review of literature.

The content validity of the survey instrument was established by means of a panel with expertise technology education (n = 5). The panel consisted of five technology education professionals from two regional Midwestern universities. They examined the instrument for grammar, clarity, and understanding. Additionally, the survey instrument was pilot tested with technology education teachers (n = 34) and technology education administrators (n = 10) at the Association of Career and Technical Education (ACTE) conference in December of 2005 to determine internal consistency reliabilities of the scales and to assess understandability. A Cronbach Coefficient Alpha test was conducted for the pilot test instruments to determine the internal consistency of the instrument and to establish reliability for the survey instrument. After eliminating two categories from the survey, a reliability index of .969 was determined for the instrument.

The survey consisted of two sections. Section one collected basic demographic and background information to provide a better understanding of the population sample. The second section listed 28 retention factors, which were categorized into pay, promotion, benefits, contingent rewards, operating conditions, nature of work, and communication. Table 1 contains a list of the 28 factors.

Table 1
Factors influencing technology education teachers to stay in teaching positions

	Pay Category
1	The current salary is comparable to that of the national average ($30,000).
2	The technology education teacher is paid above the district average.
3	Raises for technology education teachers are above the district average.
4	The school is providing yearly raises for all teachers.
	Promotion Category
5	There is a career ladder for technology education teachers in the school district.
6	Technology education teachers are promoted based on performance.
7	Technology education teachers can move up the career ladder quickly.
8	Technology education teachers are promoted based on tenure procedures.
	Benefits Category
9	There are resources available for professional development.
10	The school is paying off the teacher's student loan.
11	The school is providing a tuition waiver or reimbursement for continuing education.
12	The teacher is offered a financial reward (retention bonus) for staying a certain number of years.
	Contingent Rewards Category
13	The school is providing successful teachers with non-financial rewards.
14	The school is recognizing successful teachers within the district.
15	The school is financially rewarding teachers for school and program successes.
16	The school is providing increased compensation for quality teaching.
	Operating Conditions Category
17	Technology Resources are upgraded for the classroom and labs.
18	Class sizes are average (20 to 25).
19	The school is providing retraining for faculty and staff.
20	The school has a university partnership to recruit, alternatively certify, and train teachers.
	Nature of Work Category
21	The school is using the Standards for Technological Literacy.
22	The technology education teacher is teaching the grade they prefer to teach.
23	The technology education teacher is teaching the subject they prefer to teach.
24	Technology education is housed under Vocational Education.

Table 1 (continued)
Factors influencing technology education teachers to stay in teaching positions

	Communication Category
25	The teacher participated in a new teacher induction program to orient new teachers to the school.
26	The teacher is participating in a mentoring program in place to help new technology education teachers.
27	There is a collaborative work environment.
28	Teachers are involved in the decision-making process.

The second section asked participants to respond to each factor, and rate each as to its influence on whether a technology education teacher stays in a teaching position. A five-point Likert-type scale was used for each of the items with "1" representing strong disagreement that the factor is influential and "5" representing strongly agreement that the factor is influential.

Data Collection

The data collection process began in January of 2006. The 489 participants selected for the study were each sent a personalized email introducing the project, describing the purpose of the study, providing instructions for completing the survey online, assured confidentiality, and directing them to the site where the instrument could be completed. The researchers attempted to increase the response rate by requesting the assistance of state technology education association presidents, presidents-elect, and executive directors. Each of these individuals was sent personalized emails asking for their assistance in the study and for them to encourage their board members and regional/district representatives to participate. A follow-up mailing was conducted exactly one week after the first and a final follow-up was sent two weeks after the first mailing. Of the initial 489 surveys sent, 95 were returned as undeliverable and 230 of the 394 participants receiving the mailing (58.4%) returned the survey.

Findings

Data collected were analyzed and used to determine the factors influencing technology education teachers to stay in teaching positions. Descriptive statistics were calculated for both demographic information and the factors including means, standard deviations, frequencies, and percentages. Frequencies, means, and standard deviations were used to summarize and describe participant responses to the factors that influence technology education teachers to stay in teaching positions.

An analysis of the demographic data received from the study indicates that participants from all 32 states surveyed responded to the study. As reported in Table 2, the majority of those responding to the study (83.0%) identified themselves as technology education teachers. While only twenty respondents classified themselves as administrator, an additional 7 respondents identified

themselves as both teachers and administrators and twelve respondents answered in the *other* category.

Also reported in Table 2, approximately 30.4% of respondents (n = 70) worked at the elementary/middle school level and 11.3% (n = 26) worked at the state/district level, while the majority of the respondents (n = 126) indicated they worked at the high school level. Finally, respondents were more evenly split between locations with 22.6% of respondents in rural areas (n = 52), 29.1% located in towns or small cities (n = 67), 33.0% in suburban areas (n = 76), and 13.5% respondents in urban areas (n = 31) (see Table 2).

Table 2
Descriptive information about the respondents

Variable	*n*	%
Position Held		
Teacher	191	83.0
Administrator	20	8.6
Both	7	3.0
Other		
State Supervisor	8	3.4
Program Specialist	1	<.01
State Consultant	1	<.01
Department Head	2	<.01
Area of Work		
Elementary/Middle	70	30.4
High School	126	54.8
State/District Level	26	11.3
Other		
Both or K-12	8	3.4
Location		
Rural	52	22.6
Town or Small City	67	29.1
Suburban	76	33.0
Urban	31	13.5
No Response	4	1.7

Means ranged from 2.61 to 4.11 for all respondents on a Likert-type scale (1 = Strongly Disagree, 2 = Disagree, 3 = Undecided, 4 = Agree, 5 = Strongly Agree). There were a total of 14 factors rated with means of 3.5 and above (agree) on the scale. These data are presented in Table 3. There were 14 factors rated with means below 3.5 (disagree or undecided) on the scale which are presented in Table 4.

Most Influential Factors

Three factors received mean ratings of 4.00 and above and were perceived as most influential. They were the provision of yearly raises for all teachers (Factor 4), the school had resources available for professional development (Factor 9), and the school had a collaborative work environment (Factor 27).

Table 3

Summary of the factors influencing a technology education teacher to stay in a teaching position rated above 3.5

				Frequency of Response (Percent)				
Factor	***n***	**Mean**	**SD**	**Strongly Disagree**	**Disagree**	**Undecided**	**Agree**	**Strongly Agree**
Factor 1	228	3.560	1.338	24 (10.4)	33 (14.3)	33 (14.3)	68 (29.6)	70 (30.4)
Factor 4	227	4.110	1.071	11 (4.8)	11 (4.8)	19 (8.3)	86 (37.4)	100 (43.5)
Factor 9	227	4.110	0.967	5 (2.2)	13 (5.7)	26 (11.3)	92 (40.0)	91 (39.6)
Factor 14	225	3.680	1.219	21 (9.1)	18 (7.8)	34 (14.8)	91 (39.6)	61 (26.5)
Factor 17	226	3.990	1.095	10 (4.3)	19 (8.3)	19 (8.3)	93 (40.4)	85 (37.0)
Factor 18	226	3.880	1.137	14 (6.1)	17 (7.4)	25 (10.9)	95 (41.3)	75 (32.6)
Factor 19	226	3.630	1.209	19 (8.3)	23 (10.0)	39 (17.0)	87 (37.8)	58 (25.2)
Factor 21	226	3.730	1.181	17 (7.4)	20 (8.7)	33 (14.3)	92 (40.0)	64 (27.8)
Factor 22	226	3.740	1.126	11 (4.8)	27 (11.7)	32 (13.9)	95 (41.3)	61 (26.5)
Factor 23	224	3.990	1.018	7 (3.0)	15 (6.5)	30 (13.0)	94 (40.9)	78 (33.9)
Factor 25	227	3.830	1.220	17 (7.4)	22 (9.6)	23 (10.0)	86 (37.4)	79 (34.3)
Factor 26	224	3.750	1.153	14 (6.1)	20 (8.7)	40 (17.4)	85 (37.0)	65 (28.3)
Factor 27	227	4.100	0.950	5 (2.2)	9 (3.9)	35 (15.2)	88 (38.3)	90 (39.1)
Factor 28	222	3.910	1.114	13 (5.7)	16 (7.0)	22 (9.6)	98 (42.6)	73 (31.7)

As indicated in Table 3, respondents also perceived that having a salary comparable to that of the national average (Factor 1), having the school district recognize successful teachers (Factor 14), providing upgrades for technology

resources in classrooms and labs (factor 17), having average class sizes (factor 18), providing retraining for teachers and staff (Factor 19), using the Standards for Technological Literacy (Factor 21), having the technology education teacher teaching the grade he or she prefers to teach (Factor 22), having the teacher teaching the subject they prefer (Factor 23), having teachers who participated in a new teacher induction program to orient new teachers to the school (Factor 25), having teachers who are participating in a mentoring program in place to help new technology education teachers (Factor 26), and involving teachers in the decision making process (Factor 28) were also influential factors in whether a technology education teacher stays in a teaching position.

When comparing the results above to other teacher retention studies, similarities can be found to factors such as pay, operating conditions, and communication. Studies conducted by PSESD (2003), Marquez (2002), and Hare and Heap (2001) indicated similar results for factors such as providing yearly raises for all teachers, providing resources for professional development, average class sizes, and staff development as influential in retaining teachers. This study also found similar results to Wright and Custer (1998) in suggesting that technology resources were influential in technology education teacher retention. Finally, this study supported Brown's (2003) conclusions regarding the positive influence teacher induction and mentoring programs have on teacher retention.

Non-Influential Factors

Along with indicating the factors perceived to be influential in whether a technology education teacher stays in a teaching position, factors perceived to have less or no influence were also identified. This study found 14 factors (see Table 4) that were perceived to have the little to no influence on whether a technology education teacher stays in a teaching position. The 4 factors perceived to have the least influence were providing raises above the district average for technology education teachers (Factor 2), paying off the teacher's student loan (Factor 10), promoting technology education teachers based on performance (Factor 6), and paying technology education teachers above the district average (Factor 3).

The above perceptions of the respondents are of particular interest for two reasons. The first reason has to do with the factors relating to pay. Several of the studies discussed earlier which looked at attrition rates of teachers indicated that pay was a major reason for leaving the teaching profession. The results of this study would indicate that higher pay wouldn't necessarily be an influential factor in determining whether or not a technology education teacher stays in a teaching position. These findings may result from a desire by technology education teachers to not be paid more or receive higher raises than other teacher, but to be treated and paid similar to the other teachers in the district. The second finding that is of interest is the perception that paying off the teacher's student loan is not influential. This is interesting since student loan

payoffs are one of the programs most widely used by states and school districts to retain teachers.

Table 4
Summary of the factors influencing a technology education teacher to stay in a teaching position rated below 3.5

				Frequency of Response (Percent)				
Factors	***n***	**Mean**	**SD**	**Strongly Disagree**	**Disagree**	**Undecided**	**Agree**	**Strongly Agree**
Factor 2	228	2.800	1.512	67 (29.1)	39 (17.0)	42 (18.3)	33 (14.3)	47 (20.4)
Factor 3	228	2.610	1.493	76 (33.0)	44 (19.1)	42 (18.3)	24 (10.4)	42 (18.3)
Factor 5	224	3.020	1.385	43 (18.7)	44 (19.1)	42 (18.3)	56 (24.3)	39 (17.0)
Factor 6	225	2.780	1.400	57 (24.8)	48 (20.9)	39 (17.0)	50 (21.7)	31 (13.5)
Factor 7	226	2.940	1.305	40 (17.4)	45 (19.6)	64 (27.8)	43 (18.7)	34 (14.8)
Factor 8	226	3.230	1.292	33 (14.3)	29 (12.6)	58 (25.2)	66 (28.7)	40 (17.4)
Factor 10	227	2.740	1.588	82 (35.7)	30 (13.0)	26 (11.3)	43 (18.7)	46 (20.0)
Factor 11	226	3.270	1.542	53 (23.0)	22 (9.6)	25 (10.9)	62 (27.0)	64 (27.8)
Factor 12	226	3.040	1.622	67 (29.1)	28 (12.2)	24 (10.4)	44 (19.1)	63 (27.9)
Factor 13	225	3.120	1.385	44 (19.1)	28 (12.2)	53 (23.0)	57 (24.8)	43 (18.7)
Factor 15	223	2.900	1.484	56 (24.3)	45 (19.6)	32 (13.9)	46 (20.0)	44 (19.1)
Factor 16	225	2.910	1.507	61 (26.5)	39 (17.0)	29 (12.6)	52 (22.6)	44 (19.1)
Factor 20	225	3.040	1.346	40 (17.4)	43 (18.7)	44 (19.1)	63 (27.4)	35 (15.2)
Factor 24	226	2.960	1.448	53 (23.0)	38 (16.5)	42 (18.3)	50 (21.7)	43 (18.7)

These results could indicate that the respondents were older and did not currently have student loans or were teachers who did not have student loans to begin with. The results however are somewhat surprising in that this factor was rated as one of the four least influential.

Other factors that were rated as having little to no influence of note include those pertaining to career advancement and career ladders (Factors 5 and 7).

This finding is contrary to some previous studies. For example, Marquez (2002) found career advancement to be effective in retaining bilingual education teachers, and PSESD (2003) found career ladders to have some influence on teacher retention. The other factor of note that was perceived to be less influential was providing a retention bonus (Factor 12). Similar to paying off teacher's student loans, retention bonuses are one of the more widely used programs to retain teachers.

Conclusions and Recommendations

Many of the factors perceived as influential in this study could be used by schools to develop programs or implement policies to retain technology education teachers. For example, much like the findings of Brown (2003), this study indicated that schools could develop induction and mentoring programs to increase the likelihood of retaining technology education teachers. Additionally, this study suggests that policies could be enacted to create a more collaborative work environment with shared decision making, methods could be developed to recognize successful teachers, and schools could adopt the Standards for Technological Literacy to successfully retain technology education teachers.

Of the other factors perceived as influential, several relate to resources available to schools. While these factors may be more difficult to overcome for schools with fewer available resources, the finding of this study would indicate that many could be implemented without a significant financial burden. Low salaries are often stated as reasons that technology education teachers leave the profession (Wright, 1991; Wright & Custer, 1998). However this study indicated that technology education teachers would be more likely to stay in a teaching position if they were paid comparably to the national average while receiving a yearly raise similar to all teachers in the district. Additionally, factors such as providing higher salaries and raises for just technology education teachers were perceived as having less influence. These findings would suggest that technology education teachers are not necessarily looking to make more than the average teachers, but a similar salary with the potential for a salary increase.

Influential factors to retentions are important, but those with little influence are equally so. The programs often used to retain teachers in school districts such as retention bonuses, tuition waivers, and student loan payoffs were all perceived to have little to no influence. This would suggest that schools might better utilize these resources in acquiring materials and equipment for teaching, providing yearly raises, or providing opportunities for professional development.

While technology education continues to experience a teacher shortage, it is especially important to retain as many of the current teachers as possible. These findings could be helpful to school districts and states alike in providing a better understanding of the technology education teacher population and in developing programs and policies that actually avoid our teachers from leaving the profession. While more research is needed in addressing the technology

education teacher shortage, we must first retain the teachers we have so that technology education profession is maintained.

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