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An Investigation of Placement and Teacher Retention of Brigham Young University Technology Teacher Education Bachelor of Science Graduates from 1993-2007

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AN INVESTIGATION OF PLACEMENT AND TEACHER RETENTION OF BRIGHAM YOUNG UNIVERSITY TECHNOLOGY TEACHER EDUCATION BACHELOR OF SCIENCE GRADUATES FROM 1994-2007

by

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GRADUATE COMMITTEE APPROVAL

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This thesis has been read by each member of the following graduate committee and by majority vote has been found to be satisfactory.

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Date	Kip Christensen, Member
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BRIGHAM YOUNG UNIVERSITY

As chair of the candidate's graduate committee, I have read the thesis of Michael L. Taylor in its final form and have found that (1) its format, citations, and bibliographical style are consistent and acceptable and fulfill university and department style requirements; (2) its illustrative materials including figures, tables, and charts are in place; and (3) the final manuscript is satisfactory to the graduate committee and is ready for submission to the university library.

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ABSTRACT

AN INVESTIGATION OF PLACEMENT AND TEACHER RETENTION OF BRIGHAM YOUNG UNIVERSITY TECHNOLOGY TEACHER EDUCATION BACHELOR OF SCIENCE GRADUATES FROM 1994-2007

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School of Technology

Master of Science

The purpose of this research study was to gather data on a sample of technology teacher candidates in order to determine how many graduates with a technology teaching endorsement actually entered the teaching profession. In addition, data were collected to investigate the attrition rate of the same pool of candidates. For those who left the education profession, the study also examined how long these individuals taught before leaving as well as investigated the reasons these individuals decided to leave the technology teaching profession. For those who have remained in the teaching profession this study also explored their reasons for remaining in education. In addition, data were collected regarding how many technology teaching candidates remained within the state of Utah as well as how many have accepted positions outside of the state

of Utah. To accomplish these tasks, a survey instrument was designed to gather employment data from Technology Teacher Education (TTE) graduates of Brigham Young University over the last 14 years.

There were 189 technology teacher education graduates from 1994-07. Contact information was located and compiled for 148 of the 189 graduates; therefore, the results of this survey were calculated using the 148 graduates with current contact information. Of the 148 potential participants in this study, 110 (74%) of the TTE graduates responded.

From the responses of the 110 TTE graduates the following was determined. There were 85 of those who responded that entered the teaching profession; 84 of those graduates entered within two years of graduation. Of the 85 graduates entering education, 54 stayed in the state of Utah and 31 left the state to teach. There were 67 of 110 responders to the survey (60%) that reported they entered education within two years and have remained in education since graduation. One teacher out of the 85 entered education after attending graduate school. The survey indicated that 17 of the 85 teachers exited education which is equal to 20% of the responding educators leaving education. Of the 17 educators who left the profession six left the first year, and 13 of the 17 left sometime during the first three years. Of the 17 educators that left education, four returned to the profession.

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I want to thank my family because they truly sacrificed the most while I struggled through this process. Thanks for your love and understanding. To my daughters Marin, Mckaida, Marjorie I know that I haven't been there for the special times we usually have during the summer, look to the future and the fun times will return. Last but not least my remarkably talented wife Mariann who is truly the inspiration in my life, I love her. Without her patience, love, and support I wouldn't have completed this undertaking.

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1 Introduction

1.1 National Teacher Shortages

Professors Hassen B. Ndahi and John M. Ritz state in "Technology Education Teacher Demand, 2002-2005" that The National Center for Education Statistics or (NCES) reports that the U. S. will need an estimated 1.7 to 2.7 million teachers by 2008 to replace those educators that are choosing to leave the education profession.[1] The reasons for this teacher demand are varied. One of the major reasons as identified in the literature is that of teacher turnover. In this report published by NCES, it was determined that at least 9.3% of teachers in the public education system leave during their first year, and more than 20% of the public educators leave their assignment in the first three years.[2] In a recent study conducted by Connie Sue Greiner and Brenda Smith, they referenced a study performed by B. Eggen for a 2001 dissertation at the University of South Carolina where it was reported that as many as 50% of teachers leave education within the first five years of their teaching assignment.[3] These statistics help to build a

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[1] Hassan B. Ndahi and John M. Ritz. "Technology Education Teacher Demand, 2002-2005." *The Technology Teacher*. (April 2003): 27-31.

[2] Connie Sue Greiner and Brenda Smith. "Determining the Effect of Selected Variables on Teacher Retention." *Education.* No.126 (2006) : 653-659.

[3] Ibid

strong case for concern about the possibility of a critical teacher shortage in the future for this nation.

Another factor contributing to teacher shortages is teacher retirement. Dr. C. Emily Feistritzer, President and Chief Executive Officer at National Center for Alternative Certification (NCAC) and President and Founder of the National Center for Education Information (NCEI), and Dr. Charlene K. Haar, a leader in education policy, and past Director of Technical Assistance for the National Center for Alternative Certification, comment that a teacher shortage will compound over the next ten years due in part to the fast approaching retirement of teachers. In fact, there are some states with as many as 22% of the current teaching force planning on retiring within five years starting in 2005.[4]

If teacher retirement and turnover are combined, it is predicted that 66% of U.S. teachers are expected to retire or stop teaching in the next decade according to the National Center for Education Statistics.[5] Compounding this problem is the fact that many students graduating from universities in teacher education majors are not choosing to enter the education profession. For example, during 1998-99, 220,000 students graduated with teacher education degrees but only 86,000 of these students accepted

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[4] Dr. C. Emily Feistritzer and Dr. Charlene K. Haar. *Profile of Teachers in the U.S. 2005.* (Washington, D. C: The National Center for Education Information, 2005), http://www.ncei.com/POT05PRESSREL3.htm.

[5] *Wanted: Math and science teachers*. CNN.com. (Washington: Reuters, July 31,2002). http://archives.cnn.com/2002/fyi/teachers.ednews/07/31/teachers.needed.reut/index.html.

teaching positions, according to Richard M. Ingersoll Professor of Education and Sociology at the University of Pennsylvania.[6]

1.2 Teacher Shortages: Utah

In the State of Utah, according to a Utah supply and demand study conducted by faculty in the Instructional Technology Department at Utah State University (a study spanning from July 2003 to March 2004), it was suggested that due to many factors such as: retirement, growth, and attrition, the public school system will need more than 70,000 new teachers over the next 20 years.[7] It was reported in this same study that ten of the state's 40 school districts had teaching vacancies.[8] To make Utah's teacher shortage situation worse, only 32% of all of those graduating from teacher education programs in Utah in the five years previous to this article (1999-04) had accepted teaching opportunities within the state according to Jill Fellow, a writer for the *Daily Herald* a local Utah newspaper (2004).[9]

Each year universities recommend 3,600 students on average for educational licenses in Utah, yet only about 60% of education graduates seek teaching positions and many of these leave the state to teach.[10] Similar to the national trend, Utah has a

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[6] Dr. Richard M. Ingersoll. *Is There Really a Teacher Shortage?* (Seattle: University of Washington, 2003). http://depts.washington.edu/ctpmail/PDFs/Shortage-RI-09-2003.pdf. (September, 2003) 7

[7] Zachary Tippetts et al. *Utah Educator Supply and Demand Study 2003-2004.* (Logan, Utah: Instructional Technology Department Utah State University, 2004). 3

[8] Ibid

[9] Jill Fellow. "Study warns of teacher shortages," *The Daily Herald* (Provo), 17 June 2004. http://www.heraldextra.com/content/view/106408/. C1

[10] Daniel Robertson and Ron Thorkildsen Ph.d. *Educator Supply and Demand in Utah.* (Logan, Utah: Bureau of Research Services, College of Education Utah State University, 2001). 4

problem with teacher retention because numerous educators leave the teaching profession within the first five years. A staggering 2,700 Utah teachers depart the teaching profession each year.[11] That number (2,700) represents more than 11% of Utah's total teaching force leaving education and that percentage increases to 12.7% when calculating the rise of retirement rate with those exiting every year.[12]

1.3 Teacher Shortages: Technology Education

Science and Math are two of the most publicized subject areas in teaching that suffer from a lack of educators. While it is not as highly publicized, technology is another area in education that suffers from a lack of teachers. Ndahi and Ritz (2003) reported in the *2001-2002 Industrial Teacher Education Directory* that 71 U.S. universities produced 672 technology education teachers.[13] During this same year, Ndahi and Ritz (2003) commented that of the 50 states surveyed there was an estimated need of 2337 technology teachers to replace those exiting education.[14] This resulted in a national shortage of 1665 licensed technology teachers for just the 2001-02 school year. According to the 2005 national Supply and Demand Study conducted by AAEE (American Association for Employment in Education), seven of nine national regions reported having some shortage of technology teachers. The remaining two regions

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[11] Zachary Tippetts et al. *Utah Educator Supply and Demand Study 2003-2004.* (Logan, Utah: Instructional Technology Department Utah State University, 2004). 3, 11

[12] Ibid

[13] Hassan B. Ndahi and John M. Ritz. "Technology Education Teacher Demand, 2002-2005." *The Technology Teacher*. (April 2003): 27-31.

[14] Ibid

reported a balance in their supply and demand of technology teachers.[15] AAEE provided a scale as a guideline for those participating in the study. The scale covered demands for Technology Teachers ranging from 1 to 5 as follows: 1.00 to 1.80 reflects considerable surplus of teachers; 1.81 to 2.60 reflects some surplus; 2.61 to 3.40 reflects a balanced amount of educators; 3.41 to 4.20 reflects some shortage of educators; 4.21 to 5.00 reflects considerable shortage of teachers. The highest shortage reported on this study for Technology Teachers is 3.88 in region #8, the Middle Atlantic. The Rocky Mountain Region reported 3.75, the second highest in the study, with no region being lower than region #5, the South Central, with 3.22. The demand average for all nine regions for this study was 3.54 reflecting some shortage of Technology Teachers in all regions of the nation.[16]

How many teachers are needed in Utah to replace those who exit teaching? From the Ndahi and Ritz (2003) report, the state of Utah experienced an estimated need of 30 technology teachers in 2001, 60 technology teachers in 2003, and 55 technology teachers in 2005 to fill technology teacher vacancies in Utah.[17] Following a review of literature, it was found that there was no data being collected to determine if the supply of technology teachers produced by universities within the state for that year was able to meet this demand or even if the students that graduate in technology education were entering the teaching profession or leaving to teach in other states. In addition, no

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[15] *Educator Supply and Demand in the United States Executive Summary*, by Suzanne Burkholder, chair (Columbus, Ohio.: American Association for Employment in Education, 2005), 1-7

[16] Ibid

[17] Hassan B. Ndahi and John M. Ritz. "Technology Education Teacher Demand, 2002-2005." *The Technology Teacher*. (April 2003): 27-31.

longitudinal data was available to determine the percentage of technology education graduates that have actually entered the teaching profession during the last decade or to determine the percentage that have entered the profession but have decided to leave, or how long they were in the teaching profession and the reasons for their leaving.

1.4 Problem

Even though much data have been collected on teacher shortages and/or teacher retention in general, these studies all vary in their findings (i.e. some studies tell of a serious shortage of teachers while other studies report there is no shortage at all). Some data have been collected regarding the current number of technology education teachers in the US and the projected technology teacher shortages.[18] [19] However, there is very little data regarding how many graduates with a technology teaching endorsement actually enter the teaching profession, how many technology teaching candidates leave to take teaching positions outside the state of Utah, the attrition rate of those actually entering the teaching profession, the reasons that these individuals decide to leave the profession, and how long these individuals teach before leaving the teaching profession. This data is needed by the Utah State Office of Education, school districts, and teacher education institutions so that they can better predict the supply and demand for teachers in the future and so that they can identify possible reasons that keep individuals from

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[18] Hassan B. Ndahi and John M. Ritz. "Technology Education Teacher Demand, 2002-2005." *The Technology Teacher*. (April 2003): 27-31.

[19] *Educator Supply and Demand in the United States Executive Summary*, by Suzanne Burkholder, chair (Columbus, Ohio.: American Association for Employment in Education, 2005), 1-7.

teaching, or the reasons that cause them to leave teaching, as well as identify motivators that will help teachers choose to stay in education.

1.5 Purpose

The purpose of this research was to gather data on a sample of Brigham Young University (BYU) technology teacher candidates in order to determine the following:

1. How many and the percentage of graduates with a technology teaching endorsement that actually did enter the teaching profession
2. What was the attrition rate of those entering the teaching profession
3. How long these individuals taught before leaving the teaching profession
4. Why these individuals decided to leave the technology teaching profession
5. How many technology teaching candidates are leaving to take teaching positions outside the state of Utah

In order to do this, a study was proposed to gather employment data from TTE graduates of BYU over the last 14 years. The reasons for choosing BYU for the study are: 1) BYU has the largest number of Technology Teacher Education graduates annually in the state of Utah; and 2) access to data.

1.6 Research Questions

To conduct this study, questionnaires were sent to approximately 150 BYU Technology Education graduates that had completed the program and graduated from the university in the last 14 years. The study will help provide answers to the following research questions:

1. Upon graduation or within 2 years of graduation, what percentage of Brigham Young University Technology Teacher Education graduates entered the teaching profession?
2. Of those Technology Teacher Education graduates that entered the teaching profession, what percentage accepted teaching positions outside (or inside) the state of Utah?
3. What is the attrition rate of Technology Teacher Education graduates from BYU that entered the teaching profession over a 14 year span?
4. What are some of the most prevalent reasons why individuals decided to leave the technology teaching profession?
5. On average, how long did these individuals teach before leaving the teaching profession?
6. Of those staying in the education profession what are some of the reasons they decided to remain in the technology teaching profession?
7. What is the percentage of those that left the teaching profession but later decided to return to education?

1.7 Delimitations

As stated earlier, although teacher shortage is a national problem this study will not attempt to answer questions regarding national trends in teacher attrition and retirement but rather will focus on trends in Technology Education in the State of Utah from a single educational institution (Brigham Young University) that provides teachers for schools across the nation. In order to get results that are consistent with the problems in technology teacher education, the study will focus on just technology

teacher education. Therefore, this narrow focus will efficiently illuminate the specific problems inherent in graduates from Brigham Young University in Technology Teacher Education.

CHAPTER II

2 Review of Literature

2.1 Teacher Shortage Nationally

There is a teacher shortage in high-risk and many urban schools in this nation.[20] This shortage has encouraged school leaders to rethink their recruiting strategies and forces the leaders to work on the methods they use to retain new teachers for their schools that are hard to staff.[21] According to The National Center for Education Statistics (NCES), the U.S. will need an estimated 1.7 to 2.7 million teachers by 2008 to replace those that are leaving the education profession.[22] In fact, among the current public school teachers, 40% do not expect to be in the education profession within the next five years.[23] Research has indicated factors explaining why teachers are leaving the profession thus creating this demand.[24] These factors have been consolidated into

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[20] Misti M. Morgan and William A. Kritsonis, PhD. "A National Focus: The Recruitment, Retention, and Development of Quality Teachers in Hard-to-Staff Schools," *National Journal for Publishing and Mentoring Doctoral Student Research* 5 (November 2007).

[21] Ibid

[22] *Wanted: Math and science teachers*. CNN.com. (Washington: Reuters, July 31,2002). http://archives.cnn.com/2002/fyi/teachers.ednews/07/31/teachers.needed.reut/index.html.

[23] Dr. C. Emily Feistritzer and Dr. Charlene K. Haar. *Profile of Teachers in the U.S. 2005*. (Washington, D. C: The National Center for Education Information, 2005), http://www.ncei.com/POT05PRESSREL3.htm. (5 March, 2008).

[24] Dr. Richard M. Ingersoll. *Is There Really a Teacher Shortage?* (Seattle: University of Washington, 2003). http://depts.washington.edu/ctpmail/PDFs/Shortage-RI-09-2003.pdf. (September, 2003) 13.

categories as follows and will be discussed in this review of literature: retirement, family or personal issues (e.g., rearing children, needed at home, income change), pursuing other employment, and dissatisfaction which often leads to attrition.[25] Attrition in education can be defined as a reduction of the number of teachers or a decrease in size of the educational pool.

With so many teachers leaving the profession, education professionals need to consider if there will be a sufficient number of individuals that will be entering the education profession to fill the demand. According to a study by Ingersoll, the number of students graduating with education degrees in this nation is in excess of what is needed to fill the teacher demand. [26] However, a closer examination of the report shows that while the total number of education graduates would meet the demand for new teachers, there are specific areas within teaching in which the supply will not meet the demand. For example, while there are sufficient teacher education graduates to meet the demand for elementary school teachers, areas such as science, math, and special education do not have a sufficient supply of new teachers to meet the proposed demand. Compounding this problem is the fact that many of the graduates in these high demand areas are choosing not to enter the teaching profession despite having spent 4-5 years at a university in teacher preparation programs. Given the large numbers of education professionals leaving the profession combined with the fact that many teacher education

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[25] Dr. Richard M. Ingersoll. *Is There Really a Teacher Shortage?* (Seattle: University of Washington, 2003). http://depts.washington.edu/ctpmail/PDFs/Shortage-RI-09-2003.pdf. (September, 2003) 13.

[26] Ibid

graduates are not entering the profession, this results in some schools experiencing teacher shortage in our nation.

2.2 Reasons for the Teacher Shortage

2.2.1 Retirement

In Ingersoll's ten year study, retirement accounts for 13% each year of all of those leaving the education profession.[27] While this percentage has been increasing each year, retirement still does not make up the largest portion of those teachers leaving. Other reasons such as; dissatisfaction which leads to attrition, lack of retention, better employment offers, and family reasons account for a greater percentage of total teachers leaving according to Ingersoll's report.[28]

Data indicates that the percentage of teachers retiring will probably continue to increase because many of the current teacher population are part of the baby-boomer generation and this generation represents 29% of our current population in the United States.[29] A person included in the baby boomer generation is defined as someone born after WWII between the years of 1946-1964 making a total of approximately 75 million people in the United States.[30] That adds up to about 42% of teachers who are 50 or older in 2005 compared to 1996 numbers of approximately 24%, an increase of 18%

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[27] Dr. Richard M. Ingersoll. *Is There Really a Teacher Shortage?* (Seattle: University of Washington, 2003). http://depts.washington.edu/ctpmail/PDFs/Shortage-RI-09-2003.pdf. (September, 2003) 13.

[28] Ibid

[29] "So What's a Boomer, Anyhow?" Baby Boomer Headquarters. http://www.bbhq.com/whatsabm.htm. 6 March, 2008

[30] Ibid

over the nine year period.[31] This percentage should increase substantially over the next 10 years with the large amount of teachers who fall into the retirement category.

It is estimated that 22% of the current national teacher force plans on retiring from education within five years starting in 2005.[32] Teacher retirement and teachers dropping out (considered teacher turnover) before completing a full career creates a problem that continues to spiral out of control. Teacher turnover has been escalating yearly and has grown to 16.8% annually according to the 2007 policy brief prepared for The National Commission on Teaching and America's Future.[33]

In a national press release it was suggested that over 40 percent of the teachers in the nation are 50 years or older, meaning retirement is coming soon.[34] This is known as the graying generation. Those that belong to the graying generation are those approaching retirement. The number of teachers that are expected to retire is twice that of just over a decade ago.[35] One of five teachers (22%) is expecting to retire within five years according to a survey given to over a thousand randomly selected educators.[36] By

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[31] Dr. C. Emily Feistritzer and Dr. Charlene K. Haar. *Profile of Teachers in the U.S. 2005.* (Washington, D. C: The National Center for Education Information, 2005), http://www.ncei.com/POT05PRESSREL3.htm. (5 March, 2008).

[32] Ibid

[33] *Policy Brief*: *The High Cost of Teacher Turnover*, by Kevin Sullivan chairman (the National Commission on Teaching and America's Future, 2007), 1.

[34] "Record Number of Teachers Set to Retire," (National Public Radio, 31 January, 2008). http://www.npr.org/templates/story/story.php?storyId=18583812 (26 February, 2008).

[35] Ibid

[36] Dr. C. Emily Feistritzer and Dr. Charlene K. Haar. *Profile of Teachers in the U.S. 2005.* (Washington, D. C: The National Center for Education Information, 2005), http://www.ncei.com/POT05PRESSREL3.htm. (5 March, 2008).

the year 2010 the same study found that one third (34%) of high school teachers surveyed expect to retire.[37] This will leave a void in teaching that will be difficult to fill.

2.2.2 Dissatisfaction

Dissatisfaction currently takes many forms and often leads to teacher attrition thus contributing to teacher shortage. One study suggests that salary increases will help combat the large turnover rate due to dissatisfaction.[38] An increase in compensation would help to slow the turnover rate in most areas but it won't keep teachers involved in education if less desirable working conditions don't improve according to the research update performed by Elizabeth Glennie Director at the North Carolina Education Research Data Center and Julie Edmunds North Carolina State liaison.[39] Teachers gave several reasons for dissatisfaction as witnessed in the following list.[40] These reasons are in no specific order of importance or percentage of responses given by teachers who left the profession. Nor are the reasons limited to these listed.

- Salary
- Student discipline problems
- Lack of faculty authority
- Lack of support from administration

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[37] Dr. C. Emily Feistritzer and Dr. Charlene K. Haar. *Profile of Teachers in the U.S. 2005.* (Washington, D. C: The National Center for Education Information, 2005), http://www.ncei.com/POT05PRESSREL3.htm. (5 March, 2008).

[38] Eric A. Hanushek et.al, "The Revolving Door," *Education Next* (2004) 79. http://media.hoover.org/documents/ednext20041_76.pdf 10 December, 2007.

[39] "Teacher Retention at Low-Performing Schools," Review by: Elizabeth Glennie director, and Julie Edmunds State Liaison. (Greensboro, NC.: University of North Carolina, North Carolina Education Research Data Center, Family Policy, 2006). http://childandfamilypolicy.duke.edu/publications/policybriefs/files/edureform/Research%20UpdateDec06.pdf (12 January, 2008)

- Lack of advancement opportunities
- Workload in general (time)
- Lack of parental involvement
- Lack of mentoring (support)

It is possible that if improvements to any of the above listed areas were made teacher retention may improve. Teacher turnover increases when teachers are in high poverty areas, at low achieving schools, teaching out of their content area, given little time to prepare, teaching multiple preps, or not offered a supportive environment within co-workers and administrators. These are circumstances that add to the high turnover rate and contribute to the fact that turnover continues to increase in some schools.[41] Rebuilding staff each year will present schools with a problem of having an increasing number of inexperienced new teachers.

2.2.3 Retention of teachers

According to data collected by The National Center for Educational Statistics on teacher turnover and retention, the lowest national teacher turnover rate reported was 9.3%.[42] In a separate study, Ingersoll reported the national teacher turnover to be 14%

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[40] Dr. Richard M. Ingersoll. *Is There Really a Teacher Shortage?* (Seattle: University of Washington, 2003). http://depts.washington.edu/ctpmail/PDFs/Shortage-RI-09-2003.pdf. (September, 2003) 16.

[41] "Teacher Retention at Low-Performing Schools," Review by: Elizabeth Glennie director, and Julie Edmunds State Liaison. (Greensboro, NC.: University of North Carolina, North Carolina Education Research Data Center, Family Policy, 2006). http://childandfamilypolicy.duke.edu/publications/policybriefs/files/edureform/Research%20UpdateDec06.pdf (12 January, 2008)

[42] Connie Sue Greiner and Brenda Smith. "Determining the Effect of Selected Variables on Teacher Retention." *Education.* No.126 (2006) : 653-659.

each year.[43] What makes these percentages more shocking is the fact that most of these teachers leaving education are leaving before they finish their first year. Beginning teachers are defined as educators in their first five years of teaching. The majority of the teachers that leave do so during the first five years of their teaching experience. Regardless of the reason, or when they exit teaching, all of the teachers that depart from education contribute to teacher turnover which increases the shortage of teachers.[44]

In the report published by the NCES it was suggested that at least 9.3% of teachers in the public education system leave during their first year, and more than 20% of the public educators leave their assignment in the first three years.[45] The NEA's 2007 research offers additional evidence about high risk, high poverty, or urban schools that as many as 50% of teachers leave within the first five years of teaching in these types of schools.[46]

Attrition has grown more than 50% over the past fifteen years and the turnover rate has risen to an estimated 16.8% a year nationally.[47] For example, in the School District of Philadelphia, teacher turnover was higher than the student dropout rate over a six year period: 70% teacher turnover to 42% student dropout[48]. In this same brief, in

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[43] Dr. Richard M. Ingersoll. *Is There Really a Teacher Shortage?* (Seattle: University of Washington, 2003). http://depts.washington.edu/ctpmail/PDFs/Shortage-RI-09-2003.pdf. (September, 2003)

[44] Ibid

[45] Connie Sue. Greiner and Brenda Smith. "Determining the Effect of Selected Variables on Teacher Retention." *Education.* No.126 (Summer 2006): 653-659.

[46] *Take a look at today's teachers,* (National Education Association, 2007). http://www.nea.org/edstats/07todaysteachers.html 24 March, 2008.

[47] *Policy Brief: The High Cost of Teacher Turnover,* by Kevin Sullivan chairman (the National Commission on Teaching and America's Future, 2007), 1.

[48] Ibid

1994 the Secretary of Education informed the nation of a need for at least 2,000,000 new teachers over the next ten years. That goal was exceeded because 2,250,000 teachers were hired. But over the same time period 2.7 million teachers exited teaching, including 2.1 million teachers that left education before reaching retirement age.[49] During the 2003-04 school year according to the U.S. Department of Education, 332,700 teachers left education with over 240,000 of those teachers leaving teaching for other pursuits.[50] Is it possible that some of our nations', young, energetic teachers, who represent the possibility of a bright new future for education, are leaving education in staggering numbers?[51]

Retention of new teachers is an important factor in the attempt to curb teacher shortages. If there is a way to retain a larger percentage of new teachers the national shortage of educators may possibly remain in check. Historically the administrators in districts and schools in this nation's education system have not been successful in attracting and retaining new teachers.[52] Administrators in school districts across the nation need to make the support of beginning teachers a high priority, especially among the rural districts.[53] In some districts, there are school administrators that have found

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[49] *Policy Brief: The High Cost of Teacher Turnover*, by Kevin Sullivan chairman (the National Commission on Teaching and America's Future, 2007), 1.

[50] *Policy Brief: The High Cost of Teacher Turnover*, by Kevin Sullivan chairman (the National Commission on Teaching and America's Future, 2007), 2.

[51] *Policy Brief: The High Cost of Teacher Turnover*, by Kevin Sullivan chairman (the National Commission on Teaching and America's Future, 2007), 1.

[52] Eric A. Hanushek et.al, "The Revolving Door," *Education Next* (2004) 79. http://media.hoover.org/documents/ednext20041_76.pdf 10 December, 2007.

[53] William W. Malloy and Tawannah Allen, "Teacher Retention in a Teacher Resiliency-Building Rural School," *The Rural Educator* 28 (Winter 2007) : 19.

ways of helping new teachers by presenting them with opportunities to become involved in the school decision making process, and provided them with co-worker and administrative support. As a result the beginning teacher feels valued and this helps to decrease the turnover rate.[54] It is important, however, to balance the amount of involvement of new teachers and not overload them. Overloading new teachers with other activities can lead to burnout if not carefully regulated because new teachers are generally already in a survival situation because of the time they spend preparing to stay ahead of their students.[55] Helping beginning teachers individually will create a feeling that someone cares for them and will help these teachers gain a sense of belonging, it will also help to increase effectiveness in the classroom as well as the probability of their retention.[56]

2.2.4 Better employment /Family reasons

These subgroups can be addressed at one time because they have to deal with change of responsibility in a family group. Quite often better employment opportunities are offered to teachers in areas such as math, science, and technology.[57] [58] These job offers have a tendency to increase salary and thus draw potential teaching candidates

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[54] William W. Malloy and Tawannah Allen, "Teacher Retention in a Teacher Resiliency-Building Rural School," *The Rural Educator* 28 (Winter 2007) : 19.

[55] *Improving Teacher Retention With Supportive Workplace Conditions,* Administered by Learning Point Associates with Southwest Educational Development Laboratory and WestEd, Newsletter, (June 2007) http://www.castategearup.org/articles/TheCenter_NL_June07.pdf 12 February, 2008.

[56] Ibid

[57] Richard Vedder, "Comparable Worth," *Education Next* (2003) 3. http://www.hoover.org/publications/ednext/3347411.html. 8 June, 2004.

[58] Hassan B. Ndahi and John M. Ritz. "Technology Education Teacher Demand, 2002-2005." *The Technology Teacher.* (April 2003): 27-31.

away from education.[59] [60] The rationale for this is that these are the educators in the profession that are skilled in areas that are in high demand by markets other than education.[61] These are the areas that are mentioned specifically in research as the areas of shortage in education.[62] [63]

Job relocation could possibly affect those educators who are married and teach. The following is a possible example: in a married couple that has one spouse teaching, if the spouse of the teacher accepts a job that requires relocation for that job the teacher would most likely relocate resulting in teacher turnover. Transferring an employee within a company also happens on a regular basis. This includes movement to a site in a different location but working for the same company. Family dynamics can influence teacher retention if one spouse receives a transfer or a better offer of employment requiring relocation of the family, and the other spouse is a teacher, often the other spouse would exit the education workforce even if he/she were happy and content with his/her employment.

Family time requirements can increase or decrease for a teacher as time passes. Since the majority of teachers in this nation are female, this situation can cause problems

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[59] Richard Vedder, "Comparable Worth," *Education Next* (2003) 3. http://www.hoover.org/publications/ednext/3347411.html. 8 June, 2004.

[60] Hassan B. Ndahi and John M. Ritz. "Technology Education Teacher Demand, 2002-2005." *The Technology Teacher*. (April 2003): 27-31.

[61] Richard Vedder, "Comparable Worth," *Education Next* (2003) 3. http://www.hoover.org/publications/ednext/3347411.html. 8 June, 2004.

[62] Ibid

[63] Hassan B. Ndahi and John M. Ritz, "Technology Education Teacher Demand, 2002-2005." *The Technology Teacher*. (April 2003): 27-31.

for education.[64] As witnessed in a recent statistical report released by the National Education Association (NEA) stating male teachers comprised just over 24% of the total teacher population in 2006 which is a forty year low.[65] This trend could possibly effect education if more female educators needed to exit for family matters. The responsibilities of an individual teacher to their family can and, in effect, does change over time based on family structure, job opportunities or change offered to a spouse, a desire to stay home with children, presence or absence of a home mortgage, or even location preference.[66] These reasons affect teaching because a high percentage of females exit the education work force due to these circumstances. It is quite possible that when a female teacher leaves education to rear children she will never return to teaching. Another situation may be that many females teach while their spouse is in school, and then leave when their spouse graduates and gains employment that no longer requires the wife to work outside of the home.

One final situation that sometimes leads to teachers leaving the profession is related to personal family care situations. It is estimated that as many as 80% of the nations caregivers are female.[67] It is thus probable that if family members (older parent, young children, handicapped child, or even spouse) require more care, teachers,

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[64] Tamar Snyder, *Percentage of Male Teachers Hits 40-Year Low* (MSN Encarta, 2007), http://spotlight.encarta.msn.com/Features/encnet_Departments_CareerTraining_default_article_MissingMaleTeachers.html?GT1=10887 (8 January,2008).

[65] Ibid

[66] Eric A. Hanushek et.al, "The Revolving Door," *Education Next* (2004) 79. http://media.hoover.org/documents/ednext20041_76.pdf 10 December, 2007.

[67] *Working Women's Health: Who Cares for the Family Caregiver?* (Care guide at home) http://www.careguideathome.com/modules.php?op=modload&name=CG_Resources&file=article&sid=1008 (26 May 2008).

especially females, might feel the need to cut back on their teaching schedule or leave education altogether in order to provide the care needed.

2.2.5 Individuals with education degrees not entering the profession

There are significant numbers of graduates with education degrees that never enter teaching but choose to pursue other career paths for work. For example, a 1993 baccalaureate and beyond survey, shows that only 42% of the 1993 education graduates entered teaching within one year of earning their teaching degree.[68] A more recent result was found in Ingersoll's report which states that in the 1998-99 academic year approximately 86,000 of the over 220,000 education graduates filled positions for the next school year. This percentage (39%) is lower than the 42% mentioned earlier by Ingersoll for the number of graduates with education degrees entering education.[69] This shows a decline in the percentage of educators entering education upon receiving their teaching degree. According to data there are plenty of teachers earning education degrees, the problem lies in attracting and retaining those educators.[70]

Do schools have to depend on teachers who are not licensed to fill the classrooms or to help alleviate the teacher shortage? In the example mentioned by Ndahi and Ritz (2003) the area of technology teaching experienced a shortage for the

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[68] Dr. Richard M. Ingersoll. *Is There Really a Teacher Shortage?* (Seattle: University of Washington, 2003). http://depts.washington.edu/ctpmail/PDFs/Shortage-RI-09-2003.pdf. (September, 2003)

[69] Ibid

[70] *Policy Brief: The High Cost of Teacher Turnover,* by Kevin Sullivan chairman (the National Commission on Teaching and America's Future, 2007), 1.

2001 school year of over 1600 teachers nationwide.[71] Who fills this teacher shortage? With the continuing increase of student K-12 population and the reduction in qualified teachers in the classroom there appears to be a problem. This is especially the case if the teacher hired for a position doesn't have certification in the area of hire or the teacher has been hired out of their area of expertise. Education graduates not entering teaching increases the teacher shortage and if added to the factors previously mentioned it only makes the situation worse. If there is not a competent certified teacher in every classroom then there is a shortage.

2.3 Utah's Teacher Shortage

The public school system in Utah is experiencing a teacher shortage along with the rest of the nation. A study was conducted of teachers in the state of Utah covering the 2003-2004 school years that exposed the teacher shortage in Utah. In this Utah Educator Supply and Demand Study 2003-2004, it was found that 10 districts out of 40 in the state report had teacher shortages that school year.[72] The 10 Utah districts compiled a total of more than 70 teachers in that reported shortage.[73] The shortages in Utah were reported as mostly in the high demand fields of science, technology, and math.[74] Not figured into this teacher shortage problem was the fact that throughout the

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[71] Hassan B. Ndahi and John M. Ritz. "Technology Education Teacher Demand, 2002-2005." *The Technology Teacher*. (April 2003): 27-31.

[72] Zachary Tippetts et al. Utah Educator Supply and Demand Study 2003-2004. (Logan, Utah: Instructional Technology Department at Utah State University, 2004). http://www.schools.utah.gov/BOARD/summary/UtahTeacherSupplyDemand.pdf. (13 July, 2004) 3

[73] Ibid

[74] Ibid

districts in the state of Utah there were over 1,200 teachers on letters of authorization.[75] A letter of authorization is granted when a teacher is not teaching in an area that they are certified to teach. These cases result in the state authorizing the teacher to teach in a possible teacher shortage area for a certain amount of time. Looking at a more recent study conducted during the 2007 school year, 21 of the 39 reporting districts in the state had teacher vacancies.[76] A total shortage of 173 teachers was reported by the state of Utah to start the 2007-08 academic school year.[77] During the four years between the two studies, the amount of teachers in the shortage increased over 100%. Jordan, Alpine, and Washington County school districts made up the majority of the numbers with a total of over 110 teachers short. According to the study the largest area of shortage was in the area of special education.

Utah will need more than 70,000 new teachers over a 20 year span starting in 2003 (2003-23), including retirees, according to the 2003-2004 Utah Educator Supply and Demand Study.[78] This number of teachers will be required to cover Utah's estimated student enrollment increase of almost 50% over the next 20 years. To compound this problem, according to Jill Fellow at the *Daily Herald* only 32% of the

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[75] Zachary Tippetts et al. Utah Educator Supply and Demand Study 2003-2004. (Logan, Utah: Instructional Technology Department at Utah State University, 2004). http://www.schools.utah.gov/BOARD/summary/UtahTeacherSupplyDemand.pdf. (13 July, 2004) 3

[76] David J. Sperry, 2007 *Report on Teacher Supply and Demand Needs of K-12 Education in the State of Utah* (Salt Lake City, Utah. Prepared for the K-16 Alliance, 2007) http://www.utahsbr.edu/pdfs/TeacherReportNov2007.pdf (12 March, 2008) 12.

[77] Ibid

[78] Zachary Tippetts et al. Utah Educator Supply and Demand Study 2003-2004. (Logan, Utah: Instructional Technology Department at Utah State University, 2004). http://www.schools.utah.gov/BOARD/summary/UtahTeacherSupplyDemand.pdf. (13 July, 2004) 3

past five year education graduates are currently teaching in Utah's education system.[79] In 2004, then Utah Associate Superintendent of Law, Educational Services, Ray Timothy, suggests that Utah loses too many teachers to other states that can pay a higher salary and even lure some teachers away from Utah with signing bonuses. These are perks that Utah recruiters haven't used yet.[80]

Utah has a difficult time retaining the teachers that are trained at universities in the state. Suggested causes for the retention problem in Utah are; Utah has the lowest per student spending in the nation ($4,769), Utah educators also deal with one of the largest class sizes in the nation, and the time and patience required by teachers to deal with these situations is more than most educators choose to handle. These are reasons that few teachers in Utah last until retirement and are some of the reasons why Utah is losing teachers at a rate of 11% (2,700) per year.[81]

The replacement of teachers is extremely costly. Utah is continually losing around 50% of those teachers who enter the education system in their first five years in education.[82] The National Governors Association's Center for Best Practices has offered a simple formula to calculate the cost of replacing an educator who leaves education (25-35% of the state average annual salary, plus benefits). This calculation

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[79] Jill Fellow. "Study warns of teacher shortages," *The Daily Herald* (Provo), 17 June, 2004. http://www.heraldextra.com/content/view/106408/. C1

[80] Ibid

[81] "Teacher Burnout," *The Salt Lake Tribune* (Salt Lake City), 10 May, 2004. http://www.sltrib.com/2004/05102004/opinion/opinion.asp. 25 June, 2004.

[82] David J. Sperry, 2007 *Report on Teacher Supply and Demand Needs of K-12 Education in the State of Utah* (Salt Lake City, Utah. Prepared for the K-16 Alliance, 2007) http://www.utahsbr.edu/pdfs/TeacherReportNov2007.pdf (12 March, 2008) 12.

helps in the estimation of replacing those teachers who leave teaching.[83] What are the costs to replace each teacher? Using this formula, if the average teacher salary in Utah is $55,600 (this includes benefits) taking 25% of that average would result in a total cost to replace each teacher of $13,900 per teacher. The teachers leaving the state of Utah in the year of this study (2003) was 1,736 according to the National Center for Education Statistics. The total number of teachers who leave for other reasons added to the retirement total, results in an estimated cost to the State of Utah of approximately $24,000,000 (this includes benefits) for the 2003 year. The result was that the increase in salary and other benefits that should be offered to help retain those educators were not approved.[84]

2.4 Subject Areas Suffering Shortages (Math, Science, and Technology)

According to Ingersoll, 2003, there isn't a teacher shortage throughout the entire spectrum of subject areas in education. There is only a shortage in areas of high market demand.[85] There are exterior markets that can and do offer double the salary of that offered in education.[86] Social studies and English are examples of teaching positions that have not been significantly affected by the competition for teachers from exterior

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[83] *Educator Quality: Attracting, Training, Evaluating, Compensating, and Retaining Quality Educators in the State of Utah*, by x Dr. Phillis Safman and Dr. Ray Timothy, co-chairs (Utah, 2005). http://www.schools.utah.gov/board/summary/EducatorQualityTaskForceReportNov42005.pdf (4 March, 2008) 3-4.

[84] Ibid

[85] Dr. Richard M. Ingersoll. *Is There Really a Teacher Shortage?* (Seattle: University of Washington, 2003). http://depts.washington.edu/ctpmail/PDFs/Shortage-RI-09-2003.pdf. (September, 2003) 13-14.

[86] Lori Olszewski. "Help Wanted at Schools: Severe shortage of trained math and science teachers strains the state educational resources," *San Francisco Chronicle* (San Francisco), 6 Oct, 1998. http://www.sfgate.com/cgi-bin/article.cgi?file=/chronicle/archive/1998/10/06/MN57543.DTL. 25 February, 2008.

markets drawing educators away from education.[87] What are the areas of educational shortage then? Markets other than teaching attract skilled education graduates in science, math, and technology. These are some of the teaching areas affected most due to teachers being taken from education.[88] [89] In 2003, it was stated that there is a shortage in areas such as mathematics, special education, and the sciences.[90] One reason for this that has been suggested is the lack of distinction between need and what positions are actually hired by the district.[91] For example: a history teacher is hired to replace a retiring science teacher, a distinction was not made by the district, which, in turn, complicates the teacher shortage.[92] The result of this is not having the right teacher for the position that needs to be filled.

As mentioned earlier the areas in education with large shortages are special education, mathematics, and the sciences. Research conducted by the American Association for Employment in Education points out in an education supply and demand report that teachers in all of the areas mentioned above as well as technology are in

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[87] Dr. Richard M. Ingersoll. *Is There Really a Teacher Shortage?* (Seattle: University of Washington, 2003). http://depts.washington.edu/ctpmail/PDFs/Shortage-RI-09-2003.pdf. (September, 2003) 7.

[88] Hassan B. Ndahi and John M. Ritz. "Technology Education Teacher Demand, 2002-2005." *The Technology Teacher*. (April 2003): 27-31.

[89] Dr. Richard M. Ingersoll. *Is There Really a Teacher Shortage?* (Seattle: University of Washington, 2003). http://depts.washington.edu/ctpmail/PDFs/Shortage-RI-09-2003.pdf. (September, 2003) 13.

[90] Richard Vedder, "Comparable Worth," *Education Next* (2003) 3. http://www.hoover.org/publications/ednext/3347411.html. 8 June, 2004.

[91] Ibid

[92] Ibid

fields of considerable or some shortage.[93] These are areas outside of the education profession that are well compensated. Previous mention has been made of markets that can offer double the salary of education.[94] This is one reason that the private sector is drawing some of those with degrees in these subject areas away from teaching. At the national level, no attempt was made to acquire information regarding individual teaching shortage areas. Tracking information on a state level is easier. The reports on supply and demand conducted by the state of Utah included all the information that is needed to be able to find numbers in the areas of focus.

2.5 Teacher Shortages in Technology Education

The intent of this research is to focus on teacher turnover in Technology Teacher Education. Why do so many teachers leave the technology education field after working so hard to obtain a degree and a teaching position? In 2001, there were approximately 36,260 technology teachers employed within the education field in the United States. Information on how many teachers in individual subject areas leave teaching across the nation in a given year is difficult to track and is not the intent of this study. However, according to the following study the projected demand for technology teachers nationally for the 2001 school year was 2,337 educators. According to the *Industrial Teacher Education Directory* there were only 672 technology education teachers

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[93] *Educator Supply and Demand in the United States Executive Summary*, by Suzanne Burkholder, chair (Columbus, Ohio.: American Association for Employment in Education, 2005), 1-7.

[94] Lori Olszewski. "Help Wanted at Schools: Severe shortage of trained math and science teachers strains the state educational resources," *San Francisco Chronicle* (San Francisco), 6 Oct, 1998. http://www.sfgate.com/cgi-bin/article.cgi?file=/chronicle/archive/1998/10/06/MN57543.DTL. 25 February, 2008.

supplied to the teaching field from 71 universities in the United States in 2001.[95] Calculating the shortage of technology teachers for this year using the number supplied and subtracting that from the projected demand would equal the shortage of technology teachers. This calculates a significant shortage of 1665 technology teachers. Are these technology teacher vacancies being filled with teachers who are qualified? Are the positions in these schools technology teaching programs, needing technology teachers to staff them, being closed due to no teacher? There are estimated numbers of technology teachers that are needed in Utah. According to *The Technology Teacher* the estimated number of teachers needed for the 2001school year was 30, and in the 2003 school year the need was 60. Do the numbers supplied fill the estimated need in Utah according to *The Technology Teacher* article? The answer is no, Utah feels a shortage of technology teachers.[96] According to the Utah Educator Supply and Demand Study of 2003-2004, Utah failed to graduate enough technology teacher educators to meet the need. Utah universities that train technology educators produced 27 Technology teachers in 2001, there were 32 supplied for the 2002 school year, and there were 23 in 2003 thus verifying that the number of graduates in TTE fell short of meeting Utah's estimated needs in 2001 and 2003.[97]

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[95] Hassan B. Ndahi and John M. Ritz, "Technology Education Teacher Demand, 2002-2005." *The Technology Teacher*. (April 2003): 28.

[96] Hassan B. Ndahi and John M. Ritz, "Technology Education Teacher Demand, 2002-2005." *The Technology Teacher*. (April 2003): 29.

[97] Zachary Tippetts et al. Utah Educator Supply and Demand Study 2003-2004. (Logan, Utah: Instructional Technology Department at Utah State University, 2004). http://www.schools.utah.gov/BOARD/summary/UtahTeacherSupplyDemand.pdf. (13 July, 2004) 3

2.6 Teachers that Leave and Return

Do teachers who leave education ever return to the teaching profession? There is evidence that some educators do return to teaching. According to the *Handbook of the Economics of Education* (volume 2) located in chapter 19, it states that one out of four teachers return to education after an interruption in their teaching career. This statistic was reported by Richard J. Murnane Professor at the Graduate School of Education at Harvard in his 1996 book.[98] It is also suggested that some of these teachers leaving schools are just movers. What is a mover? A mover is someone who leaves their teaching position to take a teaching position at a different school. It is also suggested that some turnover in a school is important due to some of those leaving being movers and filling positions at another school and some of those teachers being poor educators exiting education.[99]

With all of these teachers leaving what does that mean to education? The financial impact of teacher turnover hasn't gone unnoticed by the nation. The estimated cost of teachers leaving education is ballooning out of control costing the nation over $7 billion a year.[100] [101] If more teachers could be retained, more money could possibly be spent to improve education in general. Retaining teachers in fact increases student

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[98] Peter J. Dolton, "Handbook of the Economics of Education," in the Handbooks of Economics 26, November 2006, ed. Eric A. Hanushek and Finis Welch (North-Holland, 2006), 1142.

[99] Dr. Richard M. Ingersoll. *Is There Really a Teacher Shortage?* (Seattle: University of Washington, 2003). http://depts.washington.edu/ctpmail/PDFs/Shortage-RI-09-2003.pdf. (September, 2003) 11-12.

[100] *Take a look at today's teachers,* (National Education Association, 2007). http://www.nea.org/edstats/07todaysteachers.html 24 March, 2008.

[101] *Policy Brief: The High Cost of Teacher Turnover,* by Kevin Sullivan chairman (the National Commission on Teaching and America's Future, 2007), 1.

achievement.[102] For example: if classrooms are being staffed with new, less experienced teachers each year, one probable outcome could be that the students will not be able to achieve as highly as they would with a more experienced teacher.

2.7 Why are Teachers Staying in Education?

There are many factors that can improve employment: salary, location, staff support, and working environment are only a few examples. Ingersoll performed a study of teachers leaving education that suggests some steps a school could take to persuade teachers to remain in education. Salary increase was offered as the top change that schools could make (64%). The majority of the remaining changes involved the work environment such as: improvements in classroom discipline, class size, paperwork, and workload. These reasons are mentioned as the majority of the items for improvement, to help retain more teachers, according to the study by Ingersoll.[103] The reasons that affect the outcome of a teacher's decision to remain in or exit education are vital to this research. If those in the education profession could be informed of certain situations that when present in a school could possibly aid in the retention of teachers that information would be extremely valuable. When a comparison is made of reasons for remaining in teaching to reasons why teachers exit the profession, the reasons for

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[102] La'Shonte Williams and William A. Kritsonis, PhD. *Leaders We Have a Problem! It is Teacher Retention.What Can We Do about It?* (Prairie View, TX.: Prairie View A&M University, 2007). http://eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/2b/65/ab.pdf (18 March, 2008) 9.

[103] Dr. Richard M. Ingersoll. *Is There Really a Teacher Shortage?* (Seattle: University of Washington, 2003). http://depts.washington.edu/ctpmail/PDFs/Shortage-RI-09-2003.pdf. (September, 2003) 16.

remaining are not so numerous.[104] [105] [106] The list of reasons teachers remain in education as suggested by several sources includes:

- Good working environment (school setting)
- Location
- Students
- Support from administration
- Longevity (the longer in education the less benefit for leaving)
- Involvement in school

This list leads to the suggestion of the importance of training and support for new teachers in the battle against teacher shortage. It is likely that the improvement of only one of these reasons would not affect retention significantly. There would need to be improvements in several if not all reasons to make an effective change on teacher retention.[107] Knowing these circumstances could possibly affect teacher retention. The longer a teacher remains at a school the harder it is for that teacher to leave because it

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[104] Connie Sue Greiner EdD and Brenda Smith, "Determining the Effects of Selected Variables on Teacher Retention," Education 126, no. 4 (2006): 653-659.

[105] William W. Malloy and Tawannah Allen, "Teacher Retention in a Teacher Resiliency-Building Rural School," *The Rural Educator* 28 (Winter 2007) : 19.

[106] Eric A. Hanushek et.al, "The Revolving Door," *Education Next* (2004) 79. http://media.hoover.org/documents/ednext20041_76.pdf 10 December, 2007.

[107] Dr. Richard M. Ingersoll. *Is There Really a Teacher Shortage?* (Seattle: University of Washington, 2003). http://depts.washington.edu/ctpmail/PDFs/Shortage-RI-09-2003.pdf. (September, 2003) 17.

becomes more costly to leave due to salary being tied to and increasing with years of experience in the district.[108]

2.8 Summary

The United States is experiencing a teacher shortage and has been for many years. The teacher shortage problem is magnified due to many issues. Retaining teachers and those teacher education graduates who don't enter teaching are only two of the problems that have contributed to the teacher shortage. There are many more reasons that could and have been listed. A small percentage of the teachers who leave do return to education which helps to fill some of the vacant teaching positions in the nation. However, there are so many graduating educators (60%) with teaching degrees who don't enter teaching each year, this makes solving the teacher shortage problem more challenging.[109] The cost of training new educators every year is expensive and continues to grow with the increase in teacher turnover. The soaring retirement rate added to all other issues makes solving the teacher shortage more difficult.[110] Utah, like many states is experiencing a teacher shortage. Teacher shortage in Utah is increasing due to the trouble the state has in attracting and retaining the teachers that are trained in the universities to stay and teach in Utah.[111] The teacher shortage is affecting certain

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[108] Eric A. Hanushek et.al, "The Revolving Door," *Education Next* (2004) 79. http://media.hoover.org/documents/ednext20041_76.pdf 10 December, 2007.

[109] Dr. Richard M. Ingersoll. *Is There Really a Teacher Shortage?* (Seattle: University of Washington, 2003). http://depts.washington.edu/ctpmail/PDFs/Shortage-RI-09-2003.pdf. (September, 2003) 7.

[110] Dr. C. Emily Feistritzer and Dr. Charlene K. Haar. *Profile of Teachers in the U.S. 2005.* (Washington, D. C: The National Center for Education Information, 2005), http://www.ncei.com/POT05PRESSREL3.htm. (5 March, 2008).

[111] Jill Fellow. "Study warns of teacher shortages," *The Daily Herald* (Provo), 17 June, 2004. http://www.heraldextra.com/content/view/106408/. C1

areas more than others. The areas that are of concern are math, science, technology and special education. These specific areas are experiencing shortage largely due to the teachers being lured away from education by private markets that can offer a superior salary to that of education.[112] The teacher shortage in the state of Utah is increasing and if continued at the current rate could become a severe crisis.[113] There are numerous explanations that teachers offer for the reason they exited teaching. Retaining teachers is a possible solution in combating the growth of the teacher shortage. Supporting all teachers in their first few years through mentoring, reducing their class sizes, the number of classes taught for newer teachers, and helping the teachers get involved in school functions and decision making can possibly increase retention of teachers. Feelings of belonging are apparently essential to solving the teacher shortage problem. Teachers who stay in the education profession can offer solutions to other educators by sharing their reasons for remaining in education. Technology is one of the areas in education that has a large demand for teachers. This fact was witnessed in the 2002-05 study where the results point at a deficiency in the supply of technology teachers in the 2001 school year, where the nation was over 1600 teachers short of estimated demand.[114] Technology teachers in the state of Utah are also in high demand due to many factors. The intent of this research was to explore some reasons that are given, for remaining in

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[112] Lori Olszewski. "Help Wanted at Schools: Severe shortage of trained math and science teachers strains the state educational resources," *San Francisco Chronicle* (San Francisco), 6 Oct, 1998. http://www.sfgate.com/cgi-bin/article.cgi?file=/chronicle/archive/1998/10/06/MN57543.DTL. 25 February, 2008.

[113] Lynze Wardle. "Utah teachers' pay below nearby states," *The Standard Examiner Davis Bureau* (Davis County), 31 December, 2006. http://www.standard.net/live/news/94836/ 12 March, 2008.

[114] Hassan B. Ndahi and John M. Ritz, "Technology Education Teacher Demand, 2002-2005." *The Technology Teacher*. (April 2003): 29.

or exiting teaching, by Technology Teacher Graduates from Brigham Young University over the past 14.

CHAPTER III

3 Methodology

3.1 Purpose

The purpose of this research study was to gather data on a sample of technology teacher candidates in order to determine how many graduates with a technology teaching endorsement actually entered the teaching profession. In addition, data were collected to investigate the attrition rate of the same pool of candidates. For those who left the education profession, the researcher also examined how long these individuals taught before leaving as well as investigated the reasons these individuals decided to leave the technology teaching profession. For those that have remained in the teaching profession, this researcher explored their reasons for remaining in education. In addition, data were collected regarding how many technology teaching candidates remained within the state of Utah as well as how many have accepted positions outside of Utah. To accomplish these tasks, a survey instrument was designed to gather employment data from (TTE) graduates of Brigham Young University over the last 14 years. A copy of the survey instrument is found in Appendix B.

3.2 Population and Sample

Brigham Young University (BYU) is a private four year university located in Provo, Utah and owned by the Church of Jesus Christ of Latter-Day Saints. BYU is the

largest university in the state of Utah with over 35,000 students enrolled annually. BYU graduates in education make up about 28% of the education graduates (673 out of 2,341) yearly in the state of Utah. BYU also awards a large majority of the Technology Teacher Education degrees in the state of Utah. According to the Teacher Education Supply and Demand Needs of 2007 (Sperry, 2007) over the 2 year time period studied (2001-2002), BYU reported 35 Technology Teacher Education Graduates out of the 59 degrees awarded in the state of Utah.

The target population for this study included students who graduated in Technology Teacher Education and received teaching certificates from Brigham Young University between 1994 and 2007. Students were identified using graduation information records obtained from the School of Technology at Brigham Young University. Various data bases such as: the BYU Alumni office; the Utah State Office of Education; and the internet phone directory were used to obtain and compile contact information about these students.

3.3 Design

A survey instrument was developed to obtain data to answer each of the research questions in Chapter 1(the survey is located in Appendix B). The survey was developed for BYU graduates over the past 14 years in TTE to find out their current profession and their employment history since graduation. This survey instrument was given to a panel of experts to increase the face validity and to determine any confusion or misconceptions that might have existed. The most difficult part of this study was obtaining current contact information and then successfully contacting the graduates so they could respond to the survey. It was known in advance that multiple lists would be

needed in order to gather current contact information for graduates. The first list was obtained from the alumni on record at the BYU Alumni Center. The second list was obtained from the School of Technology's advisement center. A list was also collected from the state of Utah's Career and Technical Education leaders. Crosschecking the information from these lists helped to increase chances of being able to contact the graduates.

After the collection of contact information was complete, a file was compiled with all pertinent information that was known about each technology teacher education graduate. Addresses, phone numbers, and e-mail addresses were compiled of the subjects that could be found. Following the compilation of the graduate's information an invitation was e-mailed to the potential participants informing them that a survey would be sent to them following the invitation. Because the e-mail contact information that was compiled was the most accurate and updated of any of the previously mentioned lists, the surveys were sent out using email.

In order to reach a maximum number of graduates, the surveys were sent out during the last quarter of the 2007-08 public school year. The participants were given 10 days to complete the survey. If they did not respond within the allotted ten days, then a reminder e-mail was sent to them. Attempts were made to contact a sample of non-responders to verify if they received the study and to survey non-responders to confirm data. These attempts included calling 24 randomly chosen non-responding graduates at least three times to update their contact information and to have them participate in the survey. Seven of the 24 randomly selected individuals were contacted and agreed to complete the survey.

Included in an e-mail invitation was an internet link to a Qualtrix survey instrument. After clicking on the link, the participants were connected with the first page of the survey where they were informed about and asked to give consent to participate in the survey on the website. After providing consent, the participant continued through the survey questions until they completed the survey.

3.4 Data and Instrumentation

The survey was designed to find out the following items:

1. what year the participant graduated (for tracking purposes).
2. did the participant enter the education profession within 2 years of their graduation (Research Question # 1)
3. what was their employment situation after graduation. (this survey question helped to answer Research Question # 3 and # 7) The candidates were able to choose from 1 to 8 bulleted items including:
    - Entered into education profession and have remained
    - Entered the education profession and then left to find employment in another profession
    - Currently in graduate school
    - Went to graduate school and then entered the education profession
    - Went to graduate school and went into a profession that is not education related
    - Entered into a profession other than education and have remained outside the education profession

- Entered the education profession, left education for a time, but have returned to the education profession
- Other (stay-at-home parent, industrial trainer, etc)

4. Depending on their response to question 3 they would be directed to additional questions asking the information regarding:
    - Whether participants accepted teaching positions inside or outside of Utah (Research Question # 2)
    - Reasons they remained in the education profession (Research Question # 6)
    - Reasons they never entered the education profession (not part of original research questions but valid information)
    - Reasons they entered and then left education (Research Question # 4)
    - How long they taught before leaving the education profession (Research Question # 5)
    - Reasons for returning to education after their separation from education (Research Question # 7)

The remaining questions that were asked of participants were left open ended in order to not bias the responses. The results of the participant responses to these questions were categorized and response rates calculated in order to determine most frequent responses.

3.5 Analysis

As this is a descriptive study, only descriptive statistics were collected and analyzed. To investigate the research questions, collected data were used to calculate,

1. the percentage of Brigham Young University Technology Teacher Education graduates over a 14 year span that entered the teaching profession during the first 2 years after the teachers graduation,
2. the percentage of graduates that accepted teaching positions outside the state of Utah, and
3. the attrition rate of those Technology Teacher Education graduates that entered the teaching profession over a 14 year time period.

Mean calculations were also performed that determined the average of how long these individuals taught before leaving the teaching profession. Finally, student responses were categorized and frequency responses used to identify and report some of the most prevalent reasons why these individuals decided to remain in or leave the technology teaching profession.

CHAPTER IV

4 Findings and Results

4.1 Purpose

The purpose of this research study was to gather data on a sample of technology teacher candidates in order to determine their employment patterns after completing their teaching degree from Brigham Young University. The intent therein was to discover how many graduates from BYU with a technology teaching endorsement actually entered the teaching profession and to investigate their attrition rate. Specifically, data from the study were used to determine the total number of graduates that entered the education profession and then determine the percentage that have remained employed in education and the percentage that have left education and their reasons for doing so. The survey also enabled researchers to uncover the percentage of teachers that entered education and left and then decided to return to education at a future time and the reasons they returned. Finally, data were collected regarding the percentage of graduates that accepted teaching positions inside and outside the state of Utah.

To accomplish these tasks, a survey instrument was used to gather employment data from TTE graduates of BYU over the last 14 years (1994-2007). It was determined that there were 189 technology teacher education graduates from 1994-2007 and contact information was located and compiled for 148 of the 189 graduates. The

results from this survey were calculated using the 148 graduates with current contact information. Invitations with a link to take an internet survey were sent in an e-mail to these 148 individuals.

Of the 148 potential participants in this study, 110 (74%) of the TTE graduates responded. Originally there were 90 participants that responded to the survey. After compiling a list of non-responders, 24 randomly-selected individuals were chosen out of the 58 non responders and multiple attempts (3) were made to contact these potential participants. As a result, seven additional graduates were contacted and agreed to participate in the survey. Given these additional participants, and 13 other individuals that later completed the survey on their own accord, the total responders increased to 110.

4.2 Response Rate: Survey Question # 1.

In what year did you graduate?

This survey question was intended to account for the number of participants per year to assist in determining the rate of participation for each year of graduating technology teacher educators. The following Figure 4-1 shows a graph of the year of graduation with the number of graduates that were sent the survey and the number of responders for each year.

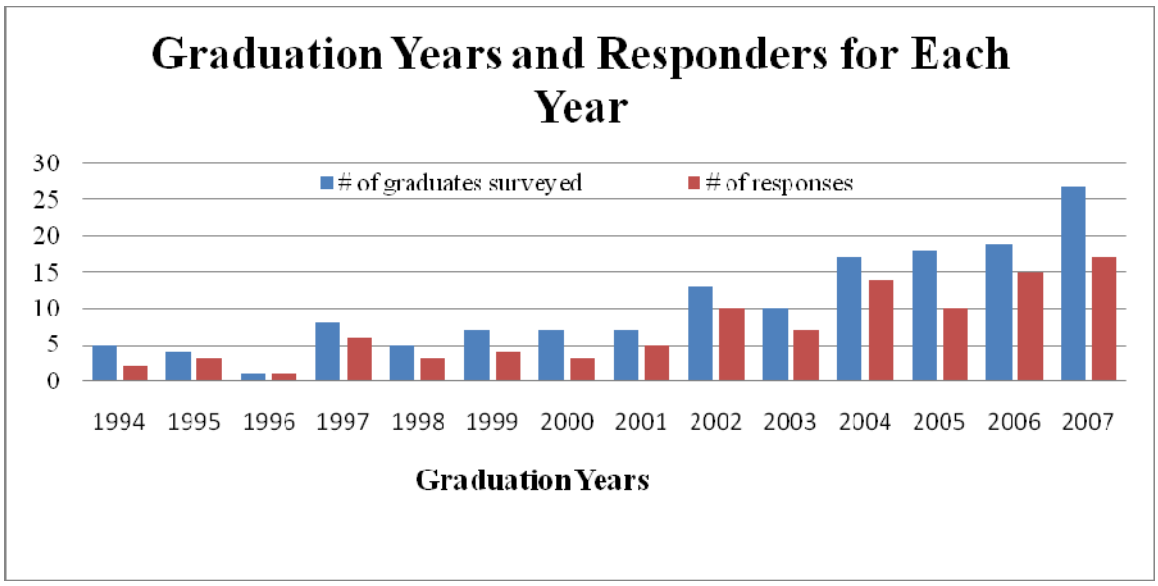

Figure 4-1: Graduation Years and Responders for Each Year

The purpose for investigating the response rate for each year was to see if the data collected was biased toward those graduating recently or if there was a fairly even response rate over the 14 year span. For example, there were only four graduates in 1996, but current contact information was available for one of the four. As a result there was one responder for this year. Some of the remaining years had a larger number of participants as seen in Figure 4-1. With this information, there was extra effort made to contact anyone from the low responding years to get an even response rate across the 14 year span. The average response rate for all years was 67% with a low of 40% (2 out of 5 in 1994) and a high of 100% (1 of 1 in 1996). The average response rate for the first seven years was 64% and the average response rate for the last seven years was 72% showing a slight bias toward those that recently graduated from the program. In addition, from the table it can be seen that the number of TTE graduates has increased in

the last seven years thus resulting in a greater response bias from graduates in these years. This is something to be considered when generalizing the data from this study.

4.3 Findings Relevant to Research Question # 1.

Upon graduation or within 2 years of graduation what percentage of Brigham Young University Technology Teacher Education graduates entered the teaching profession?

The first research question in this study was to determine the percentage of technology education graduates that entered into the education profession within two years of graduating. According to the 110 responses to the survey, 85 graduates or 77% of those replying answered that they had entered into education within two years of graduation. That leaves 25 participants or 23% who didn't enter education within two years. (Figure 4-2).

#	Answer	TTE Graduates from BYU entering the education profession within 2 years of graduation.	Response	%
1	Yes		85	77%
2	No		25	23%
	Total		110	100%

Figure 4-1: TTE Graduates from BYU that Entered the Education Profession Within Two Years of Graduation.

4.4 Direction taken after Graduating: Answers Research Questions # 3 and # 7

What best describes your situation after graduation/teacher certification from BYU?

The next question in the survey was designed to explore the employment history of the participants. This question also helped to determine what direction the survey

participants would take and which of the following questions each respondent would be asked. The participants in the survey were given choices to select from according to what best describes their situation after graduation. This question helped to determine the number of teachers who left and also those teachers who decided to return after leaving the profession. The graph below shows the choices that were offered and the selections that were chosen. The first seven options in this question cover most of the situations for the graduates to choose from. The last selection or the (Other) selection includes the rest of those participant's situations that didn't belong in any other category. As witnessed in the following figure, the majority, 67 persons or approximately 60% of the graduates that responded to the survey, have entered and stayed in education (see Figure 4-3).

#	What best describes your situation after graduation/teacher certification from BYU? Answers:		Response	%
1	Entered the education profession and have remained in the education profession		67	60%
2	Entered the education profession and then left to find employment in another profession		13	12%
3	Currently in graduate school		3	3%
4	Went to graduate school and then entered the education profession		1	1%
5	Went to graduate school and went into a profession that is not education related		2	2%
6	Entered into a profession other than education and have remained outside the education profession		13	12%
7	Entered the education profession, left education for a time, but have returned to the education profession.		4	4%
8	Other (stay-at-home parent, Industrial Trainer, etc)		7	6%
	Total		110	100%

Figure 4-1: Directions Taken by Participating Educators After Graduation.

The situations in this question can be grouped into those who remained in teaching, those who entered teaching and then left teaching, those who entered teaching left and returned to teaching, those who never entered education, and those who haven't had a chance to enter education yet. There are 85 graduate participants who entered the education profession. Of those who entered, 17 (approximately 20%) left education. Approximately 24% (or 4) of those who left education returned after a separation from the education profession. Of the 110 participants, 25 graduates (approximately 23%) of the total responders in this survey have not entered education at all.

4.5 Findings Relevant to Research Question # 2

Of those Technology Teacher Education graduates that entered the teaching profession, what percentage accepted teaching positions outside the state of Utah?

The second research question was asked of only those whom entered the education field. This question addressed the location of the educational position that the participant accepted after they received their education certification. Did they accept a teaching job in the State of Utah or choose to do something else? The percentage of total participants that accepted a teaching position in the state of Utah was 49% or 54 of the 110 participants. Of those that chose to enter the education profession within the first two years of graduation this percentage was 64%, or 54 of the 85 responders. Figure 4-4 displays the percentage of BYU TTE teachers and where they went after graduation to teach.

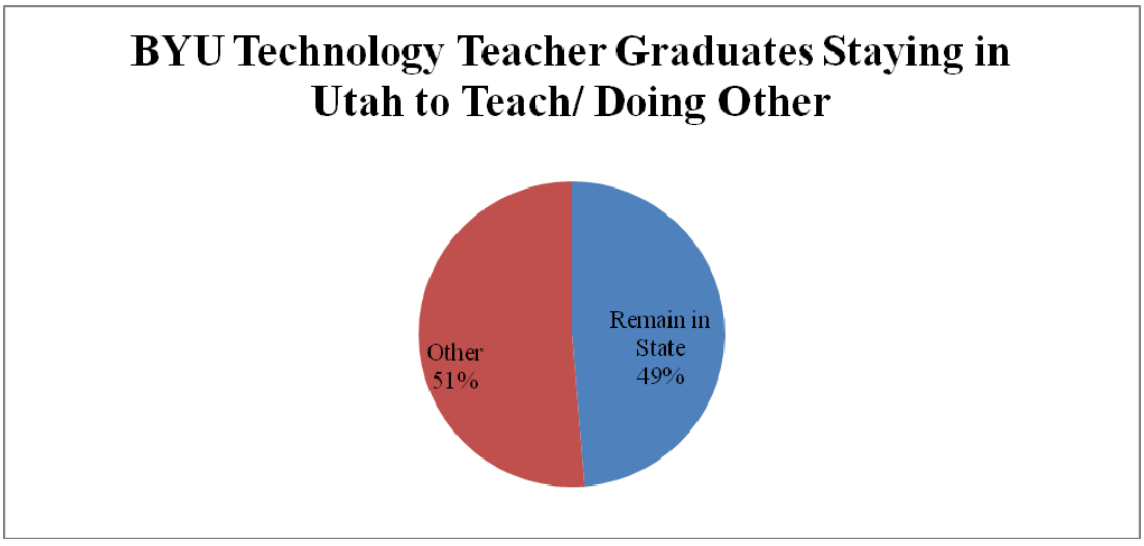

Figure 4-4: BYU TTE Educators that Accepted Teaching Positions Inside of Utah

The result of this question could be cause for concern if any of the vacancies left by TTE teachers are left unfilled. Where are the rest of the Utah technology teacher educators going to come from if there are vacancies in the state and only 49% of the graduates from the largest supplier of TTE teachers have stayed in the state over the last 14 years?

4.6 Findings Relevant to Research Question # 3

What is the attrition rate of Technology Teacher Education graduates from BYU that entered the teaching profession over a 14 year span?

This question addressed the attrition rate of the teachers in the response group. As stated earlier, 110 out of 148 graduates responded to the survey. Out of those 110 graduates who responded to the survey there were 85 who entered education and of those there were 17 teachers who left education, or about 20% as seen in the graph below. See Figure 4-5.

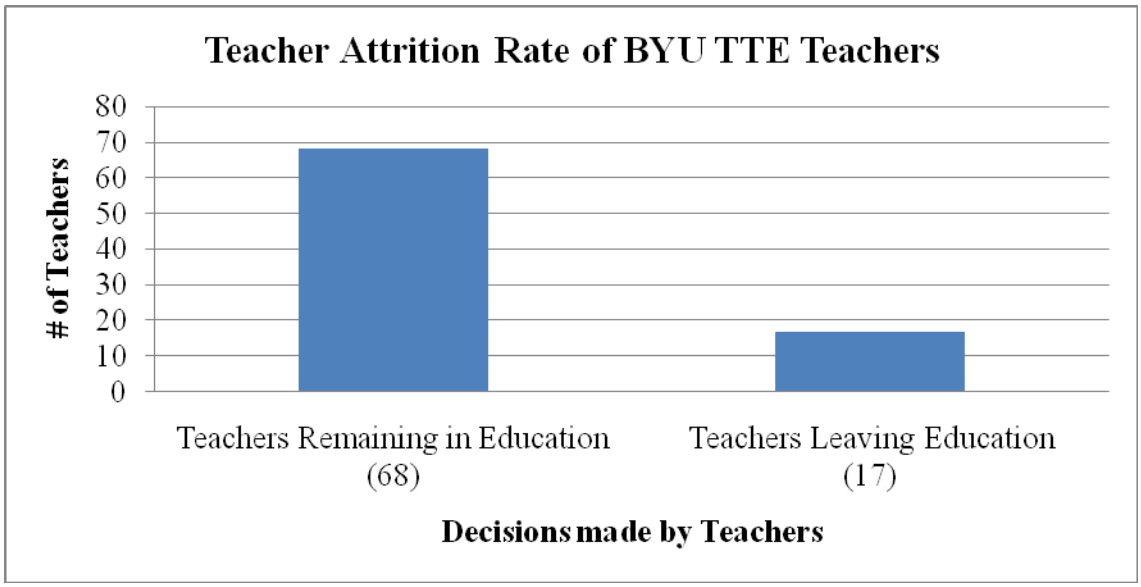

Figure 4-5: Attrition Rate of BYU TTE Graduates that Entered Education

The information presented in the graph above only presents the percentages of those leaving and staying in the education profession. However, the reasons for these educators leaving are important in order to ascertain and introduce possible solutions that could bring about change and decrease the number of teachers who leave education in the state of Utah.

4.7 Findings Relevant to Research Question # 4

What are some of the most prevalent reasons why individuals decided to leave the technology teaching profession?

The fourth research question addresses the reasons that the 17 teachers gave for leaving education after working so hard to earn their teaching certification. From the data collected, it can be seen that there were many reasons offered by the study participants as to why they left the education profession. Their responses have been categorized in order to clarify the reasons and to determine common themes. In order to categorize the responses, the participant's answers were reviewed, placed into categories, and the frequency of responses was used to calculate percentages. After exploring and categorizing the responses, it is clear that the educators whom left education state the biggest reasons for leaving according to this study are job opportunity/better job and salary. From the table and graph that follow, it can be seen that both of these response areas registered 28% of the total. Below are the categorized responses with the frequency of occurrence.

1. Job Opportunity/Better Job 5
2. Salary 5
3. Students 2
4. Personal 2

5. Family Change 2

6. Relocation 1

7. Classes were Dropped 1

See (Figure 4-6) below to view responses and percentages in a graph.

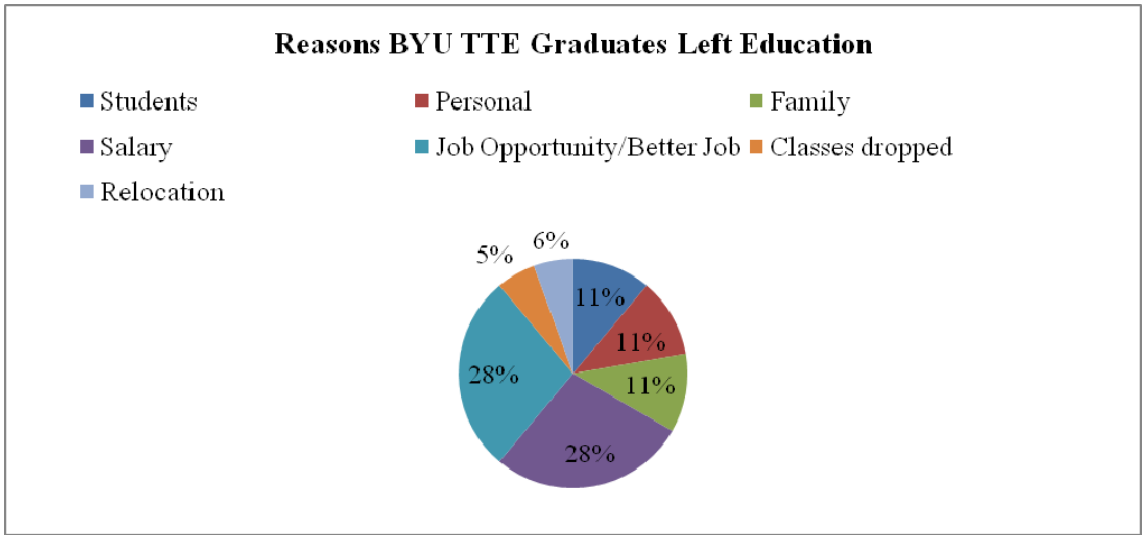

Figure 4-6: Reasons TTE Educators from BYU Offered for Leaving Education

If Salary and Job Opportunity/Better Job were addressed together, the result would be overwhelming in its conclusions, with 56% of participants responding saying that these two variables (salary and job opportunity) are their main reason for leaving education. It is also very interesting to see that salary and job opportunity are responses that could be related to each other. For example: an educator could leave for a better job opportunity most likely and that job would offer a potential for better salary also.

The information above covers all of those educators that left education and their reasons for leaving. Some of these graduates return to education after leaving and they will be discussed in research question # 7.

4.8 Findings Relevant to Research Question # 5

On average, how long did these individuals teach before leaving the teaching profession?

This research question allows researchers to assess the average number of years certain teachers taught before leaving the education profession. The teachers that taught for a time and left are important to this study as are the reasons they left (Research Question # 4). Knowing the average number of years that these teachers taught will hopefully help inform teacher trainers as well as administrators of the amount and length of mentoring new teachers required to increase their retention. These data might also be helpful for those seeking to increase new teacher salaries as a method of retention. It would also be helpful to know the years of largest attrition among educators who leave education. This information on attrition is important to assist in retaining new teachers. The teaching years for each teacher that left teaching have been compiled in a frequency response graph below in Figure 4-7.

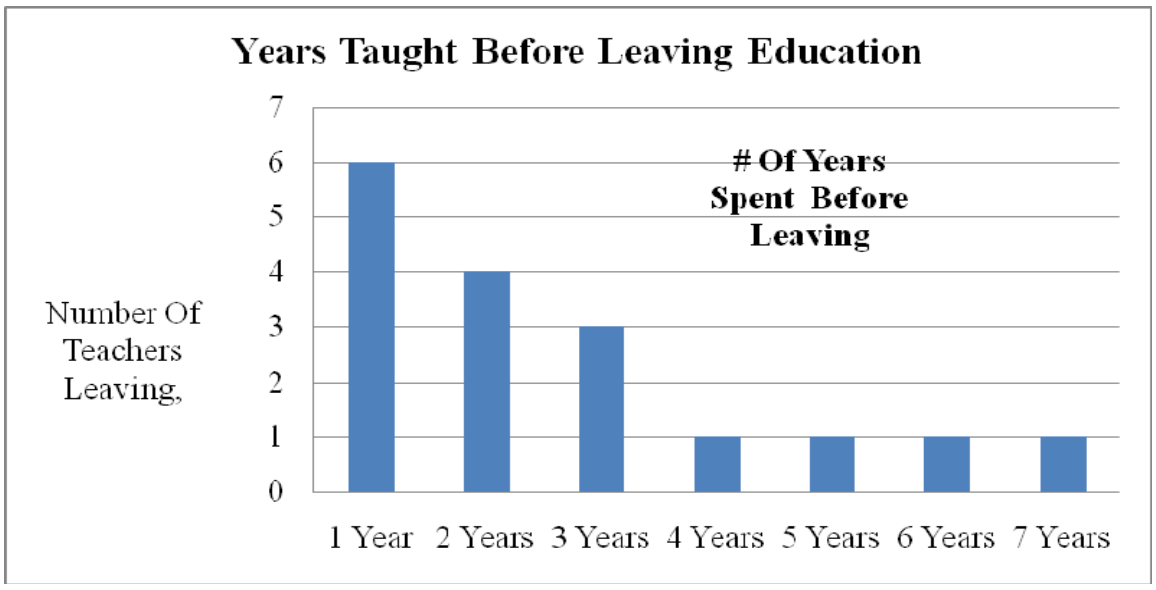

Figure 4-7: Years Spent Teaching by BYU TTE Graduates Prior to Leaving Education

These research results show a decrease after the third year in the number of teachers leaving which is similar to the information in the review of literature as seen in chapter two.

4.9 Findings Relevant to Research Question # 6

Of those staying in the education profession what are some of the reasons they decided to remain in the technology teaching profession?

This research question relates to the teachers who decided to remain in education. In this research question, the participants who remained in education were asked their reasons for choosing to remain in the technology teaching profession. The reasons for remaining in education were reviewed and are displayed in Figure 4-8. Referring to Figure 4-3 there were 68 Technology Teacher Education graduates who entered the education field and remained in education. That equals 62% of all responders on the survey. There were 86 reasons offered by the teachers for remaining in teaching. The reasons that are given for remaining in education are of interest and are noted in the following graph. The importance of these reasons is applicable in trying to retain more technology teacher educators in education. See the graph (Figure 4-8) below for a complete breakdown of the numbers and responses for teachers remaining in the education profession.

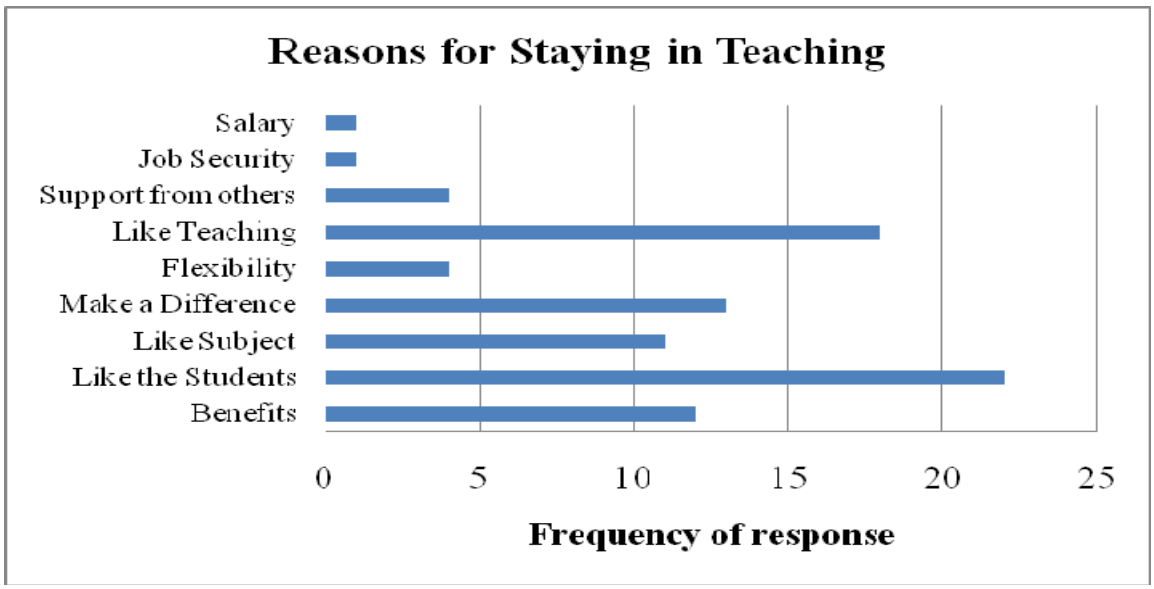

Figure 4-8: Reasons BYU Graduates in TTE Gave for Remaining in education

The reasons that teachers teach and remain teaching are different and personal. The list of reasons teachers remain in education as suggested in the literature review include; good working environment (school setting), location, the students, support from administration, longevity (the longer in education the less benefit for leaving), involvement in the school environment.[115] Some responses are similar from this study when compared to other studies that have been conducted. [116] [117] The most common reasons for staying in education, according to the responses from participants in this study, were that teachers like the students and like teaching. Other popular responses were benefits (i.e., medical insurance, summers off, not working on holidays or

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[115] Connie Sue Greiner EdD and Brenda Smith, "Determining the Effects of Selected Variables on Teacher Retention," Education 126, no. 4 (2006): 653-659.

[116] William W. Malloy and Tawannah Allen, "Teacher Retention in a Teacher Resiliency-Building Rural School," *The Rural Educator* 28 (Winter 2007) : 19.

[117] Eric A. Hanushek et.al, "The Revolving Door," *Education Next* (2004) 79. http://media.hoover.org/documents/ednext20041_76.pdf 10 December, 2007.

weekends, and daily schedule), belief that they can make a difference, and they enjoy their subject area.

4.10 Findings Relevant to Research Question # 7

What is the percentage of those that left the teaching profession but later decided to return to education?

This research question focused on a portion of those teachers who left education then decided to return and teach after a time of absence. According to the numbers on Figure 4-3, of the TTE educators that left education (17), four or approximately 24% of those teachers returned to education. This result closely correlates to previous findings that 25% of teachers who leave education return at some time.[118] For example, of the 17 teachers who exited education in this study, 4 of them returned to education after an absence. The reason this question was asked is that other teacher retention studies did not collect and present this information. The following (Table 4-1) is a list of the reasons given by the four educators for returning to education.

Table 4-1: Responses given by BYU TTE educators for why they returned to education

Educator 1	I enjoy teaching.
Educator 2	I felt like it is what I am intended to do.
Educator 3	I was unemployed after September 11. The district offered me an increase in salary. I had a new baby and a family to provide for.
Educator 4	I missed making a difference in students' lives. I wanted to continue my education and pursue a PhD.

[118] Peter J. Dolton, "Handbook of the Economics of Education," in the Handbooks of Economics 26, November 2006, ed. Eric A. Hanushek and Finis Welch (North-Holland, 2006), 1142.

4.11 Summary of Findings

To summarize this study, there were 148 e-mails sent out to graduates from the TTE department at BYU to determine their employment patterns over a 14 year time period. There were 110 responses (74%) to the survey which is typically deemed a good response rate. There were 85 (77%) of those responding who entered the teaching profession within two years of graduation. Of the 85 graduates entering education, 54 (64%) stayed in the state of Utah and 31 (36%) left the state to teach. In addition, it was determined that 67 (60%) of those that had entered the teaching profession have remained in education. The most common responses as to why they continue to teach are that: they like the students, they like teaching, they think they can make a difference, and the benefits.

In this survey, the percentage of educator attrition over the fourteen years studied was substantially less than previous studies. The results indicated that 17 (20%) of the 85 teachers exited education. The most common reasons for educators leaving education according to this study are better job opportunity and salary. There were six teachers out of the 17 leavers that left education in their first year and 13 of the 17 or 75% of the educators left during the first three years. The last research question asked the four educators who left education and returned what were their reasons for returning to education. The reasons were mostly consistent with the reasons offered by those teachers who remained in education. These returning teachers liked teaching, one thought they could make a difference, one responder felt it was what they were intended to do, and the last response was salary and job security. All of these reasons are important to educators according to this study.

CHAPTER V

5 Conclusions and Recommendations

5.1 Summary

As witnessed in the review of literature, there have been many articles and research studies published concerning teacher attrition, teacher retention, teacher supply and demand and potential teacher shortage in general. The general consensus is that education professionals need to be working on a solution to address these and other problems in education. Some of the teacher shortage problems have been somewhat minimized by providing alternative license options, but to fully address the problems mentioned, additional research is needed to see what the current attrition rates are, why potential teachers are choosing not to enter the profession, why teachers are leaving the profession, as well as why teachers are choosing to stay in the profession. This information is especially needed in technology education as it has traditionally been an area where there is a teacher shortage.[119]

To investigate these and other problems, especially as they relate to technology education in the state of Utah, a survey was developed to gather this important data from a small target group of Technology Teacher Education graduates from Brigham Young University. Specifically, this group was surveyed to investigate the percentage of TTE

[119] Hassan B. Ndahi and John M. Ritz, "Technology Education Teacher Demand, 2002-2005." *The Technology Teacher*. (April 2003): 28.

graduates that choose to enter the teaching profession, the percentage of teachers that stayed in the state of Utah, the percentage of teachers that have stayed or left the teaching profession and their reasons for staying and leaving. In addition, for those that have chosen to leave the teaching profession, data were collected to see how long they taught before leaving. Finally, this study allowed researchers to investigate reasons that some of these technology teacher educators offered for returning to education after an absence from the profession.

In this chapter, each research question will be revisited with conclusions and a comparison summary if possible. The question responses will be compared to published research information discussed in the review of literature. In addition, conclusions, recommendations and limitations of the study will be presented.

5.2 Research Question # 1

Upon graduation or within 2 years of graduation what percentage of Brigham Young University Technology Teacher Education graduates entered the teaching profession?

The first research question addressed in this study was to find out the number and percentage of BYU Technology Teacher Education graduates that entered the education profession within the first two years of graduation. The percentage of participants that responded to this survey that entered the education profession within two years of graduation was 77% or 85 participants out of a possible 110. This percentage is much higher when compared to percentages from other national and local studies referenced in the review of literature. For example, in a national study, Ingersoll states that during 1998-99, only 36% of teacher education graduates accepted teaching

positions.[120] Locally, it was reported (in 2001) that the universities in the state of Utah recommend approximately 3,600 students total over a three to four year time span on average for educational licenses, yet only about 60% of those graduates pursued a job in teaching.[121] As witnessed by the comparison of this study to previous studies, 77% appears to be a respectable rate for teachers entering the profession as it is double the percentage from Ingersoll's national study (36%) and significantly higher than Robertson and Thorkildsen's Utah-based research (60%). It can thus be concluded that the results from this study show a much higher percentage of teachers entering education among BYU TTE graduates than in previous national and local studies.

5.3 Research Question # 2

Of those Technology Teacher Education graduates that entered the teaching profession, what percentage accepted teaching positions outside (or inside) the state of Utah?

The second research question was designed to determine the number and percentage of BYU technology teacher education graduates from 1994-2007 that accepted a teaching assignment within the state of Utah. The percentage of total participants that accepted a teaching position in the state of Utah was 49% or 54 of the 110 participants. Of those that chose to enter the education profession within the first two years of graduation this percentage was 64%, or 54 of the 85 responders. While this percentage (49%) might not appear to reflect a successful retention rate for the state, when compared to findings from other studies, the retention rate of teachers staying in

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[120] Dr. Richard M. Ingersoll. *Is There Really a Teacher Shortage?* (Seattle: University of Washington, 2003). http://depts.washington.edu/ctpmail/PDFs/Shortage-RI-09-2003.pdf. (September, 2003) 7

[121] Daniel Robertson and Ron Thorkildsen Ph.d. *Educator Supply and Demand in Utah.* (Logan, Utah: Bureau of Research Services, College of Education Utah State University, 2001). 4

the state of Utah from BYU TTE is excellent. The percentage in this study is much higher than the percentage reported in Jill Fellows' article where it was stated that only 32% of all education graduates from higher education institutions in the state of Utah in a five year period had accepted teaching opportunities within the state.[122]

Fellows suggested many reasons for this low percentage including the fact that other states were offering signing bonuses and/or a much higher salaries thus attracting teachers to their state to teach.[123] Retaining teachers to teach in Utah should be a matter the state needs to focus on, and find a solution for, to curb this growing problem. In conclusion, the data from this study would seem to indicate that a higher percentage of BYU TTE graduates have chosen to remain and teach in the state of Utah than what is typical for all education graduates graduating from universities in the state of Utah.

5.4 Research Question # 3

What is the attrition rate of Technology Teacher Education graduates from BYU that entered the teaching profession over a 14 year span?

Investigating the attrition rate of those entering the education profession from the participants in this study is important in order to determine if the rate of attrition experienced among BYU TTE graduates is comparable to rates reported in other local and national studies. According to the results from this research question, of those survey participants that entered education (n=85) within two years of graduation, 17 or 20%, left the teaching profession in the years to follow. Of these 17 individuals, six

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[122] Jill Fellow. "Study warns of teacher shortages," *The Daily Herald* (Provo), 17 June 2004. http://www.heraldextra.com/content/view/106408/. C1

[123] Jill Fellow. "Study warns of teacher shortages," *The Daily Herald* (Provo), 17 June 2004. http://www.heraldextra.com/content/view/106408/. C1

(7.1%) left after the first year and 13 (15.3%) left in their first three years of teaching. Another way to view these finding is that of those individuals that left the teaching profession, 75% (13 of 17) did so within the first three years.

The findings in this study seem to be similar with the findings of the NCES study where they reported that at least 9.3% of teachers in the public education system leave during their first year, and 20% leave their assignment in the first three years.[124] The importance of this finding is increased especially with such a low percentage of general education teachers (32%) entering education over a five year period in Utah.[125] With the facts given in the previous questions, this presents serious problems that education has to deal with yearly. Where do all of the teachers come from that are needed on a yearly basis in Utah schools? It would be interesting to take a look at the attrition data for not only technology teacher education, but also for other teacher education programs at BYU (e.g., History, English, Biology Education, etc.) over a period of time to see if there are rising or declining trends in attrition rates. It would also be interesting to compare the attrition rate data from this study with data from other institutions that prepare technology teachers to form a comparison study. As a conclusion, the attrition rates of participants from this study are fairly consistent with the attrition rates reported by Greiner and Smith in the NCES study.

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[124] Connie Sue. Greiner and Brenda Smith. "Determining the Effect of Selected Variables on Teacher Retention." *Education.* No.126 (Summer 2006): 653-659.

[125] Zachary Tippetts et al. Utah Educator Supply and Demand Study 2003-2004. (Logan, Utah: Instructional Technology Department at Utah State University, 2004). http://www.schools.utah.gov/BOARD/summary/UtahTeacherSupplyDemand.pdf. (13 July, 2004) 3

5.5 Research Question # 4

What are some of the most prevalent reasons why individuals decided to leave the technology teaching profession?

The reasons for attrition among participating BYU TTE graduates are summarized in question number four. In this study, the reasons given by those participants that chose to leave the education profession are mainly job opportunity and salary. These reasons correspond nicely to previous national and state studies. In the literature that has been previously reviewed, salary has been mentioned but the point is usually made that salary was not the largest factor in teachers leaving the education profession. However, salary is offered as one of the largest reasons in Utah for teachers leaving education according to Ray Timothy former Utah Associate Superintendent of Law, Educational Services.[126] Timothy states that Utah is the lowest in spending per pupil in the Nation. The rate per pupil according to the 2006 census is $5,257 and the next closest to Utah was Arizona offering more than $1,000 more per student.[127] Utah also has one of the largest class sizes in the nation to add to the low spending on students. Students, family, and personal were other common reasons offered by the educators that graduated from BYUs' TTE program for leaving education.

The reasons for attrition as reported in chapter two have been shown to be fairly consistent across multiple studies. In general these reasons are:

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[126] Jill Fellow. "Study warns of teacher shortages," *The Daily Herald* (Provo), 17 June 2004. http://www.heraldextra.com/content/view/106408/. C1

[127] U.S. Department of Commerce, *National Spending Per Student Rises to $8,287*. U.S. Census Bureau (Washington, D.C.: Government Printing Office, 2006), http://www.census.gov/Press-Release/www/releases/archives/economic_surveys/006685.html. 21 June 2008.

- Salary
- Student discipline problems
- Class sizes
- Lack of faculty authority
- Lack of support from administration
- Lack of advancement opportunities
- Workload in general (time)
- Lack of parental involvement
- Lack of mentoring (support)

As a conclusion, the responses from this study are fairly consistent with the responses offered in previous studies.[128] The difference between this study and others is that this study was not as large as those previously mentioned in the review of literature, and as a result the reasons used by teachers exiting education in this study are not as numerous as witnessed in other findings.

5.6 Research Question # 5

On average, how long did these individuals teach before leaving the teaching profession?

In research question # 5, the subject of how long those who exited education taught before leaving the profession was investigated. It is apparent from previous research studies that teachers generally leave early in their careers. As was mentioned earlier, the NCES reported that at least 9.3% of teachers in the public education system

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[128] Dr. Richard M. Ingersoll. *Is There Really a Teacher Shortage?* (Seattle: University of Washington, 2003). http://depts.washington.edu/ctpmail/PDFs/Shortage-RI-09-2003.pdf. (September, 2003) 16.

leave during their first year, and 20% leave their assignment in the first three years.[129] In this study, 17 or 20% of the educators left the teaching profession. The average number of years these individuals taught before leaving was three years. Six of the 85 or 7% of the educators left in the first year of their teaching experience and 15% left in the first three years of their teaching experience. It is also interesting that the number of teachers leaving decreases dramatically after the third year, a finding that is fairly consistent with other studies on teacher retention where the majority of those that leave education do so in the first five years.[130] The conclusion that can be drawn from this study is when compared to teacher retention data nationally, TTE teachers from BYU are slightly less likely to leave education after entering the profession. It can also be concluded, from national data as well as the data from this study, that if teachers are able to successfully complete at least three years of teaching, they are more likely to remain in the teaching profession.

5.7 Research Question # 6

Of those staying in the education profession what are some of the reasons they decided to remain in the technology teaching profession?

This research question was designed to explore the reasons that TTE teachers entered and remained in the education profession. The number one reason that teachers offered for remaining in education according to this study is that they like the students with 22 or 26% of the respondents using this as their main reason. This finding supports

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[129] Connie Sue. Greiner and Brenda Smith. "Determining the Effect of Selected Variables on Teacher Retention." *Education.* No.126 (Summer 2006): 653-659.

[130] Zachary Tippetts et al. *Utah Educator Supply and Demand Study 2003-2004.* (Logan, Utah: Instructional Technology Department Utah State University, 2004). 3, 11

the reasons referenced in the national studies found in the review of literature, where teachers' enjoyment of the students was mentioned as one of the top reasons for educators remaining in education.[131] [132] [133]

The next most popular responses in this study were that they (the teacher) like to teach (18 responses or 21%), followed by the teachers stating that they (the teacher) think they can make a difference in the lives of their students by remaining in education (13 responses or 15%). Another response commonly offered was that the participants valued the benefits offered in education with 12 responses or 14% of the total responses. The responses with the lowest number of reasons offered were job security and the salary with one vote a piece. In conclusion, the reasons as cited by participants in this study for those choosing to remain in the education profession are similar to those mentioned by other national teacher retention studies. It would be interesting to be able to compare this study to similar studies in different general education subject areas like English, science, and social studies. It would also be nice to see this study compared to other studies performed by researcher in STEM teaching areas.

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[131] Connie Sue Greiner EdD and Brenda Smith, "Determining the Effects of Selected Variables on Teacher Retention," Education 126, no. 4 (2006): 653-659.

[132] William W. Malloy and Tawannah Allen, "Teacher Retention in a Teacher Resiliency-Building Rural School," *The Rural Educator* 28 (Winter 2007) : 19.

[133] Eric A. Hanushek et.al, "The Revolving Door," *Education Next* (2004) 79. http://media.hoover.org/documents/ednext20041_76.pdf 10 December, 2007.

5.8 Research Question # 7

What is the percentage of those that left the teaching profession but later decided to return to education?

This last research question is possibly the most consistent as compared to the previous research information. This question dealt with those who exited education at some time but then chose to return to the profession. The number of teachers returning to education is mentioned by Peter J. Dolton in The Handbook of The Economics of Education is that one in four or 25% of teachers who exit education return to teaching after a period of time.[134] The results from this survey closely correlate to the previous findings in that, of the 17 teachers who exited education, 4 of them returned to education after an absence. This percentage (24%) is almost equal to the national average of 25%. These numbers will need to remain consistent or even improve for attracting previous educators back to the classroom for the Utah education system to be able to fill the vacancies they will be faced with in the future. Conclusions from this study are that the percentage of teachers in this research study that left and then returned to education after an absence is quite consistent to those reported by Dolton.[135]

5.9 Recommendations

The purpose of this research study was to gather data on a sample of technology teacher candidates in order to determine their employment patterns after completing

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[134] Peter J. Dolton, "Handbook of the Economics of Education," in the Handbooks of Economics 26, November 2006, ed. Eric A. Hanushek and Finis Welch (North-Holland, 2006), 1142.

[135] Peter J. Dolton, "Handbook of the Economics of Education," in the Handbooks of Economics 26, November 2006, ed. Eric A. Hanushek and Finis Welch (North-Holland, 2006), 1142.

their teaching degree from Brigham Young University. The recommendations for further research as a result of this study are:

1. It is recommended that this study be replicated at intervals at BYU so that longitudinal data can be collected and trends in teacher retention and attrition be investigated.
2. It is recommended that researchers at other universities with TTE programs state wide conduct studies similar to this one so that comparisons can be established.
3. It is recommended that similar studies be conducted by other teacher education majors on BYU campus and the findings be compared to the data from this study.
4. The results of this study and results of similar studies state wide be compiled, compared, and evaluated for specific trends and similarities with the results being sent to the state office of education for consideration in the establishment and change of methods used for retention of teachers.
5. Use the findings from such studies to recommend change in the retention programs in schools, districts, and states.
6. It is recommended that a study using qualitative research methods be conducted in which a sample of teachers that left the teaching profession are interviewed and their answers are tabulated to explore and validate the reasons they left education and see if those reasons are similar to those found in this and other quantitative studies.

7. Perform research to determine the areas of greatest teacher shortages throughout the state of Utah using longitudinal data.
8. Compare the attrition rates between STEM (Science, Technology, Engineering and Math) teaching subject areas and other teaching disciplines such as (English, Social Studies, ect) to see if teacher attrition rates are higher because of the increase in demand and the opportunities offered by STEM industries.

REFERENCES

U.S. Department of Commerce . *National Spending Per Student Rises to $8,287.* Census Report, Washington, D.C.: Government Printing Office, 2006, http://www.census.gov/Press-Release/www/releases/archives/economic_surveys/006685.html.; (retrieved: June 21, 2008.)

Burkholder, S. chair. *Educator Supply and Demand in the United States Executive Summary.* Study, Columbus, Ohio: American Association for Employment in Education, 2005.

Dolton, P.J. "Teacher Supply ." In *Handbook of the Economics of Education in the Handbooks of Economics 26,* by F. Hanushek E. A. and Welch and editors, 1142. North-Holland, 2006.

Feistritzer, C.E. and Haar, C.K. *Profile of Teachers in the U.S.* Washington, D.C.: The National Center for Education Information, 2005.

Fellow, J. "Study warns of teacher shortages." *The Daily Herald,* June 17, 2004: C1.

Glennie, E. and Edmunds, J. *Teacher Retention at Low-Performing Schools.* Edited by University of North Carolina at Greensboro and the North Carolina Education Research Data Center. 2006. http://childandfamilypolicy.duke.edu/publications/policybriefs/files/edureform/Research%20UpdateDec06.pdf (retrieved; January 12, 2008).

Greiner, C.S. and Smith B. "Determining the Effect of Selected Variables on Teacher Retention." *Education,* 2006 (No.126): 653-659.

Hanushek, Eric A. et.al. "The Revolving Door." *Education Next* (Education Next), 2004: 79.

Ingersoll, R.M. *Is There Really a Teacher Shortage?* Research Report, University of Washington, Seattle, Wa: Center for the Study of Teaching and Policy, 2003, http://depts.washington.edu/ctpmail/PDFs/Shortage-RI-09-2003.pdf.

Learning Point Associates, Southwest Educational Development Laboratory, and WestEd. "Improving Teacher Retention With Supportive Workplace Conditions." *Newsletter*, June 2007: http://www.castategearup.org/articles/TheCenter NL June07.pdf

Malloy, W.W. and Allen, T. "Teacher Retention in a Teacher Resiliency-Building Rural School." *The Rural Educator (28)*, Winter 2007: 19.

Morgan, M.M. and Kritsonis, W.A. "A National Focus: The Recruitment, Retention, and Devlopment of Quality Teachers in Hard-to-Staff Schools." *National Journal for Publishing and Mentoring Doctoral Student Research*, 2007.

National Education Association. *Take a look at today's teachers.* Informational, National Education Association, 2007.

Ndahi, H.B. and Ritz, J.M. "Technology Education Teacher Demand, 2002-2005." *The Technology Teacher*, 2003: 27-31.

Olszewski, L. "Help Wanted at Schools: Severe shortage of trained math and science teachers strains the state educational resources." *San Francisco Chronicle.* October 6, 1998. http://www.sfgate.com/cgi-bin/article.cgi?file=/chronicle/archive/1998/10/06/MN57543.DTL (accessed February 25, 2008).

Public Forum . "Teacher Burnout." *The Salt Lake Tribune.* May 10, 2004. http://www.sltrib.com/2004/05102004/opinion/opinion.asp (accessed June 25, 2004).

"Record Number of Teachers Set to Retire." *National Public Radio.* January 31, 2008. http://www.npr.org/templates/story/story.php?storyId=18583812 (accessed February 26, 2008).

Robertson, D. and Thorkildsen, R. *Educator Supply and Demand in Utah.* study, Logan, Utah: Bureau of Research Services, College of Education Utah State University, 2001, 4.

Safman, P. and Timothy, R. co-chairs. "Educator Quality: Attracting, Training, Evaluating, Compensating, and Retaining Quality Educators in the State of Utah." Summary, Utah, 2005, http://www.schools.utah.gov/board/summary/EducatorQualityTaskForce.

Snyder, T. "Percentage of Male Teachers Hits 40-Year Low." *MSN Encarta.* 2007. http://spotlight.encarta.msn.com/Features/encnet_Departments_CareerTraining_default_article_MissingMaleTeachers.html?GT1=10887 (retrived: January 8, 2008).

"So What's a Boomer, Anyhow? ." *Baby Boomer Headquarters.* http://www.bbhq.com/whatsabm.htm. (accessed March 6, 2008).

Sperry, D.J. *2007 Report on Teacher Supply and Demand Needs of K-12 Education in the State of Utah.* Teacher Report, Salt Lake City, Utah: K-16 Alliance, 2007, 12.

Sullivan, K. chairman. *Policy Brief: The High Cost of Teacher Turnover chairman (), 1.* Study Brief, the National Commission on Teaching and America's Future, 2007, 2007.

Tippetts, Z. et al. "Utah Educator Supply and Demand Study 2003-2004." Study Report, Logan, Utah, 2004.

Vedder, R. "Comparable Worth." *Education Next*, June 2003: 3.

Wanted: Math and science teachers. CNN.com. Washington, July 31, 2002. http://archives.cnn.com/2002/fyi/teachers.ednews/07/31/teachers.needed.reut/index.html.

Wardle, L. "Utah teachers' pay below nearby states." *Standard Examiner Davis Bureau.* December 31, 2006. http://www.standard.net/live/news/94836/ (accessed March 12, 2008).

Williams, L. and Kritsonis, W.A. "Leaders We Have a Problem! It is Teacher Retention.What Can We Do about It?" *The Lamar University Electronic Journal of Student Research*, 2007: http://eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/000001. retrieved: 10 March, 2008.

"Working Women's Health: Who Cares for the Family Caregiver? ." *Care guide at home.* http://www.careguideathome.com/modules.php?op=modload&name=CG_Resources&file=article&sid=1008 (accessed May 26, 2008).

APPENDICES

Appendix A.

INFORMED CONSENT TITLE: Employment Decisions of Industrial Education and Technology Teacher Education Graduates (1994-2007): Brigham Young University

Description: The purpose of this research is to collect data regarding employment decisions of Industrial Education and Technology Teacher Education graduates and/or those receiving their teacher certification from Brigham Young University between 1993 and 2007. Your responses will be used to add to current research regarding technology teacher supply and demand and technology teacher retention issues.

Risks and Benefits: The benefits of this study include contributing to the general body of knowledge of teacher retention issues as well as helping to understand teacher supply and demand issues especially as they relate to technology education graduates. It is not anticipated that this survey will pose any risks or discomforts to the participants.

Voluntary Participation / Confidentiality: Your honest and professional responses are needed so that an accurate collection of data can be accomplished. Your participation will involve completing an on-line survey that should only take about 5 minutes to complete. Your participation in the survey is completely voluntary. If you consent to participate, no identifying information will be connected to the collected data. The data will be secured and used for research purposes only. Only the researchers will have access to individual responses. Be assured that responses will be held in strict confidence and only group results of this research will be reported. The results of the research study may be published but results will be presented in summary form only. Your identity will not be associated with your responses in any published format.

Statement of Consent: By completing this survey you are providing your consent to utilize your confidential responses to items on the research instrument.

If you have any questions about this research project or if you wish to receive a summary of the results, please call Dr. Steve Shumway at (801) 422-6496 or send an e-mail to steve_shumway@byu.edu.

Thank you for your cooperation.

Appendix B.

TTE Survey Instrument

In what year did you graduate?

Did you enter the education profession within two years of graduation?

- Yes
- No

What best describes your situation after graduation/teacher certification from BYU?

- Entered the education profession and have remained in the education profession
- Entered the education profession then left to find employment in another profession
- Currently in graduate school
- Went to graduate school and then entered the education profession
- Went to graduate school and went into a profession that is not education related
- Entered into a profession other than education have remained outside education
- Entered education, left education for a time, returned to the education profession.
- Other (stay-at-home parent, Industry Training, etc)

At what level was your first teaching position?

- Elementary
- Middle/Junior High School
- High School
- Technical School
- Other

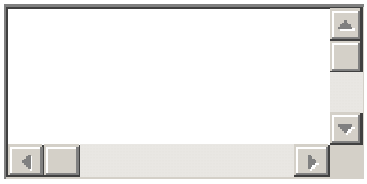
Was your first teaching position inside or outside the State of Utah?

- ☐ Inside
- ☐ Outside

How many total years have you taught?

☐

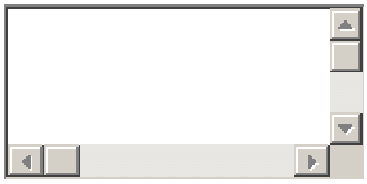
Please describe the main reasons why you have stayed in the education profession



Please respond to the degree that the education you received while a student in the technology teacher education program at BYU helped prepare you for your current responsibilities and/or profession

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
Agreement Ranking	☐	☐	☐	☐	☐

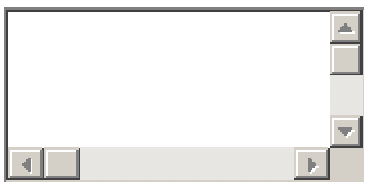
Please describe the main reasons you decided to leave the education profession



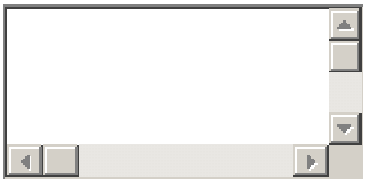
How many years did you teach before leaving education?

☐

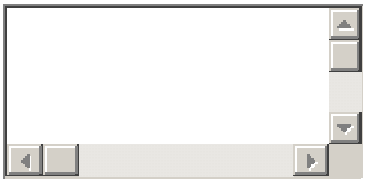
Please describe the main reasons you decided to return to the education profession



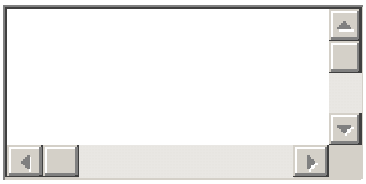
Please describe your professional and/or employment history from the time you left education until you returned to the education profession.



Please describe your professional and/or employment history from graduation until the current time



Please describe the main reasons you decided not to enter the education profession



We thank you for your time spent taking this survey.

Your response has been recorded.